Oracle® Process Manufacturing

Using Oracle Advanced Planning and Scheduling with Oracle Process Manufacturing

Release 11*i*

Part No. A81002-06

May 2004

ORACLE®

Oracle Process Manufacturing Using Oracle Advanced Planning and Scheduling with Oracle Process Manufacturing, Release 11*i*

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Contents

4   Setting Up Data in Oracle Applications

5   Working Relationship between the Two Products

6   Using Demand Planning with Oracle Process Manufacturing

A   Appendix

Index

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Oracle Process Manufacturing Using Oracle Advanced Planning and Scheduling with Oracle Process Manufacturing, Release 11*i*

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Preface

Welcome to the Oracle Process Manufacturing Using Oracle Advanced Planning and Scheduling with Oracle Process Manufacturing, Release 11*i*.

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

- The principles and customary practices of your business area.

- Oracle Process Manufacturing.

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

- Oracle Self-Service Web Applications.

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

- The Oracle Applications graphical user interface.

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

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

How To Use This Guide

The Oracle Process Manufacturing Using Oracle Advanced Planning and Scheduling with Oracle Process Manufacturing contains the information you need to understand and use Oracle Process Manufacturing. This guide contains the following:

- Chapter 1, Overview, discusses the four applications that comprise Oracle Advanced Planning and Scheduling and explains why this guide focuses on only two of these applications.

- Chapter 2, Using Advanced Planning and Scheduling with Oracle Process Manufacturing, discusses the advantages of using ASCP and provides an overview on mapping OPM Data to ASCP, setting up Oracle Applications, and OPM functional changes.

- Chapter 3, Setting Up OPM Data for Use with ASCP, discusses how OPM data maps to Oracle Applications and what you need to consider when setting up OPM data when using ASCP.

- Chapter 4, Setting Up Data in Oracle Applications, discusses data set up in Oracle Applications when using OPM.

- Chapter 5, Using ASCP Data in OPM, provides procedures for using the APS suggestions in OPM. It discusses rescheduling existing batches, scheduling new batches, and accepting or rejecting batches.

- Chapter 6, Using Demand Planning with Oracle Process Manufacturing, provides information on referencing OPM data in Demand Planning and importing Demand Planning Output into OPM.

- Appendix A describes how to navigate to each window.

Documentation Accessibility

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

Accessibility of Code Examples in Documentation

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

Accessibility of Links to External Web Sites in Documentation

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

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 Process Manufacturing.

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).

- **PDF Documentation-** See the Online Documentation CD for current PDF documentation for your product with each release. This Documentation CD is also available on Oracle*MetaLink* and is updated frequently.

- **Online Help -** You can refer to Oracle Applications Help for current HTML online help for your product. Oracle provides patchable online help, which you can apply to your system for updated implementation and end user documentation. No system downtime is required to apply online help.

- **Release Content Document -** See the Release Content Document for descriptions of new features available by release. The Release Content Document is available on Oracle*MetaLink*.

- **About document -** Refer to the About document for information about your release, including feature updates, installation information, and new documentation or documentation patches that you can download. The About document is available on Oracle*MetaLink*.

Related Guides

Oracle Process Manufacturing 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 Process Manufacturing.

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

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

Guides Related to All Products

Oracle Applications User's Guide

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

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

Guides Related to This Product

Accounting Setup User's Guide

The OPM Accounting Setup application is where users set up global accounting attributes about the way financial data will be collected by OPM. These attributes include such things as account keys, financial calendars, and account segments. Since OPM is closely integrated with Oracle General Ledger (GL), much of the attributes are defined in the Oracle GL instead of OPM, and therefore, the windows are display only within OPM. The *Oracle Process Manufacturing Accounting Setup User's Guide* describes how to setup and use this application.

Cost Management User's Guide

The OPM Cost Management application is used by cost accountants to capture and review the manufacturing costs incurred in their process manufacturing businesses. The *Oracle Process Manufacturing Cost Management User's Guide* describes how to setup and use this application.

Manufacturing Accounting Controller User's Guide

The Manufacturing Accounting Controller application is where users define the impact of manufacturing events on financials. For example, event RCPT (Inventory Receipts) results in a debit to inventory, a credit to accrued accounts payable, a debit or a credit to purchase price variance, etc. These impacts are predefined in the Manufacturing Accounting Controller application so users may begin using OPM to collect financial data out-of-the-box, however, they may also be adjusted per your business needs. The *Oracle Process Manufacturing Manufacturing Accounting Controller User's Guide* describes how to setup and use this application.

Oracle Financials Integration User's Guide

Since OPM is closely integrated with Oracle General Ledger, financial data that is collected about the manufacturing processes must be transferred to the Oracle Financials applications. The OPM Oracle Financials Integration application is where users define how that data is transferred. For example, users define whether data is transferred real time or batched and transferred at intervals. The *Oracle Process Manufacturing Oracle Financials Integration User's Guide* describes how to setup and use this application.

Inventory Management User's Guide

The OPM Inventory Management application is where data about the items purchased for, consumed during, and created as a result of the manufacturing process are tracked. The *Oracle Process Manufacturing Inventory Management User's Guide* includes information to help you effectively work with the Oracle Process Manufacturing Inventory application.

Physical Inventory User's Guide

Performing physical inventory count is the most accurate way to get an accounting of all material quantities purchased, manufactured, and sold, and update your onhand quantities accordingly. The OPM Physical Inventory application automates and enables the physical inventory process. The *Oracle Process Manufacturing Physical Inventory User's Guide* describes how to setup and use this application.

Order Fulfillment User's Guide

The OPM Order Fulfillment application automates sales order entry to reduce order cycle time. Order Fulfillment enables order entry personnel to inform customers of scheduled delivery dates and pricing. The *Oracle Process Manufacturing Order Fulfillment User's Guide* describes how to setup and use this application.

Purchase Management User's Guide

OPM Purchase Management and Oracle Purchasing combine to provide an integrated solution for Process Manufacturing. Purchase orders are entered in Oracle Purchasing and received in OPM. Then, the receipts entered in OPM are sent to Oracle Purchasing. The *Oracle Process Manufacturing Purchase Management User's Guide* describes how to setup and use this integrated solution.

Using Oracle Order Management with Process Inventory Guide

Oracle Process Manufacturing and Oracle Order Management combine to provide an integrated solution for process manufacturers. The manufacturing process is

tracked and handled within Oracle Process Manufacturing, while sales orders are taken and tracked in Oracle Order Management. Process attributes, such as dual UOM and lot control, are enabled depending on the inventory organization for the item on the sales order. Order Management accepts orders entered through Oracle Customer Relationship Management (CRM). Within CRM, orders can originate from TeleSales, Sales Online, and iStore, and are booked in Order Management, making the CRM suite of products available to Process customers, through Order Management. The *Oracle Order Management User's Guide* and *Using Oracle Order Management with Process Inventory Guide* describes how to setup and use this integrated solution.

Process Execution User's Guide

The OPM Process Execution application lets you track firm planned orders and production batches from incoming materials through finished goods. Seamlessly integrated to the Product Development application, Process Execution lets you convert firm planned orders to single or multiple production batches, allocate ingredients, record actual ingredient usage, and then complete and close production batches. Production inquiries and preformatted reports help you optimize inventory costs while maintaining a high level of customer satisfaction with on-time delivery of high quality products. The *OPM Process Execution User's Guide* presents overviews of the tasks and responsibilities for the Production Supervisor and the Production Operator. It provides prerequisite setup in other applications, and details the windows, features, and functionality of the OPM Process Execution application.

Using Oracle Advanced Planning and Scheduling with Oracle Process Manufacturing

Oracle Process Manufacturing and Oracle Advanced Planning and Scheduling (APS) combine to provide a solution for process manufacturers that can help increase planning efficiency. This solution provides for constraint-based planning, performance management, materials management by exception, mixed mode manufacturing that enables you to choose the best method to produce each of your products, and combine all of these methods within the same plant/company. The *Using Oracle Advanced Planning and Scheduling with Oracle Process Manufacturing User's Guide* describes how to setup and use this application.

MPS/MRP and Forecasting User's Guide

The Oracle Process Manufacturing Material Requirements Planning (MRP) application provides long-term "views" of material demands and projected supply actions to satisfy those demands. The Master Production Scheduling (MPS)

application lets you shorten that view to a much narrower and immediate time horizon, and see the immediate effects of demand and supply actions. The *Oracle Process Manufacturing MPS/MRP and Forecasting User's Guide* describes how to setup and use this application.

Capacity Planning User's Guide

The OPM Capacity Planning User's Guide describes the setup required to use OPM with the Oracle Applications Advanced Supply Chain Planning solutions. In addition, Resource setup, used by the OPM Production Execution and New Product Development applications, is also described.

Using Oracle Process Manufacturing with Oracle Manufacturing Scheduling

Oracle Process Manufacturing integrates with Oracle Manufacturing Scheduling to manage and utilize resources and materials. Through the Process Manufacturing application, you set up manufacturing, inventory, procurement and sales order data. Through the Manufacturing Scheduling application, you can optimize the schedule based on resource and component constraints and user predefined priorities. Using different optimization objectives, you can tailor Manufacturing Scheduling to meet your needs.

Using Oracle Manufacturing Scheduling helps you improve productivity and efficiency on your shop floor. By optimally scheduling shop floor jobs, and being able to quickly react to unplanned constraints, you can lower manufacturing costs, increase resource utilization and efficiency, and increase customer satisfaction through improved on-time delivery. The *Using Oracle Process Manufacturing with Oracle Manufacturing Scheduling User's Guide* describes how to setup and use this integrated solution.

Product Development User's Guide

The Oracle Process Manufacturing Product Development application provides features to manage formula and laboratory work within the process manufacturing operation. It lets you manage multiple laboratory organizations and support varying product lines throughout the organization. You can characterize and simulate the technical properties of ingredients and their effects on formulas. You can optimize formulations before beginning expensive laboratory test batches. Product Development coordinates each development function and enables a rapid, enterprise-wide implementation of new products in your plants. The *Oracle Process Manufacturing Product Development User's Guide* describes how to setup and use this application.

Quality Management User's Guide

The Oracle Process Manufacturing Quality Management application provides features to test material sampled from inventory, production, or receipts from external suppliers. The application lets you enter specifications and control their use throughout the enterprise. Customized workflows and electronic record keeping automate plans for sampling, testing, and result processing. You can compare specifications to assist in regrading items, and match customer specifications. Aggregate test results and print statistical assessments on quality certificates. Several preformatted reports and inquiries help manage quality testing and reporting. The *Oracle Process Manufacturing Quality Management User's Guide* describes how to set up and use this application.

Implementation Guide

The *Oracle Process Manufacturing Implementation Guide* offers information on setup. That is, those tasks you must complete following the initial installation of the Oracle Process Manufacturing software. Any tasks that must be completed in order to use the system out-of-the-box are included in this manual.

System Administration User's Guide

Much of the System Administration duties are performed at the Oracle Applications level, and are therefore described in the *Oracle Applications System Administrator's Guide.* The *Oracle Process Manufacturing System Administration User's Guide* provides information on the few tasks that are specific to OPM. It offers information on performing OPM file purge and archive, and maintaining such things as responsibilities, units of measure, and organizations.

API User's Guides

Public Application Programming Interfaces (APIs) are available for use with different areas of the Oracle Process Manufacturing application. APIs make it possible to pass information into and out of the application, bypassing the user interface. Use of these APIs is documented in individual manuals such as the *Oracle Process Manufacturing Inventory API User's Guide, Oracle Process Manufacturing Process Execution API User's Guide, Oracle Process Manufacturing Product Development Formula API User's Guide, Oracle Process Manufacturing Product Development Recipe API User's Guide, Oracle Process Manufacturing Quality Management API User's Guide,* and the *Oracle Process Manufacturing Cost Management API User's Guide.* Additional API User's Guides are periodically added as additional public APIs are made available.

Installation and System Administration

Oracle Applications Concepts

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

Installing Oracle Applications

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

Upgrading Oracle Applications

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

"About" Document

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

Maintaining Oracle Applications

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

Oracle Applications System Administrator's Guide

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

Oracle Alert User's Guide

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

Oracle Applications Developer's Guide

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

Oracle Applications User Interface Standards for Forms-Based Products

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

Other Implementation Documentation

Oracle Applications Product Update Notes

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

Oracle Workflow Administrator's Guide

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

Oracle Workflow Developer's Guide

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

Oracle Workflow User's Guide

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

Oracle Workflow API Reference

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

Oracle Applications Flexfields Guide

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

Oracle eTechnical Reference Manuals

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

Oracle Applications Message Manual

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

Training and Support

Training

Oracle offers a complete set of training courses to help you and your staff master Oracle Process Manufacturing 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 Process Manufacturing working for you. This team includes your technical representative, account manager, and Oracle's large staff of consultants and support specialists with expertise in your business area, managing an Oracle server, and your hardware and software environment.

Do Not Use Database Tools to Modify Oracle Applications Data

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

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

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

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

About Oracle

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

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

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

Your Feedback

Thank you for using Oracle Process Manufacturing and this user guide.

Oracle values your comments and feedback. In this guide is a reader's comment form that you can use to explain what you like or dislike about Oracle Process Manufacturing or this user guide. Mail your comments to the following address or call us directly at (650) 506-7000.

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Or, send electronic mail to appsdoc_us@oracle.com.

1

Overview

Advanced Planning and Scheduling (APS) includes the following applications:

- Oracle Advanced Supply Chain Planning (ASCP)
- Oracle Global Order Promising
- Oracle Inventory Optimization
- Oracle Demand Planning

Oracle Process Manufacturing (OPM) integrates with all of the APS applications. OPM users can use Global Order Promising and Inventory Optimization by following the same steps as discrete manufacturing users. This user's guide focuses on using OPM with ASCP and with Demand Planner. The ASCP integration is much more complex than the integration with Demand Planning, so most of this guide focuses on using OPM with ASCP. The integration with Demand Planning is discussed in the last chapter of this guide. For more information about the Advanced Planning and Scheduling suite of applications, refer to the Oracle Advanced Planning and Scheduling Implementation and User's Guide.

2

Using Advanced Supply Chain Planning with Oracle Process Manufacturing

The integration of Oracle Process Manufacturing (OPM) with Oracle Advanced Supply Chain Planning (ASCP) can help you increase your planning efficiency which can give you a competitive edge. The integration consists of the following features:

- Constraint-based planning that ensures that the plan is feasible and respects all of your constraints.

- Performance management enabled through the Oracle ASCP integration with Oracle BIS and Oracle Workflow. This allows you to:

  - Easily and quickly evaluate a plan based on its impact to target Key Performance Indicators (KPIs)

  - Manage by exception – receive notifications when corrective actions are required

- The ability to collect data from multiple instances.

- Mixed mode manufacturing that enables you to choose the best method to produce each of your products, and combine all of these methods within the same plant/company.

ASCP To OPM Flow

The flow between ASCP and OPM is as follows

- Static and dynamic production planning data transfers from OPM to ASCP.

- ASCP makes selected suggestion based on the data to meet the demands.

- Through OPM you can reschedule, add, and cancel batches and firmed planned orders.

Advantages of Using ASCP

ASCP with OPM offers you the following advantages:

Optimization

You can optimize your plans to financial and other enterprise strategic objectives. Since you can name and save your plans, you can run several plans optimized to different sets of objectives, then employ the Planner Workbench graphical user interface to quickly compare Key Performance Indicators and action messages associated with alternative plans.

Penalty Costs

ASCP also has some built-in optimization objectives such as weighing the penalty costs of late orders against expedited production and delivery costs. You can affect the solution by entering penalty factors, applied as a percent of cost. The optimization process attempts to drive costs out of the solution.

Mapping OPM Data to ASCP

Using ASCP, there are considerations on how you set up the data listed below:

- Organizations
- Items
- Warehouses
- Formulas and Routings
- Resources
- Production and Sales Orders, Forecasts, and Onhand Inventory
- Production Definitions

Setting Up Oracle Applications

Since OPM is integrated with Oracle Purchasing, additional setup in Oracle Applications is required. The following data must be set up for OPM to interface properly with ASCP:

- Organizations

- Items

- Sourcing Rules

- Vendors

- Shipping Methods

- Locations

- Vendors and POs

OPM Functional Changes

With the OPM integration to ASCP, the following methodology exists:

- OPM MRP does *not* need to be executed.

- Finite scheduling is accomplished seamlessly within the Oracle Applications suite. You do not need an outside vendor.

- Planning rules are set up in Oracle Applications not OPM.

- All planning activities can occur on a separate server.

- You are not restricted to a material plan.

- OPM structure needs to mimic Oracle Applications organization structure.

Planning Changes in OPM

If you do not need finite scheduling, then do not change the planning method. You can continue to use the OPM Process Planning applications. If you want to use finite scheduling functionality available in Advanced Supply Chain Planning, make the following changes:

- Set up your planning rules in Oracle Applications instead of OPM.

- Purchase a separate server for all planning activities. Purchasing a separate server is not mandatory, but it is recommended due to the heavy processing load created with ASCP.

- Create multiple plans using different scenarios. Decide which plan to use.

- Set up an organization structure in Oracle Applications that mimics the OPM organization structure by mapping a warehouse to an inventory organization.

3

Setting Up OPM Data for Use with ASCP

If you are using Oracle Advanced Planning Scheduler, you must set up Oracle Process Manufacturing data so that it can be properly processed. For Release 11i, you must understand the differences in data structure between Oracle Applications and OPM in order to properly set up and use the OPM data with ASCP. The following topics on organization structure for Oracle Applications and OPM are discussed:

- Setting Up OPM Data Overview

- Oracle Applications Organization Structure

- OPM Organization Structure

- OPM Item Master

- OPM Units of Measure, Types and Conversions

- Recipes, Formulas, Validity Rules, and Routings

- Resource Information and ASCP Capacity Planning

- Plant Warehouse Effectivities

- Shop Calendars

- MPS Schedule Parameters

- Production Orders

- Onhand Inventory

Setting Up OPM Data Overview

When setting up OPM data to use with ASCP consider the differences between Oracle Applications and OPM for the following data:

- Organization Structure

- Resource Warehouses

- Item Set Up

- Units of Measure, Types and Conversion

- Formulas

- Recipes

- Routings

- Resources

- Plant/Warehouse Effectivities

- Shop Calendars

- MPS Schedule Parameters

- Sales Order Demand

Oracle Applications Organization Structure

Before you define any type of organization in Oracle Applications, you must define a set of books. Once a set of books is defined, you can define the legal entities, operating units, inventory organizations, and sub-inventories of your company as shown below.

```
┌──────────────┐
│   Set of     │
│   Books      │
└──────┬───────┘
       │
       ▼
┌──────────────┐
│ Legal Entity │
│              │
└──────┬───────┘
       │
       ▼
┌──────────────┐
│  Operating   │
│    Unit      │
└──────┬───────┘
       │
       ▼
┌──────────────┐
│  Inventory   │
│    Org       │
└──────┬───────┘
       │
       ▼
┌──────────────┐
│    Sub       │
│  Inventory   │
└──────────────┘
```
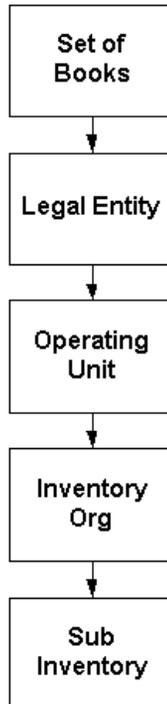
Entering Transactions and Storing Information in Oracle Applications

Transactions and other information are entered and stored at different levels of the organization structure when using Oracle Applications.

The following information is stored at the operating unit level:

- Sales orders
- Forecast
- Purchase orders

The following information is stored at the inventory organization level:

- Work-in-process

- Planning data

Onhand balances are stored at the sub-inventory level.

Setting Up Organizations in Oracle Applications

When using ASCP with OPM, consider the following when setting up organizations in Oracle Applications.

- Each OPM warehouse must have a corresponding Oracle Applications organization that is defined as an inventory organization.

- ASCP does not recognize the location level, so no special considerations are needed for locations when integrating OPM with ASCP. OPM data can still use location control, but ASCP does not recognize that location control is in use.

OPM Organization Structure

OPM organizations are structured as follows:

- OPM organizations can be companies, parent organizations, staff organizations, inventory organizations, or manufacturing plants.

- OPM organizations defined as companies must maintain a balanced set of books. A company in OPM equates to a set of books defined in Oracle Applications.

Different types of OPM organizations map to the Oracle Applications organization structure as follows:

- OPM organizations map to legal entities and operating units.

- OPM plants map to inventory organizations (with some modifications).

OPM warehouses map to inventory organizations and sub-inventories.
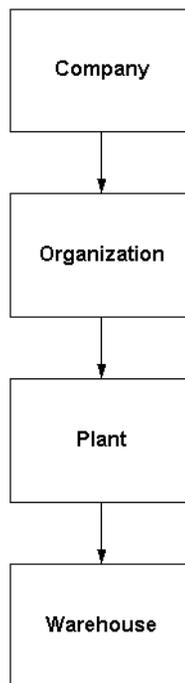
Entering Transactions and Storing Information in Oracle Process Manufacturing

Transactions and other information are entered and stored at different levels of the organization structure when using OPM.

OPM stores the following information at the organization level:

- Sales orders

- Forecast

- Purchase orders

OPM stores the following information at the plant level:

- Production

- Planning

- Onhand balances are stored at the warehouse level.

Setting UP Organizations in OPM

Before you set up organizations in OPM, you need to:

- Develop the organization scheme

- Decide whether or not to use the plant indicator. The plant indicator:

    - Allows production to occur

    - Controls other documents and inventory ownership

    - Does not control PROD and can control other docs plus INV

- Decide whether or not to use the POC indicator. The POC indicator:

    - Allows the collection of routing and resource data for production batches

    - Can be turned off and on. It must be turned on for the APS planning organization.

- If you plan to use the capacity planning function in ASCP, each OPM production plant must have one resource warehouse.

- Multiple production plants can draw raw material inventory from one warehouse to meet their production demand, but model this through transfers for visibility.

- Multiple production plants can supply one warehouse (distribution center), but model this through transfers for visibility.

Resource Warehouses

In OPM, warehouses are linked to plants. Consider the following when creating resource warehouses:

- Resource warehouses are used for capacity planning

- Define the warehouse to be used for production in the plant

- Setting the Plant Indicator on the Organizations window allows for resource warehouse definition

- Plant Warehouse Effectivity. In the Plant Warehouses window, the Replenishment or the Consumption indicator must be turned on to view the plant and the warehouse associated with it. Two plants cannot share a resource warehouse.

OPM Item Master

When setting up the OPM Item Master for use with ASCP, consider the following:

- OPM items are automatically created in Oracle Applications. The OPM items can be used within all Oracle Applications inventory organizations.

- ASCP uses lot control and lot expiration dates for planning.

- Although Oracle Applications only allows the use of one unit of measure per item, you can still use the dual unit of measure functionality in OPM. Item data is reported in the primary UOM.

- Trigger GMF_IC_ITEM_MST_BIUR_TG ensures that both the OPM and the Oracle Applications item masters contain the same items. A re-synchronization routine can be executed to ensure that, as new Oracle Applications inventory organizations are created, all items are added to the new inventory organization.

- Status Control in Oracle Applications allows for nettability of inventory.

- Most of the required attributes are set when the item is synchronized but can be verified by using the Item Master window in Oracle Applications.

Recipes, Formulas, Validity Rules, and Routings

Formulas in OPM are the same as bills of material (BOMs) in Oracle Applications. Oracle Applications has different rules from OPM for BOMs and routings.

Setting Up Formulas

When setting up formulas, consider the following:

- If an OPM formula is used in multiple recipes with different validity rules for a product or for coproducts, ASCP effectively views different formulas. A different formula is reported for coproducts with validity rules.

- ASCP expects only one product per bill of material (in OPM, a formula) and this causes the OPM coproducts and byproducts to be reported as components with negative quantities.

- Linear and fixed scaling is implemented the same as in OPM.

- Item quantities are reported in the primary UOM.

Setting Up Recipes

APS uses recipes to determine formula, routing, and validity rule assignments for a product. APS looks at the data in certain recipe fields first, then, if no data was entered in the fields at the recipe level, APS retrieves the data from the same fields in other windows. You can override the following fields in other windows by changing the field values in a recipe:

- Step Quantity - You use the Step Quantity field when computing the resource usage. If you enter a value in the Step Quantity field in the Recipe Details window, this value overrides the step quantity defined in the Routings window.

- Factor - You use the activity Factor field to indicate how many times you must perform an activity per operation. If you enter a value in the Factor field on the Recipe: Organization Details window, this value overrides the activity factor defined in the Operation Details:Activities window.

- Usage - You use the resource Usage field to indicate the amount of the resource consumed (usually expressed in hours) during the activity step. If you enter a value in the Usage field on the Recipe: Organization Details window, this value overrides the Usage field in the Operation Details Activity-Resource window.

- Process Qty - You use the Process Qty field to indicate the total quantity of material processed by the resource during the activity step. If you enter a value

in the Process Qty field on the Recipe: Organization Details window, this value overrides the Usage field in the Operation Details Activity-Resource window.

Setting Up OPM Validity Rules

When setting up validity rules in OPM, consider the following:

- A one-to-one relationship exists between validity rules and plants. When a validity rule is defined for a specific plant, any warehouse that is defined to replenish the item in the validity rule will have a version of the validity rule in ASCP.

- A one-to-one relationship exists between validity rules and inventory organizations.

- A validity rule defines the primary product.

- If the validity rule is global, then it is applied to all plants where the item can be produced.

- The following validity rule functions can be used with ASCP:

    - Minimum and maximum quantities

    - Start and end effective dates

    - Preference is used to break ties

Setting Up OPM Routings

The OPM routing maps closely to the Oracle Applications routing but there are some restrictions. When setting up routings in OPM, consider the following:

- The flexibility that OPM has for the routing quantity is restricted by Oracle Applications because the quantity must be in the unit of measure of the product being routed to scale properly. The integration takes care of any necessary conversions, but the user interface shows the converted quantity and unit of measure instead of the original quantity and unit of measure defined in OPM.

- In ASCP, only the primary and auxiliary resources have functionality. Resources are assigned a Plan Type indicating primary (1), auxiliary (2), or secondary (0) on the Operations window. In ASCP, secondary resources are ignored. With OPM Capacity Planning, you have the option of using alternate resources.

- ASCP uses resource count and usage quantity information. You record resource count and usage quantity information in the Operations window. 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.

- 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.

- ASCP enables you to overlap an operation with another operation, but this restricts OPM's functionality of allowing concurrent operations and multiple dependent operations. Since ASCP does not provide a way for the user to allow concurrent operations instead of multiple dependent operations (or vice versa), concurrent operations are not allowed with ASCP.

- Routing quantity uses the base UOM of the recipe product and is converted to the UOM of product.

- OPM step equals Oracle Applications operation.

- OPM activity equals Oracle Applications operation resource sequence.

- OPM routing resource equal Oracle Applications operation resource.

- Each activity must have ONLY one primary resource per step. If there were more, the first is selected and the others are ignored. If none exists, then activity is not reported.

Associating Formula Items with Routing Steps

Oracle Applications needs to know the items consumed at each step in the routing in order to calculate the capacity used at each step. You must define the association between formula items and routing steps if you want to create a capacity plan. For more information on defining this association, refer to *Setting Up Routing Step/Formula Items Associations* in the *Oracle Process Manufacturing Process Operation Control User's Guide*.

Resource Information and ASCP Capacity Planning

The Resource Information window defines a relationship between a plant and the resource. In Oracle Applications:

- ASCP acknowledges the plant by the resource warehouse associated with the plant.

- The resource warehouse is associated with an inventory organization. ASCP will have all the resources defined as a department in an inventory organization. The resource warehouse that has been defined for an inventory organization will be used to denote the department. This is NOT done in the Oracle Applications database.

You can use ASCP to develop capacity plans for your resources. The resource warehouse for the plant indicates to ASCP the need to perform capacity planning. The ASCP capacity planning function assumes that all resource capacity is measured in to the unit of measure you set up in the Profile Option MSC:Hour or is convertible to that UOM. The Assigned Quantity field on the Resource Information window 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 ASCP, but this cost needs to be recorded in the Planning Cost field on the Resource Information window. ASCP assumes the unit of measure for all resources is an hour.

Plant Warehouse Effectivities

Plant warehouse effectivities define 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 window, global and warehouse items are valid. If the Warehouse Item field is left blank for a particular warehouse, then any item can be consumed from or replenished to that warehouse. The plant warehouse effectivity item consumption and replenishment rules are enforced by ASCP for both global and warehouse items.

Note that setting global rules increases the amount of data transferred since 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.

Shop Calendars

Consider the following when setting up shop calendars in OPM:

- When the shop calendar is interfaced to ASCP, four relationships are created; the production calendar, weekly buckets, period buckets, and net available resources. The production calendar indicates the days planning can occur. The weekly buckets represent the weeks on which planning can occur and the period buckets represent months. The resources are applied to the shifts, defining the time available for production, which creates the fourth relationship, net available resources.

- OPM shop calendars must be carefully defined to avoid shift duplication in ASCP. When planning shifts in the OPM shop calendar, do not allow a shift to go past 12 a.m. ASCP expects shifts to occur during a calendar day (12 a.m. to 11:59 p.m.) but OPM allows shifts to go past 12 a.m. and into the next day.

- When an OPM shift overlaps with a shift the next day, one longer shift is created. If a shift engulfs another shift the next day, the engulfed shift disappears. Since ASCP does not account for shift overlaps, it is possible for duplicate shift names to appear within the same day.

- You can enter a shop calendar in the Organizations window when you define an organization as a manufacturing plant. ASCP uses this shop calendar to determine resource availability for the organization. Although entering the shop calendar is optional, you must enter the calendar in order for ASCP to perform constraint-based planning.

MPS Schedule Parameters

When you define Master Production Schedule (MPS) parameters in OPM, 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 ASCP and are used to create the ASCP Master Demand Schedule. The ASCP master demand schedule includes all plants linked to the MPS schedule in the MPS Schedule Parameters window detail.

Consider the following when setting up schedules in MPS:

- The MPS schedule must have a unique, five character name. The 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 window allows 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 Warehouse Effectivity window defines the items and warehouses from which to pull the demand for each plant linked to the MPS schedule.

- ASCP ignores the calendar associated with each organization in the schedule details region of the MPS Schedule Parameters window. This calendar field is only used when performing an MRP run using the OPM MRP application. Instead, ASCP references the calendar associated with an organization in the Organizations window.

MPS and OPM Sales Orders

The MPS schedule collects unshipped sales order information based on the following criteria:

- Select Include Sales Orders in the Make to Order field on the MPS Schedule Parameters window.

Note: Drop shipment sales orders are not considered demand and the associated requisitions are not considered supply in the APS planning calculations.

- The sales order lines are scheduled to ship from warehouses that are listed as warehouses for a plant on the MPS schedule.

- These same rules apply to the ASCP master demand schedule.
- Ensure that a plant is linked to only one MPS schedule. If more than one MPS schedule is linked to one plant, the sales order demand for the plant will be duplicated in all of the MPS schedules that contain the plant.

MPS and Forecasts

The setup steps necessary to use forecast consumption for ASCP are the same setup steps you must complete when using forecast consumption in OPM. Forecast information created and linked to an MPS schedule in OPM is used by ASCP to create the master demand schedule. The forecasts used by the MPS schedule are specified on the Forecast Schedule Association window. A forecast can contain any number of items in various warehouses, but the schedule only uses those items that are valid to replenish into a warehouse according to the Plant Warehouses window.

If you want to use forecast information when creating the master demand schedule, you must select Include Sales Forecasts in the Make to Stock field and Include Sales Orders in the Make to Order field of the MPS Schedule Parameters window. Since one forecast can be used in multiple MPS schedules, be careful not to duplicate the demand for an item in a warehouse.

Production Orders

ASCP views production orders as follows:

- ASCP views pending OPM production orders as a source of supply and demand.

- 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 window.

- 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. If POC is turned on, OPM collects the plant's routing and resource requirements once a batch is created and the batch information is transferred to ASCP. If a plant does not have a resource warehouse, routing and resource data is not transferred to ASCP.

- The ingredients for a batch must come from a single warehouse/inventory organization. ASCP does not allow the allocation of ingredients from multiple inventory organizations. OPM works around this issue by using the work-in-process warehouse or the resource warehouse, if available, as the single source of ingredients inventory when the batch has multiple sources or destinations. The work-in-process warehouse or the resource warehouse shows ASCP from where to allocate inventory.

- The quantity of a batch product's line items is reported in the converted primary unit of measure of the item.

- Firm planned orders are viewed by 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 and POC is on for the plant.

- Production rules (defined in OPM Inventory) are not required, but they do ensure that batches created meet fixed and variable leadtime requirements.

Onhand Inventory

Consider the following differences in ASCP for onhand inventory:

- ASCP only 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, ASCP considers the lot as unavailable inventory at the time it expires. It also does not suggest that you use the available lot that is closer than the other lots to expiring.

- OPM and ASCP observe lot statuses and does not consider a lot for consumption unless the lot status identifies the lot as nettable. The balance is not sent to ASCP if the lot is not nettable.

4

Setting Up Data in Oracle Applications

Data must be set up in Oracle Applications as well as OPM. The following topics are discussed:

- Automatically Create Oracle Items
- Defining Sourcing Rules
- Assignment Sets
- Creating ASCP Plans

Automatically Create Oracle Items

The OPM Item Master trigger automatically creates items in Oracle Applications that map to OPM items. These new Applications items are defined as inventory items. The following list shows the item attributes that can be assigned to newly created items:

- General Planning
    - Make or Buy (required)
    - Minimum and Maximum order quantity
    - Fixed Days Supply
    - Fixed Lot Multiplier (used to calculate the Economic Order Quantity)
    - Fixed Order Quantity
    - Safety Stock
- Lead Times
    - Fixed or Variable lead time
- Purchasing
    - List Price
    - Purchasable (checkbox)
- MPS/MRP Planning
    - Planning Time Fence
    - Demand Time Fence
    - Planning Method is MRP planning (required)
    - Forecast Control is Consume and derive if you are a Demand Planner user and want to see this item in Demand Planner.
- Work In Process
    - Build in WIP (required if producible)

- Order Management
  - ATP Components
  - Check ATP
- Main
  - Primary Unit of Measure is the OPM item primary unit of measure (**Caution:** The user should not change this UOM because it is mapped to the UOM value that exists in OPM)
- Inventory
  - Inventory Item (checkbox)

Defining Sourcing Rules

Sourcing rules and bills of distribution determine the movement of material between organizations. These organizations include supplier, manufacturing, and distribution facilities. The total allocation percentage for all sources within a rank must add up to 100%. The sources with the highest rank (lowest numerical value) have the highest priority in allocations. When sources of the highest rank have no more capacity, allocation is performed for sources in the next highest rank.

Using sourcing rules, you can define from where you receive materials. If you transfer materials from an organization, define the source and destination organization, the lead time, and the shipping method. If you manufacture materials, define which organization receives the manufactured items. If you purchase materials, define the vendor and the organization that receives the items.

Follow the Oracle Applications methodology for setting up sourcing rules. For more information about sourcing rules, refer to the Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide.

Assignment Sets

The supply chain for different products can vary. Items are associated with their sourcing rules in an assignment set. The assignment set creates the sourcing and transfer links between organizations for a particular item.

Different supply chains can be modeled by creating alternative assignment sets.

The assignment set to be used for generating a supply chain plan is specified in the planning options for the supply chain plan name. You can name and create several alternative supply chain plans, then use the Planner's WorkBench to compare key performance indicators resulting from your alternative plans.

Assignment sets give you the ability to combine many sourcing rules into a group and to source by item or by item/organization.

See: Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide on Assignment Sets.

Creating ASCP Plans

MRP, MPS, and Distribution Requirements Planning (DRP) plans are created in ASCP. You choose which type of plan for ASCP to create. ASCP pulls data from the database instances that you specify. You can also specify which data to pull and how often to pull. For example, you could pull master data daily and supply/demand data more frequently.

You can select from the following time granularities to represent the planning horizon:

- Days
- Weeks
- Months

In addition, you can specify the portion of the time horizon in which scheduling should occur and the time granularities during this period. You can select from the following time granularities for the scheduling horizon:

- Minutes
- Hours
- Days

When setting up the options for your plan, you specify the organizations covered by your plan, the Master Demand Schedule (MDS) that is driving your production plan, and the assignment sets you want to use.

Simulation set definition is mandatory. The Simulation Set field is locatedon the APS Plan option window under the Organizations tab. Move the scroll bar in the organization region completely to the right to access this field. Although the Plan Option window does not enforce the mandatory field restriction, you must enter a simulation set value for computing the correct resource availability and requirements for each plan run in APS.

After you have set your plan options, you use the Launch window to initiate the planning calculations. Note that the OPM data extract process creates MDSs for inventory organizations. The name of the MDS is generated by concatenating Scheduling/Organization.

5

Working Relationship between the Two Products

The relationship between Oracle Process Manufacturing and Advanced Supply Chain Planning (ASCP) involves data setup in OPM, the use of this data in ASCP for planning, and the flow of suggestions from ASCP to OPM. This chapter considers data setup, use, and feedback.

Setting up data in OPM includes the following :

- Defining Firmed Batches
- Defining Minimum Transfer Quantity Requirements
- Defining Resource Exception Messages
- Considering Post Processing Leadtime for Purchased Items
- Considering the Leadtime Calculator
- Regenerating Targeted Resource Availability
- Planning for Bottleneck Resources

Using data in ASCP includes the following:

- Consuming Forecasts in Advanced Supply Chain Planning
- Initiating Resource Simulation

Sending feedback from ASCP to OPM includes the following:

- Understanding Planned Order Detail Feedback
- Implementing ASCP Planning Suggestions in OPM
- Selecting Validity Rules upon Batch Creation

Realizing Data Collection Enhancements in OPM

Changes to the data collection code significantly increase the performance of the data collection process. All changes have been made to the code, not to the user interface. As such, no changes are necessary in your interaction with the application.

Performance

While the data collection performance enhancements do not change the OPM windows or parameters input to the application, you can attribute processing performance improvements to the following:

- Change of type structure definitions

- Logical loop structure changes

- Number of database access attempts

- Performance tuning of the SQL queries

Organization Based Collection

Another performance benefit results from code changes that pinpoint the collection of source data to specific organizations in an instance. Each organization can be associated with a specific group. Data collection specific to groups can then be initiated. Organization specific data collection eliminates unnecessary data collection from organizations not specified for a given group. As such, collection-processing time is reduced as are the associated costs.

Demand Planner Enhancements

Views to the database are modified and created to accommodate demand class information used by the data collection routine.

Defining Firmed Batches

Data setup can include defining firmed batches. Prior to initiating an Oracle Advanced Supply Chain Planning (ASCP) Workbench run, you can flag batches to prevent them from being considered for rescheduling or cancellation. Certain batches can be committed to a shop floor for many reasons including availability of a raw material soon to expire or the completion of an involved and lengthy setup activity.

The batch is flagged as firmed through the Batch window under the Production Supervisor responsibility. ASCP interprets the checked Firmed flag of the batch and ensures that changes are not to be made to them. Once ASCP knows that there is a firmed batch, the dates for the firmed batch remain unchanged.

▶ **To define a firmed batch:**

1. Navigate to the **Batch** window in the Production Supervisor responsibility.

2. Select the **Firmed** check box.

3. Save the batch.

4. Navigate to the **Supply Chain Planner Workbench**.

5. Launch a plan.

6. Navigate to the **Supply/Demand** window for the given plan. Note the Firm flag is checked for the appropriate items and that the remaining batches are rescheduled around the firmed batch.

Defining Minimum Transfer Quantity Requirements

Data setup can include defining minimum transfer quantity requirements. Prior to initiating an Oracle Advanced Supply Chain Planning (ASCP) Workbench run, you can define Minimum Transfer Quantity (MTQ) requirements to efficiently plan and schedule OPM production batches that have a minimum leadtime between operations.

MTQ is the minimum amount of material that must be processed at a given production operation before the material can be transferred to the next operation.

MTQ is based on the routing step quantity, not the product quantity. The MTQ can be defined on the Routing Detail window or on the Operation Details window. When a MTQ is defined at the operation level, this quantity will be defaulted into the routing step.

Let's assume that the MTQ is defined at the routing step level. If step quantity is defined as 100L for an hour duration but you want to start the next operation after a half hour, then you would enter 50 as the MTQ. This quantity is converted into the correct proportion of the product quantity and UOM of the recipe.

By defining MTQ requirements, a subsequent operation can begin before its previous operation is completed when a sufficient quantity of material is processed and available for transfer. MTQ enables the reduction of overall leadtimes between operations.

▶ **To define a MTQ:**

1. Navigate to the Operation Details window under the Process Engineer responsibility.

2. Enter operation information.

3. Type **Minimum Transfer Qty** in the header section of the window.

4. Save the operation.

Note: The Minimum Transfer Qty value defaults from the Operation Details window to the Routing Details and Routing Step Line windows.

▶ **To verify MTQ use after initiating a plan:**

1. Define a formula with intermediate ingredient.

2. Define a routing with multiple steps.

3. Define a recipe and validity rules with the defined formula and routing.

4. Type **Minimum Transfer Qty** on the **Operation Details** window.

5. Create demands for larger quantities for the final finished good so that the quantity to be processed at each step is much larger than the MTQ.

6. Perform data collection.

7. Run plan.

8. Verify operation times. The start time of the subsequent step is offset by the time greater than or equal to the time required to manufacture the MTQ at the previous step. Stagger the steps; do not schedule them sequentially. sequentially.

9. Type **Minimum Transfer Qty** on the **Routing Details** window for the last step of the routing used for the intermediate ingredient. After running the plan, scheduling is staggered between the intermediate batch and the final finished batch.

Defining Resource Exception Messages

Data setup can include defining resource exception messages. Exception messages, also called exceptions, displays for the following reasons:

- To alert you to any number of situations that require your intervention: for example, a past due sales order or a resource being under or overloaded.

- To recommend that you perform an action: for example, change the date on a supply order.

Exception sets are item or resource attributes that the planning engine uses to raise planning exceptions for an item or resource.

Defining Exception Sets

Exception sets are defined in the Planning Exception Sets window under the OPM Process Planning responsibility. The window consists of parameters, which pinpoint the circumstances when an exception message is raised.

- The Name field is a required field and once saved cannot be updated.

- The Sensitivity Controls section of the window, enables you to specify the quantity and percentage variances at which an exception is raised.

  If, for example, the Excess Quantity field is set to 3000 this could be used to limit the generation of the Excess Exception message to when the supply exceeds demand by 3000.

- The Exception Time Period section of the window, delineates the time frame in which an exception can be raised.

  If, for example, the planning time fence is selected for the Shortage Exceptions field, then the corresponding Shortage Exception would only be raised to report a shortage within the planning time fence.

Assigning Planning Exceptions to Resources

Planning exception sets are assigned to resources through the Resource Information window. From the Planning Exception Set field, select from the list of exception sets defined in the Planning Exception Sets window. An exception set can be assigned to any number of resources in a plant.

◗ **To define and assign exception sets to resources:**

1. Set up OPM data.

2. Navigate to the **Planning Exception Sets** window from the Capacity Planning menu under OPM Process Planning responsibility.

3. Type the appropriate quantity, variance, and time frame.

4. Navigate to the **Resource Information** window under the Capacity Planning menu and enter the appropriate resource information.

5. Enter **Planning Exception Set** from the **Planning Exception Set** LOV to associate the exception set with the resource.

6. Perform data collection and run the constrained and unconstrained plans.

7. Open the resources node in the Planner Workbench for unconstrained plan and right-click on one of the resources to access the **Related Exceptions** window. The appropriate exception messages display as per your OPM data.

Considering Post Processing Leadtime for Purchased Items

In a process manufacturing environment, certain known procedures are in accordance with Good Manufacturing Practices and affect the OPM Inventory, OPM Quality Management and Oracle Advanced Supply Chain Planning (ASCP) applications.

Purchased items are declared as inventory upon receipt in order to fulfill labeling and inspection requirements and ensure the traceability of goods received.

Received goods are placed under quarantine while inspection sampling determines the acceptability of this material. When a lot that is received into inventory requires inspection, it is placed onhold until released by quality management personnel. This quality hold can be modeled as a standard leadtime that defaults for all lots of an item. A secure user with the proper responsibility can change the release date for a lot depending on the actual length of the inspection process. If an inspection leadtime is not initially defined for an item, then a lot release date can still be entered manually.

ASCP recognizes that material of a lot is available for use after the hold release date. By taking a fixed leadtime into account without recommending new demand requests, the future availability of these lots is planned. For a lot that is received into inventory, ASCP recognizes that the lot is not available until after the hold release date. ASCP considers a hold release date so that the availability of onhold lots can be planned and no recommendations for immediate use of the inventory are suggested.

Post Processing Leadtime for Purchasing Suggestions

Data setup can include establishing leadtimes. ASCP data collection routine considers onhold inventory to be material in receiving. Onhold inventory are items that have a hold release date defined in the Lot Master window of the Inventory application. Through item synchronization, the Post Processing Leadtime field of the Oracle Inventory Item Master is populated with this OPM Inventory Hold Days value.

While computing the timing of purchasing suggestions, ASCP uses the Post Processing Leadtime value of the Oracle Inventory Item Master.

For example, if a requirement for an item exceeds the onhand inventory, then ASCP will make a replenishment suggestion to fill that requirement even when ample onhold inventory exists. Onhold inventory might exist but is not considered usable by ASCP until after its Hold Days value is exceeded.

Hold Release Date for Lot Availability

ASCP considers a lot that has a Hold Release Date greater than the data extraction date to be a lot in receiving. The Hold Release Date is calculated based on the Hold Days value of the OPM Item master or is manually entered through the Lot/Sublot window. ASCP uses this Hold Release Date as the new schedule date:

Lot Availability Date = Hold Release Date

Prior to the Hold Release Date, ASCP does not consider the lot usable regardless of lot status. After the Hold Release Date, ASCP makes use of the lots with a nettable status.

Considering the Leadtime Calculator

Data setup can include entering parameters for the Leadtime Calculator. Leadtime Calculator is a processing engine that automatically computes fixed and variable leadtimes by considering the route that is most likely to be used in the production of the product.

Initiated as a submitted request through the application, the Leadtime Calculator can be run for the following:

- One or all items

- One or all organizations

Once generated, the calculated leadtimes are automatically saved to the variable and fixed leadtime fields in the Oracle Inventory item master. As the leadtime attributes are populated automatically, this eliminates having to calculate and manually enter these leadtime values. Keep in mind, however, that if you have manually entered leadtime values for specific item organization combinations and want to keep these values, then do not run the Leadtime Calculator for the item organization combinations as the values will be overwritten.

The Leadtime Calculator references each of the following OPM business objects: resource, activity, operation, routing, and formula.

The Leadtime Calculator processing engine makes use of OPM recipe and routing data; synchronizes logic with Advanced Supply Chain Planning (ASCP); computes and stores offset percentages; distributes the calculated leadtime values as the defined workday standard; automatically updates item attributes with the leadtime values.

Use of OPM Recipe and Routing Data

Based on the validity rule with the highest preference, the preferred route for a given product is selected by the calculator without user intervention. OPM uses the standard quantity from the recipe validity rule as its base. The operations in the route provide the parameters for calculating the fixed and variable leadtimes of an item.

Synchronization with ASCP Planning Algorithm

ASCP requires a linear route, which is a route with sequential steps, the Leadtime Calculator considers the route to be linear and computes the leadtimes accordingly.

Computation of Offset Percentages

An offset percentage is the percentage in time at which the material transaction, that is the ingredient consumption or the product yield, is expected to occur. Offset percentages of ingredient consumption and product yield are calculated by considering the duration of a batch of standard quantity and the material transaction times. Each ingredient is planned at the beginning of its operation as per the material step association. The yield of each product, coproduct, or byproduct is planned at the completion of each operation as per the material step association. Release type validation is enforced.

Distribution of Leadtime as Work Days

As an industry standard, processing leadtime is computed as the total integer days required to manufacture one leadtime lot size of an item. As such, all leadtimes calculated by the Leadtime Calculator are converted into days based on the plant's defined workday.

Automatic Update to Item Attributes

After the processing engine computes the leadtimes, the calculated values are automatically saved as item attributes of the items in the specified inventory organizations. Assume that either validity rules exist for each plant or that validity rules are global, and you choose to compute the leadtimes for all plants. In this scenario, the item attributes of the items within each of the inventory organizations, which are mapped to the resource warehouses of the plants, are updated.

▶ **To initiate a Leadtime Calculator request:**

1. Navigate to the Process Planning **Submit Request** window.

2. Select **Lead Time Calculator for Process** from the **Name** LOV.

3. Type **From Plant Code**. You can enter a single plant or a range of plants.

4. Type **To Plant Code**.

5. Type **From Item**. You can enter a single item or a range of items.

6. Type **To Item**.

Regenerating Targeted Resource Availability

Data setup can include entering parameters for targeting resource availability. Through the Generate Resource Availability concurrent program, the resource calendar is calculated automatically by considering resource uavailability and resource availability. Resource unavailability is defined by the exception sets associated to the resource. Resource availability is defined as per the shop calendar of the plant that owns the resource.

The availability of targeted resources is determined as per the scope of exception set definitions and the parameters input to the Generate Resource Availability concurrent program:

- Exception sets allow for the definition of periods of time when resources are not available and for the definition of additional periods of time when resources are available.

- The From Resource and To Resource parameters input to the Generate Resource Availability concurrent program allows for resource availability determinations based on select resources within a plant. In generating the concurrent program, resource unavailability information is considered in conjunction with resource availability information. Upon program completion, the availability of resources is targeted to those resources within the plant specified in the resource range.

Prerequisites

❏ Define resources and plant resources.

❏ Define and associate manufacturing calendar to the plant

❏ Define exception sets and their association with the resources.

Exception Sets

Through the Exception Code window of the OPM Capacity Planning application, you can define a set of start and end dates and times and assign them to a resource. As per the Type field, specify whether the date and time indicates a period of time in which the resource is unavailable or available. The Type field specifies whether the time period is removed from resource availability or added to resource availability.

◗ **To define an exception set and assign it to a resource:**
1. Navigate to the **Exception Code** window.

2. Type **Exception Code.** The exception code can have a maximum of six characters. Required.

3. Type **Description** of the exception code.

4. Select **Inactive Indicator** to inactivate the exception code.

Unavailable Hours

5. Type **Start Date** and **End Date**. The date and time values specify the time period in which one or more resources is unavailable or available. Required.

6. Select **Type**. The value indicates whether the entered date and time values specifies a time of resource unavailable or resource availability.

7. Type **Reason Code**. The reason code value specifies why the resource is unavailable or available during this time period. The reason code **Description** displays. Required.

   Enter the **Start Date**, **End Date**, **Type**, and **Reason Code** for each range of time that one or more resources is unavailable or available.

Resources

8. Type **Plant Code**. Specify the plant in which the resource associated with this exception set is located. Required.

9. Type **Resources**. This value specifies the resource within the plant to associate with this exception set. The **Resource Description** of the resource displays. Required.

10. Type **Resource Count**. If you enter a Resource Count, then you cannot enter an Instance Number.

11. Type **Instance Number** for the specific instance that is unavailable as per the exception set. If you enter an Instance Number, then you cannot enter a Resource Count.

    If you have multiple plant and resource combinations to define, click **Associate**. Enter the Plant, Resource, and Resource Group to which this resource is assigned.

> **Note:** Through the Resource Unavailablity window, you can view the plant and resources for which the unavailable or available date and times are defined on the Exception Code window. You can also manually add unavailable or available date and times to the Resource Unavailablity window. The same information entered to the Exception Code window is entered to the Resource Unavailability window.

Extraction of Enterprise Asset Management Downtimes for Process

Maintenance on production equipment often requires that it is shutdown. Shutdown requirements are specified when a maintenance work order is created. The shutdown may be for the duration of the maintenance work order or only at specific operations. In order for this downtime to be recognized by process planning and scheduling, maintenance work order downtimes must be extracted from Enterprise Asset Management (eAM) and updated to the process manufacturing resource calendar. This ensures that both the planning and scheduling engines have the updated resource unavailability. As such, production batches are scheduled during available resource hours.

The eAM downtimes are created in the maintenance organization. Prior to running ASCP data collection, the Extract eAM Downtimes process planning concurrent program is initiated.

Extracted work order level shutdowns include eAM firm or non-firm work orders with shutdown type of Required and statuses of Unreleased or Released. Operation level shutdowns include maintenance operations and resources. Work order level shutdowns take precedence over operation level shutdowns.

These downtimes populate the resource calendar with data that includes resource, time, and duration of the work order. Through the Resource Unavailability window, eAM downtime rows are identified with the exception code EAM. The eAM downtime rows display through the Resource Unavailability window in addition to the resource downtime process rows from which production batches are scheduled during open resource hours by the planning and scheduling engines.

Generate Resource Availability Concurrent Program

Through the Scheduling application, the Generate Resource Availability concurrent program generates a clean resource calendar complete with defined shifts, performs resource netting for Oracle Manufacturing Scheduling and ASCP, and performs resource instance netting for Oracle Manufacturing Scheduling.

Consider the program logic:

- Clean the calendar of overlapping shifts.

- Depending on the passed parameters:

    - Determine the manufacturing calendar associated to the plant.

    - Once the calendar is identified, net out the available summary rows, that is, the resource counts for each shift date of a shift considering the unavailable times. First unavailable time is given preference.

    - Net out the available instance summary rows, that is, the resource instance counts for each shift date of a shift considering the unavailable times.

    - Apply the overlapping available time at the resource level and net out the available rows. The availability rows display in days and the shifts are assigned to the calendar.

    - The contiguous time period is assembled at resource and resource instance level.

In addition to the plant and calendar, you indicate the specific resources within the plant for which you want the availability determination. You can run this program repeatedly for targeted resource availability information. A standard log output file is generated at program completion. You can view the current resource availability, however, through the Resource Instance Available Time window.

▶ **To execute the Generate Resource Availability concurrent program:**

1. Navigate to the **Generate Resource Availability** window. The Parameters dialog box displays.

2. Type **Organization Code.**

3. Type **From Resource**.

4. Type **To Resource**.

5. Type **Process Calendars**.

6. Click **OK**.

7. Complete the fields on the **Generate Resource Availability window.**

8. Click **Submit**. The concurrent program is initiated. At program completion, you can view the current resource availability through the Resource Instance Available Time window.

Planning for Bottleneck Resources

Data setup can include planning for bottleneck resources. A bottleneck resource is a resource whose throughput rate is less than the throughput rate needed to meet the demand placed upon it. A bottleneck resource is the most constrained resource that is used in production. A bottleneck machine or work center exists where jobs are processed at a rate slower than the rate for which they are demanded. In general, it is more effective to resolve the most constrained resource than to resolve the least constrained resource.

By enabling the definition of bottleneck resources, you can constrain the heavily demanded resource and still collect resource requirements for all other resources. As such, you can focus on key resources and allow them to define the scheduling of production orders.

Defining Bottleneck Resources

Resources are associated to a plant and linked to group resources through the Resource Information window. The bottleneck resource is derived from this group resource and is defined under the Constraint tab of the Plan Options window under the Advanced Supply Chain Planning (ASCP) responsibility. In the Calculate Resource Requirements region of the window, select Bottleneck Resource from the Planned Resources field. Once done, the Bottleneck Resource Group field is enabled. From the LOV, select one of the group resources, which is thereby defined as the bottleneck resource.

Only one bottleneck resource group can be defined per plan.

Defining a bottleneck resource has an effect on constrained and optimized planning. Only resources linked to the Bottleneck Resource Group are capacity constrained.

- If a resource is linked to the Bottleneck Resource Group, then this resource will not be overloaded in capacity constrained or optimized plans.

- If a resource is not linked to the Bottleneck Resource Group, then this resource is overloaded even when capacity constraints are selected.

◗ **To define a bottleneck resource and run a constrained plan:**

1. Associate a resource with a plant and group resource on the **Resource Information** window under the Process Engineer responsibility.

   When entering or modifying a plant resource, enter a resource group. By using the same resource group, you can logically define a bottleneck resource group.

The value of this resource group displays in the Bottleneck Resource Group LOV.

2. Enter **Bottleneck Resource** from the **Planned Resources** LOV under the Constraint tab of the Plan Options window of the Advanced Supply Chain Planner responsibility.

3. Enter **Bottleneck Resource Group** from the **Bottleneck Resource Group** LOV, which is the group resource defined on the **Resource Information** window as the Bottleneck Group Resource.

4. Launch the constrained plan.

5. Navigate to the appropriate resources from the resource tree in the Planner Workbench.

6. Right-click on a resource, which is not linked to the Resource Bottleneck Group, and choose **Exception Details**. Note the resource that does not belong to the Resource Bottleneck Group can be overloaded.

7. Right-click on a resource, which is linked to the Resource Bottleneck Group, and choose **Exception Details**. Note the resource that does not belong to the Resource Bottleneck Group is not overloaded.

Note: If another plan is created using the same data except that the All Resources option of the Planned Resources field under the Constraint tab of the Plan Options window is selected, then no resource overload exceptions is seen and the plan order dates are pushed.

If an unconstrained plan is created and run using the same data, then the resources are overloaded, the exception messages are displayed, and all the demands are met.

Consuming Forecasts in Advanced Supply Chain Planning

Using data in Advanced Supply Chain Planning (ASCP) can include the consumption of forecasts. Forecast consumption occurs as part of the ASCP, not the data collection process.

Forecasts are defined and subsequently input to the ASCP planning engine as demand independent of sales order collection. Upon input to the planning engine, forecasts are available for consumption within the planning process.

Forecasts

OPM generated forecasts are associated to a forecast set, which is a logical grouping of like forecasts. A forecast set is mandatory for ASCP forecast consumption. A separate forecast set must be defined for each inventory organization.

Forecast sets allow for the definition of consumption requirements and are introduced to the ASCP planning engine directly. Once the forecast set is input to the ASCP planning engine, the following consumption information is available to ASCP:

- Whether the forecast is be consumed or not

- How far back or how far into the future in terms of days ASCP looks to locate a sales order to consume the forecast.

Note: Sales orders originate exclusively from Oracle Order Management tables allowing for Net Change data collection. The collection routine recognizes both discrete and process instances associated with Oracle Order Management. Currently, sales orders are not collected from OPM Order Fulfillment.

▶ **To define a forecast within a forecast set:**

1. Navigate to the Process Planning **Forecast Maintenance** window.

2. Type **Forecast**. The forecast name must be unique.

3. Type **Forecast Set**. The forecast set name must be unique. A forecast set is a logical grouping of like forecasts. For OPM, forecast sets include only one OPM created forecast. A separate forecast set must be defined for each inventory organization.

4. Type **Description**.

Consumption Options

5. Click **Consume**. The consumption indicator specifies whether the forecast associated to the forecast set is to be consumed by a sales order within ASCP.

6. Type **Backward Days**. Specifies in days how far back from the forecast date the planning engine can look for a sales order, which can consume the forecast.

7. Type **Forward Days**. Specifies in days how far ahead beyond the forecast date the planning engine can look for a sales order, which can consume the forecast.

Forecast Details

8. Type **Item**. Specify the item for which you are entering the forecast.

9. Type **Org**. Specify the code for the organization from which the forecast originates. The default is the organization code linked to the user.

10. Type **Whse**. Specify the warehouse for which you are entering forecasts. This warehouse code becomes a default for the detail fields on the bottom of the window.

11. Type **Date**. Specify the forecast date for the line item displayed.

12. Type **Quantity**. Specify the forecasted quantity of the item.

13. Type UOM. The default unit of measure for the item displays.

Descriptions

14. **Item**. This field displays the description of the item selected.

15. **Organization**. This field displays the organization description for the current record.

16. **Warehouse**. This field displays the warehouse for the current record.

Initiating Resource Simulation

Using data in Advanced Supply Chain Planning (ASCP) can include initiating resource simulation. Once you receive information from an ASCP Workbench run, you can initiate test runs through the workbench for modifying resource capacity. You can set, add, or reduce resource capacity over a specified time frame. Resource simulations enable you to anticipate potential changes in resource capacity and plan in preparation of them.

From the Update Resource region of the Resource Availability window, you can initiate the following changes and subsequently launch a plan simulation:

■   Add Capacity - Selecting this option from the Update Mode field enables you to increase the number of resources, which is the capacity count, for a particular shift over a period of time. In doing this, the following fields are enabled: From Date, To Date, Shift Number, From Time, To Time, Capacity Units. The number of resources entered in the Capacity Units field is added to the resource capacity. The resource capacity is applicable only for the resource for which the resource availability is shown.

Take Resource A, which for example purposes is assumed to be defined on the OPM Plant Resource window with a Capacity Unit value of 4. On the Resource Availability window, if 25 is entered in the Capacity Units field for Resource A, then the resource availability hours are calculated based on 29 units of Resource A being available.

■   Reduce Capacity - Selecting this option from the Update Mode field enables you to reduce the number of resources for a particular shift over a period of time. In doing this, the following fields are enabled: From Date, To Date, Shift Number, From Time, To Time, Capacity Units. The number of resources entered in the Capacity Units field is deleted from the resource capacity. The resource capacity is applicable only for the resource for which the resource availability is shown.

Take Resource B, which for example purposes is assumed to be defined on the OPM Plant Resource window with a Capacity Unit value of 4. On the Resource Availability window, if 1 is entered in the Capacity Units field for Resource A, then the resource availability hours are calculated based on 3 units of Resource B being available.

■   Set Capacity - Selecting this option from the Update Mode field enables you to set the number of resources for a particular shift over a period of time. In doing this, the following fields are enabled: From Date, To Date, Shift Number, From Time, To Time, Capacity Units. The number of resources entered in the Capacity

Units field is taken as the resource capacity. The resource capacity is applicable only for the resource for which the resource availability is shown.

Take Resource C, which for example purposes is assumed to be defined on the OPM Plant Resource window with a Capacity Unit value of 4. On the Resource Availability window, if 15 is entered in the Capacity Units field for Resource A, then the resource availability hours are calculated based on 15 units of Resource B being available.

■   Add Day - Selecting this option from the Update Mode field enables you to add a day to the calendar. In doing this, the following fields are enabled: From Date, Shift Number, Capacity Units. You can only add a day on a non-work day.

After a non-working day is specified and the planner is launched, the appropriate date, resource capacity, and shift listed in the Resource Availability window displays.

■   Delete Day - Selecting this option from the Update Mode field enables you to remove a day from the calendar. In doing this, the following field is enabled: From Date. As no validation is done on the date, you can remove a work day or a non-work day.

Once you have made changes at the resource level, you can launch a new plan. Either a completely new plan or a net change replan can be launched. Net change replan simulations enable you to update a plan by planning only for those items that have been previously modified in the workbench. The following modes exist for running a net change replan:

■   Batch Replan - In batch mode, direct database interaction is executed. As such, your changes take effect at the database level. When one user is initiating the batch replan simulation, another user can access this revised plan.

■   Online planner - In online mode, database interaction is minimized. With an online session all planner information is loaded into memory, where you can initiate plan modifications and analyze the results without initiating direct hits against the database. The results of the plan are available only to the user initiating the changes.

◗ **To add resources and initiate an online plan:**

1. Navigate to the **Resource Availability** window, which is accessed by right-clicking on the Resource through the workbench, selecting Resource Availability and clicking Details for the appropriate resource line.

2. Enter **Add Capacity** from the **Update Mode** LOV.

3. Enter the appropriate dates, shift, and times.

4. Type the number of resources, for this example 10, to add to the **Capacity Units** field. The original Capacity Units value is defined as 2.

5. Click **Apply**.

6. Close the window.

7. Select **Start Online Planner**.

8. Navigate back to the **Resource Availability** window when the plan is complete. With the values suggested for this example, the resource availability is calculated for 12 resources.

◗ **To remove resources and initiate an online plan:**

1. Navigate to the **Resource Availability** window.

2. Enter **Reduce Capacity** from the **Update Mode** LOV.

3. Enter the appropriate dates, shift, and times.

4. Enter the number of resources, for this example 8, that you want to add to the **Capacity Units** field. The original Capacity Units is defined as 7.

5. Click **Apply**.

6. Close the window.

7. Select **Start Online Planner**.

8. Navigate to the **Resource Availability** window when the plan is complete. The resource availability is calculated for 0 resources. As more resources were eliminated than were originally assigned for use, a negative number results. This indicates that the resource is not in operation on that day. A row does not display for the resource.

◗ **To add a day and initiate an online plan:**

1. Navigate to the **Resource Availability** window.

2. Enter **Add Day** from the **Update Mode** LOV.

3. Type **From Date**. For this example, enter a work day that is already defined as a work day in the calendar. The following message displays: "Cannot add work day on a work day. You can add a work day only on a non-work day."

4. Type **From Date**. For this example, enter a non-work day; that is, a day not defined as a work day in the calendar.

5. Type **Shift Num** and **Capacity Units**.

6. Click **Apply**.

7. Close the window.

8. Select **Start Online Planner**.

9. Navigate to the **Resource Availability** window when the plan is complete. The new day, shift, and capacity units display.

◗ **To delete a day and initiate an online plan:**

1. Navigate to the **Resource Availability** window.

2. Enter **Delete Day** from the **Update Mode** LOV.

3. Type **From Date**.

4. Click **Apply**.

5. Close the window.

6. Select **Start Online Planner**.

7. Navigate to the **Resource Availability** window when the plan is complete. The date entry is deleted from the Resource Availability window.

Understanding Planned Order Detail Feedback

Planned order detail feedback is sent from Advanced Supply Chain Planning (ASCP) to OPM. Oracle ASCP performs the detailed material and capacity planning for OPM and in the process generates planned orders, the details of which are transferred to OPM Process Execution.

Traditionally, the following document header level information was transferred: planned production order start date and end date, quantity, and validity rule. Based on the planned order start date, OPM Process Execution generates material details using OPM-specific business logic and algorithms. These details, however, were generated without consideration of resource availability, capacity constraints, or the planning computations generated by ASCP.

Currently, complete document detail level information including planned material and resource transactions is transferred to Process Execution from ASCP in addition to the header level information. The transferred information includes the following:

- Planned Order start and end dates including time

- Operation step start and end dates including time

- Resource start and end dates including time and the use of alternate resources

- Material consumption date, ingredients, yield date, coproducts, and byproducts

In having full access to the planned order details, OPM considers resource availability and capacity constraints while making full use of the planning computations made in ASCP.

In working with complete document detail level information, details of the planned production orders are synchronized from ASCP through the existing integration mechanism and transferred to OPM Process Execution in keeping with Process Execution rules. As such, batch and firm planned orders converted from these planned orders are consistent with ASCP planning, and they honor capacity constraints.

In working with the application, the procedure to implement the ASCP planned production orders remain unchanged. Review the suggestions generated by ASCP and release them from the planner's workbench. Review these suggestions in OPM through the APS New Batch window or APS Reschedule Batch windows. Upon executing these suggestions, OPM batches are created or rescheduled.

Analysis of Suggestions

ASCP suggestions for production batches consist of the following:

- Create a new batch

- Reschedule an existing batch

- Cancel an existing batch

For the Create and Reschedule suggestions, the ASCP generated details of the batch are transferred to OPM. Both material and resource transactions are transferred to OPM.

Cancel batch requires no additional consideration because once canceled, batch details do not require synchronization between ASCP and OPM.

For a planned production batch, ASCP generates planned details considering the production constraints. These planned details include the following:

- Material transactions

- Resource transactions

These details are based on the OPM formula and routing, which is chosen based on the preferred validity rule for the planned production batch. Let us take a closer look at both material and resource transactions for a newly suggested batch and an existing batch.

New Batch Material Transaction Considerations

ASCP suggests the creation of new batches. Synchronization of material transactions between ASCP and OPM centers around three crucial fields:

- Item

- Date

- Quantity

If a batch is created in OPM from a recipe that is used by ASCP in making a planning suggestion and no change to the recipe's formula is made between batch creation in OPM and plan generation in ASCP, then the items and quantities of the batch created in OPM and the batch suggestion created in ASCP are the same.

If an attempt is made in OPM to create an ASCP suggested batch, then subject to OPM date specific validation, then the OPM Process Execution schema is updated with the ASCP generated dates. If, for example, an ASCP batch creation date suggestion falls upon a date within a closed inventory period, then the batch is not created in OPM.

If upon OPM batch creation, you choose a different recipe that has a different formula or routing from the one that ASCP suggested, then the batch details are not synchronized from ASCP. In this scenario, the OPM Process Execution batch creation algorithm is used to create the batch.

Recipe-Related Changes after Data Extraction

If a OPM recipe related change is made after the data extraction on which the ASCP plan is based, then detail scheduled feedback does not happen. Material transactions are generated based on the OPM material types and step associations in the routing. The new batch is implemented using the updated OPM formula and routing.

New Batch Resource Transaction Considerations

The detailed feedback from ASCP to Process Execution not only includes routings, operations, activities, and resources but the constraints under which they operate: shop calendars and resource availability. Upon accepting the detailed feedback from ASCP, Process Execution resource transactions are synchronized with the ASCP generated start and end dates and its calculations.

Differences in the way that ASCP and OPM handle resource transactions follow:

- Unconstrained and Constrained Planning - OPM users can use unconstrained, constrained, or optimized planning in ASCP. When a constrained or optimized plan is executed, the feedback details are synchronized to OPM. When an unconstrained plan is executed, the feedback details from ASCP are not used; the default OPM Process Execution calculations are used.

- Daily Bucket Level Details - As ASCP bring back details to the daily bucket level, the detail feedback suggestions are provided in the daily scheduling and planning bucket.

- Automatic Step Quantity Calculations (ASQC) - OPM Process Execution uses step quantities, which are automatically calculated based on the ingredients in the formula and routing, to determine resource usage. ASCP does not perform these calculations. Instead, ASCP calculates resource usage based on the step quantities established in the routings.

- Routing Complexity - OPM makes use of a complex routing structure that calculates the timing of its operations based on routing step dependencies. ASCP works under the assumption that steps are sequential and calculates the timing of its operations on a linear routing.

- Activity and Resource Offsets - OPM allows for the definition of offsets between activities and between resources in activities. ASCP does not consider offsets when calculating the timing of resource usage. ASCP does not plan or optimize for sequence dependent activities. ASCP does consider prior and next minimum transfer quantity when calculating resource and activity scheduling.

- Primary and Auxiliary Resources - OPM considers differences in resource usage. ASCP uses maximum usage time only. For example, if some resources are defined as working for eight hours and other resources defined as working for four hours, then ASCP calculates the resource usage as eight hours. As this could have costing implications, OPM ignores ASCP usage time and retains its resource usage.

- Alternate Resource - In performing the detailed capacity planning, ASCP can use an alternate resource. Upon accepting the detailed feedback, OPM is updated with the transactions for the alternate resource and reflects its timing and usage.

- Secondary Resource - OPM makes use of secondary resources and generates start and end times for secondary resource use. ASCP does not consider noncritical secondary resources. As such, secondary resources are not planned by ASCP, but can be maintained by OPM.

- Resource Instance Transactions - OPM makes use of resource level and resource instance level transactions. ASCP plans at the resource level, not at the resource instance level.

In summary, when batch details are synchronized from ASCP, OPM batches reflect the resource scheduling calculated by ASCP.

Resource Changes after Plan Based Data Extraction

If any OPM resource change is made after the data extraction on which the ASCP plan is based, then the ASCP constrained based plan is invalidated and the new batch is implemented using default OPM Process Execution calculations. A warning message displays, which notifies you of the ASCP plan invalidation.

The resource changes that will invalidate an ASCP plan for a new batch include the following:

- Routing changes - including addition or deletion of a step, changes to operations, changes to the sequence of steps.

- Operation changes - including addition or deletion of activities, changes to minimum transfer quantity.

- Activity changes - including addition or deletion of resources, changes to throughput speeds.

- Resource changes - including changes to the counts.

Existing Batch Material Transaction Considerations

ASCP suggests rescheduling of existing batches, which have existing material and resource transactions in OPM Process Execution.

The item, quantity, and transaction date of the existing OPM batch are updated to match the item quantity and transaction dates suggested by ASCP.

Differences in the way that ASCP and OPM handle material transactions follow:

- Consolidated Transaction for a Multiple Transaction Item - OPM Process Execution can accommodate multiple transactions for a given item lot combination in a batch. These multiple transactions are created when an item is allocated to a lot many times. ASCP does not handle multiple transactions for an item. Instead ASCP consolidates multiple ingredient transactions to one ingredient transaction and multiple product transactions to one product transaction and applies a transaction date as follows:

  - Earliest transaction date applied for an ingredient

  - Latest transaction date applied for a product, coproduct, or byproduct

  When a batch is rescheduled from ASCP, multiple transactions for an ingredient or product are consolidated to the one transaction and reflect the earliest or latest transaction date, respectively.

- Product Yield and Last Step - OPM Process Execution allows for a product to be yielded at an intermediate step. ASCP does not allow for this and plans instead for the product to be yielded at the last step of the routing. As such, when an OPM batch having product yielded at an intermediate step is rescheduled by ASCP, the date and time of the material transaction associated with this intermediate step is assigned the date and time of the last step of the routing.

Existing Batch Resource Transaction Considerations

ASCP suggests rescheduling of existing batches, which have existing resource transactions in OPM Process Execution.

The resource transactions of an existing OPM batch are updated to match the resource transactions suggested by ASCP.

The difference in the way that ASCP and OPM handle resource transactions follows:

Resource Instance Transactions -If feedback suggestions for batches with existing resource instance transactions are implemented in OPM, then these resource instance level transactions are overwritten by the resource level transactions from ASCP.

Material and Resource Changes after Plan Based Data Extraction

If an OPM material or resource change is made after the data extraction on which the ASCP plan is based, then the ASCP contrained based plan is invalidated and the reschedule process is not initiated. The reschedule suggestions are not implemented. The changes that will invalidate an ASCP plan for an existing batch include the following:

- Batch status changes

- Step status changes

- Incremental completion

- Converting a firm planned order to a batch

Implementing Planning Suggestions

Sending feedback from Advanced Supply Chain Planning (ASCP) to OPM includes implementing ASCP suggestions in OPM. ASCP calculates the following types of planning suggestions based on the data collected from OPM: create production and purchase orders; reschedule production orders; and cancel production orders.

You can release individual ASCP suggestions or release them in mass.

Manual Release and Implementation of Planning Suggestions

You can manually release ASCP suggestions in Advanced Planning Scheduling (APS) and manually accepting some, all, or none of the ASCP suggestions in OPM.

The manual release of the ASCP planning suggestions in APS is accomplished by releasing the planning suggestion from the workbench. Upon release, purchase orders are sent to Oracle Purchasing and production orders related to OPM organizations are sent to OPM.

The manual acceptance of ASCP planning suggestions in OPM is accomplished by accessing the following windows and entering the details required for the creation, rescheduling, or cancellation of the production or planned order suggestion:

- Create new productions orders through the APS New Batch window
- Reschedule existing productions orders through the Reschedule Update window
- Cancel existing productions orders through the Batch Cancellations window

▶ **To manually accept an ASCP planning suggestion and create a new batch or firm planned order:**

1. Navigate to the **APS New Batch** widow.

2. Type **Plant Code**. Enter the organization code associated with the ASCP workbench run.

3. Select **Group ID**. The Group ID is associated with the suggestions to approve. The group ID displays on the ASCP workbench and identifies the group of suggestions that you selected for release to OPM.

4. **Date**. The date is populated when you select the Group ID. It represents the date that the Group ID was generated from the ASCP Planner Workbench run.

5. Select **Approve As**. The options include : Batch, Firmed Planned Order, Reject.

Order Details

6. Click **Select** for the planning suggestions to approve and convert to a batch or firm planned order.

   All of the suggestions applicable to the Group ID that are not accepted or rejected display in the Order Details section.

7. **Warehouse**. Displays the warehouse associated with the planning suggestion and into which the batch or firm planned order will be created.

8. **Batch/FPO Number**. For automatic document ordering, this field is populated automatically. For manual document ordering, enter the number that will be assigned to the batch or firm planned order.

9. **Product**. Displays the primary product of the batch or firm planned order, which is to be approved and converted from the planning suggestion.

10. **Planned Qty**. Displays the planned quantity of the primary product of the soon-to-be-converted batch or firm planned order.

11. **UOM**. Displays the units of measure in which the primary product is produced.

12. **Start Date**. Displays the start date of the soon-to-be converted batch or firm planned order.

13. **Description**. Displays a description of the product that will be produced by the soon-to-be-converted batch.

14. **End Date**. Displays the date by which the product must be produced.

15. **Formula**. Displays the formula on which the production batch or firm planned order is based.

16. **Routing**. Displays the routing code of the primary product produced by the formula.

Buttons

Click Convert to approve and convert the planning suggestions into OPM production batches or firm planned orders. After clicking Convert, the OPM Process Execution APIs are called to create the new batch or firm planned order. You are prompted for more data based on your setup.

Click Reject to reject the planning suggestions for creating new production batches or firm planned orders.

Click Cancel to exit the window without taking any action.

◗ **To manually accept an ASCP planning suggestion and reschedule an existing batch or firm planned order:**

1. Navigate to the **Reschedule Update** window.

2. Type **Plant Code**. Enter the organization code associated with the ASCP workbench run.

3. Select **Group ID**. The Group ID is associated with the suggestions to approve. The Group ID was displayed originally on the ASCP workbench and identified the group of suggestions that you selected for release to OPM.

4. **Date**. The date is populated when you select the Group ID. It represents the date that the Group ID was generated from the ASCP Planner Workbench run.

Order Details

5. Click **Select** for the planning suggestions that you want to approve and reschedule.

    All of the suggestions applicable to the Group ID that are not accepted or rejected display in the Order Details section.

6. **Warehouse**. Displays the warehouse associated with the planning suggestion and in which the batch or firm planned order is rescheduled.

7. **Type**. Displays the type of document, either batch or firm planned order, to be rescheduled.

8. **Batch/FPO Number**. Displays the batch or firm planned order document number.

9. **Old PST**. Displays the original planned start time.

10. **Plan PST**. Displays the suggested reschedule planned start time.

11. **Planned Qty**. Displays the planned quantity of the primary product of the batch or firm planned order.

12. **Product**. Displays the primary product of the batch or firm planned order.

13. **Planned End Date**. Displays the planned end date of the soon-top-be-rescheduled batch or firm planned order.

14. **Routing**. Displays the routing code of the primary product produced by the formula.

Buttons

Click Reschedule to approve and reschedule the existing OPM production batches or firm planned orders.

Click Reject to reject the reschedule suggestions thereby maintaining the existing planned start and end dates for the batches or firm planned orders.

Click Cancel to exit the window without taking any action.

◗ **To manually accept an ASCP planning suggestion and cancel an existing batch or firm planned order:**

1. Navigate to the **Batch Cancellations** window.

2. Type **Plant Code**. Enter the organization code associated with the ASCP workbench run.

3. Select **Group ID**. The Group ID is associated with the suggestions to approve. The Group ID was displayed originally on the ASCP workbench and identified the group of suggestions that you selected for release to OPM.

4. **Date**. The date populates when you select the Group ID. It represents the date that the Group ID was generated from the ASCP Workbench run.

Order Details

5. Click **Select** for the planning suggestions that you want to approve and cancel.

   All of the suggestions applicable to the Group ID that are not accepted or rejected display in the Order Details section.

6. **Warehouse**. Displays the warehouse associated with the planning suggestion and in which the batch or firm planned order is canceled.

7. **Type**. Displays the type of document, either batch or firm planned order, to be canceled.

8. **Batch/FPO Number**. Displays the batch or firm planned order document number.

9. **Old PST**. Displays the original planned start time.

10. **Plan PST**. Displays the suggested cancellation start time.

11. **Planned Qty**. Displays the planned quantity of the primary product of the batch or firm planned order.

12. **Product**. Displays the primary product of the batch or firm planned order.

13. **Planned End Date**. Displays the planned end date of the soon-top-be-canceled batch or firm planned order.

14. **Routing**. Displays the routing code of the primary product produced by the formula.

Buttons

Click Cancel Batch to approve and cancel the existing OPM production batches or firm planned orders.

Click Reject to reject the cancellation suggestions thereby maintaining the existing planned start and end dates for the batches or firm planned orders.

Click Cancel to exit the window without taking any action.

Fully Automatic Release and Implementation of Production Planning Suggestions

You can automatically release ASCP production order planning suggestions in Advanced Planning Scheduling (APS) and automatically accept all of the ASCP production order planning suggestions in OPM without intervention.

The automatic release of the ASCP planning suggestions in APS is accomplished by selecting the APS Production Flag checkbox on the Supply Chain Plan Names window before launching a plan.

The automatic acceptance of ASCP planning suggestions in OPM is accomplished by enabling the GMP: Auto Implement APS Suggestions profile option.

When the suggestions are brought over to OPM and the GMP profile is enabled, all suggestions that are grouped by the launched plan's group id are input as parameters to the Auto Release of Planning Suggestions for APS concurrent program. While implementing the suggestions, the concurrent program generates a log, which lists the implementation successes and failures.

When electing to use the fully automatic option of releasing and accepting ASCP planning suggestions, the following considerations must be kept in mind:

■ Batch numbering is automatic, not manual.

■ New batches are created using the validity rule selected by the ASCP planning engine. If the validity rule used by the planning engine is not available for use in OPM for batch creation, then the batch is not created and the concurrent program writes the reason for not implementing the suggestion in the log file.

- Production order planning suggestions are implemented automatically as batches. Planned order planning suggestions are not implemented automatically at this time.

◗ **To automatically release and accept all ASCP planning suggestions without intervention:**

1. Ensure that the GMP: Auto Implement APS Suggestions profile option is set to Yes in OPM.

2. Enable the APS Production Flag before launching an ASCP plan in ASCP.

3. Navigate to the Launch SCP Plan and initiate a supply chain planning process. The generated log file lists all implementation successes and failures.

Semiautomatic Release and Implementation of Production Planning Suggestions

You can automatically release ASCP production order planning suggestions in Advanced Planning Scheduling (APS) and accept some or all of the ASCP production order planning suggestions in OPM.

The automatic release of the ASCP planning suggestions in APS is accomplished by selecting the APS Production flag before launching a plan or by releasing the production planning suggestion from the workbench.

The semiautomatic acceptance of ASCP planning suggestions in OPM is accomplished by submitting a request to the Auto Release of Planning Suggestions for APS concurrent program. Item and date parameters are entered through the Parameters window. The entered data allows for a subset of production planning orders to be processed automatically. Semiautomatic release of production planning suggestions does not require a profile option setting.

◗ **To release and accept some ASCP planning suggestions with minimal intervention:**

1. Enable the APS Production Flag in ASCP before launching an ASCP plan. If you do not enable this production flag, you will have to manually release the production planning suggestions from the workbench after launching the plan.

2. Navigate to the Launch SCP Plan window in ASCP and initiate a supply chain planning process.

3. Navigate to the OPM Capacity Planning Submit Request window and select Auto Release of Planning Suggestions for APS after the launched plan is complete. The Parameters window displays.

4. Type **Plant Code**. Enter the organization code associated with the ASCP workbench run.

5. Type **From Item**. Enter the range of items for which you want the ASCP planning suggestions implemented.

6. Type **To Item**. Enter the range of items for which you want the ASCP planning suggestions implemented.

7. Type **From Date**.

8. Type **To Date**. Enter the range of dates for which you want the ASCP planning suggestions implemented. All suggestions with an end date within the specified From Date and To Date range will be implemented.

9. Click **OK**. The production planning suggestions are implemented for the given range of items and dates. The generated log file will list all implementation successes and failures.

Selecting Validity Rules upon Batch Creation

Sending feedback from Advanced Supply Chain Planning (ASCP) to OPM includes selecting validity rules upon batch creation. When a planned order is suggested from an ASCP Planner Workbench run, you can select the ASCP suggested recipe validity rule, which is used to create the production batch. This preferred validity rule displays first in the list of validity rules that qualify based on product, quantity, and date.

As the preferred validity rule displays first and its corresponding Select check box field is enabled, you can identify the effectivity that is the ASCP preferred validity rule. As such, the guess work is eliminated in implementing the ASCP suggestion to create the production batch.

At least one of the check boxes that correspond to a validity rule must be selected in order to create a batch. If a validity rule other than the ASCP suggested validity rule is selected, then a warning message displays.

▶ **To select the preferred validity rule upon batch creation:**

1. Navigate to the **APS New Batch** window.

2. Select the **Order Details** row and click **OK**. The **View Effectivities** window displays. The ASCP suggested validity rule is displayed first with its corresponding **Select** check box turned on.

3. Click **OK**.

▶ **To select a non-ASCP suggested validity rule upon batch creation:**

1. Select a validity rule from the **View Effectivities** window, which does not have the corresponding **Select** check box on.

2. Click **OK**. The following message displays: "This is not the actual row from APS, would you like to implement it?

3. Click **Yes**.

Note: If a validity rule is not selected and OK is clicked, then the following message displays: "At least one of the validity rules check box must be turned on."

6

Using Demand Planning with Oracle Process Manufacturing

No additional setup is required for Demand Planning to consider OPM customer demand. Read about how to use Demand Planning in the Oracle Advanced Planning and Scheduling Implementation and User's Guide.

The following topics are discussed:

- Referencing OPM Data in Demand Planning
- Importing Demand Planning Output into OPM

Referencing OPM Data in Demand Planning

The following list is the OPM demand data automatically considered by Demand Planning:

- Sales orders shipped from OPM warehouses (process-enabled organizations)

- OPM forecasts

- OPM calendars

- OPM items are copied into Oracle Inventory tables. Demand Planning copies OPM items from the Oracle Inventory tables.

In Demand Planning, you can explore the above OPM data within the framework of four seeded dimensions and two user-defined dimensions. The four dimensions seeded with OPM data are Geography, Ship from Location (organization dimension), Product, and Time. For the purposes of drilling down to the hierarchies and levels of each dimension, the following differences exist between Discrete and Process Manufacturing:

- A discrete Business Group is a process Company

- A discrete Legal Entity is a process Parent Organization

- A discrete Operating Unit is a process Organization

- A discrete Organization is a process Warehouse

- The Product dimension has two hierarchies. In the Product Category hierarchy, the OPM default category is MISC.

Importing Demand Planning Output into OPM

After you publish a demand planning forecast back to your OPM instance, you can import the Demand Planning forecast and create or replace an OPM forecast. Publishing a demand planning forecast back to the source instance is an optional step for discrete manufacturing ASCP users, but it is a required step for OPM users who use Demand Planning either with or without ASCP.

Importing the Demand Planning Output Procedure

1. Navigate to the **Submit Request** window within the OPM Process Planning responsibility.

2. Enter the report OPM Forecast Designator (Feedback from DP) in the **Name** field. Required.

3. The **Parameters** window opens. Select an existing **Forecast Name** from the list of values. The forecast names in the list include all of the Demand Planning forecast names published back to your OPM instance. If you select a Demand Planning forecast name that has the same name as an existing OPM forecast, the existing OPM forecast is overridden by the Demand Planning forecast data. Otherwise, a new OPM forecast is created. Required.

4. In the **Warehouse Name** field, select a warehouse from the list of values to import forecast data for only one warehouse or leave the field blank to import forecast data for all warehouses. Required.

5. Click **OK**.

6. In the **Submit Request** window, click **Submit**.

Note: Discrete manufacturing only allows 10 characters in a name, while OPM allows 16 characters. Therefore, you must use the profile option, GMP: Shorten Forecast Name, to resolve this discrepancy. Valid options are (Y)es and (N)o. If the value is yes, then the names are shortened and used in Demand Planning. If the value is no, you can technically still use Demand Planning, but those names that are not shortened are not used.

A

Appendix

This topic explains the typical APS navigation paths in OPM. The following topic is covered:

- OPM APS Navigator Paths

OPM APS Navigator Paths

Although your System Administrator may have customized your Navigator, typical navigation paths are described in the following table. In some cases, there is more than one way to navigate to a window. This table provides the most typical default path.

Window	Path
Reschedule Update	OPM Process Planning:Capacity Planning:Production Updates:APS Reschedule
Imported Batches	OPM Process Planning:Capacity Planning:Production Updates:APS New Batch
Batch Cancellations	OPM Process Planning:Capacity Planning:Production Updates:APS Cancel Batch

Index