

Oracle[®] Process Manufacturing Capacity Planning with RHYTHM Factory Planner

Release 11.0

Part No. A70047-01

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Oracle® Process Manufacturing Capacity Planning with RHYTHM Factory Planner

Part No. A70047-01

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OPM Capacity Planning with Rhythm Factory Planner

OPM Capacity Planning with Rhythm Factory Planner Welcome

Welcome to the *OPM Capacity Planning with Rhythm Factory Planner*.

This user's guide includes the information you need to work with OPM Capacity Planning with Rhythm Factory Planner effectively.

This preface explains how this user's guide is organized and introduces other sources of information that can help you.

About OPM Capacity Planning with Rhythm Factory Planner

This guide contains overviews as well as task and reference information about OPM Capacity Planning with Rhythm Factory Planner. This guide includes the following chapters:

- Capacity Requirements Planning
- Capacity Planner with Factory Planning Setups
- The RHYTHM Interface
- Finite Capacity Planning with Factory Planner
- Material/Capacity Synchronization

Audience for OPM Capacity Planning with Rhythm Factory Planner

This guide assumes that you have a working knowledge of your business area's processes and tools. It also assumes that you are familiar with other OPM modules. If you have never used OPM Capacity Planning with Rhythm Factory Planner, we suggest you attend one or more of the Oracle Process Manufacturing training classes available through World Wide Education. For more information about OPM Capacity Planning with Rhythm Factory Planner and Oracle training see Other Information Sources.

This guide also assumes that you are familiar with the Oracle Applications graphical user interface. To learn more about Oracle Applications graphical user interface, read the *Oracle Applications User's Guide*.

Conventions

Bolded Text

Buttons, fields, keys, menus, and selections are bolded in procedures only. For example: To access the next form click **OK**. Otherwise, references to these features appear in regular type.

Additional Menu Options

Only nonstandard menu options are discussed. Standard menu bar options (such as Save) are not discussed. These standard options are described in the Oracle Applications User's Guide. Only menu options unique to the use of the specific form are discussed.

Field References

References to fields within procedures are in bold type. References within the body of this guide appear in regular type.

Keyboard Mapping

Some keyboards have an Enter key, while some have Return key. All references to this key appear as Enter.

Required Fields

The word "Required" appears as the last word in the field descriptions of all required fields. When the field is required contingent on the entry in another field, or only in specific situations, "Required if..." is the last sentence of the field description.

Fields Reserved for Future Use

Fields with no current processing implications are referenced by the statement, "This field is not currently used" or "Reserved for future use" is shown. Do not use these fields for your own reference data, because there are plans to link future functionality to these fields. Fields intended for informational use only are referenced by the statement, "This field is for informational purposes only".

Pending/Completed Transactions

Discussions about processing transactions that use the words 'pending' and 'completed' refer to the status of a transaction. Pending and completed do not refer to the database tables that are updated as a result of transactions (for example, some completed transactions are stored in the Pending Transactions table).

Procedures

Each chapter contains a procedure with numbered steps. Any actions which are subordinate to a step are assigned letters.

Note: You can customize your Oracle Application, therefore, all procedures are suggestive only. Navigate to forms and between responsibilities in a way that works best for your particular setup. Also note that fields may appear on your screen in a different order than they are discussed in this guide.

Oracle Process Manufacturing Glossaries

A module-specific glossary is included.

Use of Word "Character"

The word "character" means an alphanumeric character. Characters that are numeric or alphabetic only are referenced specifically.

Note: Depending on your system security profile, you may not have access to all of the forms and functions described in this guide. If you do not see a menu option described in this guide, and you want access to it, contact your System Administrator.

Do Not Use Database Tools to Modify Oracle Applications Data

Because Oracle Applications tables are interrelated, any change you make using Oracle Applications can update many tables at once. If you modify the Oracle Applications data using anything other than Oracle Applications, you could change a row in one table without making corresponding changes in related tables. If your tables are synchronized with each other, you risk retrieving erroneous information and receiving 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 track who changes information. If you enter information into database tables using database tools, you could 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.

Consequently, we strongly recommend that you never use SQL*Plus or any other tool to modify Oracle Applications data unless otherwise instructed by Oracle Support Services.

Information Sources Related OPM Capacity Planning with Rhythm Factory Planner

You can choose from many sources of information, including documentation, training, and support services, to increase your knowledge and understanding OPM Capacity Planning with Rhythm Factory Planner.

Online Documentation

All Oracle Applications documentation is available online on CD-ROM, except for technical reference manuals.

All user's guides are available in HTML and paper. Technical reference manuals are available in paper only. Other documentation is available in paper and sometimes PDF format.

The content of the documentation remains the same from format to format. Slight formatting differences could occur due to publication standards, but such differences do not affect content. For example, page numbers are included in paper, but are not included in HTML.

The HTML documentation is available from all Oracle Applications windows. Each window is programmed to start your web browser and open a specific, context-sensitive section. Once any section of the HTML documentation is open, you can navigate freely throughout all Oracle Applications documentation. The HTML documentation also ships with Oracle Information Navigator (if your national language supports this

tool) which enables you to search for words and phrases throughout the documentation set.

Other Information Sources

OPM Capacity Planning with Rhythm Factory Planner shares business and setup information with other Oracle products. The following Oracle Applications guides might be useful when you are setting up and using OPM Capacity Planning with Rhythm Factory Planner.

- **Oracle Applications User's Guide**
This guide explains how to enter data, query, run reports, and navigate using the graphical user interface (GUI) available with this release. This guide also includes information on setting user profiles, as well as running and reviewing reports and concurrent processes.
- **Oracle Applications Flexfields Guide**
This guide provides flexfields planning, setup and reference information for the implementation team, as well as for users responsible for the ongoing maintenance of Oracle Applications product data. This manual also provides information on creating custom reports on flexfields data.
- **Oracle Workflow**
This guide provides information about the Oracle Workflow product. It provides guidance and assistance for automating and routing information of any type according to business rules.
- **Oracle Applications System Administrators 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 text, and manage processing.

Oracle Process Manufacturing Guides

The following is a list of the documentation in each product group of OPM release 11.0.

System Administration and Technical Reference

- *Oracle Process Manufacturing Implementation Guide*
- *Oracle Process Manufacturing Technical Reference Manuals*

OPM Inventory Control

- *Oracle Process Manufacturing Inventory Management User's Guide*
- *Oracle Process Manufacturing Physical Inventory User's Guide*
- *Oracle Process Manufacturing EC Intrastat User's Guide*

OPM Process Execution

- *Oracle Process Manufacturing Production Management User's Guide*
- *Oracle Process Manufacturing Process Operations Control User's Guide*

OPM Product Development

- *Oracle Process Manufacturing Formula Management User's Guide*
- *Oracle Process Manufacturing Laboratory Management User's Guide*
- *Oracle Process Manufacturing Quality Management User's Guide*

OPM Logistics

- *Oracle Process Manufacturing Order Fulfillment User's Guide*
- *Oracle Process Manufacturing Purchase Management User's Guide*

OPM Process Planning

- *Oracle Process Manufacturing Forecasting User's Guide*
- *Oracle Process Manufacturing Capacity Planning User's Guide*
- *Oracle Process Manufacturing MPS/MRP User's Guide*

OPM Financials

- *Oracle Process Manufacturing Cost Management User's Guide*
- *Oracle Process Manufacturing Manufacturing Accounting Controller User's Guide*
- *Oracle Process Manufacturing Accounting Setup User's Guide*
- *Oracle Process Manufacturing and Oracle Financials Integration*
- *Oracle Process Manufacturing and Oracle Financials Implementation Guide*

Other Sources

Training

We offer a complete set of formal training courses to help you and your staff master OPM Capacity Planning with Rhythm Factory Planner and reach full productivity quickly. We organize these courses into functional learning paths, so you take only those courses appropriate to your job's area of responsibility.

You have a choice of educational environments. You can attend courses offered by Oracle Education Services at any one of our many Education Centers, or you can arrange for our trainers to teach at your facility. 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.

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Capacity Requirements Planning

OPM Capacity Planning Introduction

This section contains information about capacity requirements planning and how the OPM Capacity Planning and RHYTHM can help you to plan and schedule your resource usage. This section highlights some of the business concepts that drive the need for resource capacity planning. Basic principles of capacity planning are discussed.

Capacity Requirements Planning Overview

The trend in business today is toward smaller inventories, reduced leadtimes, and consistent on-time delivery. It is increasingly important to use all of your production resources, including capital equipment and manpower, to the best possible advantage. Knowing about potential capacity problems in advance allows you minimize the impact of capacity variables on the production schedule. This can result in fewer production "crunches" and less worker overtime.

Resource Planning

Anything required to produce a formula or product may be defined as a resource in OPM. These include machinery, tools, vessels, appliances, and workers. RHYTHM Factory Planner analyzes and displays capacity loads for each of these resources.

To reduce costs, you need to streamline your production lines for best possible use of your resources. The Factory Planner interface enables you to backward and forward schedule the use of your resources (and the need for raw materials and production of intermediates). Backward scheduling, minimizes long term investment in materials. You do this by efficient planning of your resource capacity load. Wise planning with OPM Capacity Planning and RHYTHM benefits your company in the following ways:

- Allows for smaller raw material and finished goods inventories which results in reduced storage overhead for ingredients and product items

- Reduces leadtimes for:
 - Raw materials (pay for materials at last possible moment)
 - Production batches (reduces labor and machine operation costs)
- Enables you to satisfy customers' scheduling needs by helping you to plan for consistent on-time delivery
- Helps you strive for most efficient usage across bottlenecks and establish appropriate feeds that minimize supply by resource. This enables you to:
 - Use most efficient machines and work centers
 - Reduce incidents of machines at over or under capacity
 - Derive greatest value from capital equipment
 - Decrease worker idle time

Planning within OPM

With the OPM software suite you can plan at the enterprise level or at the plant level.

Enterprise Planning

OPM Material Requirements (MRP) provides the long range planning solution across multiple organizations at an enterprise level. For information on MRP refer to the *Oracle Process Manufacturing MPS/MRP User's Guide*.

Plant Level Planning

The short term planning is provided by Capacity Planner and the RHYTHM interface. This interface utilizes RHYTHM Factory Planner functionality and enables you to create short term plans *without* running MRP first. The planner determines the criteria for short-term planning.

Note: At the plant level, use OPM MRP for analyzing requirements for purchased parts and for planning requirements outside the RHYTHM Factory Planner horizon. In addition, all interplant requirements must be resolved with transactions in OPM

When plans are managed at the plant level, you initiate the export of forecast, customer sales order and safety stock demand to RHYTHM Factory Planner in a batch oriented, regenerative basis.

Note: In the Factory Planner, the planning model used by the interface is for one factory (in OPM a plant/organization) per schedule. If you want to add more organizations you need to create separate schedules and individually link them to the plant organizations. Then you will need to install the schedules as outlined in the implementation guide.

RHYTHM Factory Planner Overview

OPM uses the features of the RHYTHM software to plan for finite capacity. RHYTHM analyzes the OPM exported data (batches and firm-planned orders) and resources information (production equipment). It indicates to the master planner or plant scheduler how current and projected product demands affect the utilization of resources.

RHYTHM produces graphs and summary forms and reports to indicate if production orders are going to be early, on time, or too late to satisfy demand. It can also indicate changes to the scheduled production start dates to overcome situations of over or under capacity at routing work centers (new start dates are based on the due date of the demand order).

This graphical interface enables you to highlight all resources that are over or under capacity based on current production schedules. With this software you can see resource over or underloads and simulate various scheduling scenarios.

Use RHYTHM to :

- Produce graphic capacity load profiles for each resource
- Calculate resource usage using demand requirements and routing information to provide load profiles by resource
- Highlight all constraints concurrently and display resource overloads before they have an impact on delivery schedules.
- Produce resource load graphs and simulated capacity plans and schedules RHYTHM Factory Planner features

When you are satisfied with the results, you can import the RHYTHM suggestions back into OPM and make the desired batch and schedule changes.

OPM Prerequisites

For the software to function properly, you have to establish the information in OPM. This includes:

- Organizations
- Calendars and Shop Days
- Schedule
- Routings
- Formulas and Effectivities
- Orders (Batches, Firm-Planned Orders, Sales Orders, Purchase Orders)
- Resources
- Items
- Routing Operations and Activities
- Items
- Warehouses
- Plant/Warehouse rules

OPM Data

Dynamic data (such as the manufacturing schedule) and static data (such as routings and operations) are loaded from OPM via an interface into memory on a "server" work station.

Optimizing Resource Usage

RHYTHM tools help planners and schedulers to determine the feasibility of current production schedules. The tools help to optimize material and capacity schedules to resolve production constraints. With OPM Capacity Planning, you can determine how to set up appropriate feeds into your bottlenecked areas.

RHYTHM helps you to optimize resource usage by:

- Analyzing and displaying capacity loads for each resource
- Highlighting potential capacity problems to minimize their impact on production
- Providing simulation capabilities to resolve capacity constraints
- Producing graphic displays and reports indicating if production orders are going to be early, on time, or too late to satisfy demand
- Suggesting changes to scheduled production start dates based on due date of demand order
- Showing how current and projected product demands affect utilization of resources. This helps planners reduce incidences of over- or under-capacity at routing work centers.

Note: For additional information on the functionality available in Rhythm Factory Planner, please refer to the i2 Technologies' Rhythm user guides and reference manuals.

OPM RHYTHM Factory Planner - Client and Server

The OPM Capacity Planning product consists of three parts: OPM Capacity Planning module with the RHYTHM interface, RhythmLink and the RHYTHM software.

The RHYTHM interface operates in a Client/Server set up. When you select RHYTHM Interface from the OPM Capacity Planning menu and initiate an export, OPM converts the required information into flat files then initiates the client/server situation. RhythmLink reads the OPM views (tables) and converts the information into flat files which it sends to RHYTHM. Several planners (clients) with different schedules may look at the files and use the information and the RHYTHM programs.

Note: Even though OPM and the server can operate on a single unit, we recommend that the RHYTHM server be loaded on a separate unit to improve response time.

OPM - Data Export Overview

At interface form, you select the options on the Special menu to set parameters and export data. OPM must assemble, format, and transfer (export) to RHYTHM all data regarding calendars, schedules, routings, and all other information necessary to produce capacity load inquiry displays.

Note: Prior to performing an export, you must install the schedule you are using for resource planning purposes. Refer to the guide for *Implementing a OPM Schedule for RHYTHM* for more information.

You can export data from OPM to RHYTHM at any time.

Note: Detailed discussions for the various screens you can access from the Special menu are provided in other sections.

Infinite Planning - Viewing Load Data and Capacity Constraints

After OPM exports data to RHYTHM, it calculates required work center capacity to meet demand. It makes this first calculation based on the assumption of infinite available capacity to perform the work (scheduled resource time required to meet demand is suggested as though the resource has no time or material boundaries). An infinite capacity plan is created from demand transferred from OPM in the form of sales order and consumed forecasts. You use this infinite plan to examine available resource capacities and constraints.

RHYTHM uses the OPM data to determine if capacity constraints exist, and produces a capacity schedule that attempts to alleviate those constraints and still deliver the demand orders on time.

Finite Planning

Once you identify the constraints, you can create a plan based on finite capacity. You can create an optimal schedule by making manual changes and/or by using the Constraint Anchored Optimization (CAO) feature of factory planner. These features take resource capacity constraints into account when planning a new production schedule. Availability of production ingredient inventory can also be taken into account.

Within Factory Planner, you can view the pegging of the demand orders to OPM FPO and Batch document numbers. If RHYTHM Factory Planner plans a production order to satisfy a demand requirement, its own sequential numbering system will be temporarily assigned. These orders can be exported back to OPM and converted to batches or FPOs.

Simulated Rescheduling

RHYTHM Factory Planner also allows you to stage simulated changes to batch and firm-planned order schedules. This allows you to test the results of these changes on resource loads without altering the actual production schedule.

Note: "Super-detailed" capacity requirements planning may be counter productive due to maintenance and reporting requirements. You should use Capacity Planning to provide models for bottlenecks of resources to insure that all utilization rates are one hundred percent.

If the planner requires, RHYTHM Factory Planner can develop a detailed production schedule. Factory Planner's scheduling option considers factors such as sequence-dependents setup times as well as material and capacity availability to develop the optimal sequence of production orders in the short-term horizon.

Importing Changes Back to OPM

RHYTHM Factory Planner saves the optimized plan. If there is insufficient supply for a demand order, RHYTHM Factory Planner will create a new manufacturing order using its own numbering system. You then import the changes to batches/FPOs within the schedule's inner and outer timefences. These changes must be imported back to OPM so that the MRP module may consider the new material requirements in respect to the capacity schedule.

Making Changes in OPM

In OPM, you make changes to the routing or schedule dates. OPM can convert a RHYTHM Factory Planner manufacturing order to a OPM Batch or FPO based on OPM document numbering. The formula effectivity will be validated prior to creation of the OPM order and an OPM document number is assigned. If a valid effectivity is not found, you must update the effectivities or the production data will not be passed back to Factory Planner, resulting in RHYTHM Factory Planner planning the production order again.

Note: Purchasing data is *not* passed back to OPM, but an online report in RHYTHM provides access to this information.

Material/Capacity Synchronization

In solving capacity constraint problems, RHYTHM Factory Planner may suggest changes to the production schedule. The information flows in the following manner:

- You export OPM production and schedule data (with scheduled ship dates for demand orders, planned batch start dates) into Factory Planner.
- RHYTHM Factory Planner uses this data and explodes it against routing detail to determine if capacity constraints exist.
- Within Factory Planner, you create a capacity schedule that optimizes resource usage within capacity constraints and still deliver demand orders on time. This results in changes in your production schedule. These changes include the following modifications to production batches, RHYTHM planned manufacturing orders and/or firm-planned orders:

Rescheduling

Rerouting

- Once you create an optimal schedule, you import the changes back to OPM.
- After you make all necessary changes, you may run MRP. This way, MRP may consider the new material requirements with respect to the new capacity schedule.
- If necessary, you may want to restart RHYTHM Factory Planner to further refine resource usage until you have created an optimum capacity schedule.

Note: Rerouting requires that you define alternate routes and resources for a formula version and associate the alternate route through effectivities.

Business Scenarios

This table lists some typical production events and how to respond using OPM Capacity Planning with Rhythm Factory Planner.

Event	RHYTHM Factory Planner Response
Sales Order date and quantities are modified or sales order is added in OPM	Data are updated in database tables. RHYTHM Factory Planner files are loaded by export.
Batch/ FPO dates and/or route are modified or canceled in OPM™.	Data are saved to OPM tables but may be overwritten by import changes from RHYTHM Factory Planner based on optimized plan
New static data such as: <ul style="list-style-type: none"> • Items • UOM • Resources • Routings and Operations • Formulas and effectivities • Vendor Items Calendar and shop days • Organizations • Sequence Dependent setup • created in OPM. 	User can initiate transfer of data to Factory Planner
Batch Steps are updated manually in OPM.	User initiates transfer of data to Factory Planner. RHYTHM Factory Planner recognizes certified steps as complete.
A batch is created in OPM, which is planned to satisfy multiple demand orders	RHYTHM Factory Planner pegs batch to each demand order.
A sales order is created in OPM which exceeds the maximum batch size, as defined in the effectivity records.	RHYTHM Factory Planner plans multiple batches to satisfy the demand order.

Capacity Planning with Factory Planner Setups

Capacity Planning Setups Introduction

This section discusses the required setups in other OPM modules and the Capacity Planning product for the interface to work properly with the RHYTHM product. Also included is a list of the prerequisites necessary for using RhythmLink.

RhythmLink Prerequisites

OPM Capacity Planner utilizes the RhythmLink product, a scaleable tool platform which is database flexible. The RhythmLink product reads the tables and views from the database, and then formats them correctly creating the flat files RHYTHM requires to run.

Below is a list of what is required in order for OPM to use RhythmLink.

- A UNIX user id to start/stop rl_oracle (Listener - daemon process). We suggest that you set up the required environment variables for this user in his login script i.e. .profile or .cshrc.
- A database user to start rl_oracle daemon.
- Edit start_rl_oracle script to set the variables, RL-DIR, FP-DIR log file directory and database user/password. Note: This is a dummy user for connect priveleges to the database.
- Set CR\$RHYTHM_PACKAGE to SWB for the Factory Planner.

OPM Prerequisites Overview

Before using the interface, you must set up information in the following OPM modules:

- Inventory Control
- Formula Management
- Production Management
- Master Production Scheduling
- Material Requirements Planning
- OPM System Administration

Note: Each schedule must be installed before they can be run.

OPM distinguishes between static and dynamic data, both of which can be exported to RHYTHM to produce load capacity inquiry displays. The differences between the two types of data are described below.

Static Data

Static data are those data records that will not change as a result of RHYTHM scheduling (records that are relatively stable). Static data to export are listed below.

Items	Resources	Organizations
Routings	Operations	Shop Days
Formulas and Effectivities	Calendars	Activities

Dynamic Data

Dynamic data is that type that you may want to consider changing as a result of viewing the capacity load displays. These include the data listed below.

- Inventory Balances**
- Production Schedule (Scheduled Batches)**
- Firm-Planned Orders**
- Demand order data: Sales Order and Forecasts**
- Purchase Orders**

OPM Setup Checklist for Factory Planner Interface

The following is a checklist of all of the OPM prerequisites to run the interface and RHYTHM. The checklist is arranged in the logical sequence for setting up this data. Each of these setups is discussed in this section.

- Define Rhythm Package
- Define organizations
- Define shop days
- Define shop calendar
- Define inventory items
- Create schedule
- Install schedule (see the Capacity Planning implementation guide)
- Link schedule to operator
- Define processing resources
- Define plant/resource relationships
- Define process activities
- Define process operations
- Define processing routings
- Define formulas/effectivities
- Create production batches
- Create sales orders
- Create forecasts
- Create purchase orders

Implementation Note - Prerequisites

This assumes that during your initial implementation you already set up item masters, warehouses, plant/warehouse rules. For more information, refer to the *Oracle Process Manufacturing Inventory Management User's Guide*.

OPM Prerequisites

The topics that follow discuss the required setups for using OPM Capacity Planning and the RHYTHM interface.

Defining Package Constant - Oracle Applications Systems Product

You must set the CR\$RHYTHM_Package System Profile to SWB for the Factory Planner (Finite Planning) version and to CRP for the Capacity Planner (Infinite Planning) version.

Defining Organizations (OPM Systems Product)

Note: RHYTHM uses one plant per schedule. If you need to manage multiple plants, you should create and install a different schedule.

The interface cannot function unless you have defined valid organizations (you usually define your organization structure at the time you install OPM).

Note: See the *Oracle Process Manufacturing Implementation Guide* for details on defining organizations.

Defining Shop Days and Calendars Shop - OPM Planning

The interface references the current shop calendar to consider days on which no production occurs (weekends, holidays, and so on). Before you define a shop calendar, you must define shop days (Shop Days form).

You must define at least one shop calendar for RHYTHM to produce capacity load graphic displays. Also, RHYTHM *can only display capacity load information within the effective date range of your current calendar, so you must consider its effective date range.*

This calendar is the basis of the resource calendar within RHYTHM. If individual resources require more detailed calendars (for example to schedule maintenance downtime), this additional information must be defined within RHYTHM.

Note: See the *Oracle Process Manufacturing MRP/MPS User's Guide* for more on shop days, calendars, and effectivities.

Defining Schedule/Assigning Schedule to Operator

Note: RHYTHM Factory Planner uses one plant per schedule.

The schedule you define for scheduling your resource usage is used to define the scope of the data synchronized in the interface. The schedule defines whether forecast and/or sales orders are used as a source of demand, the inner and outer time fence, planning horizon calendar, and the single organization for which the planning will occur.

OPM Capacity Planning optimizes the plan between the inner timefence and planning horizon time period. Any batches or FPOs within the inner timefence will be considered to be “Locked” with a Rhythm server flag for both quantity, routing and date for RHYTHM optimization. Changes to batches or FPOs in RHYTHM, which occur between the schedule inner and outer timefences, will be brought back to OPM via the import.

The Make to Stock flag on the MPS Schedule Parameters form needs to be set to Include Sales Forecast if you want to export this data over to RHYTHM. The Make to Order Flag must be set to Include Sales Orders if you want to export that data. If you set both flags to these settings, the sales orders are consumed into the forecast.

Note: For more information on the Schedule Parameters form, refer to the *Oracle Process Manufacturing MRP/MPS User’s Guide*.

Implementation Note - Schedule

Once you have created the schedule for resource capacity planning, you need to run the installation script for the schedule. Installing the schedule requires System Administrator privileges and Database Administrator Privileges. Contact your SA and DBA to install the schedule for RHYTHM.

OPM MRP uses the maximum of the inner timefence and the minimum of the outer time fence as defined at three levels—the item-warehouse (in the OPM Warehouse Rules form) the organization within the schedule and the schedule header and the Production Rules. Since a short inner time fence is desirable when planning within Rhythm, the time fence associated with the schedule will be loaded by Rhythm. Due to these differences, planners may decide to have a separate planning schedules--one for Rhythm which uses a short inner-fence and planning horizon at the organization level and another for OPM MRP which has a longer planning horizon and item specific fences.

You then need to link the schedule parameters to the operator (scheduler) who will be using Factory Planner interface. You can link to a schedule by using Session Parameters or by resetting the default schedule in your User Profile.

Defining Inventory Items - OPM Inventory

All the finished goods you produce, as well as the ingredients within those finished goods, must be defined by Item records entered on the Items form. You will use these ingredients later when creating production formulas to produce finished goods and intermediates. The Items form includes lot control and location control flags, various inventory classification codes, and unit of measure data.

Note: Refer to the *Oracle Process Manufacturing Inventory Management User's Guide* for details on the Items form.

Resources Overview

Resources are the assets you use to produce batches, including production equipment and employee labor. You can define each resource very generally (for example, "OVENS") or specifically ("OVEN 1, OVEN 2," and so on). For each resource you must assign a classification code for costing purposes; see the *Oracle Process Manufacturing Cost Management User's Guide* for details on the Cost Component Class form. You can (optionally) group resources into resource classifications (for example, "Ovens" and "Stoves" may be grouped into "Cooking Units").

The interface looks at production capacity from a timeframe point of view. For this reason, it is only interested in the resource of production labor time. Capacity Planner considers only hours when performing calculations for capacity illustrations. This is defined in the System Profile SY\$UOM_HOURS.

Defining Resource Classes

Use the Resource Classes form to define resource classes.

Defining Resource Classes - Procedure

1. Navigate to the **Resource Classes** form.
2. Complete the fields as described in the *Resource Classes Form - Fields* topic.
3. Save the form.

Resource Classes Form - Fields

Resource Class

Specify the name or code for the resource class.

Description

Specify a description for the resource class.

Finding Resource Classes

There are several options for locating a record and populating a form. The List of Values option displays a dialog box with the appropriate records. The Query Find option displays a separate block called the Find form, where you enter your search criteria.

Finding Resource Classes - Procedure

Take the following steps:

1. Choose **Find** from the **Query** menu.
2. Complete one or any combination of fields as described in the *Find Resource Classes - Fields* topic.
3. Click **Find**.

Find Formulas - Fields

Resource Class

Enter the ID code of the resource class.

Description

Enter the description of the resource class.

Mark for Deletion

Blank = Do not use marked for deletion filter when finding records.

Yes = Displays a record that is in the database, but is already marked to be purged.

No = Displays a record that are not marked for purge.

Defining Resources

Use the Resources form to define resources.

Defining Resources - Procedures

1. Define resource classes (for example, "Cooking", "Washup") on the Resource Class form. Define cost component classification codes on the Component Class form, available in the Costing module. Also, you must insure that the unit of measure HR is established on the Unit of Measure form (OPM System module).
2. Navigate to the **Resources** form.
3. Complete the fields on the **Resources** form as described in the *Resources Form - Fields* topic.
4. Save the form.

Resources Form - Fields

Resource

Enter the code by which you identify this resource. Required.

Description

Enter a brief description of the resource you are adding. Required.

Standard UOM

Indicate the valid unit of measure (for example, hours) by which you measure output of this resource. RHYTHM recognizes "HR" (hours) as the only valid unit for capacity resource reporting. Required.

Resource Class

You may specify the resource class to which this resource belongs. For example, the resource "Chefs" may be included in the resource class "Labor".

Cost Component Class

A component class links this individual resource allows you to establish costing parameters for the resource in the Costing module. Required.

Finding Resources

There are several options for locating a record and populating a form. The List of Values option displays a dialog box with the appropriate records. The Query Find option displays a separate block called the Find form, where you enter your search criteria.

Finding Resources - Procedure

Take the following steps:

1. Choose **Find** from the **Query** menu.
2. Complete one or any combination of fields as described in the *Find Resources - Fields* topic.
3. Click **Find**.

Find Resources - Fields

Resource

Enter the name of the resource.

Description

Enter the description of the resource.

Standard UOM

Enter the standard unit of measure (usually HR)

Resource Class

Enter the resource class.

Cost Component Class

Enter the class component class.

Mark for Deletion

Blank = Do not use marked for deletion filter when finding records.

Yes = Displays a record that is in the database, but is already marked to be purged.

No = Displays a record that are not marked for purge.

Defining Resource Parameters in Specific Plants

A resource may operate at a different capacity at one production plant than it does at another. For example, at one plant it may be able to operate 24 hours a day, but only 18 hours a day at another plant. Also, the cost of using the resource may be more in one plant than in another.

Note: This set up is critical to the functioning of OPM Capacity Planning Based on the information entered on this form, RHYTHM 'knows' which resources belong to a given organization/plant.

Use the Resource Information form to enter plant-specific information regarding each resource. This information includes costing information, resource usage unit of measure, and available hours per day for the resource in a specific production plant. RHYTHM references this information to determine the availability and throughput of resources in each specific plant (organization).

Defining Resource Parameters - Procedure

1. Define organizations, resources, and resource units of measure on the appropriate forms.
2. Navigate to the **Resource Information** form.
3. Complete the fields as described in *the Resource Information Form - Fields* topic.
4. Save the form.

Resource Information Form - Fields

The sections that follow describe the fields on the Resource Information form.

Header Panel

Organization

Specify the production plant (organization) for which you are defining a resource capacity and cost. The cost will apply only to this plant/resource combination.

You can, however, define the cost of using the resource in more than one plant, allowing you to calculate the production costs for the resource across various organizations. Required.

Resource

Specify the resource for which you are establishing available capacity parameters and production costs when used in the designated plant (organization). Required.

Group Resource

You can group the resource that you specified in the previous field into a broader group for reporting purposes. For example, if you specified "Blender 1" as the resource in the previous field, you can group that resource into the more generic group "Blenders". The Group Resource field defaults to the value in the Resource field if there will be no grouping of the resource into a broader category. This is for reporting purposes only.

Assigned Quantity

This is 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". Required.

Available Use/Daily

Specify the maximum number of hours this resource is available in this plant each day. Required.

Nominal Cost

Specify the cost of this resource when used in the specified plant. The default is "1". This is for reporting purposes only.

Usage UOM

Specify the unit of measure by which the resource is measured in the specified plant (usually hours, "HR").

Inactive

Check this box to indicate that the resource cost you are defining for this plant is inactive. Plant/resource costs flagged as inactive will not be used for cost calculations for the resource, nor will resource availability be considered by RHYTHM.

The fields described below are used for RHYTHM's "Batching" functionality - please refer to your RHYTHM user manuals for additional information and to determine if this functionality applies to your organization

Capacity Panel

Range

Specify the resource's minimum throughput amount per capacity unit at this plant.

Ideal Capacity

Specify the resource's optimum throughput amount per capacity unit at this plant.

UOM

Enter the unit of measure in which the capacity is measured (usually HR).

Finding Resource Information

There are several options for locating a record and populating a form. The List of Values option displays a dialog box with the appropriate records. The Query Find option displays a separate block called the Find form, where you enter your search criteria.

Finding Resource Information - Procedure

Take the following steps:

1. Choose **Find** from the **Query** menu.
2. Complete one or any combination of fields as described in the *Find Resource Information - Fields* topic.
3. Click **Find**.

Find Resource Information - Fields

Organization

Enter the organization ID code of the plant for which you are defining resource information.

Resource

Enter the ID code of the resource.

Group Resource

Enter the ID code of the resource group.

Mark for Deletion

Blank = Do not use marked for deletion filter when finding records.

Yes = Displays a record that is in the database, but is already marked to be purged.

No = Displays a record that are not marked for purge.

Set Up Rules for Activities, Operations and Routings

For OPM data to map correctly over to RHYTHM, proper set up of your formula routings is essential. When setting up OPM Routing/Operation Step/Activities/Resource data that is used in RHYTHM, you need to create routings whose resource information will map over correctly into the RHYTHM model.

Routing Rules

OPM routing data consist of header information and detailed operation steps. OPM steps in a routing of resource/activity pairs with process time associated to them.

The following RHYTHM rules must be observed on the OPM side when creating routings:

- RHYTHM does *not* allow multiple *primary* resource/activity pairs in a step. It does allow one primary resource and 3 auxiliary resources. On the Operations form, the resource is flagged as Primary in the Plan Type field. The Plan Type indicator for an auxiliary resource is set as Secondary.
- RHYTHM only recognizes three activities per step: SET-UP, RUN-TIME and POST-OP.

Primary Resource Rules

Note: We recommend that you set up individual operations with the 3 activities each associated to the same primary resource and then associate this setup with a step in a routing.

The primary resource is the rate determining resource in a process routing. Usually it is the bottleneck resource. Primary resource rules for mapping over to RHYTHM are listed below:

- There must be only one primary resource per operation step. This primary resource is referred as the *machine* in RHYTHM.
- If you have flagged more than one resource as a primary resource in an operation step, the system selects the primary resource alphabetically and then basis selection on activity as follows: RUN-TIME, SETUP, and then POST-OP.
- The primary resource can be associated to one or more of the RHYTHM activities (SET-UP, RUN-TIME, POST-OP)
 - SET-UP is measured in FIXED TIME (i.e. HR)
 - RUN-TIME is measured in a RATE OF TIME (i.e. GAL/HR)
 - POST-OP is measured in FIXED TIME (i.e. HR)

Auxiliary Resource Rules

The term auxiliary resource is used in RHYTHM. On the Operations form, you need to flag resources as either primary, secondary or auxiliary resources when setting up resource/activity pairs. In OPM, auxiliary resources work along with the primary resources to perform an activity in an operation. They do not affect the rate of the operation. For example a primary resource in a mixing activity might be a mixer which at 100 gals/hour. The auxiliary resource might be a worker who operates the mixer. No matter how fast or slow to worker is the rate of the mixer remains the same.

Below are rules for setting up resources to map to RHYTHM's auxiliary resources.

- A primary resource cannot be used as an auxiliary resource
- RHYTHM will only see the auxiliary resources if you associate them to the same activities listed above and if those activities have a primary resource.
- If you more than 3 auxiliary resources, they are selected alphabetically.
- Resources in OPM map to the auxiliary resources in RHYTHM as follows:

OPM Operation Resource Plan Type Indicator	RHYTHM Resource
Primary	Machine
Secondary	Aux1, Aux2, Operators

Defining Activities and Operations

Before you can define the operations used in a specific process, you must define (on the Operations form) the kinds of activities that are performed within each operation. RHYTHM considers only the following activity codes (defined in upper case) when generating the load capacity graphics.

SET-UP - Consumes Resource

RUN-TIME - Consumes Resource

POST-OP - Does not Consume Resource

SET-UP		
	RUN-TIME	
		*POST-OP

*Does not contribute to the load graph in RHYTHM.

If you associate resource use with an unsupported activity, or an activity that does not consume resources, the resource usages that RHYTHM calculates may fall short of what is actually required. The resource may not effect the plan but you might want to include it in the Operation for Costing.

Note: POST-OP factor represents time that produced material sits after runtime; the post-op factor is not included in the load for a resource.

Defining Processing Operations

Operations link resources (such as "OVENS") with the activities performed at the resources, such as "BAKING". These activities must be defined in advance on the Activities form.

For each operation, you define the number of resources required, the primary resource and the process output of the resource when used in this operation. After you define operations, you may string the appropriate operations together in sequence to create process routings.

Note: Refer to the *Oracle Process Manufacturing Formula Management User's Guide* for details on entering activities and operations.

Note: You must specify RUN-TIME as one of the activities in each operation in order for RHYTHM to reflect capacity loads. Also, RHYTHM is capable of considering (at this time) only one primary resource per operation.

Operations Form Additional Discussions

The section that follows discusses only those fields on the Operations form that are relevant to the RHYTHM interface.

Operation Form - Fields

This section discusses those fields on the Operations form that are relevant to Capacity Planning and the RHYTHM interface.

Throughput Panel

Process Quantity

As far as RHYTHM is concerned, the Process Quantity field on the Operations form is relevant only for RUN-TIME activities. Also, this should be the demonstrated capacity process quantity for the resource (rather than the theoretical quantity).

Process quantities for the other activities are fixed; the process quantity has no impact on resource load calculations. (Typically, these resources would impact cost but not necessarily your production schedule.)

Usage UOM

RHYTHM considers only time (HR) as the resource usage unit of measure. This is set on by the SY\$UOM_HOURS System Profile. Any resource usage measured in anything other than hours will not be included in resource load calculations.

Scheduling Information

Plan Type Indicator

The primary resource is the rate determining resource. We recommend that for each operation in a routing, you flag the RUN-TIME Activity's resource as the primary resource.

To map over to RHYTHM's primary resource (machine) this indicator must be set to Primary. To map over to RHYTHM's auxiliary resources this indicator must be set to Secondary. If you do not want to include this in RHYTHM's schedule, set this indicator to Auxiliary.

Offset

RHYTHM does not consider the Offset field on the Operations form at this time. You would typically use this field to specify the offset from the start of an operation until the start of an activity's resource usage.

RHYTHM always schedules the three supported activities as non-overlapping (the second activity begins after the first one ends, and so on). It recognizes activities as occurring in the following order:

1. SET-UP
2. RUN-TIME
3. POST-OP

Count

Note that RHYTHM does not consider the entry in the Count field. This field is used by Process Operation Control (POC), if you set it to greater than 1.

Scale Types and Process Capacity Planning

The Scale Type field on the Formula's Additional Information form is used with operations for which the resource requirements are scaleable (that is, the resource requirements increase as the quantity of the product you produce increases). The Scale Type field allows you to designate if scaling is done in a continuous, linear fashion, or if it is a fixed scaling function.

RHYTHM does not consider the Scale Type flag when making its capacity calculations. It performs continuous linear scaling on the RUN-TIME activity only. POST-OP and SET-UP activities are always scaled as fixed, regardless of the scale type or the quantity the routing is producing.

Note: If you are using the OPM POC Module with production batches, you should assure that your Post-Op and Set-Up activities have a Fixed Scale Type.

Defining Routings

The routing is a process sequence that ties together the operations used during the manufacturing of a formula. You assign the routing to a formula on the Formula Maintain Effectivities form (illustrated later) to indicate the production path taken in the manufacture of the formula.

Notes: The routing steps are handled in Rhythm in an ascending order; at this time parallel operations are not supported.

See the *Oracle Process Manufacturing Formula Management User's Guide* for more information on routings.

Defining Formulas and Formula Effectivities

Formulas are the "recipes" that you produce by mixing ingredients in a batch. Formula ingredients (as well as the product produced as output) must be defined first as items on the Items form.

Note: See the *Oracle Process Manufacturing Formula Management and the Oracle Process Manufacturing Process Operation Control user's guides* for details on the Formula form and their use in OPM.

Implementation Notes - Formulas

- If you have multiple routes to produce the same formula, you will need to associate these routes as formula effectivity records.
- RHYTHM does not support byproducts or coproducts, therefore items produced by a formula may be over planned since RHYTHM will plan a manufacturing order for both requirements.
- Linear scaling of items will be supported by this interface therefore, items in formulas which are designated as Fixed Scale items will be proportionally scaled in RHYTHM.
- OPM plans for scrap at the detail line of a formula. RHYTHM plans at the inventory item level. Due to the differences in concept, the planning of scrap in RHYTHM will not be supported by this interface.
- The interface will support standard OPM formulas and routings. Changes made during production batches will not be loaded into RHYTHM. Therefore, this interface will not support alternate ingredients and/or alternate resources.

You must also define the criteria by which one formula (or version of it) may be selected over another formula (or version of it) when both produce the same product. You do this by defining an effectivity record on the Maintain Effectivities form for each formula, based on date range or quantity range. You may also assign the routing by which each formula will be produced.

Create a Batch/FPO

When you create a production batch, you specify the formula and route for the product(s) you intend to make. The default routing for the formula (defined on the Formula Effectivities form) displays automatically; you may change the batch, as needed.

Note: For more information on creating batches, refer to the *Oracle Process Manufacturing Production Management User's Guide*.

Implementation Note - Batches/FPOs

All batches/FPOs will be locked by quantity in Factory Planner. The Batches/FPOs can still be re-routed or re-scheduled. Batches/FPOs are locked because if they were not locked, and no demand were found for pegging, the batch/FPO would be automatically canceled by Factory Planner

Purchase Orders

With RHYTHM, purchase orders work as follows:

- The interface first loads the vendor specific leadtimes (selecting the longest lead-time, if multiple warehouses are defined), then creates default vendor records from the values in OPM Warehouse Rules for purchased items which do not have Vendor Item records defined (once again, selecting the longest leadtime).
- Procurement information can be viewed from RHYTHM in the Procurement report. This interface does not load new or modified Purchase Orders back to OPM. It is recommended that the planner continue to user MRP for purchase planning for items which have warehouse specific planning rules, variable lead-times and lead-times longer than the RHYTHM planning horizon.
- All open purchase order items, quantities/UOMs for the organization will be passed to RHYTHM as supply. Loading of Blanket PO release supply will be considered only if the Unreleased BPO indicator on the schedule parameters is set to include BPO schedules.

Note: For more information on creating purchase orders refer to the *Oracle Process Manufacturing Purchasing User's Guide and the Oracle Applications Purchasing User's Guide*.

Defining Alternate Resources

An alternate resource is one that can perform the same operation as the primary resource. Alternate resources are used when the primary resource cannot be used, perhaps due to overload, breakdown or performance issues. They can be used in alternate routings.

On the Alternate Resource form you indicate resources that may be used as alternatives to the primary resource. The setup, run time, and post-op times for the alternate operation resources are then exported to RHYTHM Factory Planner, where they help in balancing the load.

Implementation Note - Alternate Resources

Use of an alternate resource in RHYTHM requires that you manually update when using POC.

Defining Alternate Resources - Procedure

1. Navigate to the **Alternate Resources** form.
2. Complete the fields as described in the *Alternate Resource - Fields* topic.
3. Save the form.

Alternate Resource - Fields

Resource

Specify valid code of primary resource for which you are defining alternates

- Must be a resource already established on Resources form
- Corresponding resource description displays automatically

Alternate Resource Factors

Alternate Resource

Specify code for first resource that will be used as an alternate to primary resource

- Must be a valid resource id already established on Resources form
- Enter additional alternate resources on succeeding lines

Runtime

This is the rate determining time. For alternate resources, run time is a factor of the primary resources runtime. For each alternate resource, specify the factor for run time in comparison with primary resource. This must be a positive (+) numeric factor. Examples:

- If runtime for primary resource is 4 hours, entry of a Runtime Factor of .75 would indicate that alternate resource runtime is 3 hours ($4 \times .75 = 3$)
- If runtime for primary resource is 4 hours, entry of a Runtime Factor of 1.5 would indicate that alternate resource runtime is 6 hours ($4 \times 1.5 = 6$)

Setup

For alternative resources, set-up is a factor of the primary resource's set-up time. For each alternate resource, specify factor for setup time in comparison with primary resource. This must be a positive (+) numeric factor. Examples:

- If primary resource requires 2 hours of setup, entry of a Setup Factor of 2 would indicate that alternate resource requires 4 hours for setup ($2 \times 2 = 4$).
- If setup time for primary resource is 1 hour, entry of a Setup Factor of 1.5 would indicate that alternate resource requires 1.5 hours for setup ($1 \times 1.5 = 1.5$)

Post-Op

For alternative resources, post-op is a factory of the primary resource's set-up time. For each alternate resource, specify factor for post-operation (for example, cleanup) time in comparison with primary resource. This must be a positive (+) factor. Example:

If post-op for primary resource requires 3 hours, entry of a Post-Op of .5 would indicate that alternate resource post-op time is 1.5 hours ($3 \times .5 = 1.5$)

Note: POST-OP factor represents time that produced material sits after runtime; the post-op factor is not included in the load for a resource.

Alternate Resources - Additional Information

You *cannot* delete a resource on the Resources form if it has been specified as an alternate on the Alternate Resource form. A message displays indicating that the deletion cannot be performed.

Creating Demand

Demand in OPM consists of sales orders, forecasts and safety stock.

Creating a Sales Order

RHYTHM will be populated with data from the open order detail lines : customer, item number, sales order number, quantities/UOM and scheduled ship dates (including backorder quantities) from all warehouses supplied by the planner's schedule organization. Sales order will be viewed in RHYTHM with a prefix with a user-defined value.

Note: For more information on creating sales orders refer to the *Oracle Process Manufacturing Order Fulfillment User's Guide*.

Note: If you are including sales orders, the Schedule Parameters must have the Make to Order flag set to Include Sales Orders.

Creating a Forecast

Forecast detail lines will be retrieved for each forecast which has been associated with the planner's Master Production Schedule, where the Make to Stock value is set to Include Sales Forecast. These forecasts will be consumed by the sales orders consistent with MPS/MRP prior to being loaded by RHYTHM. Within RHYTHM, the forecast demand orders will be prefixed with a user-defined value.

Forecast Records and Demand Order Priority

The first step is to find all forecasts that have been associated with the schedule being used. If the schedule has the Make to Order indicator set to Include Sales Orders, the forecast will be required to be consumed by pending Sales Orders. If the indicator is not set, the forecast can be written to the appropriate table as is without consumption by Sales Orders.

The next part is the consumption of the forecast as done in MRP. If the sales order detail falls on or after the date of a forecast detail and is before the next forecast detail for that item/warehouse, then the forecast detail is reduced by the sales order quantity. The Sales Orders may not consume more than the forecast detail line. If the Sales orders consume all or more than a forecast line, nothing will be written to the table and the process should move to the next forecast line.

In the case that more than one forecast line exists for an item, warehouse and date the consumption will occur on the last forecast line. This is decided by the ordering of the forecast lines which is by item, warehouse and quantity(ascending). Using this ordering will place the largest quantity to be consumed by the sales.

Note: For more information on defining Forecasts see the *Oracle Process Manufacturing Forecasting User's Guide*.

Safety Stock

Safety stock is defined in OPM for an item/warehouse. It must be modeled in RHYTHM through the creation of a “safety stock” demand order for a “safety stock” customer – representing the warehouse – with lead time equal to the lead time of the item. Safety stock in RHYTHM will be prefixed with a user-definable parameter. Safety stock information is sent over with the sales order records.

Note: For more information on safety stock, refer to the *Oracle Process Manufacturing Inventory Management* and the *Oracle Process Manufacturing MRP/MPS* user's guides.

Demand Order Prioritization

Rhythm will plan for all demand orders with equal priority. However, a planner may wish to plan for actual sales order demand first, followed by forecast demand and safety stock. This interface will support parameters which allow the user to determine the relative priority of the various types of demand. In addition, using the Demand Order Priority form, specific sales order details can be assigned a priority code (used by RHYTHM for sequencing orders where there is a resource conflict). This code will be loaded by RHYTHM and used by the prioritization algorithm. This algorithm is:

```
(today's julian date + 1 year) - (julian due date) +  
(priority parameter) + (sales order priority in OPM) = RHYTHM  
priority.
```

Defining Demand Order Priorities

RHYTHM Factory Planner scheduling options are able to resolve resource conflicts for demand orders through the use of order priorities. The lower the priority number assigned to an order ("1" being the highest priority), the more priority the order will be given when resource constraints are considered during scheduling.

If a situation exists where a specific warehouse should be given priority for replenishment, you can make the demand order priority criteria specific to a single warehouse. Otherwise, demand order criteria will apply to all warehouses for which you have planning authority.

Demand Order Priority - Fields

The sections that follow describe the fields on the Demand Order Priority form.

Header Panel

Default Schedule

Schedule for which you are performing demand order prioritization displays for reference.

Rows Selected

The number of demand orders selected.

Warehouse

Specify code for the warehouse for which production orders are scheduled; leave the field blank for ALL if there will be no restriction based on warehouse

You can prioritize orders from all warehouses on manufacturing schedule, or restrict prioritization to orders from a single warehouse.

Order by Date

Specify sort position (1,2,3,4) for scheduled ship date for demand orders

Order by Customer

Specify sort position (1,2,3,4) for customers for which demand (sales) orders were generated

Order by Order Number

Specify sort position (1,2,3,4) for demand order numbers.

Order by Priority

Specify sort position (1,2,3,4) for order priority for demand orders

Details Panel

Demand orders for the warehouse(s) you specified are listed based on the sort sequence criteria you specified. For each of the demand orders in the specified warehouse(s), the following information displays:

Line

The line number of the demand order.

Org

This field displays the ID code for the organization.

Order Number

This field displays the order number from the demand order.

Item

This field displays the item ID code from the demand order.

Scheduled to Ship Date

This field displays the scheduled ship date of the item from the Sales Order detail.

Customer

This field displays the ID code of the customer on the demand order.

Priority

Highlight the current record indicator boxes of demand orders you wish to prioritize. For each, enter the appropriate priority code.

Customer Name

This field displays the name of customer from highlighted demand line.

Type

This field displays the sales order type (OPSO) from highlighted line.

Warehouse

This field displays the warehouse code from sales order line detail.

Line

This field displays the sales order line item number from highlighted line.

Establishing Sequence-Dependent Operations

Setup times for a production operation can vary based on the products being produced and the sequence in which product batches are scheduled. For example, the standard SET-UP time for tank cleaning after paint has been mixed may be one hour. However, if in the same machine, you mix darker paints first, then lighter colors, additional time may be required for cleanup before lighter paints can be mixed (for example 3 hours).

Dynamic Scheduling lets you specify operation sequences for items that require additional batch setup time. Using the example above, the planner would probably want to mix white paint first, then black. This would reduce the time the mixing tank is used for this batch. By establishing the order "light" to "dark", you instruct RHYTHM Factory Planner to plan resource load based on the activity sequence within the operation.

You establish sequence-dependent operations by first defining sequence-dependent classifications. You then assign these classification codes to the items that you want to sequence. Finally, you assign the additional setup times required when items are produced in specific operation sequences.

Defining Sequence Dependent Classes

The first step in defining sequence-dependent operations is establishment of sequence-dependent classes. Rather than establish an individual sequence for each item being produced, you establish more general classifications. For example, each paint color of a lighter shade could be included in a classification called "Light". Darker-colored paint products could be in a class called "Dark".

Sequence Dependent Class Form - Fields

Sequence Dependent Class

Specify code identifying sequence classification. Required.

Example: Dark if you are defining a category of paints of darker shade

Description

Enter a description of sequence classification you are defining. Required.

Example: If you are creating a classification for darker-shade paint products, enter Darker Colors

Assigning Sequence Dependent Class to Item Master

After you have defined sequence classification codes, you can assign them to the appropriate product items on the Items form. Enter the code in the Sequence Dependent Class field on the lower right side of the form.

Note: An item must be defined as a *product* in a *formula* before it can have a sequence dependent class associated with it.

Next Steps: After sequence classifications have been assigned to product items, you can define the actual sequence class combinations on the Sequence Dependent Setup form.

Finding Sequence Dependent Classes

There are several options for locating a record and populating a form. The List of Values option displays a dialog box with the appropriate records. The Query Find option displays a separate block called the Find form, where you enter your search criteria.

Finding Sequence Dependent Classes- Procedure

Take the following steps:

1. Choose **Find** from the **Query** menu.
2. Complete one or any combination of fields as described in the *Find Sequence Dependent Classes - Fields* topic.
3. Click **Find**.

Find Sequence Dependent Classes - Fields

Class

Enter the ID code for the sequence dependent class.

Description

Enter the description of the sequence dependent class.

Mark for Deletion

Blank = Do not use marked for deletion filter when finding records.

Yes = Displays a record that is in the database, but is already marked to be purged.

No = Displays a record that are not marked for purge.

Setting Up Sequence Dependencies

At this point you have defined sequence-specific classifications for operations, and assigned the appropriate class codes to the inventory product items to which they apply. Now you must indicate the amount of additional setup time required when products are processed through each operation in a specific sequence. OPM will retrieve all items that are assigned the sequence-dependent classes that you specify on the Sequence-Dependent Setup form.

Sequence Dependent Setup - Fields

The topics that follow discuss the fields in the Sequence Dependent Class form.

Header Panel

Operation

Specify operation (example: "Blending") for which you are defining sequence-specific parameters. Required.

From Class

Specify code for classification of products that will be first during this operation.

Example: If paints are being blended, you might want to blend light shades first, then darker shades; if this is the case, enter sequence classification code for lighter shades of paint.

To Class

Specify code for classification of products that will be processed second during this operation

Example: If paints are being blended, you might want to mix light shades first, then darker shades; if this is the case, enter sequence classification code for darker shades of paint

Setup Time

Indicate amount of setup time that will be added to this operation when items are processed in this sequence (in this case, when light paints are mixed first, then dark paints)

Note: This field defaults to the value in the header, but may be overwritten

Dependent Details Panel

From Item

Displays the first item in the sequence.

To Item

Display the last item in the sequence.

Setup

Enter the time it takes to perform set up for the sequence.

Sequence Dependent Setup - Special Menu

Update Sequence-Dependent Data

Use this option if you have to change the sequence-dependent setup time for one or more item sequence combinations. When the Sequence-Dependent Setup form displays, the cursor displays in the Setup field on the first line. Scroll through to the desired line(s), then change the entry in the Setup field, as necessary.

Rebuild Existing Sequence-Dependent Setup

Use this option to completely rebuild an existing sequence-dependent setup for the specified item and sequence classes. When the Sequence-Dependent Setup form displays, the cursor is in the Setup Time field. Enter a new default setup time.

The items that have been assigned the specified sequence classes display. Override the default setup times with the proper setup times, as necessary.

Finding Sequence Dependent Setups

There are several options for locating a record and populating a form. The List of Values option displays a dialog box with the appropriate records. The Query Find option displays a separate block called the Find form, where you enter your search criteria.

Finding Sequence Dependent Setup- Procedure

Take the following steps:

1. Choose **Find** from the **Query** menu.
2. Complete one or any combination of fields as described in the *Find Sequence Dependent Setup - Fields* topic.
3. Click **Find**.

Find Sequence Dependent Setup - Fields

Class

Enter the ID code for the sequence dependent class.

Description

Enter the description of the sequence dependent class.

Mark for Deletion

Blank = Do not use marked for deletion filter when finding records.

Yes = Displays a record that is in the database, but is already marked to be purged.

No = Displays a record that are not marked for purge.

The RHYTHM Interface

The RHYTHM Interface Introduction

This section discusses the OPM forms used to interface with the RHYTHM software. Discussions about the various forms you use to run Factory Planner, configure data, and export data are provided.

Factory Planner Form Overview

The Factory Planner form is the entry point to interface with (export and import data) and the way in which you access the RHYTHM Factory Planner windows and graphic displays.

Note: Make sure your UNIX Display environment variable is set properly from where you are running OPM. See your System Administrator for information on how to set your Display variable.

The Factory Planner form is the entry point to interface with (export and import data) and the way in which you access the RHYTHM Factory Planner windows and graphic displays.

The initial form is not editable but is used to summarize the status of the exports and the imports. Use the Special menu options to start the RHYTHM Factory Planner server, enter parameters, export the data and display the RHYTHM windows. Once parameters are set and exported, the initial RHYTHM Factory Planner window is displayed.

After you have optimized the resource schedule with the RHYTHM software, you can then use the interface form to import the changes back into OPM.

Exporting Data to RHYTHM

This section describes how to use the form to export data to RHYTHM. Use the interface form to access and interface with the RHYTHM Factory Planner software. The interface form displays the current status of both the *export* and the *import* routines.

Exporting Data to Factory Planner - Procedure

Note: You must have run the installation script for your schedule before you use the interface.

1. Navigate to the interface form. The organization code and schedule code are brought over automatically.
2. If necessary, modify the Organization code in the **Organization** field. Enter the schedule code in the **Schedule** fields. Otherwise **Tab** through these fields.

This populates the rest of the fields on the form in the Data Transfer panel. These fields are not editable.
3. If you need to start the RHYTHM client and/or server, select **Start RHYTHM** from the **Special** menu. Otherwise proceed to step 4.
4. To choose the parameters (data types) you want to export to the RHYTHM server, select **Export Parameters** from the **Special** menu.

This displays the **Export Parameters** form (more details provided later on in this section). At this form, you *check* the static and/or dynamic data you want to send to the RHYTHM server.
5. To *export* the data over to RHYTHM, select **Export** from the **Special** menu. This displays the **Export Data** form.
6. At the **Export Data** form, define the time you want to initiate the export in the Batch Date field. You can define the current time, or anytime in the future.
7. Initiate the export by Saving the form.

Note: If you set the FP_PLAN_RESTART export parameter to 1, the RHYTHM Windows will automatically be populated with the exported data if you are restarting RHYTHM. If this parameter is set to 0, then you must manually refresh the screen to see the data for that schedule.

Factory Planner Form

At the Factory Planner form, you make data selections and initiate actions from the Special menu. Through the Special menu, you can start or stop the RHYTHM server, edit, select, and export parameters (data types), import schedule and production changes to OPM, and perform various utility functions. Note that the details in the body of the form are for display purposes only.

After the initial export of data, the form displays each type of data transfer and its direction; exported (OPM to RHYTHM) or imported (RHYTHM to OPM), the status of each data type, and the last date the respective data was transferred.

Activating the Interface Form - Procedure

At the Interface form, enter the schedule ID number or accept the default and press Tab. This activates the screen so you can use options on the Special menu. Details on these options are provided later on in this section.

Factory Planner Form - Fields

The sections that follow describe the fields on the Factory Planner form.

Header Panel

Organization

This field defaults from your user profile or session parameters. You may edit this field.

Schedule

If it has not defaulted from the session parameters, enter the organization and schedule code. The schedule's description is also displayed. Required.

Note: All fields described below are for display purposes only.

Data Transfer Panel

In this panel the types of data that can be transferred to RHYTHM are listed:

Static Data:

- Formula/Routing
- Item
- Resource
- Resource Calendar
- Calendar
- Sequence Dependent

Dynamic Data:

- Sales/Forecast
- Batch/FPO
- Inventory
- Purchase/BPO

Direction

Displays the direction (export or import) of the data type. When you use this form for the first time, these fields are blank.

Status

OPM updates and displays the status of run (that is, what eventually happened to the run). The following are valid status codes

- **Wait** - The batch job for the run is stuck in a wait status; call your system administrator if this status remains unchanged after an inordinate length of time.
- **Run** - The job is currently running.
- **Stop** - A data problem interrupted the run, check the error messages.
- **Complete** - The batch job for the import was completed successfully

Last Transfer

Displays the date of the last transfer for the data.

RHYTHM Changes

Displays the last direction of the data (export or import), the current status of the import or export: Wait, Run, Completed or Stop,

Server Port Num

The port number of the RHYTHM Factory Planner server. The port number must be between 10,000 and 99,999.

RL Port Num

Port number for RHYTHM Link. The port number must be between 10,000 and 99,999.

Factory Planner Form - Special Menu

Parameters

Displays the Parameters form. At this screen you may edit the default descriptions and the values of the parameters (data types).

Export Parameters

Displays the Export Parameters form. At this form, you *select* which parameters (data types) you want to export over to Factory Planner.

Export

Displays the Export Data form. At this form you *initiate the export* of data to the RHYTHM Factory Planner flat files. If you set the FP_PLAN_RESTART Export Parameter to 1, the RHYTHM windows will automatically be populated with the newly exported data. If this parameter is set to 0, then you must manually refresh the screen.

Import

Displays the Import Data form. Use this form to import the scheduling data changes back into OPM. (See the *Material/Capacity Synchronization* section for more information on this option.)

Unlock Schedule

Unlocks the in use lock on the schedule for RHYTHM use. Schedules are locked for RHYTHM Factory Planner uses only. You need to unlock schedules when the export has not been executed properly or if the server shuts down unexpectedly.

Clear Server Port

Clears the RHYTHM Factory Planner Server port number. If you have an error on start up or if the server shuts down expectedly, you will need to clear the port.

Clear RL Port

Clears RhythmLink Server port number. If you have an error on start up or if the server shuts down unexpectedly, you will need to clear the port.

Starting the Rhythm Server

To start the RHYTHM server, the `rl_oracle` daemon must be running.

Use the sample scripts to start the server and client. To see the client, you must have an X-windows environment.

Editing Parameters

At the Parameters form, you may edit the description and the values of the OPM parameters that are sent to RHYTHM during the Export routine.

Note: Parameters are discussed in more detail in the Appendix .

Parameters Form - Fields

Organization

The ID code of the organization associated with the schedule you are using with RHYTHM.

Schedule

The schedule that you are using with RHYTHM. This defaults from the interface form.

Parameter

This column lists the “parameters” that can be sent over to RHYTHM. Display only. These parameters are discussed in *the Additional Discussions - Export Parameters* topic later on in this section.

Description

Displays a longer description of the parameter. If required, enter a new description in this field.

Value

The value assigned to the parameter. If required, enter a new value into this field.

Selecting Export Parameters - Factory Planner

Version

The 'export parameters' are the data types that OPM sends over to RHYTHM. This dialog box enables you to *select* the data types you want to export from OPM into RHYTHM Factory Planner files. You can access this dialog box from the Special menu on the interface form or the Export Data form.

You can either select or deselect the data types and then accept the choices or cancel and exit the screen. When you first export the data, you may want to select all the data types. Then, when you do subsequent exports you may decide to select only some of the dynamic data types.

Selecting Export Parameters - Procedure

1. Navigate to the **Export Parameters** dialog box.
2. Check each type of data you want to transfer into the RHYTHM flat files. The data you may select is described in the Export Parameters Dialog Box - Fields topic.
3. When you are satisfied with your choices, select **OK**.

Export Parameters Dialog Box - Fields

This section describes the data you may select to export to RHYTHM.

Static Panel

Items data

Select to export Item data (item master, uom conversion, safety stock values)

Formulas/Route

Select to export Formula and Routing information for the selected schedule.

Resources

Select to export Resource information to Factory Planner

Resource Calendar

Select to export the Resource/Shop Calendar of the selected schedule. This will be used to establish the Resource Calendars in RHYTHM and will overwrite changes a user has made to a resource calendar in RHYTHM.

Sequence Dependent Setup

Select to export Sequence Dependent Setup data.

Dynamic Panel

Batches/Firm Planned Order

Select to export batches or firm planned orders for the selected schedule. These may be MRP or manually generated batches and FPOs.

Inventory

Select to export current on-hand inventory.

Sales/Forecast

Select to export Sales and Forecast consumed data for the selected schedule

Purchase/BPO

Select to export Purchase orders and Blanket purchase orders.

Exporting Data

Use this form to export the OPM data into flat files on the RHYTHM server via RhythmLink. This form displays the last time that data was exported for RHYTHM Factory Planner and the status of the last transfer.

Note: The Export Data form enables you to submit a background process to load the data in RHYTHM files.

Exporting Data - Procedure

1. Navigate to the **Export Data** form.
2. If necessary, go to the **Export Parameters** dialog box to select or deselect the data types you want to transfer to Factory Planner. Otherwise, proceed to step 3.
3. If you want to initiate an export immediately, select NOW from the **Queue** list and leave the current date in the **Batch Date** field. Otherwise, select QUEUE and then define the time you want to initiate the export in the **Batch Date** field.
4. Initiate the export by saving the form.

OPM updates the form with the actual start and end dates, the status of the export and the ID of user who initiated the run. If you have restarted RHYTHM and you set the FP_PLAN_RESTART Export Parameter to 1, the initial RHYTHM window will automatically be populated with the exported data. If this parameter is set to 0, then you must manually refresh the screen.

Export Data Form - Fields

Schedule

Displays the default organization and schedule code from the interface form.

Queue

Select NOW to initiate an export immediately. If you intend to schedule the batch job for the import to begin at a later time, select QUEUE and proceed to the Batch Date field.

Batch Date

If selected QUEUE, enter the date and time the batch job will begin. The date and time must both be entered. If you selected NOW, leave the current date and time in the field.

Actual Start

This is the date the export was actually started. OPM automatically updates this field.

Actual End

The date the run was completed displays. OPM automatically updates this field.

Status

OPM updates and displays the status of run (that is, what eventually happened to the run.). The statuses displayed are:

- **Wait** - The batch job for the run is stuck in a wait status; call you system administrator if this status remains unchanged after an inordinate length of time.
- **Run** - The job is currently running.
- **Stop** - A data problem interrupted the run, check the error messages.
- **Completed** - The batch job for the import was completed successfully

Run By

The code for the user who initiated the run.

Export Data Form - Buttons

Remove CRP Data

Highlight the row you want to purge and click Remove CRP Data. The following tables get purged:

rh_expt_mst - the export master

rh_expt_dtl - export details

rh_mesg_tbl - message table

The purge only deletes for the specific export being purged in each table.

Export Data Form - Special Menu

Export Params

Displays the Export Parameters form.

Messages

Displays a list of the error messages that may display during an export batch run (see the Appendix for a list of messages).

Messages Form

After an export or import is completed, you can view messages on the Messages Form. If an export or import does not complete successfully and the status is either Failed or Stop, select this screen to why this occurred.

Note: These messages along with possible resolutions (where applicable) are discussed in the Appendix.

Capacity Planner Form (Infinite Planning Version)

The Capacity Planner form drives the interface. At this form, you make data selections and initiate actions from the Special menu. Through the Special menu, you can start or stop the RHYTHM server, stop the RhythmLink server, edit, select, and export parameters (data types), import schedules and production changes back from RHYTHM to OPM, and perform various utility functions. Note that the details in the body of the Capacity Planner form are for display purposes only.

After the initial export of data, the Capacity Planner form displays each type of data transfer, the status of each data type, and the last date the respective data was transferred.

Capacity Planner Form - Procedure

At the interface form, enter the organization and schedule codes. This activates the screen so you can use options on the Special menu. Details on these options are provided later on in this section.

Capacity Planner Form - Fields

Schedule

Enter the organization and schedule code. The schedule's description is also displayed. These fields default from the session parameters. Required.

Note: All remaining fields are for display purposes only.

Data Transfer

This column displays a list of the data types that can be exported over into RHYTHM Capacity Planner

Direction

Indicates that a parameter (data type) has been exported. When you use this form for the first time, these fields are blank.

Status

OPM updates and displays the status of run (that is, what eventually happened to the run.). The following are valid status codes:

- Wait - The batch job for the run is stuck in a wait status; call your system administrator if this status remains unchanged after an inordinate length of time.
- Run - The job is currently running.
- Stop - A data problem interrupted the run, check the error messages.
- Completed- The batch job for the import was completed successfully

Last Transfer

Displays the date of the last transfer for the data type.

Server Port No.

The port number of the RHYTHM Capacity Planner server. The port number must be between 10,000 and 99,999.

RL Port No.

Port number for RHYTHM Link. The port number must be between 10,000 and 99,999.

Capacity Planner Interface Form - Special Menu

Parameters

Displays the Parameters form. At this screen you may edit the default descriptions and the values of the parameters (data types). Export Parameters are discussed in the Appendix.

Export Parameters

Displays the Export Parameters form. At this form, you select which parameters you want to export over to Capacity Planner.

Export

Displays the Export Data form. At this form you initiate the export of data to the RHYTHM Capacity Planner flat files.

Unlock Schedule

Unlocks the in use lock on the schedule for RHYTHM use. Schedules are locked for RHYTHM Capacity Planner uses only. You need to unlock schedules when the export has not been executed properly or if the server shuts down unexpectedly.

Clear Server Port

Clears the RHYTHM server port number. If you have an error on start up or if the server shuts down expectedly, you will need to clear the port.

Clear RL Port

Clears RhythmLink Server port number. If you have an error on start up or if the server shuts down unexpectedly, you will need to clear the port.

Selecting Export Parameters - Capacity Planner Version

The 'export parameters' are the data types that OPM sends over to Capacity Planner. This dialog box enables you to select the data types you want to export from OPM into RHYTHM Capacity Planner files. You can access this dialog box from the Edit menu on the Capacity Planner form or the Export Data form. The organization and schedule code are populated from these forms.

You can either select or deselect the data types and then accept the choices or cancel and exit the screen. When you first export the data, you may want to select all the data types. Then, when you do subsequent exports you may decide to select only some of the dynamic data types.

Selecting Export Parameters - Procedure

1. Navigate to the Export Parameters dialog box.
2. Check the type of data you want to transfer into the RHYTHM Capacity Planner flat files.
3. When you have made your choices, select OK.

Export Parameters Dialog Box - Fields

The topics that follow describe the fields on the Export Parameters dialog box.

Static Data Panel

Item

Check this box to export Item numbers and unit of measure conversions.

Formula/Route

Check this box to export Formula and Routing information for the selected schedule.

Resources

Check this box to export Resource information to Capacity Planner

Resource Calendar

Check this box to export the Resource/Shop Calendar of the selected schedule. This will be used to establish the Resource Calendars in RHYTHM and will overwrite changes a user has made to a resource calendar in RHYTHM.

Dynamic Data Panel

Batch/FPO/MRP

Select to export Batches, FPOs and MRP Planned Orders.

Finite Planning with Factory Planner

Finite Planning with Factory Planner Introduction

This chapter is intended as a brief overview of the RHYTHM Factory Planner software. It provide you with some examples of RHYTHM windows and graphs. In addition, samples procedures for using the software to perform finite planning, including constraint anchored optimization, are provided.

For more details on how to use the RHYTHM software, refer to the RHYTHM user guides provided with the software.

Finite Planning with Factory Planner Overview

Once RHYTHM Factory Planner has been initiated you will see the Main Window. From this Main Window you can access all of the features of RHYTHM Factory Planner.

This chapter discusses the Main Window that first displays when you initiate RHYTHM Factory Planner. In addition, the Problem Window is discussed.

Note: For more detailed information on RHYTHM Factory Planner, refer to the Documentation CD.

Also included are some basic procedures for balancing the load, constraint optimization and creating a RHYTHM Factory Planner schedule.

Main Window

Note: If you set the FP_PLAN_RESTART Export Parameter to 1, the RHYTHM Windows will automatically be populated with the exported data. If this parameter is set to 0, then you must manually refresh the screen.

The Main Window is the first RHYTHM Factory Planner window that you see. It contains four major sections. The first section is the menu bar. Just below the menu bar is an information area. Below this and to the left is a select location pane; note that locations refer to organizations established in OPM on the Organizations form (System module). To the right of the location list is the select resource pane.

At this window, you can make selections from the menu bar, select locations and list resources, generate a Gnat chart, generate a load graph and view WIP profile.

Main Window Features

Information Area

At the top of the Main Window, just below the menu bar is the information area. This area keeps you updated with the current condition of the server and your data. Right click Update if information is not current.

For example, if there are multiple users on the system as one user makes changes to the plan, the other users will be informed that their information may not be up to date, requiring them to click the update button. displays on the condition of the server and you data. In this example, you can see the message "Displayed information IS current."

Select Location Pane

The Location List pane is used to select a collection of resources from a location (organization) for which you are creating plans. The currently selected location has its resources displayed in the resource pane. Use this area to select locations and display resources as follows:

- To select a location and display its resources: Click the Select Location button. This displays a list of locations (OPM organizations) tied to the schedule you exported.
- To display location resources: Click location name and click List Resources button, or double click location name

Select Resource Pane

Use the Resource List pane to view or modify information about resources. From this pane you can directly access the resource editor or load graph. To create a resource load graph: click the resource to highlight it and then click the Load Graph button or double-click the resource from the Resource List.

Buttons

This section discusses the buttons you can use to load information at the Main Window. On the Main Window, beneath the Select Location and the Select Resource panes, respectively, you can find two buttons:

List Resources

Puts list of resources contained at a particular location (OPM organization) in resource pane to the right (shortcut: double click a location name in the Select Location pane). To display the Resource Editor:

- In the Select Resource pane, click right the mouse with the pointer on top of a resource to be edited.
- When the pop menu displays, click Edit. The resource editor window will display with desired resource already selected.

Load Graph

Displays load graph for currently-selected resource. There are three ways to display a load graph:

1. Click resource, then click Load Graph button
2. Double click resource name
3. Click right button on top of a resource; select Load Graph from pop window that appears

Main Window - Menu Selections

The diagram below shows the options under each pull down menu (except Help) you can select at the Main Window. To view a menu, position the pointer on the menu bar selection you want to see and Click right. The most commonly used options will be discussed in this training guide. For more detailed descriptions of these pull down menus refer to your RHYTHM manuals.

File	Edit	View	Planning	Scheduling	Reports	Utilities
Save	Orders	Resource	Generate Plan	Generate Detail Schedule	Master Schedule	Problem Window
Save As	Resources	Product	Planner Restart	Dispatch	Procurement	Demand Order Finder...
Exit	Parts	Customer	Print Plan		Short Order Analysis	Deliver Date Quota
Shutdown Server	Data Files	Graphical Resources	Save Plan		Due Date Cycle Times	Resource Calendar
		Graphical Locations	Restore Plan		Material Allocations	Sizes Summary
			CAO		Wipe Deconsolidation	
			Automated Batching		Cumulative Capacity	

Main Window's Menu Bar Selections

Note that 'parts' in RHYTHM refers to 'items' in OPM.

Problem Window

The Problem Window is one of the more important windows in the Oracle OPM capacity planning solution. This window displays problems with the plan in the following ways: Capacity Shortages, Late Orders, Short Orders, Parts with Late Reservations, Parts that Constrain Orders. Each of these problem categories can be selectively displayed or not displayed. To display the problem window:

1. Click the Utilities menu on the Main Window menu bar
2. Click Problem Window in the Utilities menu

The initial problem window consists of features discussed in the next sections.

Problem Window - Features

Buttons

- Close - Removes problem window from screen
- Update All - Updates each of the problem categories
 - This becomes necessary after changing an order quantity or due date in Order Editor (especially when multiple schedulers are working on a schedule at same time)
- Sizes Summary - provides a listing of sizes of various data files.

Toggle Buttons

- Five toggle buttons are used to turn on or off the display of any combination of various problem types
- Each problem type contains two parts
- Problem list - To print current list of problems, click Print button
- Tolerance level - To change tolerance level, enter a new tolerance and click Update button

Display Capacity Shortages Toggle

The first toggle button selectively turns on or off the list of capacity shortages. The problem window will be similar to the following when only the capacity shortages are listed. Each overutilized or underutilized resource is displayed, followed by when the peak load occurs and utilization during the peak load time.

Overutilized (in this context) means a resource is used more than 100% (plus or minus tolerance) during any time bucket.

- To get more information on why a resource is overutilized, click on resource to bring up its load graph
- Tolerance defined for capacity shortages is percent overutilized; by default this value is 10%, meaning only resources more than 10% overutilized will display
- Entering a larger number will display fewer resources; entering a negative number will cause resources under 100% overutilized to display
- Example: Enter -50; all resources that are at least 50% utilized during any of their buckets will display

Display Late Orders Toggle

The second toggle button selectively turns on or off the list of late orders. The problem window will be similar to the following when only the late orders are listed:

- For each late order, order ID, order due date, and days late display
- A late order is one that is not available until after its due date
- Orders can be late due to lack of material availability, cycle time, or resource overutilization.
 - For more information on why orders are late, either click on an order to bring up its assembly or order plan, or view the Late Orders Reasons Report.
- Tolerance defined for late orders is days late
 - By default this value is 7, meaning only orders seven or more days late will display
 - Setting this value to 0 will display all late orders

Finite Capacity Planning Procedures

Finite capacity planning with RHYTHM Factory Planner is designed to offer batch planning within a short time horizon. For example, finite capacity planning may use a time horizon of several weeks. Other features of finite capacity planning include:

- Sensitivity to the current shop date
- Gantt chart and list-based user interface, which allows you to interactively examine the current sequence of jobs in front of each resource
- Ensures that committed material is onhand before sequencing the orders

Finite capacity planning considers factors which may place constraints on capacity. Material availability and capacity constraint details (such as batching, sequence-dependent setups, transport time, and domain-specific constraints) are taken into account, unlike with infinite capacity planning.

Driven By Demand Orders

Finite capacity planning is driven by demand orders. If no demand is associated with the manufacturing order, finite capacity planning will not consider the manufacturing order for schedule planning. To compensate for this automatic cancellation of batches/FPOs - all OPM production orders will have their quantity locked. RHYTHM will not cancel locked orders. You can view a list of production orders that do not have demand associated with them in OPM. This view is accessed from Object>P/CRP>Factory Planner>Edit>Import>Edit>Demand View.

In the case of "what if?", the demand orders (sales orders) drive scheduling; the end-level product is exploded to indicate batch production requirements. Finite capacity planning then suggests creation of batches to satisfy these exploded demands. In this way the association between suggested batch production and the original order demand is inherent.

Balance the Load - Procedure

1. Select Resources from the Main Window Editor menu
This displays the Resources Editor window.
2. At the Resources Editor window menu bar, click Planning and select Balance from the Planning menu. This balances the resource load.
3. Close the Resource Editor window by selecting Close from the File menu
4. To view the balanced resource, double click a resource on the Main Window.

Constraint Anchored Optimization

Schedules are planned dynamically using a RHYTHM Factory Planner feature called Constraint Anchored Optimization (CAO), based on rules established by the planner. You can set the CAO feature to consider one or more of the following rules:

- Pull Push - Define whether an operation is moved to earlier time buckets (pull) or later time buckets (push). The type of push-pull balancing to be used at a particular resource during CAO are listed below.
 - Due Date Priority. This is the first criteria. When two or more tasks with the same due date can be moved, the task with the higher priority is considered first for pulling.
 - Due Date. Tasks with earlier due dates are pulled first. Tasks with later due dates are pushed next.
 - Setup. Tasks will be pulled or pushed based on their setup types. Tasks with similar setup types will be pulled first. Next, tasks with different setup types will be pushed forward.
- JIT (Just in Time) - Produce product in time to meet due date
- Optimistic - Load balancing considers earliest possible lead time
- Minimize WIP - Minimization of WIP materials during production
- Maximum Utilization, Minimum WIP - Resource use is maximized, while attempt is made to keep WIP at a minimum

RHYTHM Factory Planner then suggests a manufacturing schedule is free of capacity and material availability constraints.

RHYTHM Factory Planner uses demand order or manufacturing order information to calculate the load at individual resources associated with the designated routing. Ingredient constraints are then reviewed before the production plan is generated.

If a resource capacity constraint exists, an alternate (if available) resource is suggested. Production load is then distributed between the primary and

alternate resources to the degree that the capacity constraint is removed. You can use the CAO to distribute the load automatically, or it can be done manually.

CAO - Procedure

1. Open the Problem Window and view the Capacity Shortages.
2. Click on each resource listed to open up their Load Graphs
3. Using the scroll bar at the bottom of each Load Graph, display the bucket where the peak load occurs for each resource
4. Select CAO from the Main Window Planning menu. This displays the CAO Window.
5. Select Parameters from the CAO menu in the CAO window. The CAO Parameters window appears. The settings for these parameters are important. They determine the objective function used to optimize the plan and the speed with which CAO converges to a solution.
6. Make any necessary changes. In the Startup Parameters pane, click the toggle buttons on or off. You can change the Convergence Speed. Max Balancing Horizon and the Look Ahead by moving the scroll bars. You can toggle the units of the Time Horizon by clicking the toggle buttons.
7. To apply the changes click the Apply button and then the OK button. To cancel your changes, click the Cancel button.
8. Select Run from the CAO menu. This executes CAO. CAO performs push-pull load balancing on the resources which were listed as anchors to generate a finite capacity plan. After CAO runs, RHYTHM updates the open Load Graph windows.
9. Click on the Update button on the Main Window. This allows you to see the effects of CAO. The Load Graph windows which are open should change to reflect the new balanced plan.

Scheduling

RHYTHM Factory Planner scheduling considers dependent setup times, batching constraints, move times, domain specify priority and sequencing rules. It sequences individual tasks within the buckets determined to produce a detailed schedule. With it the planner can make on-line changes to the shop-floor schedule. It is designed for a short time horizon. The detailed schedule can be generated automatically for all resources or interactively for individual resources.

Displaying the Interactive Scheduler Window - Procedure

1. Highlight a resource in the Main Window and hold the right mouse button on the resource. This displays a pop-up menu.
2. Drag the pointer to the Interactive Scheduling option.
3. This window may also be accessed from the Resources Editor window's Resource menu.

At this window you can:

- Customize the Layout
- Change Sequencing
- Perform Scheduling

Automatic Scheduling

To automatically schedule resources, select the Generate Detail Schedule option from the Scheduling menu on the Main Window. The generate Schedule dialog window appears.

Gantt Chart

Gantt charts for resources are blank until the detailed schedule has been generated.

1. Select the location (OPM organization) in the Main Window.
2. Click the Gantt Chart button
3. The Gantt Chart for all resources at that location will appear.

Material/Capacity Synchronization

Material/Capacity Synchronization

This section describes how to use the OPM software to synchronize the OPM data with the suggestions brought over from RHYTHM Factory Planner. The forms which allow you to reroute batches, reschedule batches, and convert imported batches into OPM production batches or FPOs are described.

Material/Capacity Synchronization Overview

Both short term material and capacity constraints are resolved simultaneously within RHYTHM using the OPM interface and planning horizon as boundaries. This is handled within RHYTHM using pull-push rules. Pull-push rules define the priority of jobs to either be pulled to start earlier or pushed to start later in order to balance the workload. Refer to the i2 manuals for an explanation of their push pull criteria.

However, in solving the problems of capacity constraint, RHYTHM Factory Planner may have to suggest changes to the production schedule. These changes include rescheduling and rerouting of production batches and/or firm-planned orders or the creation of new manufacturing orders in RHYTHM Factory Planner. These changes must be imported *back* to OPM. This way you can choose to run MRP so it may consider the new material requirements in respect to the capacity schedule.

Capacity Schedule Changes

The changes that RHYTHM Factory Planner makes to scheduled production are to solve capacity constraints. If RHYTHM Factory Planner has produced changes in the production schedule, they may have an impact on the new production schedule's material requirements. The changes produced by the RHYTHM Factory Planner capacity schedule must be imported back to OPM in order for capacity scheduling and material planning to be synchronized.

Importing Capacity Schedule Deltas to OPM

You must import the capacity schedule changes (for example, rerouting or rescheduling of batches) back to OPM, then run MRP again. MRP uses the new capacity information from RHYTHM Factory Planner to develop a new material plan.

Note: RHYTHM provides a procurement report for short term plans. You will still want to use MRP for items with longer lead times.

"Fine-Tuning" the Schedules

If your update to OPM batches/FPOs results in selection of a different effectivity, you must then export this new material plan back to RHYTHM Factory Planner for further capacity optimization. Repeat the import processes between RHYTHM Factory Planner and OPM until the schedule reflects the desired capacity parameters. Any modification in one application (OPM or RHYTHM Factory Planner) must be reflected in the other system using the appropriate import and update processes. The procedures for importing RHYTHM Factory Planner capacity deltas back to OPM are outlined in the following discussions.

The Means of "Fine Tuning"

The production schedule changes brought on by import of the RHYTHM Factory Planner capacity schedule information produces deltas that affect the most recent MRP run. The information that can change as a result of the capacity schedule are listed:

- Demand Order Data (sales orders, forecasts)
- Pegging Data
- Manufacturing Order Data
- Resource Calendars

RHYTHM Factory Planner refers to the scheduled ship dates on demand orders to determine if and when the production schedule must be altered to allow the order to be shipped on time. The finite capacity schedule is therefore driven by the scheduled ship dates of demand orders.

By modifying the scheduled manufacturing orders, you can accommodate the schedule changes RHYTHM Factory Planner has made to resolve capacity constraints. Modifications include rescheduling and rerouting of production batches and/or firm-planned orders (FPOs).

Importing RHYTHM Factory Planner Schedule Importing Changes to OPM (Factory Planner Version)

The first step in updating the RHYTHM Factory Planner scheduling suggestions into OPM is the import of the deltas to the interface tables. You must later update the RHYTHM Factory Planner deltas (selectively or in total) to the appropriate OPM database table(s) using a series of Update forms.

Import Data Form

This form enables you to submit a background process to load the RHYTHM Factory Planner data into the OPM database. Depending on your needs, you can initiate the background process now, or define a later date and time. In either case, OPM returns control of your terminal immediately after scheduling the run.

You can determine the last time that data was imported from RHYTHM Factory Planner and the status of the last transfer. With this form, you define the type of transfer, "now" or at a scheduled date/time in the Batch Date field and then initiate the import by saving. Upon refreshing the form, OPM updates it with the Actual Start and End dates, status and operator who initiated the run. You can initiate a purge routine to clean-up previous export data based on the line you have highlighted by clicking Remove CRP Data

Importing Changes to OPM - Procedure

To import changes from RHYTHM to OPM, proceed as follows.

1. Navigate to the **Factory Planner** interface form.
2. Select **Import** from the **Special** menu.
3. Complete the fields as described in the *Import Data Form - Fields* topic.
4. You are returned to the **Factory Planner** form after the import of RHYTHM Factory Planner data has been completed.

Import Data Form - Fields

Organization

Displays the ID code of the organization against which you are importing RHYTHM records.

Schedule

Displays the schedule parameters ID code.

Queue

Select the Batch Queue Control command: NOW or QUEUE.

Batch Date

If you selected Queue, enter the date and time the batch job will begin. The date and time must both be entered.

Actual Start

This is the date the import was actually started. OPM automatically updates this field.

Actual End

The date the run was completed displays. OPM automatically updates this field.

Status

OPM updates and displays the status of run (that is, what eventually happened to the run.). The statuses displayed are as follows:

- **Wait**- The batch job for the run is stuck in a wait status; call you system administrator if this status remains unchanged after an inordinate length of time.
- **Run** - The job is currently running.
- **Stop** - A data problem interrupted the run, check the error messages.
- **Completed** - The batch job for the import was completed successfully

Run By

The code for the operator who initiated the run.

Import Data Form - Special Menu

Cancelled Batches

Select this option to view the batches that RHYTHM Factory Planner suggests be canceled.

Demand View

Select this option to view an online report of RHYTHM Factory Planner demand data.

Messages

Select this option to view any Import error messages. (See the Appendix for a list of error messages.)

Import Data Form - Buttons

Remove CRP Data

Highlight the indicator of the row (import) you want to purge. When the purge is run from the Export screen the following get purged:

rh_expt_mst - the export master

rh_expt_dtl - export details

rh_mesg_tbl - message table

The purge only deletes for the specific export being purged in each table.

Viewing Canceled Batches (Factory Planner Version)

After you complete an import you can view a list of batches and FPOs which Factory Planner suggests that you cancel to optimize your resource usage. This form is for viewing purposes only. You can cancel batches via the Production Module Batches form. Alternately, you can reschedule the batch via the Reschedule form

Canceled Batches Form - Fields

Default Schedule

The id of the schedule you are using with Factory Planner.

Import Id

The id of the import for which you want to view canceled batches. .

Date

Date of the selected import.

Rows Selected

The number of rows fetched.

Seq

The row number of the fetched rows.

Org

The organization associated with the batch.

Batch No.

The batch id number and it's description

Start Date

Start date of the batch

End Date

End date of the listed batch.

Item

The item that the batch is producing.

Plan Qty

The batches planned quantity.

Routing

The routing number for the specified item.

Vers

The routing version number.

Viewing Changes to Sales Orders/Demand View

This form enables you to see the Sales Order changes against the specified schedule. The form displays RHYTHM's suggested modifications. All fields are display only.

Implementation Note - Demand View

Forecast changes are not displayed. Since the Forecast information in Factory Planner represents a OPM consumed forecast, the information cannot be directly correlated.

Demand View Form - Fields

Schedule

The id of the schedule used for planning resource capacity.

Orgn

The organization id associated with the schedule.

Order No

The OPM sales order number.

Line

The line number of the specified order.

Item

The item that needs to be produced to fulfill the demand.

New Qty

The quantity suggested by factory planner

Old Qty

The original quantity entered into OPM

UOM

The unit of measure of the item.

Scheduled To Ship

The factory planner scheduled ship date

Old Scheduled Ship

The original OPM ship date

Customer

The customer id number

Planning Class

The planning class id.

Updating RHYTHM Data to OPM (Factory Planner Version)

RHYTHM Factory Planner calculates the planned start and end times of manufacturing orders (FPOs and/or scheduled batches) based on resource usage and capacity. As a result of finite resource planning and capacity optimization, RHYTHM Factory Planner may suggest that manufacturing orders be rescheduled or rerouted to resolve capacity constraints. The capacity-resolved start and end times for the manufacturing orders (imported back to OPM) allow OPM MRP (if desired) to generate an appropriate material plan.

Two Update forms allow you to restrict the update of RHYTHM Factory Planner information to OPM based on the parameters that you specify. You can restrict the update of RHYTHM Factory Planner deltas to specific areas of your corporate hierarchy (for example, one specific organization).

Rescheduling Batches and FPOs (Factory Planner Only)

RHYTHM Factory Planner may suggest that manufacturing orders be rescheduled to resolve capacity constraints. The capacity-resolved start and end times for the manufacturing orders (imported back to OPM) allow OPM MRP to generate an appropriate material plan.

You have the option of updating batch rescheduling deltas or FPO rescheduling deltas into OPM, or updating both sets of deltas.

Rescheduling Batches/FPOs - Procedure

To reschedule batches and/or FPOs, proceed as follows:

1. Navigate to the **Reschedule Update** form.
2. Check **Firm Planned Order** and/or **Batch**.
3. Click the **Select** check box next to the Batches/FPOs that you want to reschedule.
4. Save the form. A message box displays telling you the batch or FPO number. When you click **OK**, the number is displayed in the **Batch** field.

Reschedule Update Form - Fields

The sections that follow describe the fields on the Reschedule form.

Header Panel

Firm Planned Order

Check this box to select to reschedule FPOs according to the RHYTHM suggestions.

Batch

Check this box to select to reschedule batches according to the RHYTHM suggestions.

Detail Schedule

The ID code of the schedule used for the capacity planning export and import.

Import ID

The ID number of the last import from RHYTHM.

Date

The date of the last import from RHYTHM.

Update Details Panel

Select

Check this box to select to reschedule the batch or FPO on this line.

Note: The remainder of these fields are for display only.

Line

This field displays the sequential number of the batch/FPO rescheduling suggestions.

Organization

This field displays the ID code of the organization/plant for which you are rescheduling batches/FPOs.

Type

This field displays the document type: PROD or FPO.

Batch

This field displays the Batch FPO number to be updated.

Old PST

This field displays the original planned start time in OPM.

New PST

This field displays the suggested new planned start time.

Planned Quantity

This field displays the planned quantity as set up in OPM.

End

This field displays the planned end date of the batch or FPO as set up in OPM.

Item

This field displays the item ID code of the product produced by the batch/FPO.

Routing

These fields displays the batch routing ID code and version number.

Rerouting Batches and FPOs (Factory Planner Only)

RHYTHM Factory Planner may indicate that an alternate routing be used to resolve capacity constraints. You must import these alternate routings to OPM to reflect the load on the resources that will now be used for the manufacturing order.

You have the option of updating batch rerouting deltas or FPO rerouting deltas into OPM, or updating both sets of deltas.

Rerouting Batches and FPOs- Procedure

To reroute batches and/or FPOs, proceed as follows:

1. Navigate to the **Reroute Update** form.
2. Check **Firm Planned Order** and/or **Batch**.
3. Click the **Select** check box next to the Batches/FPOs that you want to reroute.
4. Save the form. A message box displays telling you the batch or FPO number and the number is displayed in the **Batch** field.

Reroute Update Form - Fields

The sections that follow describe the fields on the Reroute Update form.

Header Panel

Firm Planned Order

Check this box to select to reroute FPOs according to the RHYTHM suggestions.

Batch

Check this box to select to reroute batches according to the RHYTHM suggestions.

Detail Schedule

The ID code of the schedule used for the capacity planning export and import.

Import ID

The ID number of the last import from RHYTHM.

Date

The date of the last import from RHYTHM.

Update Details Panel

Select

Check this box to select to reroute the batch or FPO on this line.

Note: The remainder of these fields are for display only.

Line

This field displays the sequential number of the batch/FPO rerouting suggestions.

Organization

This field displays the ID code of the organization/plant for which you are rerouting batches/FPOs.

Type

This field displays the document type: PROD or FPO.

Batch

This field displays the Batch FPO number to be updated.

Old Routing

This field displays the original routing ID code in OPM.

Version

This field displays the old routing version number.

New routing

This field displays the suggested new routing.

Version

This field displays the new routing version.

Planned Start

This field displays the planned start date as set up in OPM.

End

This field displays the planned end date of the batch or FPO as set up in OPM.

Item

This field displays the item ID code of the product produced by the batch/FPO.

Planned Qty

These fields displays the planned quantity of the batch or FPO.

Converting RHYTHM Batches

You can choose to convert suggested manufacturing orders from RHYTHM Factory Planner and create new OPM Production Batches or FPOs. To do this you need to navigate to the Imported Batches form.

The Imported Batches form allows you to convert suggested manufacturing orders from RHYTHM Factory Planner and create new OPM Production Batches or FPOs.

You select the RHYTHM Factory Planner manufacturing orders you want to convert. Then you choose to convert the orders to a Production Batch or FPO.

Converting Imported Batches - Procedure

1. If necessary, at the **Imported Batches** form, enter the ID code of the schedule you are using with RHYTHM Factory Planner.
2. From the **Approve As** list choose either **Firm Planned Order** or **Batch**.
3. Check the **Select** box of the order that you want to convert.
4. From the Special menu, choose **Convert Orders**.

OPM uses the RHYTHM Factory Planner data associated with the suggested orders along with formula, routing, quantity date and effectivity to create the Batch/FPO for each selected order. A new batch/FPO number will be assigned and you will be prompted to record it.

Once the conversion process completes, the unselected suggestions will be re-displayed.

Note: If the effectivity used by RHYTHM is no longer valid, the Select Effectivity Dialog Box will be displayed. You should select a valid effectivity and, if necessary, verify the Factory Availability in Rhythm through another export.

Imported Batches Form - Fields

The sections that follow describe the fields on the Imported Batches form.

Header Panel

Organization

Accept the default or enter an ID code for a valid organization. You may enter another organization which is associated to your user ID code.

Schedule

Accept the default or enter schedule code used for RHYTHM Factory Planner scheduling. The description of the schedule you entered displays. Press **Tab** twice. This populates the fields on the form.

Rows Displayed

The number of rows that are displayed on this form.

Approve As

Select to approve as a Firmed Planned Order or Batch

Import Details Area**ID**

Displays the ID code of the last import.

Date

Displays the date of the import.

Order Details Panel**Select**

Check this box to select this order for conversion.

Plant

Displays the plant code of the plant associated with the schedule.

Batch/FPO

When you type X in the select field, and tab through, this field display the word NEW or if you are using manual document numbering enter the Batch/FPO number.

Product

Displays the name of the item/product of the currently highlighted suggested manufacturing order.

Start Date

Displays the RHYTHM Factory Planner suggested start date of currently highlighted suggested manufacturing order.

Description

Displays the product description of the currently highlighted suggested manufacturing order.

Planned Qty

Displays the planned quantity of the currently highlighted suggested manufacturing order.

End Date

The ending date of the highlighted suggested manufacturing order.

Order Number

Displays the RHYTHM Factory Planner order number of the currently highlighted suggested manufacturing order.

Formula

Displays the formula code and version of the item that the highlighted suggested manufacturing order will produce.

Routing

Displays the routing code and version associated with items formula.

Imported Batches Form - Button

Convert

Click this button to convert the selected orders.

Imported Batches Form - Special Menu

Convert Orders

Choose this option to convert the selected order to FPOs or Batches.

Clear All

Choose this option to clear all the Select checkboxes.

Select All

Choose this option to select all the Select checkboxes.

Appendix

OPM Capacity Planning with RHYTHM Factory Planner Navigator Paths

Although your system administrator may have customized your navigator, typical navigation paths are described in the following tables. In some cases, there is more than one way to navigate to a form. These tables provide the most typical default path.

Form	Path
Alternate Resources	OPM Process Planning > Capacity Planning > Setup > Alternate Resources
Canceled Batches	OPM Process Planning > Capacity Planning > Rhythm Interface > Special > Import > Canceled Batch
Demand View	OPM Process Planning > Capacity Planning > Rhythm Interface > Special > Import > Special > Demand View
Export Data	OPM Process Planning > Capacity Planning > Rhythm Interface > Special > Export
Export Parameters	OPM Process Planning > Capacity Planning > Rhythm Interface > Special > Export Parameters
Factory Planner	OPM Process Planning > Capacity Planning > Rhythm Interface
Import Data	OPM Process Planning > Capacity Planning > Rhythm Interface > Special > Import
Imported Batches	OPM Process Planning > Capacity Planning > Production Updates > Imported Batches
Messages	OPM Process Planning > Capacity Planning > Rhythm Interface > Special > Export or Import > Special > Messages
Parameters	OPM Process Planning > Capacity

	Planning > Rhythm Interface > Special > Parameters
Reroute Update	OPM Process Planning > Capacity Planning > Production Updates > Reroute
Reschedule Update	OPM Process Planning > Capacity Planning > Production Updates > Reschedule
Resource Classes	OPM Process Planning > Capacity Planning > Setup > Resource Classes
Resource Information	OPM Process Planning > Capacity Planning > Setup > Plant-Resources
Resources	OPM Process Planning > Capacity Planning > Setup > Resources
Sequence Dependent Classes	OPM Process Planning > Capacity Planning > Setup > Seq Dependent Classes
Sequence Dependent Setup	OPM Process Planning > Capacity Planning > Setup > Seq Dependent

Capacity Planning with RHYTHM Factory Planner

Profile Values

During your implementation, you or your system administrator set values for selected profile options to specify how your Capacity Planning with RHYTHM Factory Planner application controls access to and processes data. The profile options related to Capacity Planning with RHYTHM Factory Planner are listed below.

- CR\$EXPORT_HOME
- CR\$\$SWB_MATRIX_NAME
- CR\$RHYTHM_PACKAGE
- CR\$ROUT_ERRLOG
- CR\$\$SCHE_ERRLOG
- SY\$UOM_HOURS

You might set up these profile options when you set up other applications prior to your Capacity Planning with RHYTHM Factory Planner implementation. Refer to the other product user's guides for more details on how other products use these profile options.

Your system administrator sets user profile options at one or more of the following levels: Site Application, Responsibility, and User. Use the Personal Profile Options window or view or set your profile options at the user level. You can consult *the Oracle Process Manufacturing Implementation Guide* for a complete description of the profile options listed below. Consult your *Oracle Applications System Administrator's Guide* for a list of profile options common to all Oracle Applications.

User Parameters

These are the parameters that you see on the Parameters form. The following parameters are written to during the install of the schedule and should NOT have their default values changed:

CRP_MRP

FP_HOST

RHYTHM_BIN

USER PARAMETERS		
Parameter	Description	Default Values
DELIMITER	delimiter for separation	/
BATCH_PREFIX	Batch prefix for batches	PROD (The value used to uniquely define the manufacturing order number as a Production batch from OPM. It is positioned as the first set of characters before the first delimiter in the FP manufacturing order number)
FORECAST_PREFIX	Forecast prefix for order no	FCST (The value used to uniquely define the demand order number as a Forecast from OPM. It is positioned as the first set of characters before the first delimiter in the Factory Planner demand order number)
FPO_PREFIX	FPO prefix for order no	FPO (The value used to uniquely define the manufacturing order number as an FPO from OPM. It is positioned as the first set of characters before the first delimiter in the Factory Planner manufacturing order number)
PURCHASE_PREFIX	Purchasing prefix for order no	FCST (The value used to uniquely define the demand order number as a Forecast from OPM. It is positioned as the first set of characters before the first delimiter in the FP demand order number)

User Parameters (continued)

BPO_PREFIX	BPO prefix for order no	PBPO (The value used to uniquely define the unassigned inventory order number as a Blanket Purchase Order from OPM. It is positioned as the first set of characters before the first delimiter in the Factory Planner unassigned inventory order number)
DEFAULT_VENDOR	default vendor name	DEFAULT VENDOR (The value used for the default vendor when there has been no vendor associated with and item for supply)
PO_EXPORT	Purchase order export run flag row	0 (This indicates if the data from OPM purchase orders should be exported to FP 1 = export,, 0 = do not export)
ITEM_EXPORT	Items export run flag row	0 (This indicates if the item data from OPM should be exported to FP, these include items, UOM conversions, vendor items and safety stock. 1 = export, 0 = do not export)
BOM_EXPORT	Bill of Material export run flag row	0 (This indicates if the formula effectivity data from OPM should be exported to FP, these include formulas, and routings. 1 = export, 0 = do not export)
RSRC_EXPORT	Resource export run flag row	0 (This indicates if the resource data from OPM should be exported to FP. 1 = export, 0 = do not export)
RSRCCAL_EXPORT	Resource Calendar export run flag row	0 (This indicates if the reroute plant calendar data from OPM should be exported to FACTORY PLANNER. 1 = export, 0 = do not export)
SQDPND_EXPORT	Sequence Dependent export run flag row	0 (This indicates if the sequence dependent setup data from OPM should be exported to FACTORY PLANNER. 1 = export, 0 = do not export)

User Parameters (continued)

PROD_EXPORT	Production export run flag row	0 (This indicates if the Production data from OPM should be exported to Factory Planner. This includes all pending and WIP batches, FPOs, and MRP actions (Capacity Planner only). 1 = export, 0 = do not export)
OPSO_EXPORT	Sales, forecast and safety stock export run flag row	0 (This indicates if the sales, forecast and safety stock data from OPM should be exported to Factory Planner, these include sales orders, forecast(consumed) and safety stock. 1 = export, 0 = do not export)
FCST_PRIORITY	Forecast priority level	0 (The priority assigned to forecasted demand for preference by factory planner to break ties when re-supplying demand)
PPRD_PRIORITY	MRP Planned Production Demand priority level	0 (The priority assigned to MRP planned orders for preference by factory planner to break ties when re-supplying demand)
INV_EXPORT	Onhand Inventory export run flag row	0 (This indicates if the onhand inventory data from OPM should be exported to Factory Planner. 1 = export, 0 = do not export)
SS_PRIORITY	Demand priority level for Safety Stock	0 (The priority assigned to safety stock for preference by factory planner to break ties when re-supplying demand)
OPSO_PRIORITY	Demand priority level for Sales Orders	50 (The priority assigned to sales orders for preference by factory planner to break ties when re-supplying demand)
FP_PLAN_RESTART	Run FP Restart request after Exporting data if FP Server is up	1 (Indicates whether a planner restart for all of the Factory Planner clients using this schedule should be executed, 1 = yes, 0 = no)
FP_SAVE_PLAN	Run FP Save Plan request before Importing data if FP Server is up	1 (Indicates whether a save plan for all of the Factory Planner clients using this schedule should be executed, 1 = yes, 0 = no)

User Parameters (continued)

DEBUG_MODE	Write debugging messages	0 (allows for debugging messages to be written, 1 = yes, 0 = no)
LOAD_TIMEOUT	RhythmLink timeout in Seconds	1200 (the number of seconds the export or import routines should wait for commands to return form RhythmLink software)
FP_HOST	Host Machine where Rhythm Factory Planner software is running	''
RL_HOST	Host Machine where RhythmLink software is running	''
RHYTHM_BIN	Rhythm binary and executable files area	'' (directory where the executables reside)
PPRD_PRIORITY	Demand order priority for MRP ACTIONS	
SALES_PREFIX	sales prefix for order no	OPSO (The value used to uniquely define the order number as a Sales Order from OPM. It is positioned as the first set of characters before the first delimiter in the Factory Planner order number)
SS_PREFIX	Safety stock prefix	SS (The value used to uniquely define the order number as a Safety Stock from OPM. It is positioned as the first set of characters before the first delimiter in the FP order number)

System Parameters

These parameters do not appear on the Parameters form. They can be set by your System Administrator.

SYSTEM PARAMETERS		
Parameter	Description	Values
ORGN_CODE	organization for the users schedule	''
IN_USE	In use locking for the schedule	
DATA_IMPORT	Data import run flag row	
START_DATE	Date for the start in factory planner	01-JAN-1970 00:00:00
END_DATE	Date for the horizon in factory planner	01-JAN-1970 00:00:00
FP_PORT_NUM	Port number of the Factory Planner server	0
RL_PORT_NUM	Port number of the RhythmLink server	0
RL_USER	RhythmLink User. Must exist in the user.dat file.	rl
FP_PORT_NUM	Port number of the Factory Planner server	0
FP_EXEC_DIR	Factory Planner Execution Directory	''
FP_DATA_DIR	Factory Planner Data Directory	''
RL_EXEC_DIR	RhythmLink Execution Directory	''
RL_DATA_DIR	RhythmLink Data Directory	''
SCHEMA_NAME	Database Schema Name	''
SCHEMA_PASSWORD	Database Schema Password	''
FP_VERSION	Factory Planner Version Number	2.9J
STDATE_EXPORT	Plan Start Date export run flag row	1
RHYTHM_PACKAGE	RYHTHM Package being used SWB or CRP	''
BC_DELIMITER	Delimiter character used for FP batch client concatenation commands	%
BC_TIMEOUT	FP Time out in Seconds.	FP Time out in Seconds.

RhythmLink

Oracle OPM RHYTHM Factory Planner utilizes the RhythmLink product, a scaleable tool platform which is database flexible. The RhythmLink product reads the tables and views from the database, and then formats them correctly creating the flat files RHYTHM Factory Planner requires to run. When the data is returned to the Oracle OPM database, RhythmLink will also take the flat file output and import it into the Oracle OPM database.

Note: RhythmLink is supported by i2 Technologies.

Oracle OPM/RHYTHM Synonyms

Some of the terms in OPM have synonyms in RHYTHM. Below is a table that lists OPM terms and their synonyms along with a definition of the term.

RHYTHM	OPM	Definition
Bill of Materials (BOM)	Formula with effectivity and routing	Single BOM consists of a produced part and quantity, a set of consumed parts, quantities and a routing.
Part Number	Item Number	A number that uniquely identifies and item.
Manufacturing Order	Batch with POC information	A quantity scheduled to be produced. For discrete products the batch is planned to be the standard batch quantity, but during production the standard batch quantity may be broken into smaller lots. In non-discrete products the batch is a quantity that is planned to be produced based on a formula or recipe, often yielding a given number of end items. In OPM, a document that is used to plan and record a manufacturing event.
Location	Organization	An entity for grouping resources together, in OPM this could represent a work-center or plant.

Error and System Messages

Below is a list of messages that OPM may generate when you are running the interface.

CODE	DISPLAY	RESOLUTION
CR_NOMSGS	No messages to be displayed for this schedule	No action necessary
SY_UNLOCKINUSEFAIL	Unlock of in use failed	Check unlock in use again. Try again after some time.
CR_NOIMPORT	No Import available to process for this schedule	Please complete an import for this schedule
CR_NOORDERCONV	No orders available to convert for this schedule	There are no suggestions for batch creation in this import. No action required
CR_NOCLEARFPPORT	Unable to clear the server port number	Try again after some time
CR_NOCLEARRLPORT	Unable to clear the RL port number	Try again after some time
CR_CMNDSUB	Command has been submitted	No action required
CR_NOEXPORT	No Export available to process for this schedule	Please complete at least one successful export for this schedule.
CR_NOIMPORTID	Invalid Import id being used for process	You must complete a successful import before doing this step.
CR_IMPTSCHEDPARM	Invalid schedule being used as a parameter to the import	The schedule id passed to import does not exist. Check id to see if such a schedule exists. Otherwise call Oracle OPM Level 1 support.
CR_IMPTNEWPROD	Failure occurred during import of Planned Manufacturing Orders	Call Oracle OPM Level 1 support.
CR_IMPTCANPROD	Failure occurred during the import of Batch/FPO cancellation suggestions	Call Oracle OPM Level 1 support.
CR_IMPTRESCHED	Failure occurred during the import of Batch/FPO	Call Oracle OPM Level 1 support.
CR_IMPTRERROUTE	Failure occurred during the import of Batch/FPO reroute suggestions	Call Oracle OPM Level 1 support.
CR_IMPTRESIZE	Failure occurred during the import of Batch/FPO resize suggestions	Call Oracle OPM Level 1 support.
CR_IMPTSALES	Failure occurred during the import of Sales Order modifications	Call Oracle OPM Level 1 support.
CR_INVALID_FCSTIND	The demand indicators are not set for the schedule id :parameter	Turn on make to stock or make to order indicator. Initiate export again.

CR_FORECASTERR	Failure occurred during export of Forecast data	Call Oracle OPM Level 1 support.
CR_EXPTPRTWHS	Failure occurred when attempting to create Item item-whose relationship	Call Oracle OPM Level 1 support.
CR_INVALID_TRANS_ID	Invalid request type for data transfer. Could not find schedule for transaction id: %s. The . erpi2.load_data was passed an Export/Import id of a row that does not exist in RH_EXPT_MST or RH_IMPT_MST.	Call Oracle OPM Level 1 support. The erpi2.load_data was passed something other than X or I.
CR_NOSCHEDULE	Invalid Schedule for selected data transfer	Invalid schedule_id was passed to export or import. Call Oracle OPM Level 1 Support.
CR_SCHEDULEINUSE	The schedule was locked by another process and export could not proceed.	Wait until the export of the schedule being used is finished and try again. If this does not resolve the problem, clear the port.
CR_NOSCHEDULEINFO	Details for the schedule do not exist	Call Oracle OPM Level 1 Support.
CR_NOORGNCODE	No plants are associated with the schedule.	Recheck the schedule set up to ensure that the organization that you have associated with the schedule is a plant.
CR_RHYTHMLINKERR	The RhythmLink server could not be started	Could not start up RhythmLink. Check that the rl_oracle listener is running. Check that RhythmLink is installed. If you still have a problem, call i2 RHYTHM support.
CR_FP_SAVEPLANERR	Failure occurred during attempt to execute a save plan. Factory Planner, not running or rl_oracle listener not working.	Stop Factory Planner. Clear the server port. Check that the rl_oracle listener is running. Try again.
CR_FP_PLANRESTARTERR	Failure occurred when attempting a planner restart. Factory Planner, not running or rl_oracle listener not working.	Stop Factory Planner. Clear the server port. Check the rl_oracle listener is running. Try again.
CR_LOADDATA_SUCCESS	The data transfer completed successfully	No action required
CR_LOAD_ABORT	The data transfer completed with errors!	Check Messages screen

CR_WRITESTATERR	An error occurred updating the status error. This is an error updating load status in %s for foreign key %s in the table :parameter1.	Contact your DBA
CR_RL_INVALIDPORTNUM	Invalid port number for RhythmLink. (The erpi2.load_data was passed something other than X or I.)	Check the port number to be sure it is correct (it should be between 10,000 and 99,999) and try to run export /import again. If it fails, call level 1 support.
CR_RL_SERVERERR	The RhythmLink server is unable to execute command rl . RhythmLink unable to continue, problem with Server.	Stop RhythmLink. Clear the RL Port Number. Try again.
CR_RL_PROGRAMERR	Undefined RHYTHMLink error	Check that the rl_oracle listener is working.
CR_PARMNOTFOUND	The interface parameter, parameters not found for the schedule.	Updating of wrong parameter was tried. Report to Oracle OPM Level 1 Support.
CR_DELETEDATA	This run could be active, continue with the purge (Y or N)?	Enter Y or N. If you enter Y OPM will continue the purge of data from an active or waiting run.
CR_DELINVALIDROW	This run can not be purged	Do not try to delete that row.
CR_DATAPURGED	The data associated with this run has been removed	No action required
CR_NODMND	The import does not contain any modified Demand Orders	No action required
CR_STARTCLIENT	Starting Client ...	No action required
CR_STARTSERVER	Starting Server ...	No action required
CR_FCSTTRUNC	Failure occurred when truncating the forecast interface table	Could not delete rows from rh_fcst_tbl. You may try deleting all rows from this table for the schedule and continue export or call Oracle OPM Level 1 Support.
CR_FCSTINSERT	Failure occurred attempting to insert into forecast interface table	Unplanned error when inserting data into this schedule's forecast tables. Call Oracle OPM Level 1 Support.

Glossary

Activity

Action performed during the manufacturing process, such as mixing or heating.

Byproduct

An item produced by a formula in addition to the product. Byproducts differ from products in that you do not plan your production to make byproducts. Byproducts may or may not have value, but generally have less value than products or in some instances there may be a cost associated with disposing of a byproduct.

Component Class

A way of classifying item costs. Examples of component classes are labor or overhead.

Coproduct

One of several products produced by a formula. The term coproduct is sometimes used when a formula produces more than one product. GEMMS does not distinguish between products and coproducts. Compare with by-product.

Cost Analysis Code

A code which generally specifies whether an activity is value-added or non-value-added.

Effectivity

A set of parameters that specify under what circumstances a formula can be used. These parameters include date of production and product quantity. Effectivities also link formulas with routings.

Formula

The "recipe" upon which production batches are based. A formula consists of products, ingredients, and, optionally, by-products. The formula also specifies the quantities of each item. Formulas are used by the Costing and Material Requirements Planning modules as well as the Production module.

Formula Use

The module for which a formula will be used, either Production, Costing, Material Requirements Planning, or Material Safety Data Sheets (future functionality).

Ingredient

An item which is used in a formula to produce a product.

Operation

A combination of one or more activities and the resources used to perform those activities. For example, the combination of mixing (activity) and the mixer (resource) defines the mixing operation.

Product

An item which is produced by a formula. See also coproduct.

Resource

Any noninventory item used in production, like a mixer or oven.

Routing

A sequence of operations performed in manufacturing a product.

Scaling

The proportional increase or decrease of product, by-product, and ingredient quantities in a formula or batch.

Theoretical Yield Calculation

A calculation that calculates product quantities yielded by a formula given a specified yield percentage.

Version

A number identifying a variant of a formula or routing. All formulas and routings are uniquely identified by a combination of formula or routing code and version number.

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