



QAD Enterprise Applications
Enterprise Edition & Standard Edition

Training Guide **MRP/CRP Fundamentals**

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About This Course

Course Description

QAD designed this course to cover the basics of preparing to implement Material Requirements Planning (MRP) and Capacity Requirements Planning (CRP) in QAD Enterprise Applications.

The Course Includes

- An introduction to MRP and CRP in QAD Enterprise Applications
- An overview of key business issues
- Instructions on how to set-up the MRP module
- Instructions on how to operate the MRP module
- Instructions on how to process CRP
- References to other QAD materials, such as on-line help
- Activities and exercises throughout the course (for student practice of key concepts and processes)

Course Objectives

In this course you learn how to:

- Identify some key business considerations before setting up MRP and CRP in QAD Enterprise Applications
- Set up MRP and CRP in QAD Enterprise Applications
- Use MRP and CRP in QAD Enterprise Applications

Audience

- Implementation consultants
- Members of implementation teams
- Operators

Prerequisites

- Initial QAD Enterprise Applications Setup training course
- Basic knowledge of:
 - American Production and Inventory Control Society (APICS) theory
 - Theory of MRP and CRP
 - QAD Enterprise Applications as it is used in the business
- Working knowledge of the manufacturing industry in general

Note Students that are unfamiliar with QAD Enterprise Applications should read the User Interface Guide before attending this class.

Course Credit

This course is valid for 6 credit hours.

This course is typically taught in one day.

QAD Resources

If you encounter questions or problems on QAD software that are not addressed in this book, several resources are available.

Product Help

All QAD products ship with integrated help systems. A properly installed QAD application will display help when you press the Help key (F1), or access it through the menu. The help covers the normal use of the product.

QAD Web Resources

The QAD website provides product and company overviews. The Print Solution option on the opening page provides a means of compiling desired content into a document specialized to your industry, business implementation, and needs.

<http://www.qad.com/>

From QAD's main site, you can access QAD's Learning or Support sites.

QAD Learning Portal for Training Opportunities

To view available training courses, locations, and materials, use the QAD Learning Portal. Choose Learning under the Global Services tab to access this resource.

QAD Support for Product Documentation and the QAD Knowledgebase

To access release notes, user guides, installation and conversion guides by product and release, visit the Support website. Support also offers an array of tools depending on your company's maintenance agreement with QAD. These include the Knowledgebase and direct links to QAD Support experts.

Choose Support under the Global Services tab.

Any QAD customer can register for a QAD web account by accessing the Support web site and clicking the Accounts link at the top of the screen. Your customer ID number is required. Access to certain areas is dependent on the type of agreement you have with QAD.

CHAPTER 1


Introduction to MRP and CRP



Course Overview

- ▲ Introduction to Material Requirements Planning (MRP) and Capacity Requirements Planning (CRP)
- ▲ Business Considerations
- ▲ Set up MRP and CRP
- ▲ Use MRP and CRP

Course Overview

		
<h2 style="text-align: center;">Planning and Scheduling Overview</h2>		
Activity	Personnel	Planning Horizon <i>(varies with industry)</i>
Strategic Planning	CEO, CFO, VPs, etc.	3-5 years
MFG/PRO Planning and Control Modules		
Product Line Planning	Senior VPs, Plant Managers	Varies <i>(1 Month is typical)</i>
Forecasting, Master Scheduling, and RCCP	Master Schedulers	Cumulative Lead Time
MRP and CRP	Planners, Shop Floor Managers	Cumulative Lead Time

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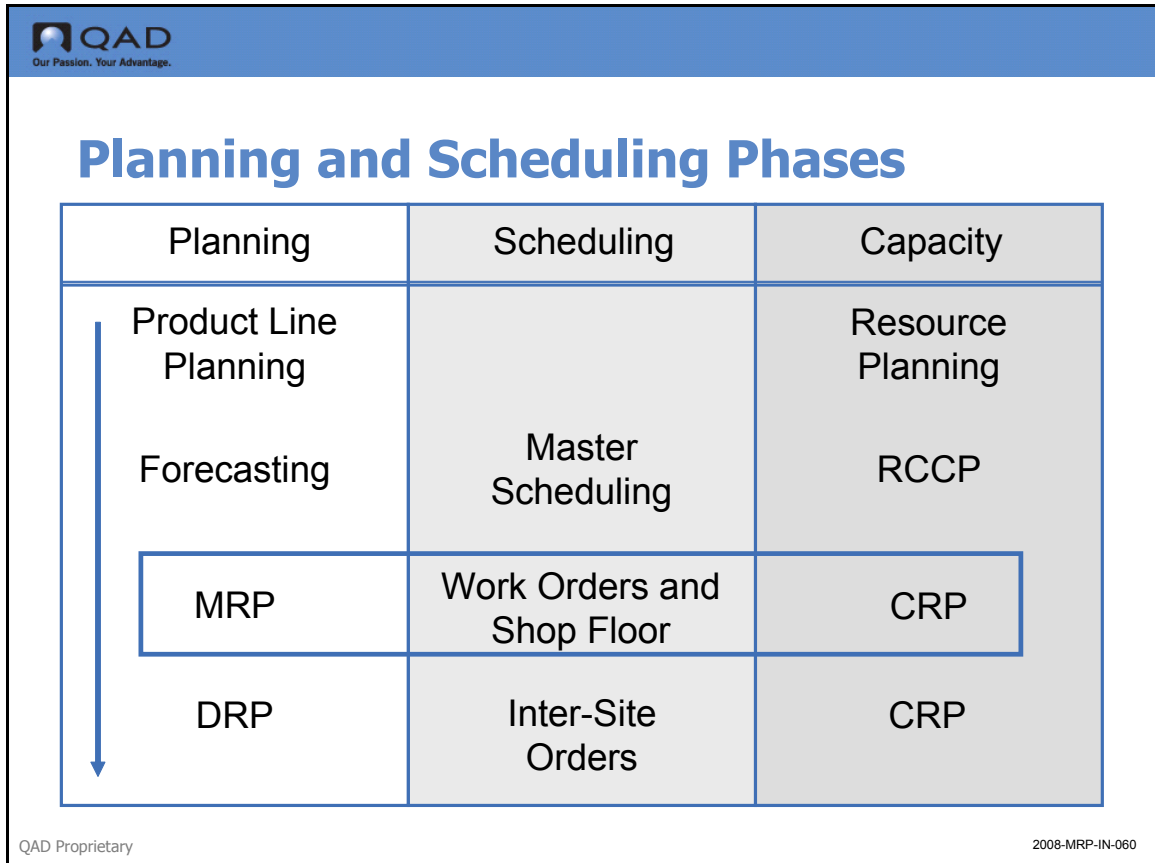
Planning and Scheduling Overview

Component planning takes place in the Material Requirements Plan (MRP) module and the plans are checked against capacity in the Capacity Requirement Plan (CRP) module.

This tool enables you to schedule and issue orders for the items and for the work that will be needed to support the master schedule. You can use CRP to determine at a fairly precise level how this plan will load the resources you have at your site.

Component planning enables you to determine which work centers and components will be used to meet the plan. The check is to determine whether the work centers have the capacity to meet the schedule.

Items that are not master scheduled will be planned using MRP with master schedule as input. Master schedules generate demand for components. MRP uses this demand to schedule orders for components.



Planning and Scheduling Phases

Planning and execution generally move down and to the right through the matrix shown above.





MRP is a time-phased priority planning system that calculates material requirements using:

- Product structures
- Inventory status
- The master schedule
- Open order dates

MRP plans orders: what to order, when and how much. Supply is scheduled and rescheduled to meet changing demand and maintain valid due dates.



Planning and Scheduling Areas of Concern

Activity	Concerns	Expectations vs Feasibility
Strategic Planning	 Sales and Profitability	Income vs Outlays
Product Line Planning	 Factories	Gross Sales vs Gross Production
Forecasting, Master Scheduling and RCCP	 End Items	Units vs Resources
MRP and CRP	 Departments, Work Centers, and Components	Planned Production vs Actual Production

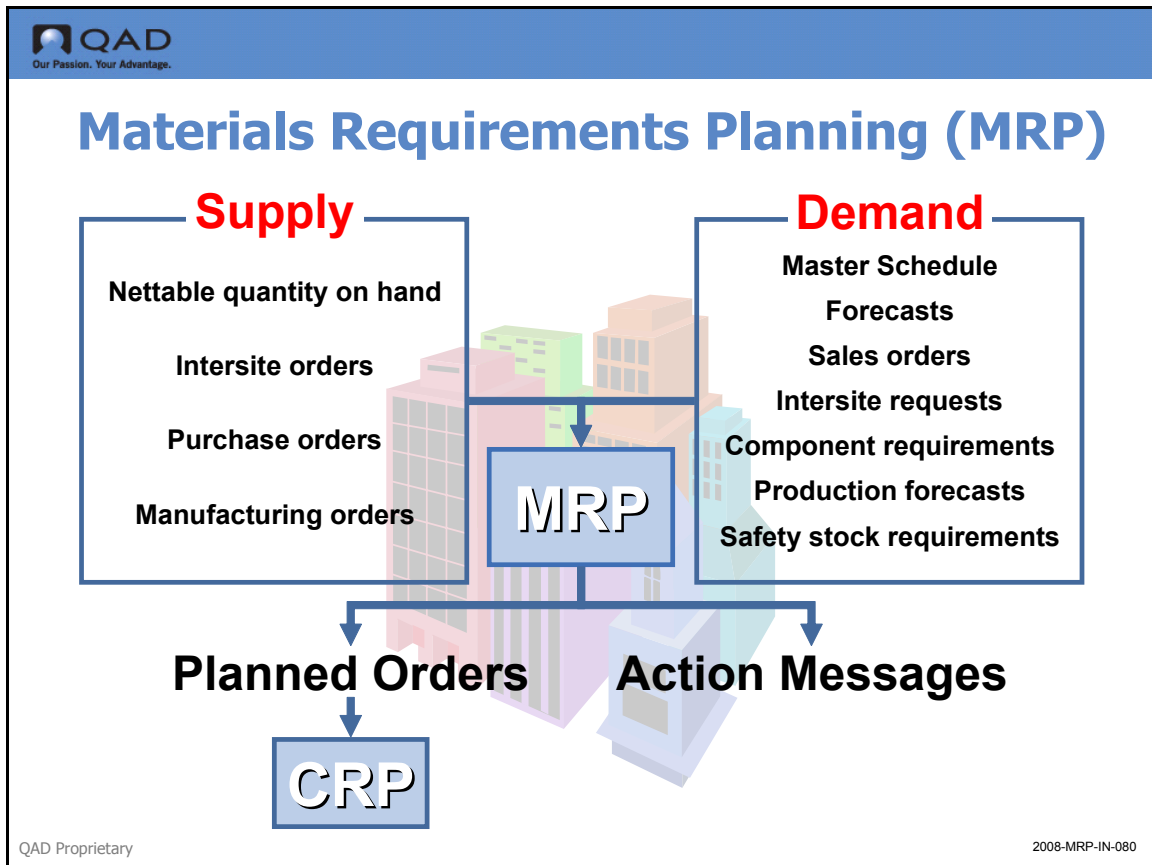
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Planning and Scheduling Areas of Concern

MRP and CRP deal with departments, work centers and components.

Planners and shop floor personnel use MRP results to determine manufacturing schedules, which have the same time horizon as master schedules.



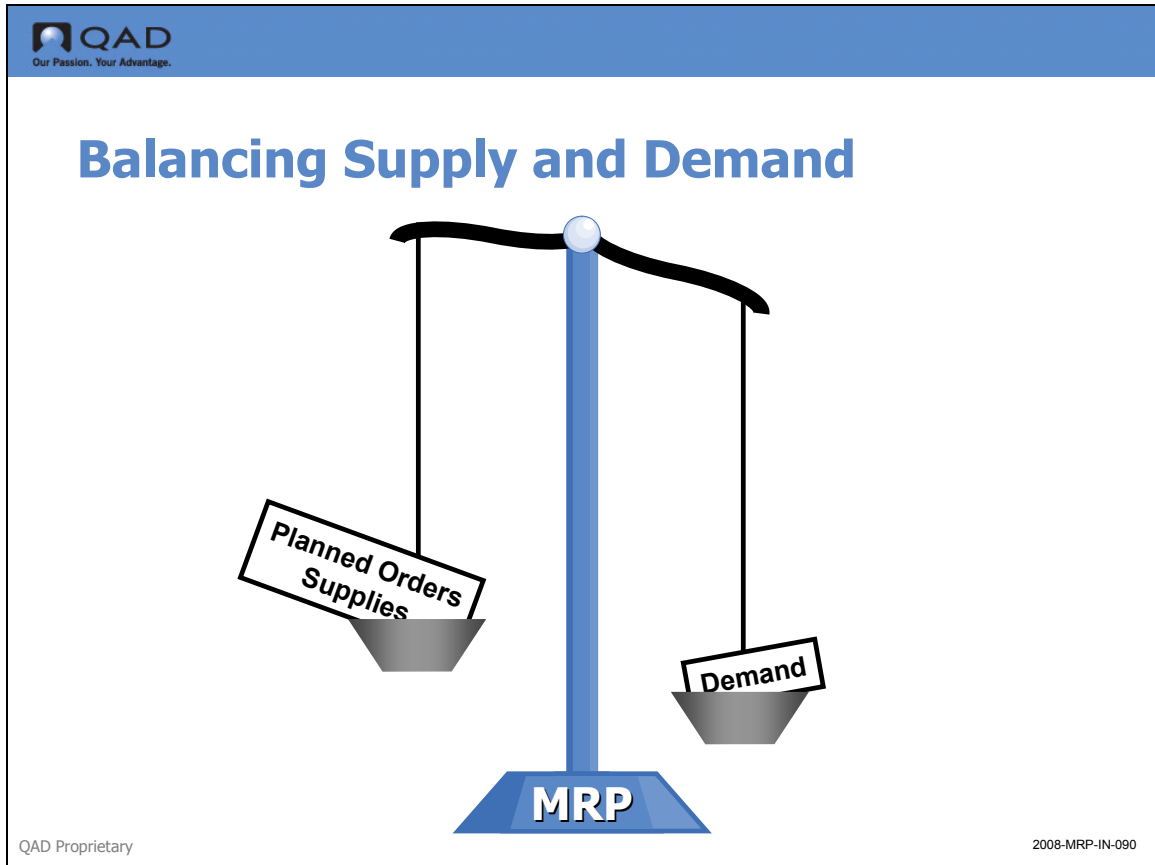
Materials Requirements Planning

MRP balances supply and demand for purchased and manufactured items. Given a set of demands or requirements, MRP automatically calculates a time-phased schedule of planned supply orders or replenishments to satisfy those demands.

It also generates action messages to alert you to any problems such as shortages and late receipts.

- MRP looks at demand for finished items and uses product structure information to calculate demand for component items
- For each item, MRP looks at the:
 - Ordering information
 - Amount currently on hand

- Lead times
- MRP then generates planned orders suggesting how many of each item to buy or make and when to do so
- MRP's planning activity is performed by site
 - Each site's material plan is completely independent from inventory, demand, and supply at other sites
 - To plan for multiple sites, you run MRP for each site separately
- Reliable MRP processing depends on accurate:
 - Inventory data
 - Product structures and formulas
 - Manufacturing and purchasing lead times



Balancing Supply and Demand

MRP attempts to balance supply and demand. It detects imbalances in the plan and makes recommendations to restore the balance.

- It tries to drive inventory to zero, never planning more than it needs
- It plans without respect to capacity

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Order Timing

There is demand with Date Due=Period 6
Lead Times:
A=2
B=2
C=3

Begin work in period 1 to meet the due date
Back Scheduling

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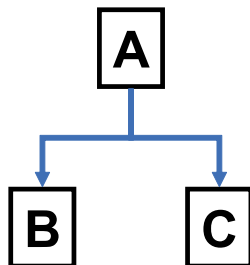
Order Timing

The master schedule sets the overall plan on which MRP bases the timing. MRP uses backward scheduling to determine the start date. In backward scheduling, the lead time is subtracted from the due date in order to arrive at the start date. MRP performs this calculation on all planned orders.

Some guidelines of MRP:

- A component due date is generally the parent item's release date; however, lead time offsets adjust the component due date.
- For all non-purchased items, MRP counts only work days as defined in the Shop Calendar.
- For purchased items, MRP uses regular calendar days; if the release date is a non-workday, MRP uses the prior workday.

MRP Calculations



$$\begin{aligned} \text{Gross Requirements} &= 100 \\ - \text{Nettable Quantity on Hand} &= 54 \\ - \text{Scheduled Receipts} &= 17 \\ \hline \text{Net Requirements (MRP Orders)} &= 29 \end{aligned}$$

MRP Calculations

MRP uses this calculation for each period.

- Maintaining the balance across the planning horizon complicates the calculations

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Calculations

A LT=1

B **C**

Demand for item A in period 4 is 100

	Past Due	1	2	3	4
Gross Requirements		70	150	50	100
Scheduled Receipts		250			
On-Hand Inventory	50	230	80	30	0
Net Requirements		0	0	0	70
Planned Orders Due					70
Planned Order Release				70	

MRP also calculates the requirements for components B and C


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MRP Calculations (continued)

The illustration above shows the calculations for end item A.

- MRP also calculates the requirements for all components

$$\text{Net Req.} = \text{Gross Req.} - \text{Sched. Recp.} - \text{Nettable On Hand}$$



Prerequisites

- Demand Requirements**
- Item Planning Data**
- Product Structures & Routings**
- Inventory Balances**

98%
A c c u r a t e

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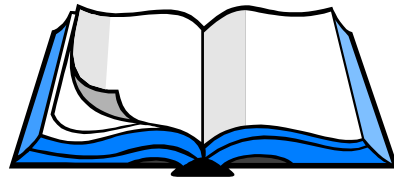
MRP Prerequisites

MRP is as accurate as its input allows it to be.

For useful output, the inputs should be more than 98% accurate.

Terminology

- ▲ Action messages
- ▲ Available to promise (ATP)
- ▲ Low-level code
- ▲ Pegging
- ▲ MRP horizon



Terminology

Action Message. A system message usually created during MRP calculations to call attention to a current or potential problem and suggest corrective action.


Available to Promise (ATP). The uncommitted portion of inventory or planned production, maintained in the master schedule to support customer order promising. ATP quantity is the uncommitted inventory balance in the first period and is normally calculated for each period in which a Master Production Schedule (MPS) receipt is scheduled. In the first period, ATP equals on-hand inventory less customer orders due and overdue. In any period containing MPS scheduled receipts, ATP equals MPS minus customer orders for the period and all subsequent periods before the next MPS scheduled receipt. A negative ATP reduces prior period ATP

Low-Level Code. The lowest level in a product structure (BOM) at which a particular component can appear. Net requirements for an item are not calculated until gross requirements are calculated down to that level. Normally calculated and maintained automatically by the system.

Pegging. (1) In MRP and MPS, the capability to identify for a given item the sources of its gross requirements and/or allocations.

(2) The process of consuming a shipper line that is tied to a required ship schedule requirement record.

MRP horizon. Also known as the MRP planning horizon, the MRP horizon is how far to plan forward in time, and is determined by how far ahead demand is known and by the lead times through the manufacturing operation.

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Action Messages

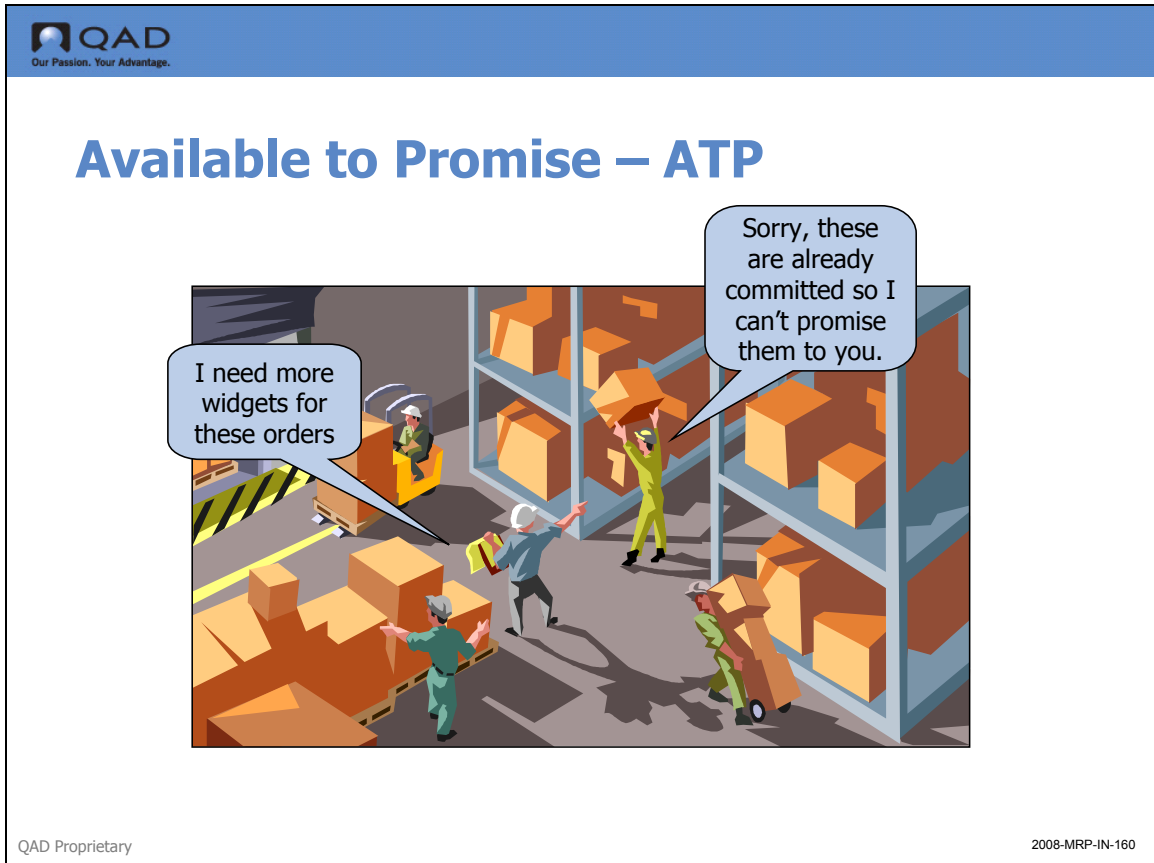
Supply exceeds demand	Demand exceeds Supply
<p>Action Messages</p> <p>De-expedite those orders Cancel that order</p>	<p>Action Messages</p> <p>Expedite those orders or Add an order</p>

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Action Messages

Action messages recommend the actions a planner should take to balance supply with demand, such as rescheduling, canceling, or releasing orders.

MRP generates action messages, as required, for all items with non-blank order policies. Order policy codes not recognized by the system are planned as LFL.



Available to Promise

Available-to-promise (ATP) is the uncommitted portion of inventory or planned production which is available to be promised to new sales orders. The system displays ATP quantities on master schedule reports and inquiries.

ATP can be used to verify whether a sales order can be filled within a specific time frame given other demands and currently scheduled supply orders.

- The system calculates ATP by time period by deducting real demand from real supply
 - Real demand includes requirements for work order components, sales orders, and required ship schedules
 - Real demand excludes forecast and production forecast

- Real supply includes quantity-on-hand, purchase orders, work orders, and repetitive schedules
- A net decrease in demand increases ATP, while a net increase in demand decreases ATP

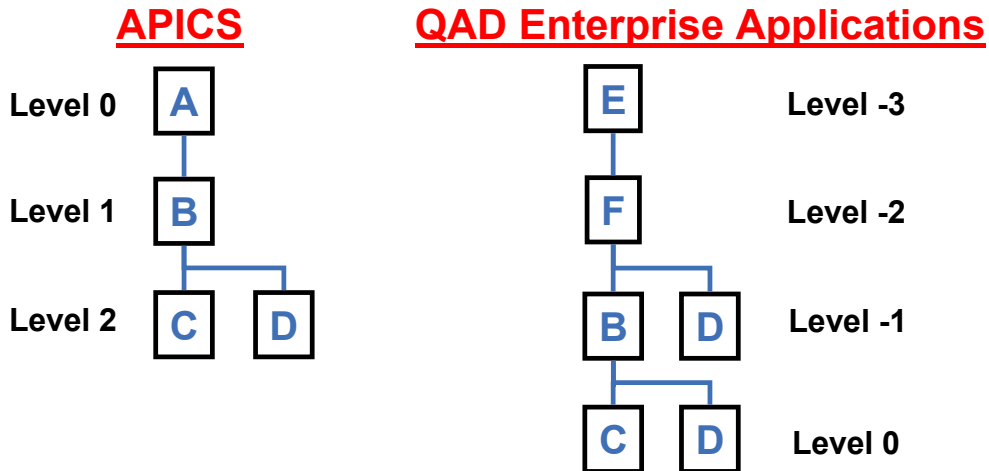
Traditionally ATP was only displayed for periods which had a master schedule quantity. ATP from a prior period was not carried forward. QAD Enterprise Applications allow you to display ATP in the traditional format and also in a cumulative format that does allow prior period unconsumed ATP to be carried forward.

You also have the option of enforcing ATP in sales order maintenance with either a warning or an error. An ATP error tells you there is insufficient quantity of the item on the date requested, but will let you take the order anyway. An ATP warning will not allow the item to be processed.

You may also specify an ATP horizon which tells the system how far into the future to look for ATP to fill a demand.



Low-Level Codes



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Low-Level Codes

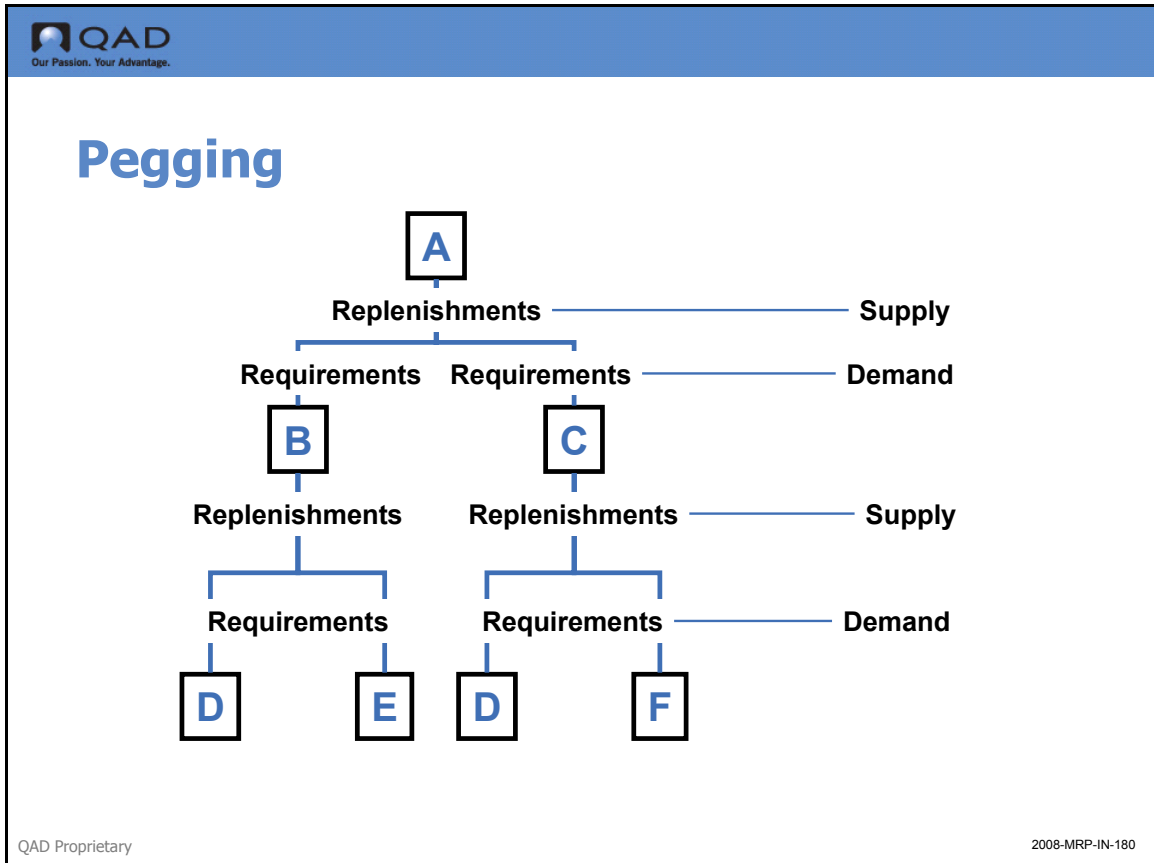
Low-level codes indicate the relative position of each item within the product structures. MRP uses low-level codes to ensure that all dependent demands from parent items are included. In the diagram above, item C's low-level code is determined by the product structure for item E, not by item A.

- MRP stops searching for occurrences of the item when it reaches the lowest level in each product structure, thus saving time
- QAD Enterprise Applications and APICS number the levels differently, but the process is the same: search for the item from the top down in each structure and stop searching after the lowest-level code for the item

- QAD Enterprise Applications automatically updates the low-level codes when you enter or modify product structures

Low-level codes can be inaccurate if you import data without testing it, or if you modify structures directly from PROGRESS. If you believe that the codes are incorrect, you should run Low Level Code Update, (23.22).

Note Product structure data is often imported from CAD/CAM systems



Pegging

Pegging identifies the source of the requirements. For example, pegging identifies the sales order or forecast that is creating the need for an item.

Pegging is made possible by the low-level codes. Pegging is maintained for one level; in the above example, you can see that the requirement for E came from B, and the requirement for B came from A, but you cannot inquire about E and see that its requirement comes from A.

MRP Horizon

Also referred to as the MRP Planning Horizon, it is the number of calendar days to be planned forward in time. The MRP Horizon is determined by how far ahead demand is known and by the lead times through the manufacturing operation.

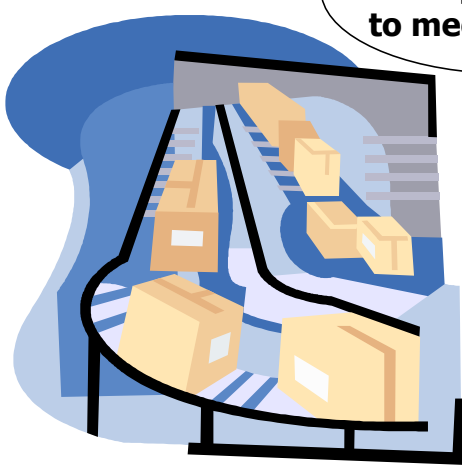
- MRP only processes material requirements within this planning horizon, ignoring activity outside this horizon
- This horizon should be at least one day longer than your longest cumulative lead time

If you change the MRP planning horizon, replan all items by running Regenerate Materials Plan, (23.2).

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Capacity Requirement Planning (CRP)

Do we have enough capacity to meet the plan?



```

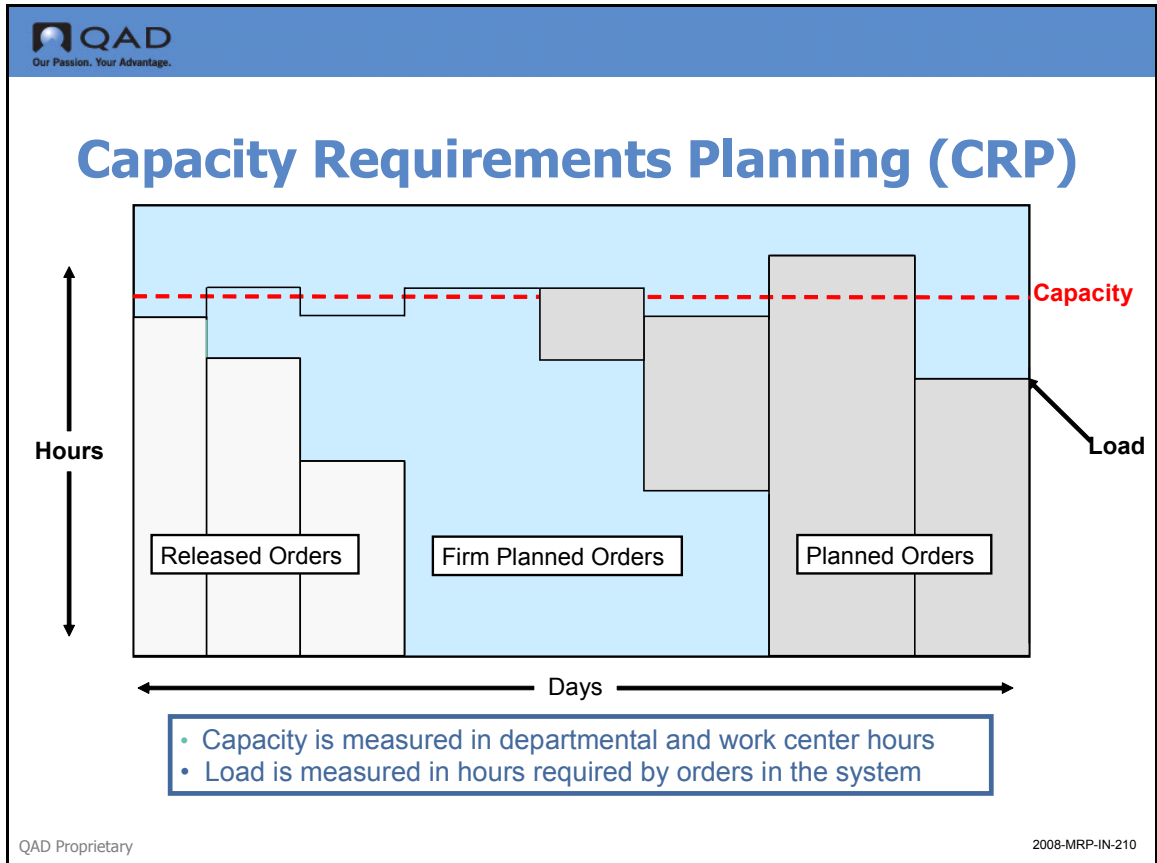
graph BT
    subgraph Department
        WC1[Work Center 1]
        WC2[Work Center 2]
        WC3[Work Center 3]
        WC4[Work Center 4]
        WC5[Work Center 5]
    end
    WC1 --> D[Department]
    WC2 --> D
    WC3 --> D
    WC4 --> D
    WC5 --> D
  
```

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Capacity Requirements Planning

CRP calculates the workload in a given department or specific work center or machine by:

- Exploding the routings and processes for MRP planned and firm planned orders and updating or creating work order routings
- Determining the start/due dates for each operation using:
 - Work center and shop calendars
 - Back scheduling (start date of the last operation is the due date of the previous operation)



The Foundation for CRP

MRP provides the foundation for calculating CRP, a tool used to complete the master schedule.

Master scheduling and rough-cut capacity planning (RCCP) should have removed most of the capacity constraints before MRP is run.

Note Discussed in the following Training Guide: Master Scheduling and Rough-Cut Capacity Planning (RCCP)

- MRP looks at the inventory and at orders
- CRP uses routings and work centers
- RCCP uses resources and resource bills

Back Scheduling

When CRP back schedules orders, it takes the due date of an order or repetitive schedule and schedules each of its operations from the last operation in the order routing or process backward to the first one.

CRP assigns each operation a start date and a due date, using the operation lead time components—queue, setup, run, wait, and move—to calculate operation start dates.

- The start date of an operation is the same as the due date of the previous operation
- CRP calculates run times based on the actual order quantity - order quantity less the quantity completed

Departments and Work Centers

Resources used to process orders on the shop floor, from sub-assembly to end item, are:

- Departments
- Work centers
- Number of machines

Departments


The capacity of a department is the total number of available labor hours per day for all work centers in the department, as defined in Department Maintenance, (14.1).

CRP provides a Department Load Summary which shows the total load hours for all the work centers in a department against the total capacity. This can be a useful quick check on load conditions. However, you need to be aware that labor from one work center may not be interchangeable with other work centers in the department.

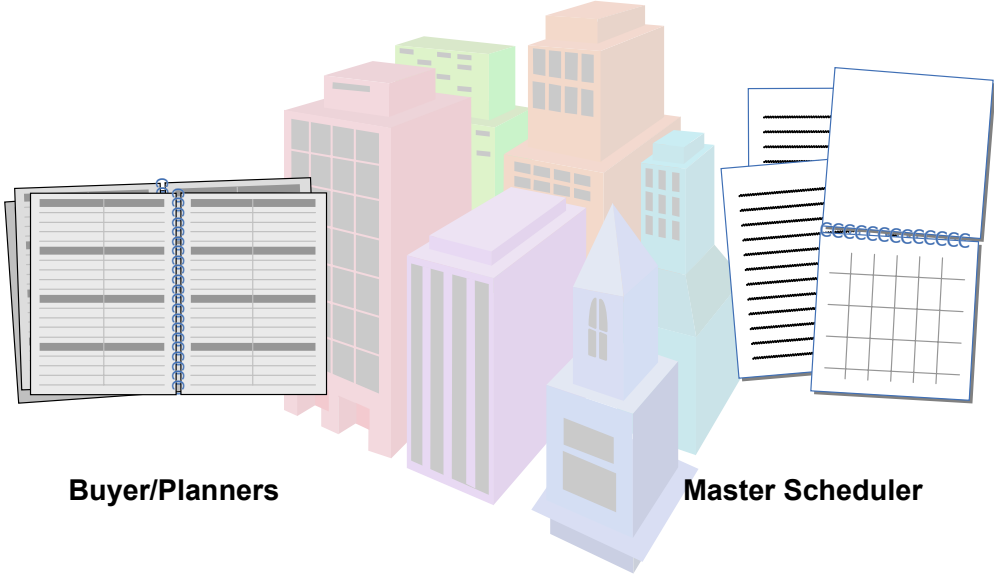
Work Centers

The capacity of a work center is the number of machines and personnel available multiplied by work hours in a period, as defined in Work Center Maintenance, (14.5) and Calendar Maintenance, (36.2.5).

CRP loads (or simulates) the expenditure of work center and department hours using orders as production demand. Work order routings provide data about which orders will be using which work centers and when.



MRP and CRP Users



Buyer/Planners

Master Scheduler

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MRP and CRP Users

MRP and CRP are high-level operations that should be password protected and used only by qualified employees.

CHAPTER 2

Business Considerations



Business Considerations

- ▲ Planning Parameters
- ▲ Kanban
- ▲ Batch Processing
- ▲ Cumulative Lead Times

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Business Considerations

In this section, you learn how to identify some key business considerations before setting up MRP and CRP in QAD Enterprise Applications.

There are several business issues to take into consideration before using MRP and CRP:

- Planning parameters
- Kanban
- Batch processing
- Cumulative lead times

This section does not discuss all potential issues, but presents some issues to generate thought and discussion.



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Planning Parameters

Item Planning Maintenance x

Item Planning Maintenance: GoTo | Actions

Item Number: 02-0005 Description: MECHANICAL PENCIL
Unit of Measure: EA (SMM) BLISTER PACKED

Item Planning Data

Mstr Sched: <input checked="" type="checkbox"/>	Buyer/Planner: PL	Phantom: <input type="checkbox"/>
Plan Orders: <input checked="" type="checkbox"/>	Supplier:	Minimum Order: 0
Time Fence: 0	PO Site: train	Maximum Order: 0
MRP Required: <input checked="" type="checkbox"/>	Purchase/Manufacture: M	Order Multiple: 1,000
Order Policy: POQ	Configuration Type: ATO	Op Based Yield: <input type="checkbox"/>
Order Qty: 1,000	Inspect: <input type="checkbox"/>	Yield Percent: 100.00%
Batch Qty: 1.0	Ins LT: 0	Run Time: 0.010
Order Period: 7	Mfg LT: 1	Pur LT: 0
Safety Stock: 0	Cum LT: 17	Setup Time: 1.000
Safety Time: 0	ATP Enforcement: NONE	EMT Type:
Reorder Point: 0	Family ATP: <input type="checkbox"/>	Auto EMT Processing: <input type="checkbox"/>
Rev:	Run Seq 1:	Network Code:
Issue Policy: <input checked="" type="checkbox"/>	2:	Routing Code:
		BOM/Formula:

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Planning Parameters

You set these in Item Planning Maintenance, (1.4.7) and Item-Site Planning Maintenance, (1.4.17).

Definitions

Planning parameters are established for each item in your database; they govern the way MRP handles the items.

Why Consider?

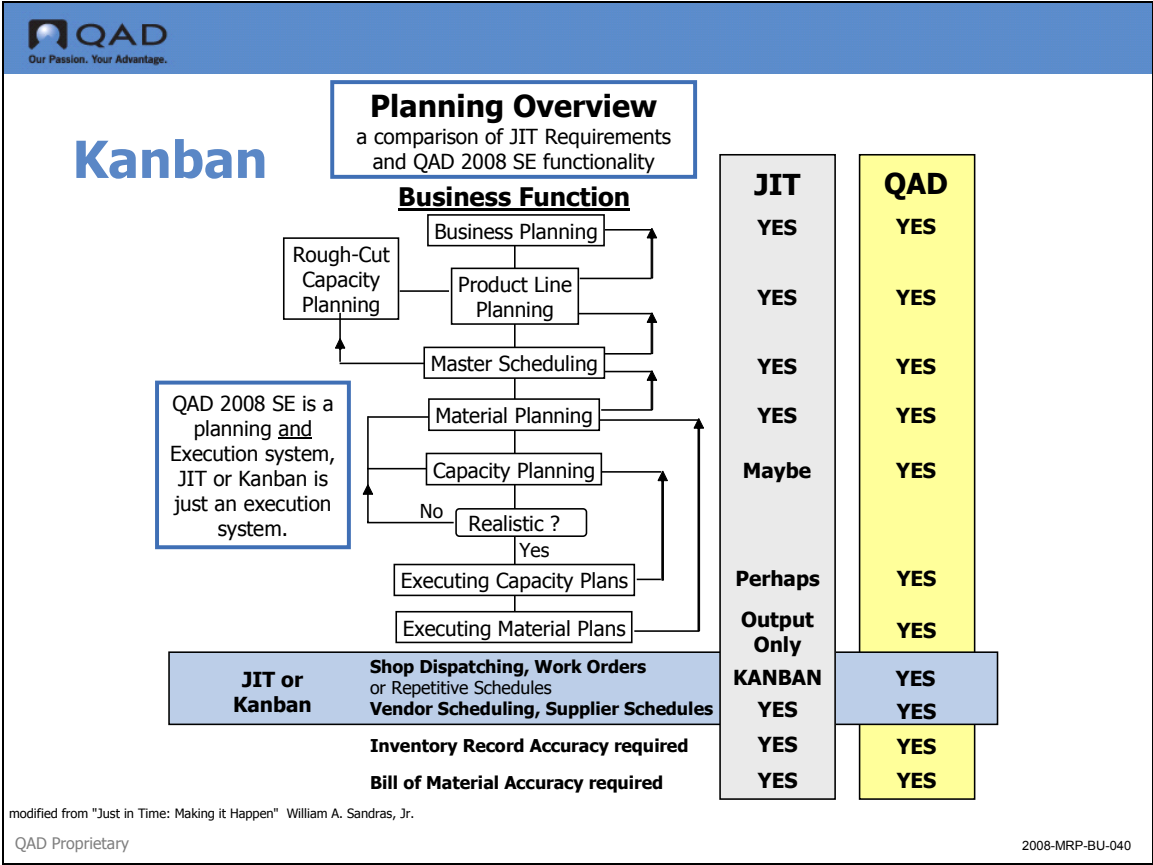
MRP is only as accurate as the data it processes; your planning parameters should have 98% plus accuracy.

Functionality in QAD Enterprise Applications

The item planning data is the most used information in your database.

Setup Implications

- Inaccurate data can be catastrophic
- A good clean-up of the database is always worthwhile



Kanban

Definition

A Japanese method of production and inventory control first developed and used at Toyota.

- Designed for day-to-day, on-floor control of production and inventory, it relies on a series of control triggers, typically a visual one in the form of cards
- Kanban is the predecessor of Just-in-Time (JIT)

Kanban is an appropriate way to schedule a plant if you use advanced repetitive with single-step routings or multiple steps with a milestone at the last operation. Otherwise, you need a repetitive exploded schedule in place to net the work in process.

Why Consider?

Many companies use it. Some QAD customers use kanban in their plants and MRP to create supplier schedules. You can set up separate buyer/planner codes to apply to kanban and non-kanban items.

Setup Implications

Planning parameters in Item Planning Maintenance, (1.4.7) can be set to conform with kanban needs.

- Set Order Policy to POQ with a period of 1 or 2 days
- Avoid order modifiers or use them to set Kanban quantity

QAD Enterprise Applications offer several production options including Kanban, Flow manufacturing Repetitive Line Scheduling and Sequenced Line Scheduling. Which of these methods you choose to use will have a significant impact on setting your planning parameters. This in turn has a significant impact on how MRP calculates requirements.

Before setting planning parameters for an item it is necessary to understand the total manufacturing environment for all items at all sites. Different items may be processed differently at different sites.

Batch Processing



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Batch Processing

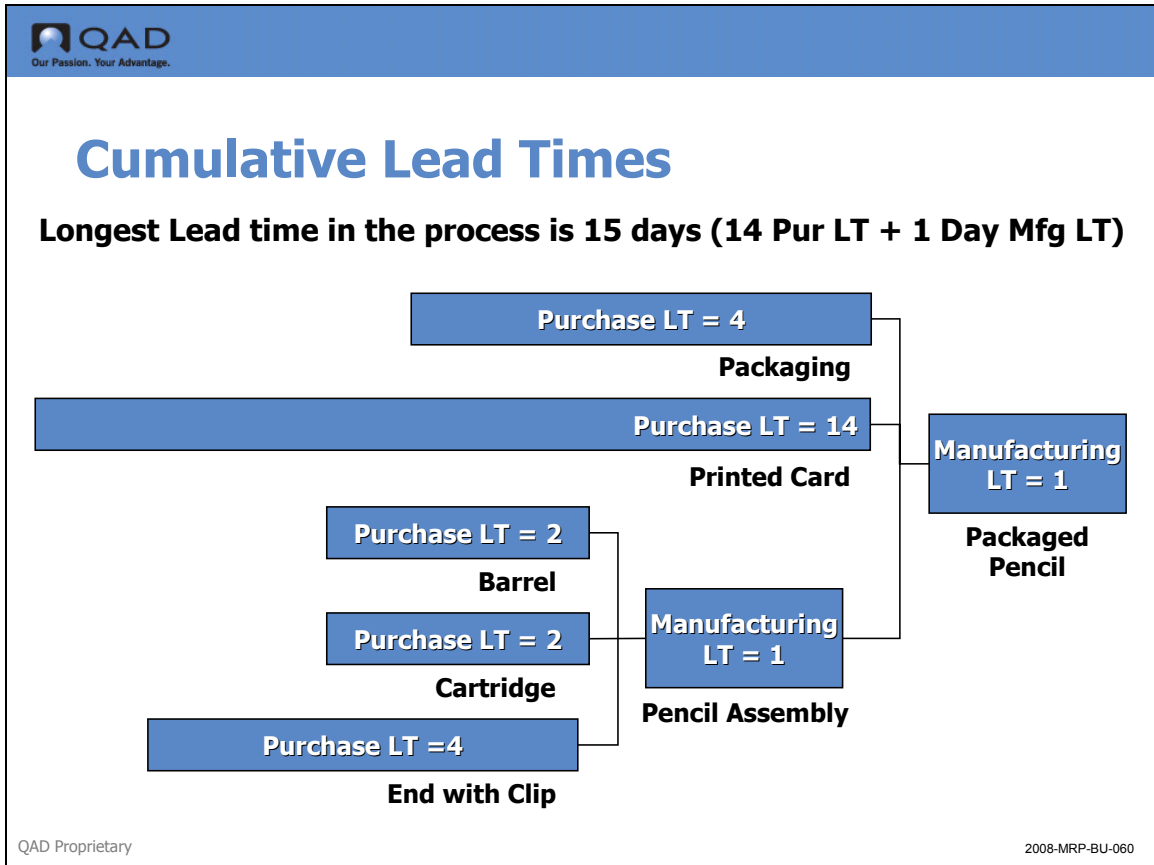
Definition

A computer technique where transactions are accumulated and processed together.

Why Consider?

MRP runs can take a long time.

- You should schedule MRP at reasonable intervals, depending on:
 - How often you require change
 - How often your suppliers need updates
 - The length of your MRP horizon



Cumulative Lead Times

Definition

The time required to produce an item, based on component lead times.

Why Consider?


- MRP considers component lead times in generating its plan
- Inaccurate lead times result in faulty plans
- MRP horizon must be at least one day longer than longest cumulative lead-time

Discussed in the following Training Guide: Product Structures and Formulas

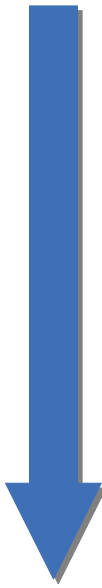
Discussed in the following Training Guide: Product Structures and Formulas

CHAPTER 3

Set Up MRP



MRP Setup



- ▲ Creating Work Schedules
- ▲ Managing the Control Program
- ▲ Maintaining Planning Parameters

QAD Proprietary 2008-MRP-SU-020

MRP Setup


In this section, you learn how to set up MRP and CRP in QAD Enterprise Applications. This lesson covers the data that you need to enter or configure for a successful MRP implementation.

Reading the training flow

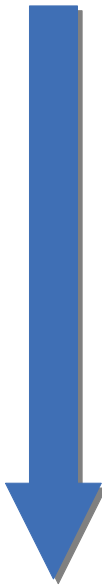
- The current step will be highlighted
- Optional steps say “(optional)”

A suggested setup sequence for MRP includes three steps:

- First, verify the accuracy of your work schedules and holidays so that MRP can properly plan your activities.
- Second, set up or maintain the MRP control program.
- Third, verify the planning parameters of your items so that MRP can properly process them.



MRP Setup



- ▶ Creating Work Schedules
- ▶ Managing the Control Program
- ▶ Maintaining Planning Parameters

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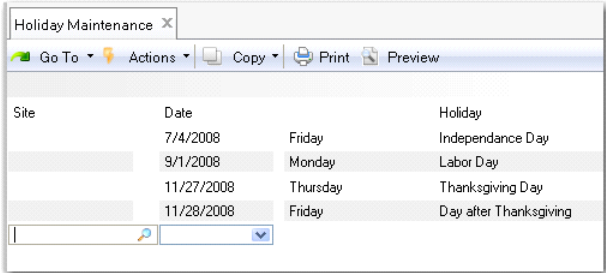
2008-MRP-SU-030

Creating Work Schedules

Here you look at how to create calendars and holidays in QAD Enterprise Applications.

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Holiday Maintenance



Site	Date		Holiday
	7/4/2008	Friday	Independence Day
	9/1/2008	Monday	Labor Day
	11/27/2008	Thursday	Thanksgiving Day
	11/28/2008	Friday	Day after Thanksgiving

QAD Proprietary 2008-MRP-SU-040

Holiday Maintenance

Use Holiday Maintenance (36.2.1) to schedule holidays and other nonwork days that apply to an entire site.

That is: Holiday Maintenance is used to set a normal work day, to a non-work day for all calendars at a site.

Field Definitions

The information below describes the key fields in the screen above.

Site

The site to which the holiday applies.

Date

The holiday date.

Holiday

A brief, reference-only description.

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Calendar Maintenance

Calendar Maintenance x

Go To Actions Copy Print Preview

Site: PRPROTO Prototype Production-PR
 Work Center: Machine:

Work Day	Hours
Sunday: <input type="checkbox"/>	0.00
Monday: <input checked="" type="checkbox"/>	7.00
Tuesday: <input checked="" type="checkbox"/>	7.00
Wednesday: <input checked="" type="checkbox"/>	7.00
Thursday: <input checked="" type="checkbox"/>	7.00
Friday: <input checked="" type="checkbox"/>	7.00
Saturday: <input type="checkbox"/>	0.00

Reference:
 Start:
 End: Daily Hours:

Set up one like this for each site

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Calendar Maintenance

Calendars provide the basis for MRP scheduling functions. Calendars define the standard work week for a site and the work centers in it. They also define exceptions to the normal calendar, such as scheduled overtime or shutdown periods. In Calendar Maintenance, (36.2.5), you can create calendars for individual work centers or for the entire site. At least one calendar must be defined.

Field Definitions

The following information describes the key fields in the screen above.

Site

Note You can also setup for each domain a generic calendar with both site and work center blank will default into each new site you create.

This field contains the site code to which this shop calendar applies. For each site, set up at least one calendar without specifying work centers or machines. This sets the default for the site.

Work Center

The work center to which this shop calendar applies. A work center is uniquely identified by a work center code and a machine code.

Machine

The machine to which this shop calendar applies.

Work Day / Hours

Shows which days are work days and how many hours are available for work.

When calculating schedule due and release dates, the system only looks at scheduled work days, ignoring exceptions and holidays. Note:

- If you set work day to [N] on a Sunday, the system will never schedule a work order or purchase order due date that day.
- If you sometimes work on a Sunday, you should enter Yes in work day and set the scheduled hours to zero, allowing due dates to fall on a Sunday, which you can reschedule manually.

Exceptions to the normal calendar are identified by a reference code and a start and end date. Use these fields to schedule overtime, increased shifts, reduced shifts, preventative maintenance or shutdowns. The number of hours specified is added (or subtracted) from the normal work day for each day in the range of dates specified.

Reference

A reference code identifying an exception to the shop calendar, usually describing the type of exception, such as Overtime or Shutdown.

Exceptions only record holidays if the holiday only applies to some work centers. If the holiday applies to all work centers, use Holiday Maintenance, (36.2.1).

Missing or empty src attribute on einclude:include


Start / End

The start and end dates of the exception.


Enter start and end dates carefully. The exception applies to all work days in the range of dates specified.

Daily Hours

Daily hours may be positive or negative. A positive number increases scheduled work hours; a negative number decreases them.



MRP Setup



- ▲ Creating Work Schedules
- ▲ Managing the Control Program
- ▲ Maintaining Planning Parameters

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2008-MRP-SU-060

Maintaining the Control Program

The MRP control program sets some basic parameters.

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MRP Control

MRP Control X

Go To Actions Copy Print Preview

MRP Horizon: 60

MRP/DRP Combined:

Summary Default: Monday

Order Release Horizon: 7

Enable Op Based Yield:

Use AppServer:

AppServer Name:

Default Number of Threads: 0

QAD Proprietary 2008-MRP-SU-070

MRP Control

Enter appropriate values in MRP Control (23.24).

Field Definitions

The information below describes the key fields in the screen above.

MRP Horizon

- The period of time, in calendar days, which MRP should plan. MRP calculations ignore data outside this time period. The horizon should be at least one day longer than the longest item cumulative lead time in the database to avoid planning it late

Note If you change the MRP planning horizon, impacted items are not automatically replanned when you run Net Change Materials Plan (23.1). Ensure that all items are replanned by running Regenerate Materials Plan.

MRP/DRP Combined

Indicates whether MRP planned items can be planned by the Distribution Requirement Planning (DRP). DRP is the balancing of supply and demand for items transferred between sites. If this field is set to:

- No = MRP planned items may be recalculated only using the MRP functions
- Yes = MRP planned items may be recalculated using DRP planning functions

When to run DRP and MRP depends on where your DRP items are in the structure:

- If you are distributing finished products, you can usually run DRP followed by MRP
- If you are supplying component items between sites, you can usually run MRP followed by DRP

You would normally only need to run a combined MRP/DRP when you have DRP items at multiple levels of the product structure.

Summary Default

Indicates the day of the week all MRP summary reports and inquiries should start.

Order Release Horizon

The number of calendar days before planned order release that an action message should appear.

- MRP assigns *Release Due* action messages to orders with release dates within this release horizon
 - For example, if you set the release horizon to 7 days, all orders due to be released within the week have a *Release Due* action message
- This gives planners time to take appropriate actions
- The release horizon setting should reflect your normal paperwork leadtime and how often you run MRP

If you run MRP once a week, the release horizon should be at least 7 days

If you run MRP daily, you can leave this field at zero

Enable Op Based Yield

This field determines how the system calculates yield for component items when product structures and routings are exploded in material requirements planning (MRP) programs, work orders, repetitive, advanced repetitive, and configured products.

- *No*=The system uses the Yield % field associated with the parent item in Item Planning Maintenance or Item-Site Planning Maintenance to calculate component requirements.
- *Yes*=The system derives the yield percentage amount for components from operations on the parent item's routing. The Yield % field associated with the item is used for the parent item only, not the components.

Note Even when Enable Op Based Yield is Yes, this calculation method is only used for parent items with Operation Based Yield set to Yes in either Item Planning Maintenance or Item-Site Planning Maintenance.

Use AppServer


Specify whether your system uses a Progress application server to run MRP/DRP processes on a Symmetric Multiple Processor (SMP) computer.

AppServer Name

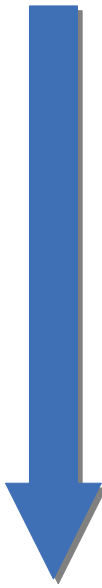
When Use AppServer is Yes, enter the name of the application server that is configured to run the MRP/DRP programs.

Default Number of Threads

When your system uses an AppServer for MRP/DRP processing, enter the default number of processing threads, or agents, that the AppServer can create. This can be any integer up to 99.



MRP Setup



- ▲ Creating Work Schedules
- ▲ Managing the Control Program
- ▲ Maintaining Planning Parameters

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Maintaining Planning Parameters

The material planning department uses item planning data to determine how and when to replenish inventory. This data affects MRP, purchasing, manufacturing, configured products, and costing. Most of the fields are used in MRP.

Buyer/Planners need to understand the planning parameters for the items. These parameters must be set appropriately for your company.

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Item Planning Maintenance

Item Planning Maintenance X

Go To Actions Copy Print Preview Attach

Attachments

Item Number: 1000-00 Description: Roller-Bearing Hub Assy
Unit of Measure: EA

Item Planning Data

Mstr Sched: Plan Orders:
Time Fence: 0 MRP Required:
Order Policy: LFL Order Qty: 5
Batch Qty: Order Period: 7
Safety Stock: 0 Safety Time: 0
Reorder Point: 0 Item Rev: Issue Policy:

Buyer/Planner: Supplier: PO Site: PRPROTO
Phantom:
Purchase/Manufacture: M Configuration Type: Inspect:
1.0 Ins LT: 0 Cum LT: 0
Mfg LT: 1 Pur LT: 0
Minimum Order: 0
Maximum Order: 0
Order Multiple: 0
Op Based Yield: Yield Percent: 100.00%
Run Time: 0.000
Setup Time: 0.000
EMT Type: NON-EMT
ATP Enforcement: NONE Auto EMT Processing:
Family ATP: Network Code: Routing Code: BOM/Formula:
ATP Horizon: 0
Run Seq 1: 2:

QAD Proprietary 2008-MRP-SU-090

Item Planning Maintenance

MRP uses item planning data to plan items. You define this data in Item Planning Maintenance. If an item is used at multiple sites, you can set up planning data differently for each site using Item-Site Planning Maintenance. Data not defined in Item-Site Planning Maintenance defaults from Item Planning Maintenance.

Independent demand items can be identified in the Master Production Schedule (MPS) and planned by a master scheduler, whereas dependent demand items are planned by MRP except items replenished according to a reorder point policy.

- MPS represents what the company plans to produce expressed in specific configuration, quantities, and dates

Note The manufacturing lead time (Mfg. LT) stored with the Item Planning Data is the value calculated during the routing roll up using the Order Quantity value also found in Item Planning Data. The lead time value in days is truncated to a whole number. The Purchase Lead Time is entered by the planner based on information from the supplier and the companies past experience with that supplier.

Master Schedule Item Parameters

- Master Schedule: Yes
- Plan Order: Yes
- Time Fence: Management policy
- Order Policy: Any policy except blank. Non-valid policies are treated as LFL

MRP Items

- Master Schedule: No
 - Yes if there is spare part or other independent demand usage to be master scheduled
- Plan Orders: Yes
- Time Fence: Optional
- Order Policy: Any policy except blank

Reorder Point Items

- Master Schedule: No
- Plan Orders: No
- Time fence: 0
- Order Policy: <blank>
- Reorder Point: Non-zero quantity, such as demand during lead time
- Issue Policy: No (Optional)

See in this training guide: [Order Policies and Modifiers](#) on page 62

Item-Site Planning Maintenance

Go To Actions Copy Print Preview Attach

Attachments

Item Number: 1000-00
Site: PRPROTO

Description: Roller-Bearing Hub Assy
UM: EA

Item Planning Data

Mstr Sched: Buyer/Planner:
 Plan Orders: Supplier:
 Time Fence: PO Site: PRPROTO
 MRP Required: Purchase/Manufacture: M
 Order Policy: LFL Configuration Type:
 Order Qty: Insp Location: inspect
 Batch Qty: 1.0 Inspection:
 Order Period: Inspect LT: Cum LT:
 Safety Stock: Mfg LT: Pur LT:
 Safety Time: ATP Enforcement: NONE
 Reorder Point: Family ATP: Auto EMT Processing:
 Planning Rev: ATP Horizon: Network Code:
 Issue Policy: Run Seq 1: Routing Code:
 2: BOM/Formula:

Phantom:
 Minimum Order:
 Maximum Order:
 Order Multiple:
 Op Based Yield:
 Yield Percent:
 Run Time:
 Setup Time:
 EMT Type: NON-EMT

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Item-Site Planning Maintenance

Use this function to set planning data for item on a site-by-site basis. The same item made at different sites will often have different product structures, routs and planning data. This generally results in a different lead time.

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Order Policies and Modifiers

The diagram illustrates the MRP calculation process. Item A (Lead Time = 1) has a demand of 100 in period 4. This demand is broken down into components B and C. The MRP table shows the resulting requirements and planned orders for item A and its components. The order policy settings for item A are: Min Ord: 0, Max Ord: 1,000, and Ord Mult: 50. A callout box shows that the quantity 100 is rounded down to 70 based on the order multiple of 50.

	Past Due	1	2	3	4
Gross Requirements		70	150	50	100
Net Requirements		0	0	0	0
Scheduled Receipts		250			
On-Hand Inventory	50	230	80	30	0
Planned Orders Due					70
Planned Order Release				70	

Demand for item A in period 4 is 100

MRP also calculates the requirements for components B and C

Order Policies and Modifiers:

- Min Ord: 0
- Max Ord: 1,000
- Ord Mult: 50

Quantity: 100

Order Quantity: 70

Order policies and modifiers control the type and quantities of MRP-generated orders

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Order Policies and Modifiers

The graphic shows the MRP calculation from the introduction and how it would change if the Order Multiples field were set to 50.

Order Policies

Lot-for-Lot (LFL)

Planned orders will be created for the net requirement quantities for each demand. LFL consumes on hand available and on order available prior to creating a supply order to cover this demand.

Period Order Quantity (POQ)

Planned orders will be created to satisfy requirements for the number of calendar days specified in the Order Period field each time an order is created. Orders are only created when needed.

Fixed Order Quantity (FOQ)

Planned orders will be created for the quantity specified in the Order Quantity field.

One Time Only (OTO)

A planned order will be made for a quantity of one only. As long as one (1) order exists, another will not be created. This can be used for prototypes.

No Order Policy (blank)

MRP does not plan the item even when the Plan Orders flag is set to Yes.

Order modifiers

Order modifiers change planned order quantities.

Order Quantity

A specified quantity used in conjunction with the Fixed Order Quantity (FOQ) order policy. It is also used for all item cost and lead time calculations as the standard order quantity.

Safety Stock Quantity

A specified quantity used as inventory reserve to compensate for unexpected demand and to maintain desired service levels. This applies to all order policies, including a blank. The system will never plan to use safety stock, but will always replace it if consumed.

Minimum Order Quantity

This is the smallest order quantity that will be planned. Minimum quantities are often set by vendors for purchased items. This could be a case or pallet quantity or a quantity established for a quantity discount. For manufactured items this is often the minimum quantity required to incur the setup costs for the item. Minimum quantities should only be used with items that have continuing demand, since the minimum order quantity could exceed the actual current demand.

Maximum Order Quantity

MRP generates a warning message in the event a planned order quantity is larger than the specified maximum order quantity. Excessively large lot sizes may tie up a resource so that other orders may be delayed unnecessarily. Further, setting a quantity limit can uncover data entry errors (i.e., entry of 1,000 instead of 100).


Order Quantity Multiple

Planned orders will be created in multiples of this quantity. That is, if the order multiple is 100, planned orders will only be created for quantities of 100, 200, 300, etc. Order multiples are appropriate for multiple cavity molding applications, packaging, etc.

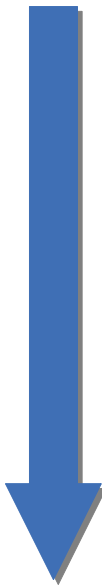
Order multiples are commonly used for multiples of case or pallet quantities, kanban pull quantities or other convenient storage or transport unit of measure. Items whose calculated requirement has a decimal value due to scrap or yield factors may be forced to a whole number by setting the multiple to one, or any whole number.

CHAPTER 4

Use MRP and CRP



MRP Processing



- ▶ Verify Low Level Codes
- ▶ Calculate Requirements
- ▶ Review Action Messages
- ▶ Approve Planned Orders
- ▶ Review MRP Information
- ▶ Calculate the Capacity Plan

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Use MRP and CRP

In this section you learn how to use MRP and CRP in QAD Enterprise Applications.

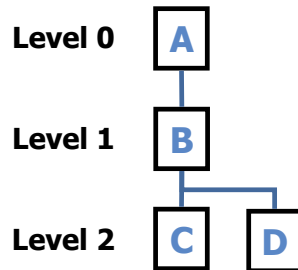
The diagram above is a suggested processing sequence of master files for processing MRP which is based on information that flows from one master file to another and the prerequisites that need to be accomplished.

The diagram shows the steps that are covered in this course:

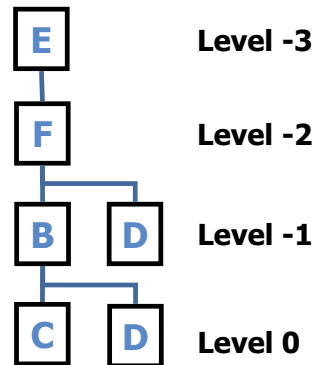
The MRP output is the direct input to CRP. Once the MRP has been reviewed and action messages acted upon, the capacity plan can be run.

Low Level Code Update

APICS

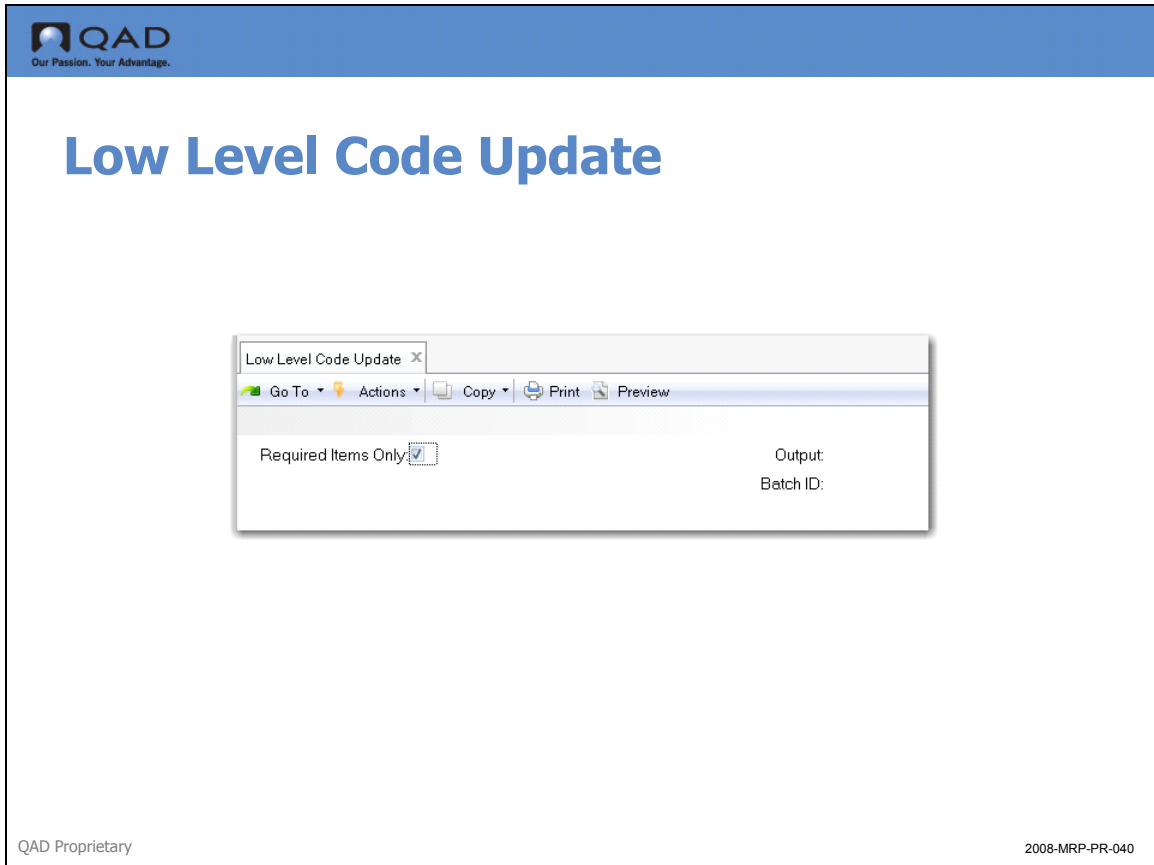


QAD Enterprise Applications



Low Level Code Update

Low-level codes maintain a numeric value for each item relative to its parent item. This accelerates MRP processing time. Normally, QAD Enterprise Applications automatically updates these codes through item planning, BOM, MRP, and DRP transaction.




You can update them anytime with Low Level Code Update, (23.22) as shown above.

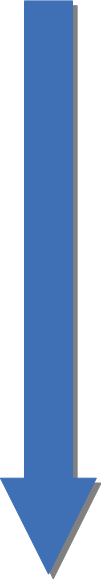
You can also do this through Selective Materials Plan, (23.3).

Depending on the number of items in your database, this program can take a long time to run.

Discussed in the following training guide: Product Structures and Formulas



MRP Processing



- ▲ Verify Low Level Codes
- ▲ Calculate Requirements
- ▲ Review Action Messages
- ▲ Approve Planned Orders
- ▲ Review MRP Information
- ▲ Calculate the Capacity Plan

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Calculate Requirements

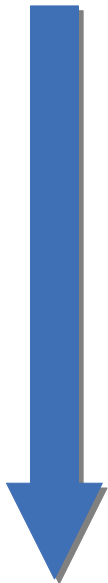
QAD Enterprise Applications offers you three ways to run MRP:

- Net Change Materials Plan, (23.1) calculates requirements only for those items that have changed since the last update
- Regenerate Materials Plan, (23.2) updates the entire database
- Selective Materials Plan, (23.3) updates selected items only

MRP ignores items with an order policy of blank.




Calculate Requirements



- ▲ Verify Low Level Codes
- ▲ Calculate Requirements
 - Net Change Update
 - Regenerate Plan
 - Selective Update
- ▲ Review Action Messages
- ▲ Approve Planned Orders
- ▲ Review MRP Information
- ▲ Calculate the Capacity Plan

Net Change Materials Plan



Net Change Materials Plan

Net Change Materials Plan X
Go To Actions Copy Print Preview

Site: To:

Synchronized Calculation:

Synchronization Code:

Number of AppServer Threads:

Output:
Batch ID:

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Net Change Materials Plan (23.1) considers only items with MRP Required set to Yes in their item planning data. The system sets this field to Yes automatically when changes occur for an item in any of the following areas:

- Item or item-site planning data
- Product structures
- Sales or purchase orders
- Work orders or repetitive schedules
- Inventory
- Forecasts
- Master production schedule
- Intersite demand

About this functionality:

- It may take some time to process. You may wish to submit it in batch.
- It does not see demand or forecast for items moving into the MRP horizon as time passes.
- It is used by many companies for their normal MRP runs.

If more than 50% of items have changed since the last MRP, it takes about the same amount of time as a full regen.

Field Definitions

The information below describes the key fields in Net Change Materials Plan, (23.1).

Site/To

Enter the sites to plan for. One site's material plan is completely independent from inventory, demand, and supply in other sites.

Synchronized Calculation

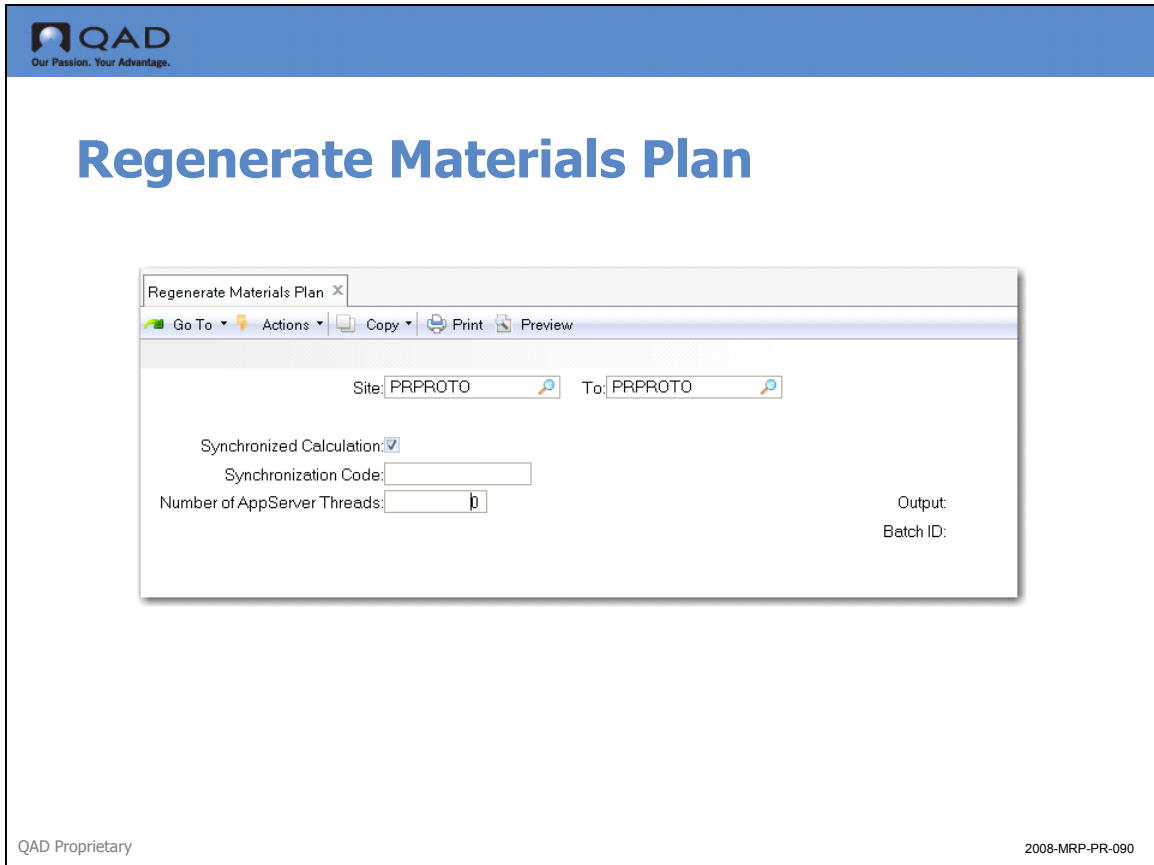
Determines whether this MRP/DRP calculation is to be run simultaneously with other calculations sharing the same synchronization code. Synchronized calculations benefit you if you have Symmetric Multiple Processor (SMP) computers.

Calculate Requirements



- ▲ Verify Low Level Codes
- ▲ Calculate Requirements
 - Net Change Update
 - Regenerate Plan
 - Selective Update
- ▲ Review Action Messages
- ▲ Approve Planned Orders
- ▲ Review MRP Information
- ▲ Calculate the Capacity Plan

Regenerate Materials Plan



Regenerate Materials Plan, (23.2) recalculates demand and plans supply for all items in the site. This method generates a plan for all items, not just those that have changed since the last run. The outputs of net change and regenerative MRP are the same. However, net change MRP generally runs faster than regenerative, since it only plans for items that changed since MRP was last run.

Guidelines:

- The first time you run MRP, it should be regenerative.
- You should always schedule periodic regenerative MRP runs, even if you primarily use net change MRP, since net change MRP does not consider demand or forecast for items entering the MRP horizon over time.
- For forecasting, you may want to run this at 12:01 a.m. Monday.

Note The first time you run MRP, it should be regenerative.

Field Definitions

The Information Below describes the key fields in Regenerate Materials Plan, (23.2).

One site's material plan is completely independent from inventory, demand, and supply in other sites

Synchronized Calculation

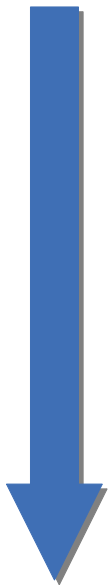
Determines whether this MRP/DRP calculation is to be run simultaneously with other calculations sharing the same synchronization code.

Synchronized calculations benefit you if you have Symmetric Multiple Processor (SMP) computers

Synchronization Code

A user-defined alphanumeric code that is shared by multiple, concurrent synchronized MRP/DRP calculations.

Calculate Requirements



- ▲ Verify Low Level Codes
- ▲ Calculate Requirements
 - Net Change Update
 - Regenerate Plan
 - Selective Update
- ▲ Review Action Messages
- ▲ Approve Planned Orders
- ▲ Review MRP Information
- ▲ Calculate the Capacity Plan

Selective Update

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Selective Materials Plan

Selective Materials Plan X

Go To Actions Copy Print Preview

Item Number: 1000-00 To: 1000-50
Site: PRPROTO To: PRPROTO

Master Scheduled Items:
Non Master Scheduled Items:
MRP Items:
DRP Items:
Required Items Only:
Resolve Low Level Codes:
Synchronized Calculation:
Synchronization Code:
Number of AppServer Threads:

Buyer/Planner:
Product Line:
Group:
Item Type:
Supplier:
Pur/Mfg:

Output
Batch ID:

QAD Proprietary 2008-MRP-PR-110

Selective Materials Plan

Selective Materials Plan (23.3) plans only for items and sites you select. It can be run in net change mode by setting the Required Items Only field to Yes, or in regenerative mode by setting Required Items Only to No.

You can use Selective Materials Plan to plan master schedule items separately from other items, or to plan small groups of items by using buyer/planner, product line, group, type, supplier, or any combination of these, as selection criteria.

Guidelines:

- Only master schedulers should use this program.
- This program plans down one level only.

- It can be run in net change mode by setting the Required Items Only field to Yes, or in regenerative mode by setting Required Items Only to No.
- You can use Selective Materials Plan, (23.3) to plan master schedule items separately from other items, or to plan small groups of items by using buyer/planner, product line, group, type, supplier, or any combination of these, as selection criteria.

In the selection fields, enter data for the criteria relevant to your needs; bypass fields by leaving them blank.

Field Definitions

The information below describes the key fields in Selective Materials Plan, (23.3).

Item Number/To

Enter the range of item numbers that you want to update.

Site / To

Enter the range of sites that you want to update.

Master Scheduled Items

- Yes = Replan those items flagged Master Sched = Yes in Item Planning Maintenance, (1.4.7).
- No = Ignore these items.

Non Master Scheduled Items

- Yes = Replan those items flagged Master Sched flag = No in Item Planning Maintenance, (1.4.7).
- No = Ignore these items.

MRP Items

- Yes = Replan items flagged as Plan Orders = Yes in Item Planning Maintenance, (1.4.7).
- No = Ignore these items.

DRP Items

- Yes = Replan distribution items:

Distribution items are flagged as Pur/Mfg = D in Item Planning Maintenance, (1.4.7)

This flag may only be set to Yes if the DRP/MRP Combined flag in the DRP Control File is set to Yes

Normally these items are planned using DRP calculations

- No = Ignore these items.

Required Items Only

- Yes = Include only items flagged for replanning. The system flags replanning whenever a change is made affecting order timing or quantity, including changes to:

- Planning data
- Inventory balance
- Product structure
- Purchase requisitions and orders
- Sales orders
- Work orders
- Master schedule
- Repetitive schedule
- Forecast

- No: include all selected items.

Resolve Low Level Codes

- Yes = Analyze and resolve all low level codes.
- No = Ignore the low level codes.

Note If low level codes are unresolved when MRP is run, the results of the MRP run may not be totally accurate.

Synchronized Calculation

Determines whether this MRP/DRP calculation is to be run simultaneously with other calculations sharing the same synchronization code. Synchronized calculations benefit you if you have Symmetric Multiple Processor (SMP) computers.

Synchronization Code

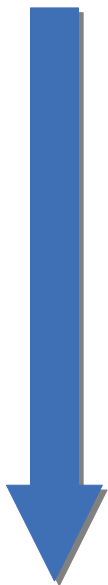
A user-defined alphanumeric code that is shared by multiple, concurrent synchronized MRP/DRP calculations.

Buyer/Planner, Prod Line, Group, Item Type, Supplier, Pur/Mfg fields

If you enter a code in any of these fields, MRP limits planning to items so flagged.



MRP Processing



- ▲ Verify Low Level Codes
- ▲ Calculate Requirements
- ▲ Review Action Messages
- ▲ Approve Planned Orders
- ▲ Review MRP Information
- ▲ Calculate the Capacity Plan

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2008-MRP-PR-120


Review Action Messages

Action messages suggest courses of action to resolve problems found by MRP.

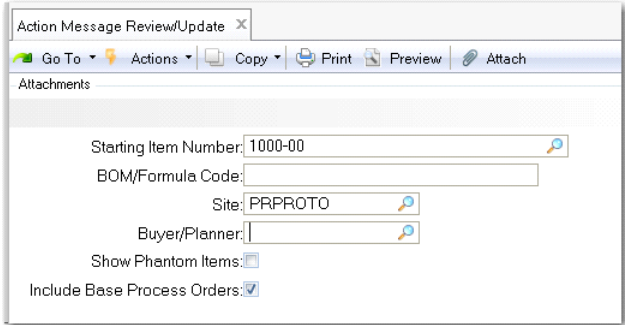
MRP Action Messages:

Message	Meaning
Beginning Quantity Less Than Zero	Indicates that the initial nettable quantity on hand is negative.
Beginning Available Less Than Zero	Indicates that the quantity on hand less safety stock is negative.
Create	Indicates that a supply order should be created to satisfy a negative projected on hand balance. This message is only generated if Plan Orders is No or if a new requirement appears within the time fence.
De-Expedite	Indicates that a scheduled supply order is due before it is needed and should be delayed, or demand rescheduled to an earlier date.
Expedite	Indicates that a scheduled supply order is due after it is needed and should be rescheduled to an earlier date, or demand rescheduled to a later date.
Cancel	Indicates that a scheduled supply order is no longer needed and should be deleted.
Release Due For	Indicates that a supply order should be released. If it is a planned order, it must also be approved. Use the Order Release Horizon field in the MRP Control File, (23.24) to specify the number of days prior to the order release date for this action message to display.
Release Past Due For	Indicates that a supply order was not released when it was due, and should be either released or expedited now, or the demand rescheduled for a later date.
Quantity Less than Minimum	Indicates that a supply order was created for a quantity less than the minimum quantity set in the item planning data.
Quantity Exceeds Maximum	Indicates that a supply order was created for a quantity greater than the maximum quantity set in the item planning data.
Past Due	Indicates that a scheduled supply order receipt is past due.
Time Fence Conflict	Indicates that there is an unsatisfied material requirement inside the planning time fence for this item. You should either manually schedule and expedite orders to fill this demand or delay fulfillment of the requirement that created the demand.
Shipment Due	Indicates that a shipment for an intersite request item is due. Action should be taken at the source site to ensure that the order is received on time.

Message	Meaning
Shipment Past Due	Indicates that a shipment for an intersite request item is past due. You should either delay the orders that created the requirement for the item or expedite them when the item does arrive.
No Source Of Supply	Indicates that the planning data for an intersite request item does not specify a valid source network for the date an intersite request is required.
Planned Order Count Exceeds Maximum	Indicates that the maximum allowable number of 9999 planned orders per day has been generated by an item-site. Calculation for other items is not affected.

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Action Message Review/Update




The screenshot shows a software window titled "Action Message Review/Update". It features a menu bar with "Go To", "Actions", "Copy", "Print", "Preview", and "Attach". Below the menu bar is an "Attachments" section. The main area contains several input fields: "Starting Item Number" with the value "1000-00", "BOM/Formula Code" (empty), "Site" with the value "PRPROTO", and "Buyer/Planner" (empty). There are also two checkboxes: "Show Phantom Items" (unchecked) and "Include Base Process Orders" (checked).

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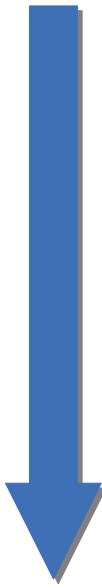
2008-MRP-PR-130

Action Message Review/Update

Action Message Review/Update, (23.5) reports on action messages using various selection criteria. Select the messages you want using the criteria.



MRP Processing



- ▲ Verify Low Level Codes
- ▲ Calculate Requirements
- ▲ Review Action Messages
- ▲ **Approve Planned Orders**
- ▲ Review MRP Information
- ▲ Calculate the Capacity Plan

QAD Proprietary 2008-MRP-PR-140

Approve Planned Orders

MRP produces orders based on demand. The status of these orders is planned. They can be for manufactured and purchased items and work orders:

- You release the orders for manufactured items as work orders
- You release the orders for purchased parts as requisitions

Planned orders can be changed by subsequent MRP runs. To move these orders out of MRP's control, you approve them.

Approve Planned Orders



- ▲ Verify Low Level Codes
- ▲ Calculate Requirements
- ▲ Review Action Messages
- ▲ Approve Planned Orders
 - Work Orders
 - Purchase Orders
- ▲ Review MRP Information
- ▲ Calculate the Capacity Plan

Planned Work Order Approval

Planned Work Order Approval

Go To Actions Copy Print Preview Attach

Attachments

Item Number: 1000-00 To:

BOM/Formula: To:

Site: PRPROTO To: PRPROTO

Release Date: To:

Default Approve:

Buyer/Planner:

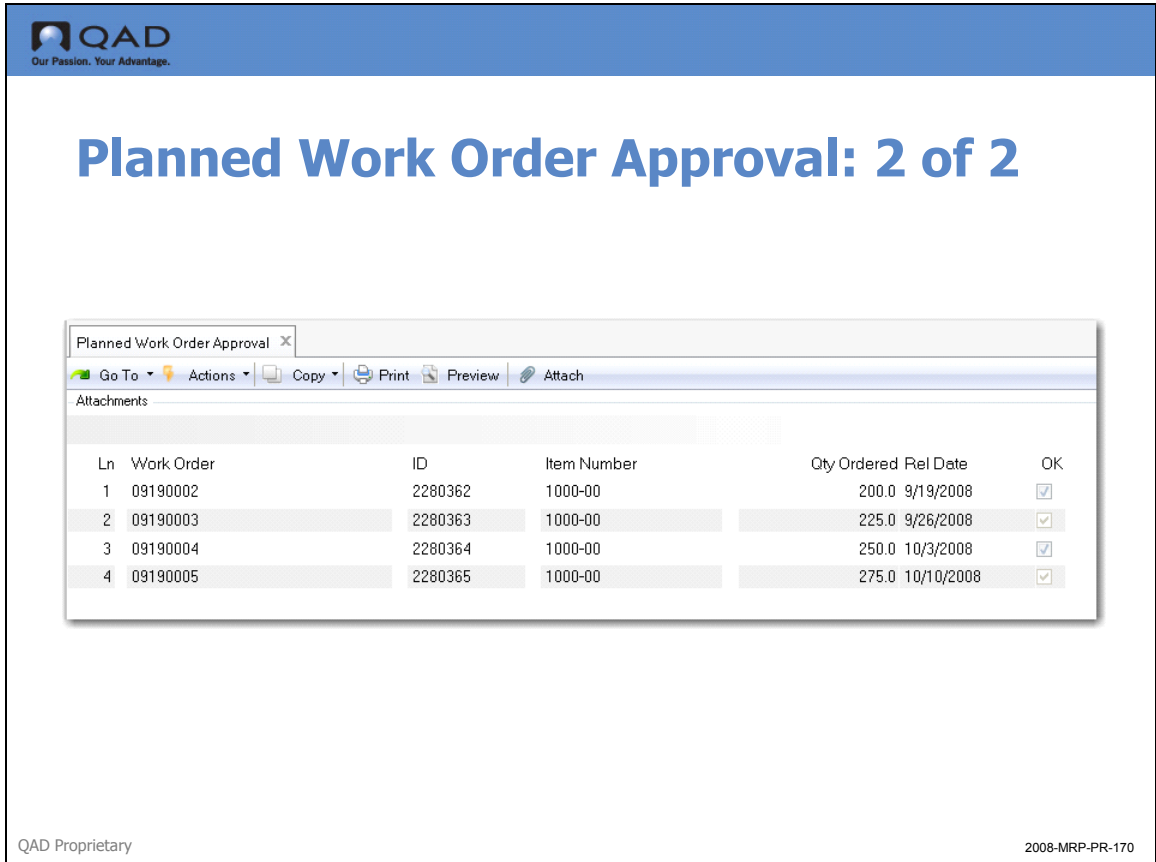
Include Phantoms:

Include Line Manufactured Items:

Include Purchased Items:

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Planned Work Order Approval, (23.10) approves the MRP plan, generating a firm order for the amount of each planned order, changing the status from P to F. After this step, items are ready for release. The new status prevents MRP from changing the order dates and quantities. Select orders for approval with the criteria displayed.



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Planned Work Order Approval: 2 of 2

Planned Work Order Approval X

Go To Actions Copy Print Preview Attach

Attachments

Ln	Work Order	ID	Item Number	Qty Ordered	Rel Date	OK
1	09190002	2280362	1000-00	200.0	9/19/2008	<input checked="" type="checkbox"/>
2	09190003	2280363	1000-00	225.0	9/26/2008	<input checked="" type="checkbox"/>
3	09190004	2280364	1000-00	250.0	10/3/2008	<input checked="" type="checkbox"/>
4	09190005	2280365	1000-00	275.0	10/10/2008	<input checked="" type="checkbox"/>

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The screen displays the relevant work orders in the top half. In the bottom, you select orders by line number for processing:

Field Definitions

The information below describes the key fields in the screen above.

Ln

Enter the line number of the work order, shown in the top half of the screen

Work Order

The number assigned by MRP

ID / Item Number / Qty Ordered / Release

Display-only fields

OK

- Yes to release the order, place a check mark in the box by cursor clicking in the box.
- No to prevent its release

Is all information correct?

- Yes = Process
- No = Correct the data
- Cancel = Cancel the function

Discussed in the following Training Guide: Work Orders

Approve Planned Orders



- ▲ Verify Low Level Codes
- ▲ Calculate Requirements
- ▲ Review Action Messages
- ▲ Approve Planned Orders
 - Work Orders
 - Purchase Orders
- ▲ Review MRP Information
- ▲ Calculate the Capacity Plan

Planned Purchase Order Approval

Planned Purchase Order Appr... x

Go To Actions Copy Print Preview Attach

Attachments

Item Number: 1000-10 To: 1000-50

Site: PRPROTO To: PRPROTO

Release Date: To:

Default Approve

Buyer/Planner:


Include Phantoms:

Include Manufactured Items:

QAD Proprietary 2008-MRP-PR-190

Planned Purchase Order Approval, (23.11) approves the MRP plan, generating purchase requisitions for the amount of each planned order. From here, the requisitions are ready to print. This moves the purchase orders out of the MRP module and into the purchasing module.

On the first screen, select the planned orders to be approved, usually for a range of items and release dates. To approve the entire group, set Default Approve to Yes

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Planned Purchase Order Approval: 2 of 2

Planned Purchase Order Appr... x

Go To Actions Copy Print Preview Attach

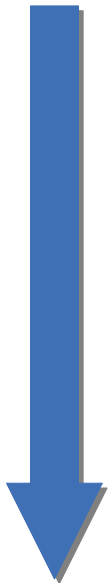
Attachments

Ln	Req	Item Number	Qty Ordered	Rel Date	Due Date	Appr
1	09190006	1000-10	200.0	9/18/2008	9/19/2008	<input checked="" type="checkbox"/>
2	09190007	1000-10	225.0	9/25/2008	9/26/2008	<input checked="" type="checkbox"/>
3	09190008	1000-10	250.0	10/2/2008	10/3/2008	<input checked="" type="checkbox"/>
4	09190009	1000-10	275.0	10/9/2008	10/10/2008	<input checked="" type="checkbox"/>
5	09190010	1000-20	200.0	9/18/2008	9/19/2008	<input checked="" type="checkbox"/>
6	09190011	1000-20	225.0	9/25/2008	9/26/2008	<input checked="" type="checkbox"/>
7	09190012	1000-20	250.0	10/2/2008	10/3/2008	<input checked="" type="checkbox"/>
8	09190013	1000-20	275.0	10/9/2008	10/10/2008	<input checked="" type="checkbox"/>
9	09190014	1000-30	400.0	9/19/2008	9/19/2008	<input checked="" type="checkbox"/>
10	09190015	1000-30	450.0	9/26/2008	9/26/2008	<input checked="" type="checkbox"/>

QAD Proprietary 2008-MRP-PR-200

This screen displays outstanding MRP-generated purchase requisitions and enables you to approve them. Enter the line number in the indicated field to access the appropriate data.

MRP Processing



- ▲ Verify Low Level Codes
- ▲ Calculate Requirements
- ▲ Review Action Messages
- ▲ Approve Planned Orders
- ▲ Review MRP Information
- ▲ Calculate the Capacity Plan

Review MRP Information

In this section, we will cover:

- MRP Summary
- MRP Details
- Past Due Receipts

MRP Processing



- ▲ Verify Low Level Codes
- ▲ Calculate Requirements
- ▲ Review Action Messages
- ▲ Approve Planned Orders
- ▲ Review MRP Information
 - MRP Summary
 - MRP Details
 - Past Due Receipts
- ▲ Calculate the Capacity Plan

MRP Summary

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MRP Summary Inquiry

Master Schedule Detail Inquiry... x

Master Schedule Detail Inquiry 12/11/08

Item Number: 1100-00 Site: PROTO Start Date:
Alloy Chain Crank, 160mm Output: PAGE

Item Number: 1100-00 Qty on Hand: 0.0 Site: PROTO
Alloy Chain Crank, 160mm UM: EA Pur/Mfg: M

Buyer/Planner: njm Order Policy: POQ Min Order: 0 Mfg LT: 1
Mstr Sched: Yes Order Period: 7 Max Order: 0 Pur LT: 0
MRP Required: No Time Fence: 0 Ord Mult: 0 Ins LT: 0
Plan Orders: Yes Safety Time: 0 Order Qty: 10 Inspect: No
Issue Policy: Yes Safety Stock: 0 Yield Percent: 100.00% Cum LT: 3

Due Date	Gross Reqs	Mstr Sched	Proj QOH	Plan Ords	Details
12/15/08	15		0		Beginning Available
12/15/08			-15		Forecast
12/15/08			0	15	W/O: 12110002 ID: 2280419 Release Date 12/12/08
12/29/08			0		Seasonal Build 30
12/29/08	250		-250		S0: CU100 Line: 1
12/29/08			30	280	W/O: 12110003 ID: 2280420 Release Date 12/26/08
01/05/09			30		Seasonal Build 60
01/05/09			60	30	W/O: 12110004 ID: 2280421 Release Date 01/02/09
01/12/09	23		37		Forecast
01/12/09			37		Seasonal Build 0
01/19/09	22		15		Forecast
01/26/09	24		-9		Forecast
01/26/09			0	9	W/O: 12110005 ID: 2280422 Release Date 01/23/09

QAD Proprietary 2008-MRP-PR-220

MRP Summary Inquiry

MRP Summary Inquiry, (23.13) gives you a brief view of the MRP outlook for specified date buckets.

The top portion of the MRP Summary Inquiry screen shows the item planning data stored in the item master along with the current quantity on hand.

The MRP Summary Inquiry screen layout follows APICS standards. The top row shows the "Gross Reqs" (Gross Requirements) for the period. The calculation of gross requirements was covered in an earlier section.

The time buckets are user defined at the selection screen for the summary inquiry. They may be days, weeks, months or General Ledger calendar periods. The display defaults to weeks. In

addition you may specify how many periods to display in each vertical column. For example you could select months and two periods per bucket, this would display a years data in a single row.

The second line shows Sched Receipt (Scheduled Receipts). These are released orders, either purchase or work orders due to be received in the period the quantity appears in.

The third line Projected QOH (Quantity on Hand) is a calculated value based on the current quantity on hand, plus the scheduled receipts, less the gross requirement.

The fourth line "Plan Ords Due" (Planned Orders Due) is the quantity of items on planned orders, that is MRP planned orders that have not been released, that need to be received in the period.

The last line, "Plan Ords Rel" (Planned Orders to be Released) is the quantity of items on planned orders that need to be released in the period.

Once an order that appears on the Plan Ords Rel line, is release, it becomes a Scheduled Receipt.

Category	Past	9/15/2008	9/22/2008	9/29/2008	10/6/2008	10/13/2008	10/20/2008			
Gross Requirements	0	0	200	225	250	275	0			
Sched Receipts	0	0	0	0	0	0	0			
Projected QOH	0	0	0	0	0	0	0			
Plan Ords Due	0	0	200	225	250	275	0			
Type	Order	Line/ID	Date	Past	9/15/2008	9/22/2008	9/29/2008	10/6/2008	10/13/2008	10/20/2008
Planned Order	09190002	2280362	9/22/2008	0	0	200	0	0	0	0
Planned Order	09190003	2280363	9/29/2008	0	0	0	225	0	0	0
Planned Order	09190004	2280364	10/6/2008	0	0	0	0	250	0	0
Planned Order	09190005	2280365	10/13/2008	0	0	0	0	0	275	0
Plan Ords Rel	0	200	225	250	275	0	0			

Note Drill down detail shown above.

MRP Summary Report X

Go To Actions Copy Print Preview Attach

Attachments

Item Number: 1000-00 To: 1000-50

BOM/Formula Code: To:

Site: PRPROTO To: PRPROTO

Buyer/Planner: To:

Product Line: To:

Group: To:

Item Type: To:

Supplier: To:

Purchase/Manufacture:

Details: Use Cost Plans:

Print Action Messages: Include Base Process Orders:

Print Substitute Items:

Include Zero Requirements: Sort by Item or BOM/Formula: Item Number

Start Date: 9/15/2008 End Date:

Day/Week/Month: W Per Column: 1 Output: Batch ID:

QAD Proprietary 2008-MRP-PR-230

MRP Summary Report

MRP Summary Report, (23.14) gives you summary information on MRP for specified date buckets. Information appears in columns, with one column per time period. Activity prior to the start date appears in the first column under the label Past.

Select the data according to the criteria displayed.

Field Definitions

The following information describes the key fields in the screen above.

Print Detail

Allows to print order details following the summary. Useful to help resolve shortage situations. This creates a report that is both summary and detail format.

Use Cost Plans

Allows you to print a summary of production costs for each period. Normally production costs are based on the GL cost of the item, but if a cost plan is in place, costs are based on these planned future costs. This is the cost of implementing the MRP plan.

Costs plans are entered in the Cost Management module and they allow you to project future cost changes - particularly useful for commodities or seasonal items.

Print Action Messages

Allows you to print action messages following the summary report. Useful to help resolve shortage situations.

Day / Week / Month

Indicates the length of each column period:

- D for Day
- W for Week
- M for Month (requires that you set the Per Column field to 1)
- P for GL calendar period (works only if you are using the General Ledger module)

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MRP Summary Report: Sample

MRP Summary Report - 9/19/2... X

MRP Summary Report

Puerto Rico

09/19/08 15:32:55

Page: 1

Item Number: 1000-00	Roller-Bearing Hub Assy	Buyer/Planner:	Site: PRPROTO
Qty on Hand: 0.0	UM: EA	Manufacturing Lead Time: 1	MRP Required: No
Order Policy: LFL	Minimum Order: 0	Pur/Mfg: M	Purchase LT: 0
Order Period: 7	Maximum Order: 0	Inspect: No	Inspect LT: 0
Order Qty: 5	Ord Mult: 0	Cumulative Lead Time: 0	Issue Policy: Yes
	Yield%: 100.00%	BOM/Formula Code:	

	Past	09/15/08	09/22/08	09/29/08	10/06/08	10/13/08	10/20/08	10/27/08	11/03/08	11/10/08	11/17/08	11/24/08	12/01/08
	09/14/08	09/21/08	09/28/08	10/05/08	10/12/08	10/19/08	10/26/08	11/02/08	11/09/08	11/16/08	11/23/08	11/30/08	12/07/08
Gross Reqs	0	0	200	225	250	275	0	0	0	0	0	0	0
Sched Receipt	0	0	0	0	0	0	0	0	0	0	0	0	0
Projected QOH	0	0	0	0	0	0	0	0	0	0	0	0	0
Plan Ords Due	0	0	200	225	250	275	0	0	0	0	0	0	0
Plan Ords Rel	0	200	225	250	275	0	0	0	0	0	0	0	0

Item Number: 1000-10	Hub Housing	Buyer/Planner:	Site: PRPROTO
Qty on Hand: 0.0	UM: EA	Manufacturing Lead Time: 0	MRP Required: No
Order Policy: LFL	Minimum Order: 0	Pur/Mfg: P	Purchase LT: 1
Order Period: 7	Maximum Order: 0	Inspect: No	Inspect LT: 0
Order Qty: 0	Ord Mult: 0	Cumulative Lead Time: 0	Issue Policy: Yes
	Yield%: 100.00%	BOM/Formula Code:	

	Past	09/15/08	09/22/08	09/29/08	10/06/08	10/13/08	10/20/08	10/27/08	11/03/08	11/10/08	11/17/08	11/24/08	12/01/08
	09/14/08	09/21/08	09/28/08	10/05/08	10/12/08	10/19/08	10/26/08	11/02/08	11/09/08	11/16/08	11/23/08	11/30/08	12/07/08
Gross Reqs	0	200	225	250	275	0	0	0	0	0	0	0	0
Sched Receipt	0	0	0	0	0	0	0	0	0	0	0	0	0
Projected QOH	0	0	0	0	0	0	0	0	0	0	0	0	0
Plan Ords Due	0	200	225	250	275	0	0	0	0	0	0	0	0
Plan Ords Rel	0	200	225	250	275	0	0	0	0	0	0	0	0

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2008-MRP-PR-240

Sample MRP Summary Report

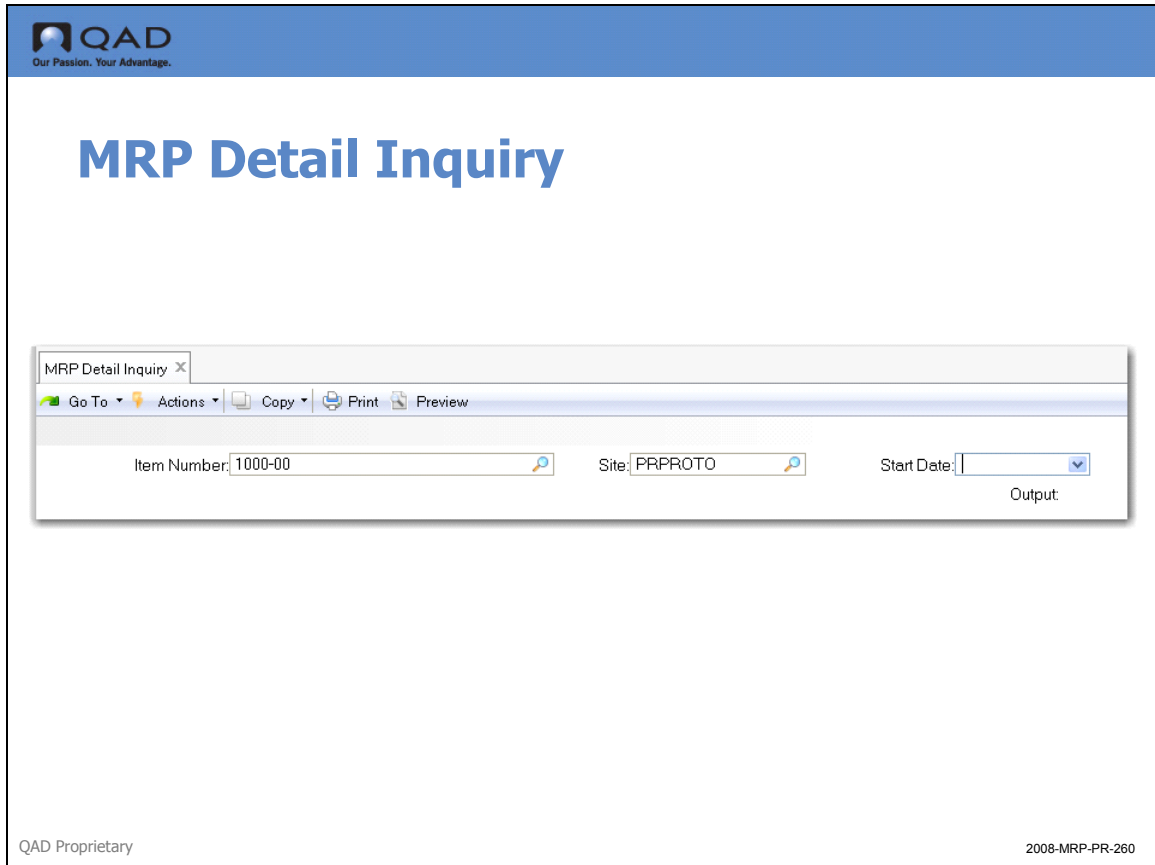
The summary report shows the same information as the summary inquiry.

MRP Processing



- ▲ Verify Low Level Codes
- ▲ Calculate Requirements
- ▲ Review Action Messages
- ▲ Approve Planned Orders
- ▲ Review MRP Information
 - MRP Summary
 - MRP Details
 - Past Due Receipts
- ▲ Calculate the Capacity Plan

MRP Details



MRP Detail Inquiry

MRP Detail Inquiry, (23.16) gives you a detailed look at MRP for specified date buckets. Buyer/Planners use this inquiry often.



MRP Detail Inquiry

MRP Detail Inquiry - 9/19/2008... X						
MRP Detail Inquiry						09/19/08
QAD						
Item Number: 1000-00	Site: PRPROTO	Start Date:				
Roller-Bearing Hub Assy		Output: PAGE				
Item Number: 1000-00	Qty on Hand: 0.0	Site: PRPROTO				
Roller-Bearing Hub Assy	UM: EA	Pur/Mfg: M				
Buyer/Planner:	Ord Pol: LFL	Min Order: 0	Mfg LT: 1			
Mstr Sched: Yes	Order Period: 7	Max Order: 0	Pur LT: 0			
MRP Required: No	Time Fence: 0	Ord Mult: 0	Ins LT: 0			
Plan Orders: Yes	Safety Time: 0	Order Qty: 5	Inspect: No			
Issue Policy: Yes	Safety Stock: 0	Yield%: 100.00%	Cum LT: 0			
Due Date	Gross Reqs	Sched Rcpt	Proj QOH	Plan Ords	Details	
09/22/08	200		0		Beginning Available	
09/22/08			-200	200	Forecast	
			0		W/O: 09190002	
					ID: 2280362	
09/29/08	225		-225		Release Date 09/19/08	
09/29/08			0	225	Forecast	
					W/O: 09190003	
					ID: 2280363	
10/06/08	250		-250		Release Date 09/26/08	
10/06/08			0	250	Forecast	
					W/O: 09190004	
					ID: 2280364	
10/13/08	275		-275		Release Date 10/03/08	
10/13/08			0	275	Forecast	
					W/O: 09190005	
					ID: 2280365	
					Release Date 10/10/08	

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2008-MRP-PR-270

Sample MRP Detail Inquiry

The top of the Detail Inquiry screen shows the item planning data and current quantity on hand.

The body of the inquiry displays, in date order, all the transactions for the item. Only dates that have transactions are displayed. The second column is the gross requirement. The third column is the projected quantity on hand based on these transactions. The fourth column is the plan order quantity and the last column is the details of that planned order.

In the example screen we see Sales Orders (SO) and forecasts creating gross requirements and planned work orders (WO) to satisfy that demand. Note the sales order number and line item are given and work order numbers are given as part of the detail.






MRP Processing




- ▲ Verify Low Level Codes
- ▲ Calculate Requirements
- ▲ Review Action Messages
- ▲ Approve Planned Orders
- ▲ Review MRP Information
 - MRP Summary
 - MRP Details
 - Past Due Receipts
- ▲ Calculate the Capacity Plan

Past Due Receipts


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Review Due Receipts Inquiry

Past Due Receipts Inquiry - 9/1... X



Past Due Receipts Inquiry

09/19/08

Item Number 1000-10	Site PRPROTO	Buy Pln	Show MRP Required Items no	Show Phantom Items no	Output PAGE
Item Number: 1000-10		Buyer/Planner:		Site: PRPROTO	
Hub Housing					
Due Date Release Quantity UM Detail					
09/19/08	09/18/08	30.0	EA	Planned Order Release Past Due	
				W/O: 09190006	ID: 2280366
09/26/08	09/25/08	40.0	EA	Planned Order Release Due	
				W/O: 09190007	ID: 2280367

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2008-MRP-PR-290

Past Due Receipts Inquiry

Past Due Receipts Inquiry, (23.19) shows you past due receipts.

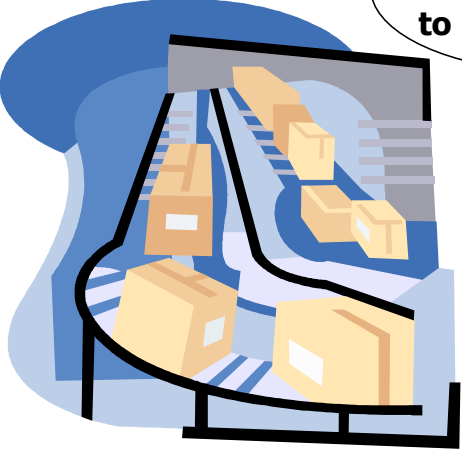
Because the projected quantity on hand value uses released order due dates for supply, orders that become past due are a real problem. It is imperative that past due orders be rescheduled with a due date in the future for the projected quantity on hand value to be meaningful.

MRP has no logic to deal with past due orders, they are simply lumped into the first column of the summary inquiry screen as "past due."

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Calculate the Capacity Plan

Do we have enough capacity to meet the plan?



```

    graph BT
      subgraph Department
        WC1[Work Center 1]
        WC2[Work Center 2]
        WC3[Work Center 3]
        WC4[Work Center 4]
        WC5[Work Center 5]
      end
      WC1 --> Dept[Department]
      WC2 --> Dept
      WC3 --> Dept
      WC4 --> Dept
      WC5 --> Dept
  
```

QAD Proprietary 2008-MRP-PR-295

Calculate the Capacity Plan

Once the MRP has been reviewed and action messages acted upon, the capacity plan can be run. The MRP output is the direct input to CRP. Capacity Requirements Planning uses all work orders on the system to calculate the load.

All capacity planning and reporting is done by work center/machine.

MRP Processing



- ▲ Verify Low Level Codes
- ▲ Calculate Requirements
- ▲ Review Action Messages
- ▲ Approve Planned Orders
- ▲ Review MRP Information
- ▲ Calculate the Capacity Plan

Calculate the Capacity Plan

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Recalculate Capacity Plan

Recalculate Capacity Plan x

Go To Actions Copy Print Preview

Site: PPROTO To: PPROTO

Work Order: To:

Item Number: To:

Release Date: To:

Due Date: To:

Sales/Job: To:

ID: To:

Supplier: To:

Planned Orders:

Firm Planned Orders:

Exploded Orders:

Allocated Orders:

Released Orders:

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Recalculating the Capacity Plan

Capacities and Load

The capacity plan is usually recalculated after an MRP run. CRP looks at the available hours or machines for departments and work centers. CRP then loads the work center by locating all orders that meet the selection criteria and applies them to operations by start date, using backward scheduling from the orders' due dates.

Note This may take some time to process; consider submitting it in batch mode.

Discussed in the following Training Guide: Work Centers, Routings, and WO Subcontracting

Like selective MRP, CRP may be restricted to certain ranges of sites, items, and other factors as seen on the Recalculate Capacity Plan selection screen. Like selective MRP you should be very aware of what you are leaving out of the capacity plan.



Recalculate Capacity Plan

Recalculate Capacity Plan - 12... X

Recalculate Capacity Plan
Puerto Rico

Work Order	ID	Item Number	Rel Date	Due Date	ST	Qty Ordered	Qty Completed	First Op Due Date	
								Start	Last Op
12090002	2280392	1500	12/15/08	12/15/08	P	1,000.0	0.0		
12090003	2280393	1500	12/22/08	12/22/08	P	1,000.0	0.0		
12090004	2280394	1500	12/29/08	12/29/08	P	1,000.0	0.0		
12090005	2280395	1500	01/05/09	01/05/09	P	1,000.0	0.0		
12090006	2280396	1500	01/12/09	01/12/09	P	1,000.0	0.0		
12090007	2280397	1500	01/19/09	01/19/09	P	1,000.0	0.0		
12090008	2280398	1500-10	12/05/08	12/15/08	P	200.0	0.0	12/12/08	12/15/08
12090009	2280399	1500-10	12/12/08	12/22/08	P	200.0	0.0	12/19/08	12/22/08
12090010	2280400	1500-10	12/19/08	12/29/08	P	200.0	0.0	12/26/08	12/29/08
12090011	2280401	1500-10	12/26/08	01/05/09	P	200.0	0.0	01/02/09	01/05/09
12090012	2280402	1500-10	01/02/09	01/12/09	P	200.0	0.0	01/09/09	01/12/09
12090013	2280403	1500-10	01/09/09	01/19/09	P	200.0	0.0	01/16/09	01/19/09
12090014	2280404	1500-20	12/15/08	12/15/08	P	300.0	0.0		
12090015	2280405	1500-20	12/22/08	12/22/08	P	300.0	0.0		
12090016	2280406	1500-20	12/29/08	12/29/08	P	300.0	0.0		
12090017	2280407	1500-20	01/05/09	01/05/09	P	300.0	0.0		
12090018	2280408	1500-20	01/12/09	01/12/09	P	300.0	0.0		
12090019	2280409	1500-20	01/19/09	01/19/09	P	300.0	0.0		
12090020	2280410	1500-50	12/15/08	12/15/08	P	500.0	0.0		
12090021	2280411	1500-50	12/22/08	12/22/08	P	500.0	0.0		
12090022	2280412	1500-50	12/29/08	12/29/08	P	500.0	0.0		
12090023	2280413	1500-50	01/05/09	01/05/09	P	500.0	0.0		
12090024	2280414	1500-50	01/12/09	01/12/09	P	500.0	0.0		
12090025	2280415	1500-50	01/19/09	01/19/09	P	500.0	0.0		
12100002	2280417	1000-00	01/22/09	01/26/09	P	16.0	0.0	01/26/09	01/26/09
12100003	2280418	1000-00	01/29/09	02/02/09	P	27.0	0.0	02/02/09	02/02/09
400003	2280416	1000-00	12/29/08	01/05/09	F	100.0	0.0	01/01/09	01/05/09

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2008-MRP-PR-

Recalculate Capacity Plan





Lead-Time Components

Queue	Setup	Run	Wait	Move
-------	-------	-----	------	------

▲ **Queue**

- Time waiting before operation begins

▲ **Setup**

- Time getting ready for operation

▲ **Run**

- Time performing operation

▲ **Wait**

- Time waiting after operation ends

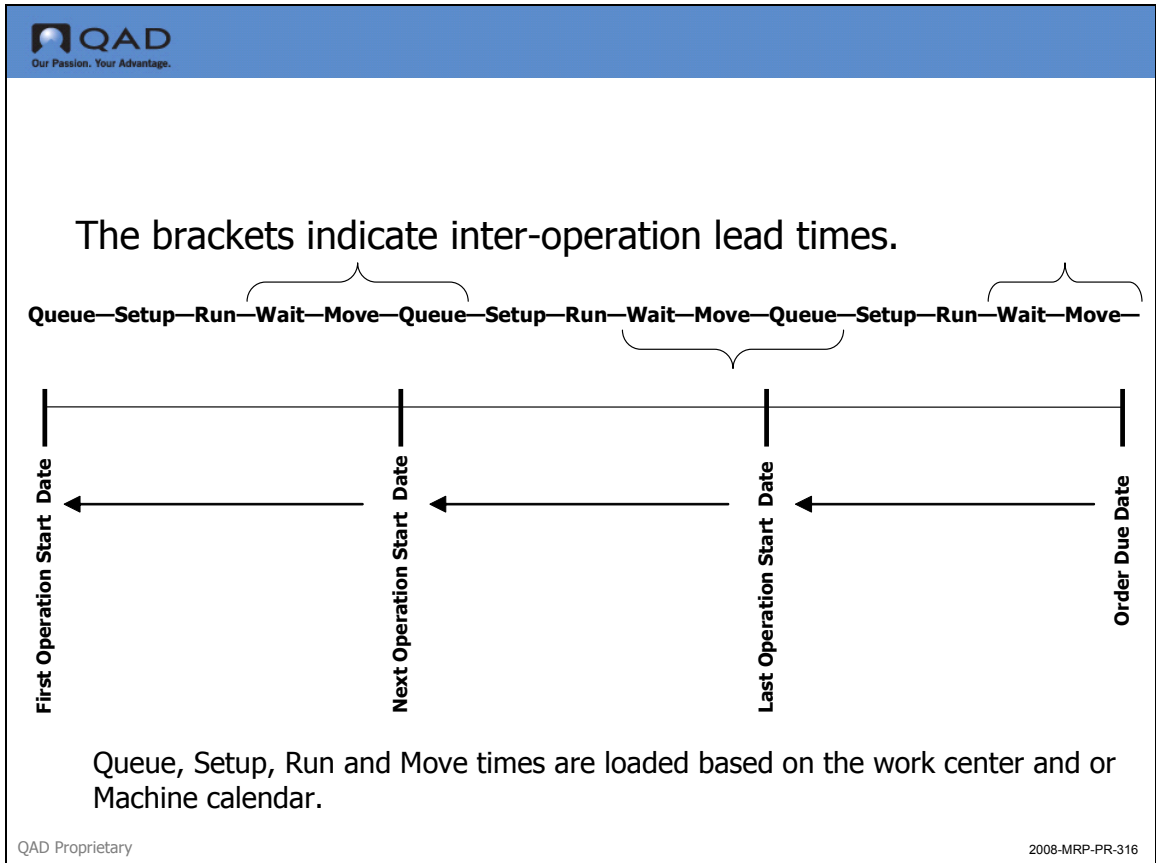
▲ **Move**

- Time physically moving between operations

Queue, Setup, Wait and Move times are referred to as Order times, that is they do not vary with order size. They can be different for every operation.

CRP Planning

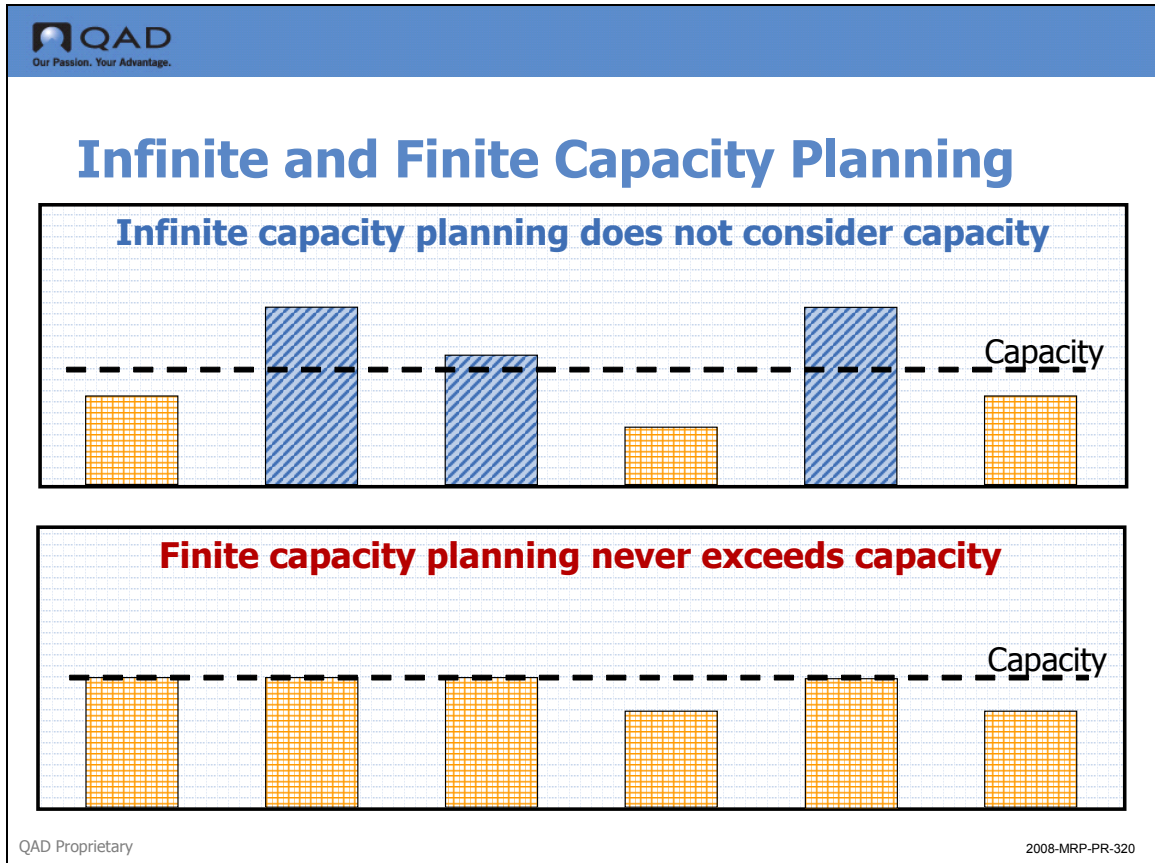
CRP uses very different logic than MRP to calculate load. MRP offsets from a demand due date the fixed lead time to arrive at a release date for the supply order. CRP calculates from the same due date, but backward schedules all the five elements of lead time from the specific work order route which is based on the work order quantity. CRP does this for each operation.



CRP Planning (continued)

Each element of lead time is added up backwards from the order due date. Each work center/machine may have its own calendar. The system uses the actual order quantity, which may be different than the standard order quantity.

In addition the machines per operation and operation overlap values from the route also effect the lead time calculation. For these several reasons it is entirely possible for CRP to calculate a first operation start date before the order release date from MRP. This will be reported as a CRP action message.



Infinite and Finite Capacity Planning

Infinite (Unfixed) Capacity Planning

QAD Enterprise Applications CRP uses infinite loading to schedule operation and work center production loads based on work order due dates:

- No work order routing dates are changed to accommodate insufficient capacity
- Loading continues into the future without regard to capacity

Finite (Fixed) Capacity Planning

Finite capacity planning assigns no more work to a work center than the work center can be expected to execute in a given time period. QAD Enterprise Applications Advanced Repetitive Workbench uses finite loading:

- Loading to finite capacity will extend deliveries; as a result, the Master Schedule will have to be changed.
- Finite capacity looks at capacity and determines how much to produce, or how long it will take to produce it.

The Plan

The capacity plan is sorted by:

- Work order and item
- Work order due and release dates
- Quantity ordered and quantity completed
- CRP-scheduled start and last operation dates

The CRP indicates:

- *No Routing* for orders that cannot be exploded
- *Op Conflict* difference between operation start date and work order release date

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Department Maintenance

Department Maintenance x

Go To Actions Copy Print Preview

Department: PROTO

Default Sub-Account: Override:

Default Cost Center: Override:

Description:

Labor Capacity:

Cost of Production:	<input type="text" value="5770"/>	<input type="text" value=""/>	Cons	<input type="text" value=""/>	<input type="text" value=""/>
Labor:	<input type="text" value="5100"/>	<input type="text" value=""/>	Cons	<input type="text" value=""/>	<input type="text" value=""/>
Burden:	<input type="text" value="5200"/>	<input type="text" value=""/>	Cons	<input type="text" value=""/>	<input type="text" value=""/>
Labor Usage Variance Acct:	<input type="text" value="5140"/>	<input type="text" value=""/>	Cons	<input type="text" value="Mfg"/>	<input type="text" value=""/>
Labor Rate Variance Acct:	<input type="text" value="5150"/>	<input type="text" value=""/>	Cons	<input type="text" value="Mfg"/>	<input type="text" value=""/>
Burden Usage Variance:	<input type="text" value="5240"/>	<input type="text" value=""/>	Cons	<input type="text" value="Mfg"/>	<input type="text" value=""/>
Burden Rate Variance:	<input type="text" value="5250"/>	<input type="text" value=""/>	Cons	<input type="text" value="Mfg"/>	<input type="text" value=""/>

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Department and Work Center Capacities

The resources used to process orders on the shop floor are work centers, departments, and machines. The capacity of a department or work center is the time available for production in that location.

The capacity of a department is the total number of available labor hours per day for all work centers in that department, as defined in Department Maintenance, (14.1), shown above.

High level rough cut capacity information can be obtained using Department Load Summary and Detail Inquiries. Thus if a department has four work centers each with four people, who are each available to do work for 7.5 hours per day, the total labor for the department per day is 120 hours. ($4 \times 4 \times 7.5 = 120$) This assumes the labor in a department is relatively interchangeable between work centers.

Note The labor capacity field is the only field that should be maintained by capacity planners or shop floor personnel. All of the account codes fields should be restricted to the appropriate finance personnel. see the QAD 2008 EE Security and Controls Guide for information on implementing role permissions and security

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Work Center Maintenance

Work Center:	PROTO	Machine:	
Description:	Prototype Production		
Department:	PROTO	Prototype Production	
Queue Time:	0.0		
Wait Time:	0.0		
Mach/Op:	1		
Setup Crew:	0.00	Setup Rate:	35.00
Run Crew:	1.000	Labor Rate:	35.00
Machines:	1.000	Labor Burden Rate:	10.00
Mach Bdn Rate:	150.00	Labor Bdn %:	75.00%

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Work Center Maintenance

The capacity for a work center is the number of machines or personnel available for that work center, as defined in Work Center Maintenance, (14.5) shown above, multiplied by work hours (defined in Calendar Maintenance, 36.2.5).

If a work center or machine is over or under-loaded, you can modify either its capacity, the timing, or amount of the load.

For example, a work center with a 7.5m day and five interchangeable machines has 37.5 hrs/day of capacity.

Field Definitions

The information below describes the key fields in Work Center Maintenance, (14.5).

Capacity

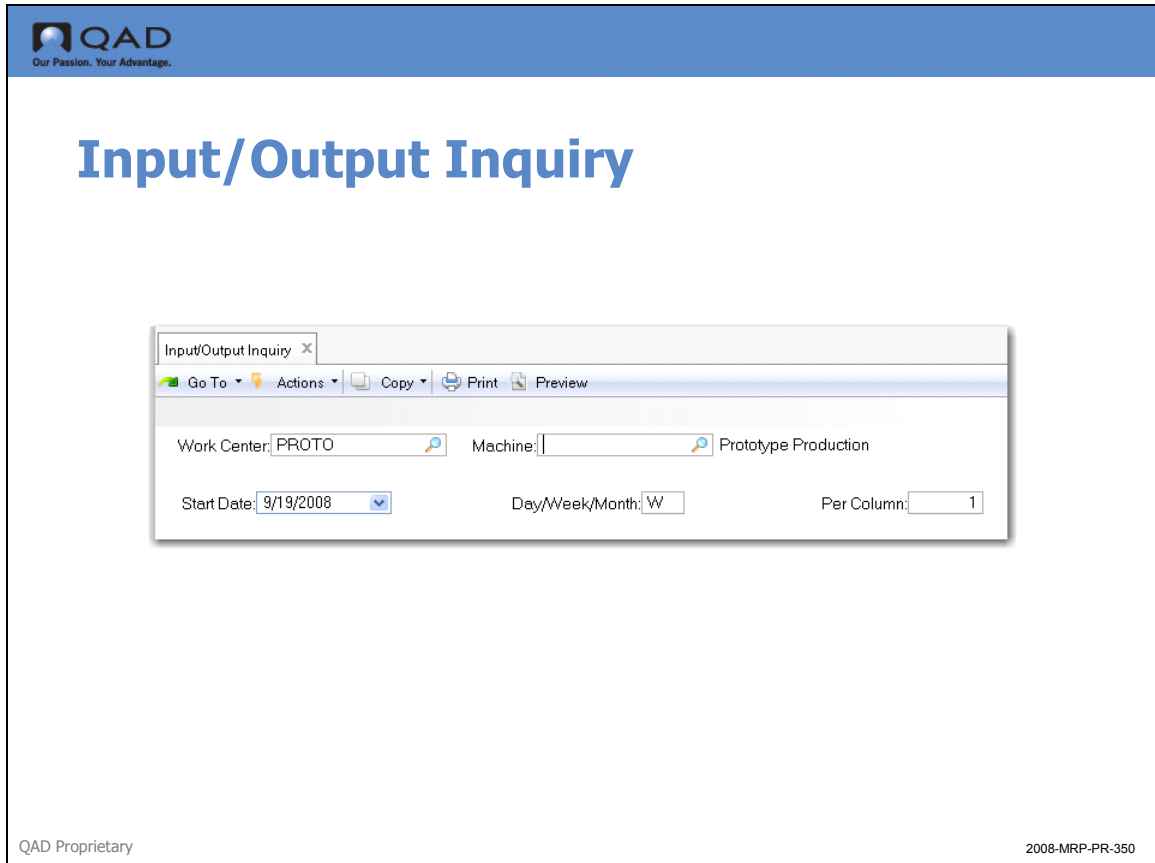
- Adjust capacity using one of the following functions:
 - Calendar Maintenance
 - Holiday Maintenance
- Add or subtract workday hours as needed for work center or shop calendars

Adjusting Load

- Adjust the timing or amount of load by modifying:
 - Work order due dates
 - Operation lead time components
 - Repetitive schedules

Note If you manually adjust operation start and stop dates, CRP reschedules them the next time it is run.

In addition, repetitive schedules may have multiple shifts and each shift may have a “productivity factor” which will increase or decrease the line production rate.



Input/Output Analysis

Input/Output Inquiry

In order to provide control and auditable shop floor data about planned versus actual results, compare the planned load input and output for a work center/machine with the actual load incurred and the actual output hours against that load. Input/Output Inquiry, (24.4) and Input/Output Report, (24.5) help evaluate a work center or machine's response to planned loads by:

- Displaying planned and actual input and output in daily, weekly, or monthly periods
- Spotting "bottlenecks"
- Giving a perspective apart from traditional load reports

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Input/Output Inquiry

Input/Output Inquiry - 9/19/2008

QAD Input/Output Inquiry 09/19/08

Work Center: PROTO Machine: Prototype Production

Start Date: 09/19/08 Day/Week/Month: W Per Column: 1 Output: PAGE

Work Center: PROTO Description: Prototype Production
 Department: PROTO wc_qad01: 0.0 Mach/Wk Ctr: 1.000
 Mach/Op: 1 Run Crew: 1.000 Labor Rate: 35.00
 Lbr Bdn Rate: 10.00 Labor Bdn %: 75.00% Mach Bdn Rate: 150.00
 Queue Time: 0.0 Wait Time: 0.0 Work Location:
 Machine: Percent Utiliza: 0.000 Percent Effi: 0.000
 wc_qad02: 0.000 UFlid1: UFlid2:
 Setup Crew: 0.00 Setup Rate: 35.00 Mod Date:
 User ID: Setup Bdn Rate: 0.00 Setup Bdn %: 0.00%
 Mach Setup B: 0.00 FSM Type: QAD Character:
 QAD Character: QAD Character: QAD Decimal: 0.00
 QAD Decimal: 0.00 QAD Logical: No User Character:
 User Character: User Character: User Decimal: 0.00
 User Decimal: 0.00 User Logical: No Domain: Train

	Past	09/19/08	09/26/08	10/03/08	10/10/08	10/17/08	10/24/08
	09/18/08	09/25/08	10/02/08	10/09/08	10/16/08	10/23/08	10/30/08
Input Plan	0	6	8	9	11	0	0
Input Actual	0	0	0	0	0	0	0
Cumulative Dev	0	-6	-14	-23	-34	-34	-34
Output Plan	0	6	8	9	11	0	0
Output Actual	0	0	0	0	0	0	0
Cumulative Dev	0	-6	-14	-23	-34	-34	-34
Queue Plan	0	0	0	0	0	0	0
Queue Actual	0	0	0	0	0	0	0

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The Input/Output Inquiry and Report display the same information. The inquiry screen displays one work center/machine at a time. The report selection allows you to select a range of work centers and or machines.

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Input/Output Report

Input/Output Report x

Go To Actions Copy Print Preview

Work Center: PROTO To:

Machine: To:

Start Date: 9/19/2008

D/W/M/P: W

Per Column: |

QAD Proprietary 2008-MRP-PR-360

Input/Output Report

The Input/Output Inquiry and Report display the same information. The inquiry screen displays one work center/machine at a time. The report selection allows you to select a range of work centers and or machines.

Input/Output Report

09/19/08 15:36:53
Page: 1

Work Center: PR0T0 Prototype Production
Machine: Queue Time: 0.0
Department: PR0T0 Prototype Production Wait Time: 0.0
Mach/Op: 1
Mach/Wk Ctr: 1.000
Run Crew: 1.000

Past	09/19/08	09/26/08	10/03/08	10/10/08	10/17/08	10/24/08	10/31/08	11/07/08	11/14/08	11/21/08	11/28/08	12/05/08
Input Plan	34	38	43	47	0	0	0	0	0	0	0	0
Input Actual	0	0	0	0	0	0	0	0	0	0	0	0
Input Cum Dev	-34	-73	-115	-162	-162	-162	-162	-162	-162	-162	-162	-162
Output Plan	14	36	40	44	28	0	0	0	0	0	0	0
Output Actual	0	0	0	0	0	0	0	0	0	0	0	0
Output Cum Dev	-14	-50	-90	-135	-162	-162	-162	-162	-162	-162	-162	-162
Queue Plan	20	3	3	3	-28	0	0	0	0	0	0	0
Queue Actual	0	0	0	0	0	0	0	0	0	0	0	0

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Field Definitions

The information below describes the key fields in the screen above.

Planned Input

Load on a work center or machine represented by work order operations scheduled to start in a reporting period. It is determined using the following calculation:

$$\text{Standard Setup} + (\text{Standard Run} * \text{Quantity Ordered}).$$

Actual Input

Load that has been moved to the first and subsequent order operations. It is calculated for a reporting period based on move transactions entered using work order release and shop floor control functions. It is determined using the following calculation:

Standard Run Hours * Quantity Moved.

Planned Output

Load calculated based on order operations scheduled to be completed in a reporting period. It is determined using the following calculation:

Standard Setup + (Standard Run * Quantity Ordered).

Actual Output

Load calculated for a reporting period based on operation quantity completed transactions for:

- Work orders
- Repetitive schedules

Report completed quantities for order operations using labor feedback transactions in:

- Shop Floor Control
- Advanced Repetitive
- Repetitive
- Work Order Accounting Close

Actual output is determined using the following calculation:

Actual Setup + (Standard Run * Quantity Completed).

Planned Queue

Difference between planned input and planned output

Actual Queue

Difference between actual input and actual output

Experienced shop floor planners will quickly scan the Input/Output Report Queue line for a fast indication of how things are going. Assuming they have loaded a given work center/machine to a relatively fixed planned queue, an actual queue that is either growing or shrinking will be a fast indicator that work is either building up or running out.

Note Shop Floor Control, (17.24) must be used in order for this to be useful..

Load Summary and Detail Inquiries/Reports



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2008-MRP-PR-380

Summary and Detail Inquiries and Reports

You can generate load reports by department, work center, or machine using the work center and department load inquiries and reports.

CRP determines load hours for a work center based on setup and run times. Queue, wait, and move times are excluded from load calculations. To include queue times in load calculations, set up separate operations for queue. CRP then considers these operations when calculating load.

CRP determines the load an operation exerts on a work center using the following calculation:

$$\text{Operation Load} = \text{Setup Time} + (\text{Run Hours/Unit} * \text{Quantity Open})$$

The quantity open for an operation is the order quantity minus any quantities reported complete.

The system assigns the entire load for an operation to its scheduled start date. Even for operations with run times longer than one day, load is not spread between operation start and due dates

Work Center Load Summary Inquiry

Work Center Load Summary In... x

Run Export to Excel View as PDF

Work Center: PROTO Machine: PPROTO Site: PPROTO Start Date: 9/19/2008 End Date: Column Type: Week Per Column: 1 Columns: 12

Work Center: PROTO Machine: PPROTO Site: PPROTO Run Crew: 1.000
 Description: Prototype Production Queue Time: 0.0 Mach/Wk Ctr: 1.000
 Department: PROTO Prototype Production Wait Time: 0.0 Mach/Op: 1

Category	Past	9/19/2008	9/26/2008	10/3/2008	10/10/2008	10/17/2008	10/24/2008			
Work Days	0	5	5	5	5	5	5			
Available Hours	0	35	35	35	35	35	35			
Load Hours	34.32	38.4950	42.650	46.8150	0	0	0			
Order	ID/Line	Operation	Date	Past	9/19/2008	9/26/2008	10/3/2008	10/10/2008	10/17/2008	10/24/2008
09190002	2280362	10	9/16/2008	7.66	0	0	0	0	0	0
09190002	2280362	20	9/17/2008	6.66	0	0	0	0	0	0
09190002	2280362	30	9/18/2008	20	0	0	0	0	0	0
09190003	2280363	10	9/22/2008	0	8.4925	0	0	0	0	0
09190003	2280363	20	9/23/2008	0	7.4925	0	0	0	0	0
09190003	2280363	30	9/24/2008	0	22.5	0	0	0	0	0
09190004	2280364	10	9/26/2008	0	0	9.325	0	0	0	0
09190004	2280364	20	9/30/2008	0	0	8.325	0	0	0	0
09190004	2280364	30	10/1/2008	0	0	25	0	0	0	0
09190005	2280365	10	10/3/2008	0	0	0	10.1575	0	0	0
09190005	2280365	20	10/6/2008	0	0	0	9.1575	0	0	0
09190005	2280365	30	10/8/2008	0	0	0	27.5	0	0	0
Capacity Less Load		-34.32	-37.8050	-45.4550	-57.2700	-22.2700	12.7300	47.7300		

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Work Center Load Summary Inquiry and Report

Inquiry

The work center load summary displays total load from all orders in the period compared to available capacity, with the difference and the cumulative difference. The inquiry displays data for one work center/ machine at a time.

A cumulative difference that continues to move in one direction is a sure indication of an imbalance that needs to be addressed.

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Work Center Load Summary Report

Work Center Load Summary R... X

Go To Actions Copy Print Preview

Site: PPROTO To: PPROTO

Work Center: PROTO To: PROTO

Machine: To:

Department: To:

Start Date: 9/19/2008

End Date:

D/W/M/P: W

Per Column: 1

Under Cap %: 0.00%

Over Cap %: 0.00%

Filters to show exceptions

QAD Proprietary 2008-MRP-PR-400

Report

The work center load summary report displays the same information as the inquiry however it allows you to select a range or work centers and or machines. The report may be view on your terminal but directing the output to page.



Work Center Load Summary Report

Work Center Load Summary R... x




Work Center Load Summary Report Puerto Rico

09/19/08 17:17:14

Page:1


Site: PRPROTO												Run Crew: 1.000
Work Center: PROTO	Prototype Production										Queue Time: 0.0	Mach/Wk Ctr: 1.000
Machine:												Mach/Op: 1
Department: PROTO	Prototype Production										Wait Time: 0.0	
Past	09/19/08	09/26/08	10/03/08	10/10/08	10/17/08	10/24/08	10/31/08	11/07/08	11/14/08	11/21/08	11/28/08	12/05/08
	09/18/08	09/25/08	10/02/08	10/09/08	10/16/08	10/23/08	10/30/08	11/06/08	11/13/08	11/20/08	11/27/08	12/04/08
Workdays	0	5	5	5	5	5	5	5	5	5	5	5
Work Ctr Cap	0	35	35	35	35	35	35	35	35	35	35	35
Work Ctr Load	34	38	43	47	0	0	0	0	0	0	0	0
Cap Less Load	-34	-3	-8	-12	35	35	35	35	35	35	35	35
Cumulative	-34	-38	-45	-57	-22	13	48	83	118	153	188	223





Work Center Load Detail Inquiry

Work Center Load Detail Inquir... x



Work Center Load Detail Inquiry

09/19/08

Work Ctr Machine
PROTO

Work Center: PROTO Machine:
Machine:

Department: PROTO

Prototype Production

Prototype Production

Prototype Production

Mach/Op: 1

Mach/Wk Ctr: 1.000

Queue Time: 0.0
Wait Time: 0.0

Run Crew: 1.000

Output PAGE

Work Order	ID	ST	Op	St	Start	Load	Hours	Qty	Open
09190002 1000-00	2280362	P	10		09/16/08		7.7		200
09190002 1000-00	2280362	P	20		09/17/08		6.7		200
09190002 1000-00	2280362	P	30		09/18/08		20.0		200
09190003 1000-00	2280363	P	10		09/22/08		8.5		225
09190003 1000-00	2280363	P	20		09/23/08		7.5		225
09190003 1000-00	2280363	P	30		09/24/08		22.5		225
09190004 1000-00	2280364	P	10		09/26/08		9.3		250
09190004 1000-00	2280364	P	20		09/30/08		8.3		250
09190004 1000-00	2280364	P	30		10/01/08		25.0		250
09190005 1000-00	2280365	P	10		10/03/08		10.2		275
09190005 1000-00	2280365	P	20		10/06/08		9.2		275
09190005 1000-00	2280365	P	30		10/08/08		27.5		275

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2008-MRP-PR-420

Work Center Load Detail Inquiry and Report

The work center load detail inquiry and report display the order detail associated with the load shown in the summary inquiry. Usually if the summary inquiry indicates there is no problem the planner will be finished. However if the summary indicates an overloaded condition, the planners next step would be to look at the load detail inquiry to see specifically which orders and which operations are causing the overload.

The planning can then make decisions about which orders (or operations) to reschedule or move to a different work center.



Work Center Load Detail Report

Work Center Load Detail Repo... X

Work Center Load Detail Report 09/19/08

Puerto Rico

Work Center: PROTO Prototype Production Department: PROTO Prototype Production
 Machine: Mach/Wk Ctr: 1.000 Run Crew: 1.000 Queue Time: 0.0 Wait Time: 0.0 Mach/Op: 1

Work Order	ID	Due Date	Op	Operation Description	Start	Setup	Run Time	Load Hrs	Open Qty	Status
09190002	2280362	09/22/08	10	Assy Axle, bearing Item: 1000-00	09/16/08	1.0	6.66	7.66	200.0	
09190002	2280362	09/22/08	20	Assy axle, bearing Item: 1000-00	09/17/08	0.0	6.66	6.66	200.0	
09190002	2280362	09/22/08	30	Spin test unit Item: 1000-00	09/18/08	0.0	20.0	20.0	200.0	
09190003	2280363	09/29/08	10	Assy Axle, bearing Item: 1000-00	09/22/08	1.0	7.4925	8.493	225.0	
09190003	2280363	09/29/08	20	Assy axle, bearing Item: 1000-00	09/23/08	0.0	7.4925	7.493	225.0	
09190003	2280363	09/29/08	30	Spin test unit Item: 1000-00	09/24/08	0.0	22.5	22.5	225.0	
09190004	2280364	10/06/08	10	Assy Axle, bearing Item: 1000-00	09/26/08	1.0	8.325	9.325	250.0	
09190004	2280364	10/06/08	20	Assy axle, bearing Item: 1000-00	09/30/08	0.0	8.325	8.325	250.0	
09190004	2280364	10/06/08	30	Spin test unit Item: 1000-00	10/01/08	0.0	25.0	25.0	250.0	
09190005	2280365	10/13/08	10	Assy Axle, bearing Item: 1000-00	10/03/08	1.0	9.1575	10.158	275.0	
09190005	2280365	10/13/08	20	Assy axle, bearing Item: 1000-00	10/06/08	0.0	9.1575	9.158	275.0	
09190005	2280365	10/13/08	30	Spin test unit Item: 1000-00	10/08/08	0.0	27.5	27.5	275.0	



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Department Load Summary Inquiry

Department Load Summary In... x

Run | Export to Excel | View as PDF

Department: PROTO Start Date: 9/19/2008 End Date: Column Type: Week Per Column: 1 Columns: 12

Department: PROTO Prototype Production Labor Capacity: 7

Category	Past	9/19/2008	9/26/2008	10/3/2008	10/10/2008	10/17/2008	10/24/2008			
Work Days	0	5	5	5	5	5	5			
Available Hours	0	35	35	35	35	35	35			
Load Hours	34.32	38.4850	42.650	46.8150	0	0	0			
Order	ID/Line	Operation	Date	Past	9/19/2008	9/26/2008	10/3/2008	10/10/2008	10/17/2008	10/24/2008
09190002	2280362	10	9/16/2008	7.66	0	0	0	0	0	0
09190002	2280362	20	9/17/2008	6.66	0	0	0	0	0	0
09190002	2280362	30	9/18/2008	20	0	0	0	0	0	0
09190003	2280363	10	9/22/2008	0	8.4925	0	0	0	0	0
09190003	2280363	20	9/23/2008	0	7.4925	0	0	0	0	0
09190003	2280363	30	9/24/2008	0	22.5	0	0	0	0	0
09190004	2280364	10	9/26/2008	0	0	9.325	0	0	0	0
09190004	2280364	20	9/30/2008	0	0	8.325	0	0	0	0
09190004	2280364	30	10/1/2008	0	0	25	0	0	0	0
09190005	2280365	10	10/3/2008	0	0	0	10.1575	0	0	0
09190005	2280365	20	10/6/2008	0	0	0	9.1575	0	0	0
09190005	2280365	30	10/8/2008	0	0	0	27.5	0	0	0
Capacity Less Load				-34.32	-3.4850	-7.650	-11.8150	35	35	35
Cumulative				-34.32	-37.8050	-45.4550	-57.2700	-22.2700	12.7300	47.7300

QAD Proprietary 2008-MRP-PR-440

Department Load Summary Inquiry and Report

The department inquires and reports work the same as the work center inquires and reports except they are summarized for all work center/machines in the department. Depending on how you have setup your department / work center relationships these reports and inquires may be very useful or of little or no use.

In the case where the work centers and machines in the department are relatively similar and work could be shared between them, a department level overview may give a good first indication that things are ok, or not.

In the case where work centers and machines are quite different the high level overview could be quite meaningless. In this situation one work center could be very overloaded and another quite under-loaded, the department view might make the situation look manageable. Yet because they are very different you cannot adjust load by shifting work from one center to the other.



Department Load Summary Report

Department Load Summary Re... X

Go To Actions Copy Print Preview

Site: PRPROTO To: PRPROTO
Department: PROTO To: PROTO

Start Date: 9/15/2008
End Date:
D/W/M/P: W
Per Column: 1

Under Cap %: 0.00%
Over Cap %: 0.00%

Output:
Batch ID:






Department Load Summary Report


Department Load Summary Report													
Puerto Rico													09/19/08 17:
Department: PR0T0 Prototype Production Site: PRPR0T0													
Past	09/15/08	09/22/08	09/29/08	10/06/08	10/13/08	10/20/08	10/27/08	11/03/08	11/10/08	11/17/08	11/24/08	12/01/08	
	09/14/08	09/21/08	09/28/08	10/05/08	10/12/08	10/19/08	10/26/08	11/02/08	11/09/08	11/16/08	11/23/08	11/30/08	12/07/08
Workdays	0	5	5	5	5	5	5	5	5	5	5	5	5
Dept Capacity	0	7	35	35	35	35	35	35	35	35	35	35	35
Dept Load	0	34	48	43	37	0	0	0	0	0	0	0	0
Cap Less Load	0	-27	-13	-8	-2	35	35	35	35	35	35	35	35
Cumulative	0	-27	-40	-49	-50	-15	20	55	90	125	160	195	230
End of Report													




Our Passion. Your Advantage.

Department Load Detail Inquiry

Department Load Detail Inquiry.. x



Department Load Detail Inquiry

09/19/08

Department: PROTO
Starting:
Prototype Production
Ending:
Output: PAGE

Work Order	Work Ctr Machine	Op Start	Dept Load	Open Qty
09190002	PROTO	10 09/16/08	7.7	200
09190002	Item: 1000-00 PROTO ID: 2280362	20 09/17/08	6.7	200
09190002	Item: 1000-00 PROTO ID: 2280362	30 09/18/08	20.0	200
09190003	Item: 1000-00 PROTO ID: 2280363	10 09/22/08	8.5	225
09190003	Item: 1000-00 PROTO ID: 2280363	20 09/23/08	7.5	225
09190003	Item: 1000-00 PROTO ID: 2280363	30 09/24/08	22.5	225
09190004	Item: 1000-00 PROTO ID: 2280364	10 09/26/08	9.3	250
09190004	Item: 1000-00 PROTO ID: 2280364	20 09/30/08	8.3	250
09190004	Item: 1000-00 PROTO ID: 2280364	30 10/01/08	25.0	250
09190005	Item: 1000-00 PROTO ID: 2280365	10 10/03/08	10.2	275
09190005	Item: 1000-00 PROTO ID: 2280365	20 10/06/08	9.2	275
09190005	Item: 1000-00 PROTO ID: 2280365	30 10/08/08	27.5	275

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2008-MRP-PR-470

Department Load Detail Inquiry and Report



Department Load Detail Report

Department Load Detail Report											
Puerto Rico											
09/19/08											
Department: PROTO Prototype Production											
Work Order	ID	Op	Operation Description	Work Ctr	Machine	Start	Std Setup	Run Time	Load Hours	Open Qty	St
09190002	2280362	10	Assy Axle, bearing Item: 1000-00	PROTO		09/16/08	1.0	6.7	7.7	200	
09190002	2280362	20	Assy axle, bearing Item: 1000-00	PROTO		09/17/08	0.0	6.7	6.7	200	
09190002	2280362	30	Spin test unit Item: 1000-00	PROTO		09/18/08	0.0	20.0	20.0	200	
09190003	2280363	10	Assy Axle, bearing Item: 1000-00	PROTO		09/22/08	1.0	7.5	8.5	225	
09190003	2280363	20	Assy axle, bearing Item: 1000-00	PROTO		09/23/08	0.0	7.5	7.5	225	
09190003	2280363	30	Spin test unit Item: 1000-00	PROTO		09/24/08	0.0	22.5	22.5	225	
09190004	2280364	10	Assy Axle, bearing Item: 1000-00	PROTO		09/26/08	1.0	8.3	9.3	250	
09190004	2280364	20	Assy axle, bearing Item: 1000-00	PROTO		09/30/08	0.0	8.3	8.3	250	
09190004	2280364	30	Spin test unit Item: 1000-00	PROTO		10/01/08	0.0	25.0	25.0	250	
09190005	2280365	10	Assy Axle, bearing Item: 1000-00	PROTO		10/03/08	1.0	9.2	10.2	275	
09190005	2280365	20	Assy axle, bearing Item: 1000-00	PROTO		10/06/08	0.0	9.2	9.2	275	
09190005	2280365	30	Spin test unit Item: 1000-00	PROTO		10/08/08	0.0	27.5	27.5	275	





MRP Processing Summary



- ▲ Verify Low Level Codes
- ▲ Calculate Requirements
- ▲ Review Action Messages
- ▲ Approve Planned Orders
- ▲ Review MRP Information
- ▲ Calculate the Capacity Plan

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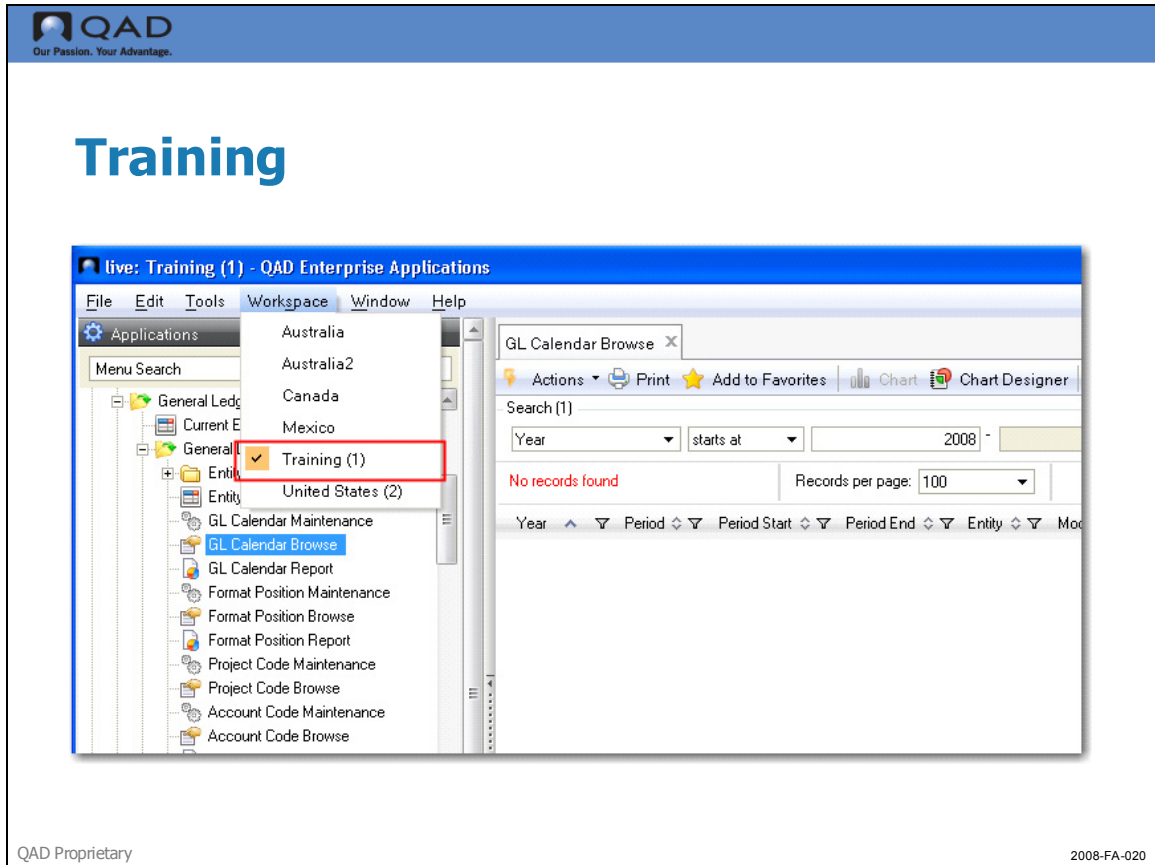
2008-MRP-PR-490

MRP/CRP Processing Summary

Processing Exercises

The data used in the following exercises may not be the same as the data shown in the screen captures in this lesson.

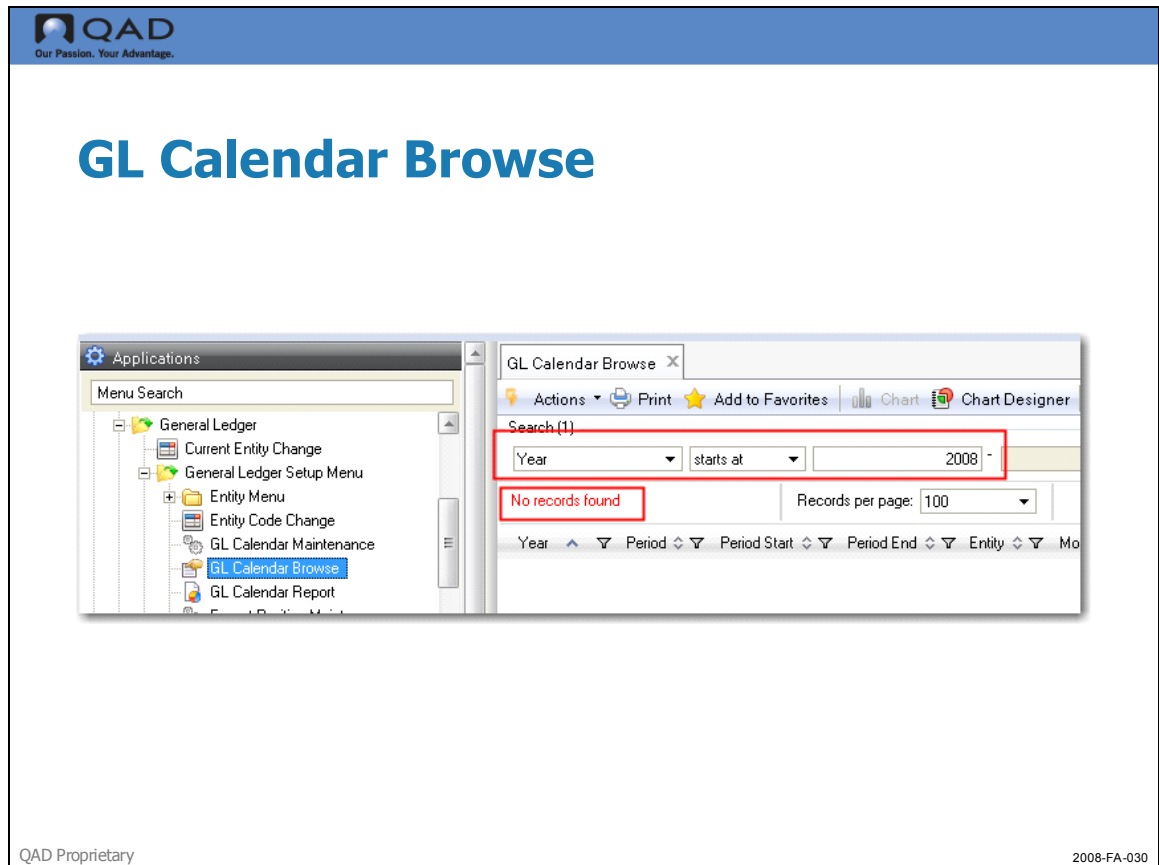
Note If you are using QAD 2008 Standard Edition, perform the first exercise, “Preliminary Setup (SE Only)” on page 134, otherwise, if you are using QAD 2008 Enterprise Edition skip to “Exercise: Component Requirement Calculations” on page 137.



Preliminary Setup (SE Only)

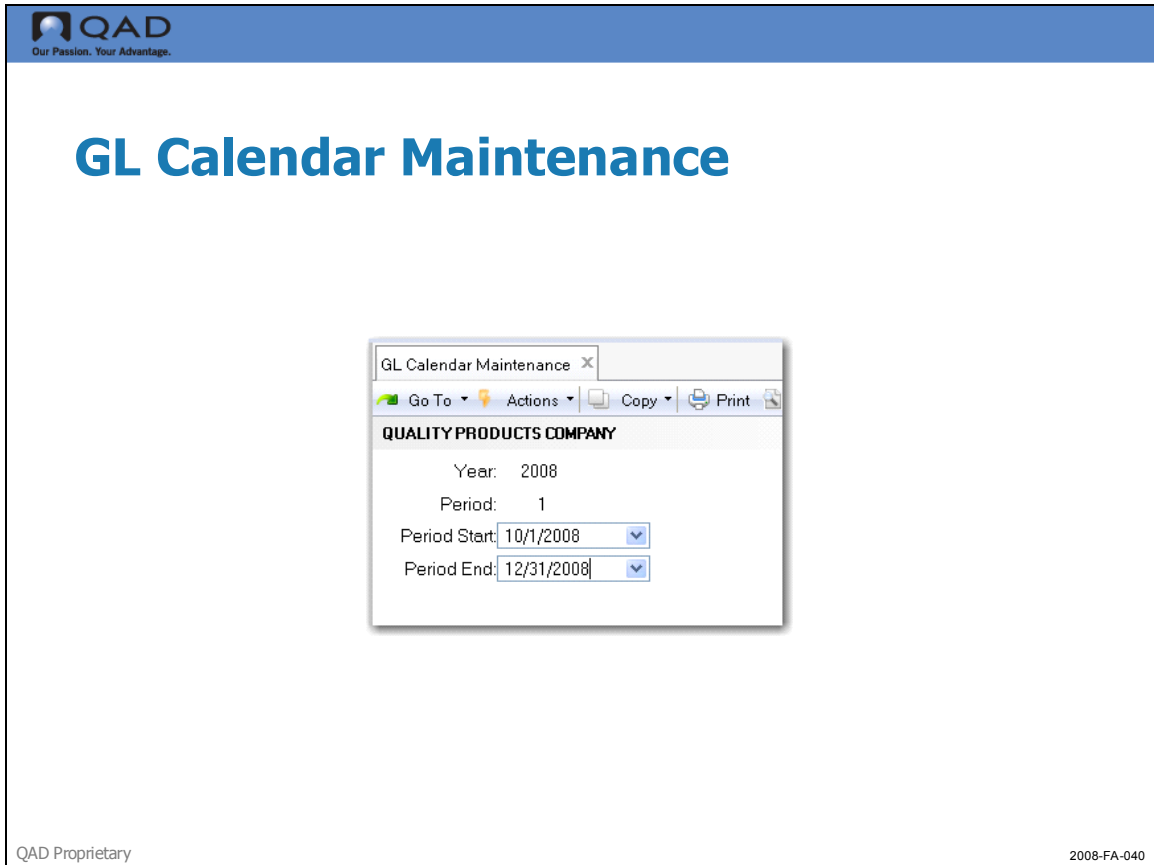
Core SE First Activity - First Activity for all 2008 SE Courseware

- 1 Verify Domain: From the workspace menu select Training.
 - a Note the domain name appears in the top window frame.



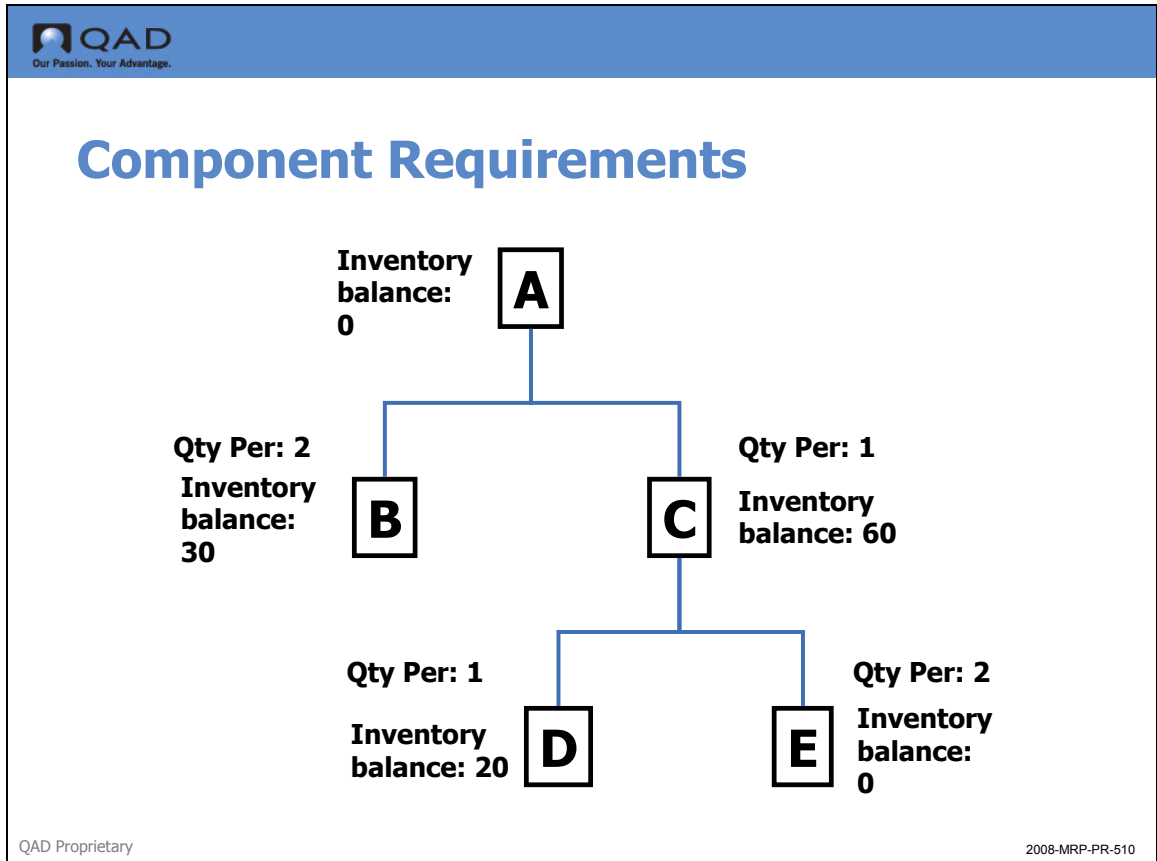
2 Verify GL Calendar Period

- a Use GL Calendar Browse (25.3.5)
- b Start search at current year
- c You should see a list of months for the current year
- d If you find "No Records" continue to step three.



3 Use GL Calendar Maintenance (25.3.4)

- a Enter the current year, then as a short cut enter one period whose dates will cover the term of your training event.



Exercise: Component Requirement Calculations

In this activity, you describe the determination of gross requirements (product structure explosion) and the subsequent determination of net requirements.

Instruction: Using the product structure above, determine the net requirements for items B, C, D, and E to make 100 of item A. Note: There are no item As or Es in inventory, but there are on-hand inventory balances of 30 Bs, 60 Cs and 20 Ds.



Order Policies and Modifiers

Period	1	2	3	4	5	6	7	8	9	10
Demand	25	30	20	35	25	30	25	35	30	25
LFL										
FOQ=35										
POQ 2 Periods										
POQ-2 Periods Min Qty =60										
POQ-2 Periods Multi Qty=25										

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2008-MRP-PR-520

Exercise: Order Policies and Modifiers

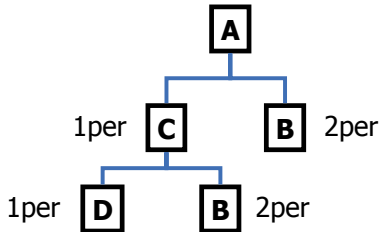
This activity tests your knowledge of order policies and modifiers.

Instruction: Using this table, determine in which periods orders are required and for what quantities. Assume that there is no on-hand inventory.



Order Calculation

Gross Requirement = 100, Period 5



Each period = 1 week (7 days)

A Lead time = 1 wk
Min = 200

	Period				
	1	2	3	4	5
Gross requirements					
Scheduled receipts					
On hand	0				
Planned order receipt					
Planned order release					

B Lead time = 1 wk
Mult = 250

	Period				
	1	2	3	4	5
Gross requirements					
Scheduled receipts					
On hand	30				
Planned order receipt					
Planned order release					

C Lead time = 2 wks
Mult = 50

	Period				
	1	2	3	4	5
Gross requirements					
Scheduled receipts					
On hand	60				
Planned order receipt					
Planned order release					

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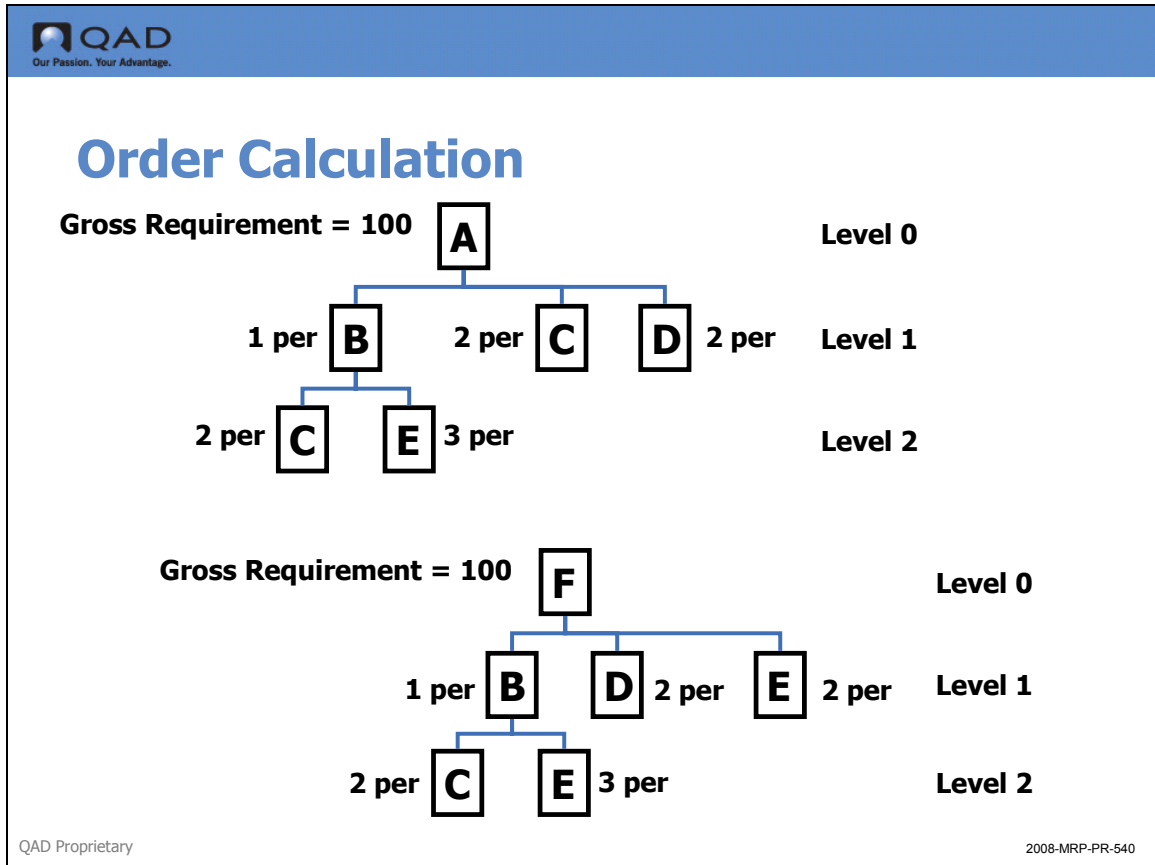
2008-MRP-PR-530

Exercise: Order Calculation 1 of 2

Instruction: This activity tests your knowledge of order policies and modifiers.

Using this table, determine in which periods orders are required and for what quantities. Assume that there is no on-hand inventory.





Exercise: Order Calculation 2 of 2

Instruction: Using the above product structures, determine the required quantities of:

Item: B =

C =

D =

E =

Exercise: Running MRP

In this activity, you review the product structure of an item, review the item planning data, create a forecast for that item, review MRP Control, run MRP, and review and act on the results.

- Review the product structure for item 1000-00, using Product Structure Inquiry, (13.6). The structure should look like this:

Product Structure Inquiry - 9/18/08							
QAD		Product Structure Inquiry				09/18/08	
Parent Item/BOM Code: 1000-00		Roller-Bearing Hub Assy		EA			
As Of: 09/18/08		Levels:		Rev:			
PCO Number:		ID:		Domain:		Output: PAGE	
Level	Component Item	Description	Quantity	Per	UM	Ph	T Iss
Parent	1000-00	Roller-Bearing Hub Assy			EA		
1	1000-10	Hub Housing	1.0		EA		
1	1000-20	Axle Bolt	1.0		EA		
1	1000-30	Roller Bearing Assy	2.0		EA		
1	1000-40	Axle Flange	2.0		EA		
1	1000-50	Spring Clip Retainer	2.0		EA		

- 5 Review the routing for item 1000-00, using Routing Inquiry (14.13.3). The route should look like this:

The screenshot shows a window titled "Routing Inquiry - 9/18/2008 4:1...". The window content includes the QAD logo, the title "Routing Inquiry", and the date "09/18/08". Below this, it displays "Routing Code: 1000-00", "Effective: 09/18/08", and "Roller-Bearing Hub Assy". The output is labeled "Output: PAGE". A table follows with columns for Op, Work Center, Machine, Setup, Run Time, Move, and Yield%. The table contains three rows of data for operations 10, 20, and 30.

Op	Work Center	Machine	Setup	Run Time	Move	Yield%
10	PROTO Prototype Producti Assy Axle, bearing		1.0	0.0333	0.0	100.00%
20	PROTO Prototype Producti Assy axle, bearing		0.0	0.0333	0.0	100.00%
30	PROTO Prototype Producti Spin test unit		0.0	0.1	0.0	100.00%

- 6 Review item planning data for item 1000-00 using Item Planning Maintenance, (1.4.7). Verify the following information:

Order Policy : LFL
 Order qty : 5
 Mfg LT : 1

- 7 Review item planning data for item 1000-10, 1000-20, 1000-30, 1000-40 and 1000-50, using Item Planning Maintenance, (1.4.7)

Note Item 1000-50 is order policy FOQ with a quantity of 100 and a yield of 98%

- 8 Use Forecast Maintenance, (22.1) to enter a forecast, starting next week for the following 3 weeks for item 1000-00 at site QMS-PR:

Item : 1000-00
 Site : PROTO
 Next Week : 200
 Week + 1 : 225
 Week + 2 : 250
 Week + 3: 275

- 9 Set the MRP horizon to 60 days in the MRP Control, (23.24) program and set the Order Release Horizon to 7 days.
- 10 Run MRP at site PRPROTO using Regenerate Materials Plan, (23.2).
- 11 Review the Master Schedule Summary Inquiry, (22.18) items 100-00, 1000-10, 1000-20, 1000-30, 1000-40 and 1000-50.
- 12 Review the MRP Detail Inquiry, (23.16) for each of these items.
 - b (The program displays pegging information, such as the scrap requirements, seasonal builds, forecasts and product structure requirements.)
- 13 Using Action Message Inquiry/Browse, (23.6), examine the action message details for these items.



Calculating Work Center Load

Item Number	44-100
Site	12000
Work Center	1030
Total Workers	2
Worker Hours	8 hrs/day
Worker Days	Monday-Friday

WO Number	Qty	Status	Oper	Setup	Run Hours	Sch. Start
1000	25	Planned	10	2.0	1.0	Week 2
1001	1000	Planned	10	0.5	0.001	Week 1
1002	50	Firm	30	0.0	0.1	Week 2
1003	5000	Firm	10	1.5	0.01	Week 1
1004	200	Released	30	0.0	0.05	Week 2
1005	600	Planned	20	4.0	0.02	Week 3
1006	4000	Allocated	10	0.0	0.01	Week 1

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2008-MRP-PR-570

Exercise: Calculating Work Center Load

This activity is intended to help you learn how to calculate work center load and compare it to capacity.

Instruction: Use item number 44-100 at site 12000, work center 1030. There are 2 workers, working 8 hours a day, Monday through Friday, for a combined total of 80 hours a week. Use the data in the above graph to calculate your answers.

- 1 Determine the total run time and the total load represented by each work order.

WO Number	Total Run Time	Setup Time	Total Load
1000		2	
1001		.5	
1002		0	
1003		1.5	
1004		0	
1005		4	
1006		0	

- 2 Determine the cumulative load for weeks 1 through 3

	Week 1	Week 2	Week 3
Load	93	42	124
Capacity	80	80	80
Over/Under Capacity	-13	38	-44
Cumulative Load			

- 3 What might be deduced from these results? What should be done?
- 4 Two hours of overtime for each worker is added per day. How does this affect the cumulative load calculations?

	Week 1	Week 2	Week 3
Load	93	42	124
Capacity	$80 + (2 \times 5 \times 2) = 100$	100	100
Over/Under Capacity			
Cumulative			

- 5 What would be a more optimal solution to this resource problem?

Exercise: Recalculating the Capacity Plan

In this activity, you recalculate the capacity plan and then review the changes in the work center resulting from the recalculation

Instruction:

- 1 Run Recalculate Capacity Plan, (24.1) using the following information:

Site: PRPROTO	To: PRPROTO
Item Number: 1000-00	To: 1000-00

Accept the defaults for all remaining fields.

Note You would not usually recalculate the capacity plan based on a range of items. The capacity plan usually is run for a site, a work center, or some range of sites and work centers. We are specifying the item number so that we can narrow the scope of data that goes into this calculation.

- 2 Review the Work Center Load Summary Browse/Inquiry, (24.13) for work center PROTO at site PRPROTO. Use today as the start date.
 - c How is the work center capacity calculated?
 - d How is the work center load determined?
 - e Why is the Cumulative row so important?
- 3 Use Work Center Load Detail Inquiry, (24.16) to review the work center load detail for work center PROTO.
- 4 Can you tie these work orders to the work center load from Work Center Load Summary Browse/Inquiry, (24.13)?
- 5 What can you do to rebalance the load at this work center? Spend some time balancing the work center.

Exercise: Approving MRP Suggestions

- 1 Use Planned Work Order Approval, (23.10) to approve work orders for item 1000-00 that need to be released before the end of this week.
- 2 Use Planned Purchase Order Approval, (23.11) to approve purchases for the components associated with item 1000-00 that need to be released before the end of this week.
- 3 Go to Work Order Browse/Inquiry, (16.2) to see if the status of the planned order changed from "P" (Planned) to "F" (Firm Planned) when you did the approval of the Planned Work Order.
You should see that the work order(s) you approved now have a status of "F" (Firm). The work orders you did not approve should still have a status of "P" (Planned).
- 4 Go to Purchase Requisition Browse/Inquiry, (5.1.5) to see the Purchase Requisitions that were created when the planned purchase orders were approved. These requisitions would then be used to create purchase orders for these items.



Exercise Answers

Period	1	2	3	4	5	6	7	8	9	10
Demand	25	30	20	35	25	30	25	35	30	25
LFL	25	30	20	35	25	30	25	35	30	25
FOQ=35	35	35	35	35	---	35	35	35	35	---
POQ 2 Periods	55	---	55	---	55	---	60	---	55	---
POQ-2 Periods Min Qty =60	60	---	60	---	60	---	60	---	60	---
POQ-2 Periods Multi Qty=25	75	---	---	75	---	50	---	75	---	25

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2008-MRP-PR-520

Answers to Exercise: Order Policies and Modifiers on page 138

Component Requirement Calculation

B=170 C=40 D=20 E=80

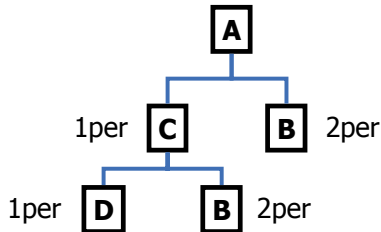
Order Policies and Order Modifiers



Order Calculation

Answer Sheet

Gross Requirement = 100, Period 5



Each period = 1 week (7 days)

A Lead time = 1 wk
Min = 200

	Period				
	1	2	3	4	5
Gross requirements					
Scheduled receipts					
On hand	0				
Planned order receipt					200
Planned order release				200	

B Lead time = 1 wk
Mult = 250

	Period				
	1	2	3	4	5
Gross requirements		300		400	
Scheduled receipts					
On hand	30	230	20		
Planned order receipt		250			
Planned order release	250				

C Lead time = 2 wks
Mult = 50

	Period				
	1	2	3	4	5
Gross requirements				200	
Scheduled receipts					
On hand	60				
Planned order receipt				150	
Planned order release		150			

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2008-MRP-PR-530

Answers to Exercise: Order Calculation 1 of 2 on page 139

Answers to Exercise: Order Calculation 2 of 2 on page 140

Instruction: Using the above product structures, determine the required quantities of:

Item: B = 200

C = 600

D = 400

E = 800



Answers to Exercise: Exercise: Calculating Work Center Load on page 144

1 Determine the total run time and the total load represented by each work order.

WO Number	Total Run Time	Setup Time	Total Load
1000	2.5	2	27
1001	1	.5	1.5
1002	5	0	5
1003	50	1.5	501.5
1004	10	0	10
1005	12	4	16
1006	40	0	40

2 Determine the cumulative load for weeks 1 through 3

	Week 1	Week 2	Week 3
Load	93	42	124
Capacity	80	80	80
Over/Under Capacity	-13	38	-44
Cumulative Load	-13	25	-19

3 What might be deduced from these results? What should be done?

4 Two hours of overtime for each worker is added per day. How does this affect the cumulative load calculations?

	Week 1	Week 2	Week 3
Load	93	42	124
Capacity	$80 + (2 \times 5 \times 2) = 100$	100	100
Over/Under Capacity	7	58	-24
Cumulative	7	65	41

What would be a more optimal solution to this resource problem?

pull load from week 3 forward to week 2

APPENDIX A

Study Questions

Study Questions

1 Explain the difference between the three MRP planning modes available in QAD Enterprise Applications2008 Standard Edition.

2 Give an example of what types of items would have the following setups:

Item Planning Maintenance

Set A

Master Sched: Yes

Plan Orders: No

Time Fence: 0

Set B

Master Sched: No

Plan Orders: Yes

Time Fence: 0

3 What MRP Item Planning data field would ensure a planned order would never be less than 100 units?

4 What MRP order policy ensures a planned replenishment for every requirement after netting?

5 A sales order, for MRP purposes, is treated as dependent demand.

True False

6 MRP calculates the release or start date of a planned order by subtracting the appropriate lead time from the order due or need date.

True False

7 Accuracy in the BOM is not of critical importance since MRP is a planning tool.

True False

8 MRP will automatically reschedule firm planned orders as long as the regenerative mode is selected.

True False

9 Specifying a yield percentage for an item will have no effect on MRP planning activity.

True False

Answers to Study Questions

- 1 *Net Change* plans only those items that has changed since the last MRP run. *Regenerative* replans all items. *Selective* allows you to specify which items to plan.
- 2 Set A represents independent demand items (MPS). Set B represents dependent demand items (MRP).
- 3 Minimum Order Quantity.
- 4 Lot-for-Lot (LFL).
- 5 False. Sales orders and forecasts are independent demand.
- 6 True.
- 7 False.
- 8 False. MRP does not reschedule firm orders; MRP generates action messages.
- 9 False. MRP increases the order quantity for items with less than 100% yield.

APPENDIX B

Reports, Inquiries, Browsers

MRP and CRP Reports, Inquiries, and Browsers

Name	Function / Purpose
Action Message Browse	Displays Action messages
Action Message Report	Prints action messages
Planned Order Browse	Displays planned orders
Planned Order Report	Prints planned orders
MRP Summary Inquiry	Displays summary MRP data
MRP Summary Report	Prints summary MRP data
MRP Detail Inquiry	Displays detailed MRP data
MRP Detail Report	Prints detailed MRP data
Past Due Receipts Inquiry	Displays past due receipts
Past Due Receipts Report	Prints past due receipts
Input/Output Inquiry	Compares planned load input and output for a work center/machine with actual load and actual output hours against that load.
Input/Output Report	Provides a report on input/output analysis; helps to spot bottlenecks.

The following summary and detail inquiries and reports display load information by work center, machine, and department.

Work Center Load Summary Inquiry	
Work Center Load Summary Report	
Work Center Load Detail Inquiry	
Work Center Load Detail Report	
Department Load Summary Inquiry	
Department Load Summary Report	
Department Load Detail Inquiry	
Department Load Detail Report	

APPENDIX C

MRP Utilities and Troubleshooting



Why Are There MRP Utilities?

- ▲ To correct and update system data that has been corrupted for unreported or undetected system problems.
- ▲ To update data once an ECO, to correct a reported problem, is added.

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MRP-UT-020

Why are there MRP Utilities?

In general, these utilities are used when a problem is detected in your MRP run. The first step is to contact QAD Support and initiate a call. The main concern of Support will be to identify and resolve the cause of the problem, not gloss over the symptoms with utilities.

The MRP utilities allow you to clean up corrupted data and continue with business. They can also be used to establish a baseline to track the cause of a problem and aid in analysis and correcting the issue.

Some sites run these utilities prior to running MRP as a precaution. But they should not be used to continually mask a recurrent problem.



23.25.1 Rebuild 'mrp_det' Table

- ▲ Program mrmpupe.p was created in 1988.
- ▲ Data Checked:
Sales Order, Work Order, Purchase Order,
Requisitions, Forecasts, Distributed Orders,
Scheduled Orders,
etc...
- ▲ Output: None

Rebuild 'mrp_det' Table



23.25.1 Rebuild 'mrp_det' Table

Rebuild 'mrp_det' Table x

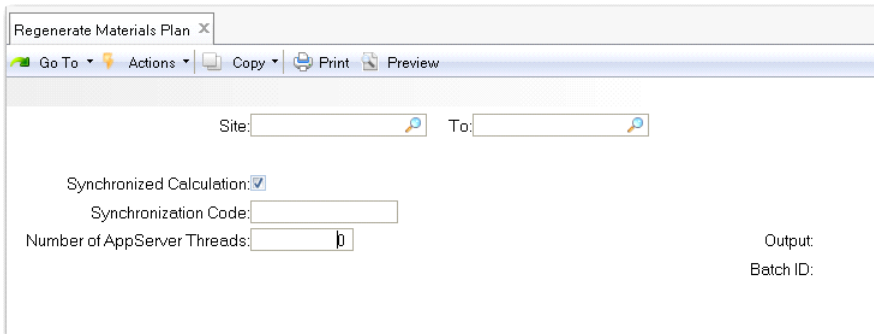
Rebuild 'mrp_det' Table: GoTo v Actions v

This utility will delete all material requirements records from the MRP workfile which cannot be validated against a current valid source record (Sales Order, Work Order, Purchase Order, etc.) In addition, all action messages, available to promise, and production forecast details will be erased. Because of this, a full MRP Regeneration after completion of this utility is recommended.

Please confirm update

23.25.1 Rebuild 'mrp_det' Table (cont)

- ▲ **What Should be Done at Completion:**
All action messages, available to promise, and production forecast details are erased.
Because of this, a full MRP Regeneration after completion of this utility is recommended.



The screenshot shows a web-based utility window titled "Regenerate Materials Plan". The window has a menu bar with "Go To", "Actions", "Copy", "Print", and "Preview". Below the menu bar, there are two search fields labeled "Site:" and "To:". Underneath, there is a checked checkbox for "Synchronized Calculation:", followed by a text input field for "Synchronization Code:". Below that is another text input field for "Number of AppServer Threads:" with the value "10" entered. On the right side of the form, there are labels for "Output:" and "Batch ID:".



23.25.2 Sync. MRP/DRP Work Table Delete

- ▲ Program utmrpwwd.p was created in 1998
- ▲ Running utility program utmrpwwd.p deletes stranded workfile (qad_wrkfl) records which were created when synchronized mode MRP/DRP run was abnormally interrupted (ie: power failure).

Previously with stranded workfile records, the MRP/DRP run in synchronized mode displayed messages "Waiting for completion of low-level code update. Pausing 30 second(s). Press space bar to continue.", and not letting the users proceed further.

- ▲ Output: None
- ▲ When to Run: On Oracle DB's after an abnormal interruption of MRP/DRP and/or when message appears.
- ▲ What Should be Done at Completion: Restart MRP/DRP.

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MRP-UT-060

Sync. MRP/DRP Work Table Delete

23.25.2 Sync. MRP/DRP Work Table Delete

Sync. MRP/DRP Work Table DeL.. ✕

Sync. MRP/DRP Work Table Delete: GoTo - | Actions - |

This utility will be used in Oracle environments to delete stranded qad_wkfl records which are used in synchronized MRP or DRP run. This utility will be executed when program running in synchronized mode waits indefinitely, displaying the message:

Waiting for Completion of low-level code update. Pausing 30 second(s).

No other session should be executing MRP or DRP programs when this utility is executed.

Continue the Delete:



23.22 Low Level Code Update

- ▲ Program mrlup01.p was created in 1994
- ▲ Data Checked:
 - If "Required Items Only: Yes"
 - Item with a Low Level Code (in_level) equal to 99999 are recalculated.
 - If "Required Items Only: No" then all items are recalculated regardless of the present Low Level Code.

Low Level Code Update

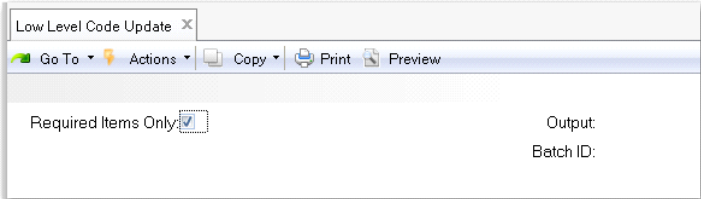


23.22 Low Level Code Update

- ▲ What Should Be Done at Completion:
The items that did not have their Low Level Codes resolved (in_level = 99999) should be reviewed and corrective actions taken.
Example:
 - ▲ Invalid Item: (no pt_mstr) a pt_mstr should be created (ie: 1.4.1), or the part should be deleted from the system.
 - ▲ Invalid Site: (no si_mstr) an si_mstr should be created (1.1.13) or the item deleted from the system.
 - ▲ Possible Cyclic: (available pt_mstr and si_mstr) the item should be researched to find the problem source. (Cyclical product structure? Cyclical network code? Etc.....)



23.22 Low Level Code Update



23.22 Low Level Code Update

- ▲ Program `mrlup.p`, the program where the recalculations are made, is a program that can be run as a utility (23.22) and is a pre-processor to any MRP runs. The `in_level`, Low Level Codes, need to be updated and recalculated based on changes to other structures such as Networks, BOM and Formula codes and Product structures.



23.22 Low Level Code Update

▲ **Program mrlup.p is called from and executed in:**

- 12.13.1 Net Change Distribution Plan
- 12.13.2 Regenerative Distribution Plan
- 12.13.3 Selective Distribution Plan
- 23.1 Net Change Materials Plan
- 23.2 Regenerate Materials Plan
- 23.3 Selective Materials Plan
- 23.22 Low Level Code Update

Also In:

Kanban Functionality
Flow Schedule Functionality
and throughout the system in other functions.



23.22 Low Level Code Update

▲ Output: The output from MRP/DRP 12.1,2,3 and 23.1,2,3

```

xterm
File Edit Search Buffer Compile Tools Help
614 website vkp_test1          0    1    26 ms
615 website we-rm              0    0    12 ms
616 website x165c              0    0    12 ms
617 website ze                  0    0    11 ms
618 website zf                  0    0    12 ms
(483) *** SUBTOTAL ***          136  0    0:00:24
619 website *90                99999  0    13 ms
620 website dr1                99999  0    12 ms
621 website dr2                99999  0    12 ms
622 website dr3                99999  0    12 ms
(4) *** SUBTOTAL ***           0 99999  0:00:24

Process Started      Items      Planned      Elapsed
                    Processed   Orders      Time Process Stopped
-----
08/07/08  6:49:15 AM      622          171  0:00:24 08/07/08  6:49:39 AM

- File: wee.prn -----

F1=RUN  F3=MENUS  F5=OPEN  F6=SAVE  F8=CLOSE          Insert
  
```



23.22 Low Level Code Update

▲ Output: The output 23.22

mrl1up01.p 2+		23.22 Low Level Code Update			Date: 08/07/08		
Page: 1		coli41 RAD eB2.1 DEM01			Time: 06:47:00		
Unresolved Inventory Master Low Level Codes							
Item Number	Description	Site	P/M BOM/Formula Code	Network Code	Invalid Item	Invalid Site	Possibly Cyclic
1 0820	test part	wesitel	P				X
2 0115		wesite	M		X		
3 1004		F43L	P			X	
4 00001A		10000			X		

Invalid Item: No pt_mstr is available
 Invalid Site: No si_mstr is available
 Possibly Cyclic: Available pt_mstr and si_mstr and in_level is unresolved.



Stranded qad_wkfl's where qad_key1 = mrp/drp.

- ▲ Prior to ECO P45W (eB2 SP11, eB2.1 SP4 and eB3 SP1 (October, 2005)), due to abnormal termination of an MRP/DRP run, qad_wkfl's would become stranded and the item/site represented by the qad_wkfl value would be bypassed in the planning process. This required the user to execute a Progress query to search, delete the stranded work files prior to running MRP/DRP. The scripts were never developed into a utility, but documented in a Solution (K-base).

Stranded qad_wkfl's where qad_key1 = mrp/drp



Stranded qad_wkfl's where qad_key1 = mrp/drp.

- ▲ Progress Query (while MRP/DRP is not running) :
for each qad_wkfl where
 qad_key1 = "mrp/drp":
 display qad_wkfl with side-labels 2 col.
end.

If data is returned then:

- for each qad_wkfl where
 qad_key1 = "mrp/drp":
 delete qad_wkfl.
end.

What Should be Done at Completion: Run MRP/DRP.



Stranded qad_wkfl's where qad_key1 = mrp/drp.

- ▲ After the introduction of P45W (eB2 SP11, eB2.1 SP4 and eB3 SP1 (October, 2005)), the above scripts were incorporated into program gmpup.p, a subprogram called from all MRP/DRP executions.

12.13.1 Net Change Distribution Plan

12.13.2 Regenerative Distribution Plan

12.13.3 Selective Distribution Plan

23.1 Net Change Materials Plan

23.2 Regenerate Materials Plan

23.3 Selective Materials Plan

Any stranded qad_wkfl's are removed prior to the execution of MRP/DRP systematically.


No user intervention is required.



36.25.15 Set Qty Oh/Qty All/Qty Req

- ▲ **What Should be Done at Completion:**
Variations should be researched and resolved. These could be procedural problems causing the discrepancies or undetected system problems. Tracing through the transaction history file, (tr_hist) could lead to problem resolution.
- ▲ If this utility is run in a regular batch (nightly), then the output should be reviewed on a regular (daily) basis and the proximate cause resolved.


Set Qty Oh/Qty All/Qty Req


 Our Passion. Your Advantage.

36.25.15 Set Qty Oh/Qty All/Qty Req


Set Qty Oh/Qty All/Qty Req x


Set Qty Oh/Qty All/Qty Req: GoTo ~ Actions ~


Item Number: 

Site: 


Line:


Type: 


Buyer/Planner: 


Supplier: 


Update:


Sort by Site/Item: Item 


To: 

To: 

To: 

To: 

To: 

To: 

Output:
Batch ID:

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36.25.15 Set Qty Oh/Qty All/Qty Req

- ▲ Program utptqty.p was created in 1987
- ▲ Output: Report/Update (y/n)

Set Qty Oh/Qty All/Qty Req		Set Qty Oh/Qty All/Qty Req - 8...					
QAD		Set Qty Oh/Qty All/Qty Req				08/07/08 08:53:32	
		United States - DB 101				Page: 1	
Item Number	Site	Qty on Order	Qty Required	Qty Allocated	Qty on Hand	QOH Non-nettable	Avail Status Qty On Hand
000-0117-38 1Finder	10000	01d New		5.0 0.0	30.0 0.0		30.0 0.0
02-0001 CONFIGURED DISPLAY RACK	10000	01d New		1.0 0.0			
0300001 Axle, Integral Arm Steel	10000	01d New			1,000,379.0 0.0		1,000,379.0 0.0
0300002 Filter, Air	10000	01d New			998,637.0 0.0		998,637.0 0.0
10-10000 OASIS(TM) SYSTEM INDUST MODEL	10000	01d New		5.0 0.0	5.0 0.0	337.0 338.0	337.0 338.0
22-100 CORD, POWER, UK	10000	01d New	1,885.0 1,876.0		10,553.0 10,453.0		10,553.0 10,453.0





22.12 Seasonal Build MRP Utility

- ▲ Menu item '22.12 Seasonal Build MRP Utility' (fcfcmrp.p).
- ▲ This function will report seasonal build records and the impact they have on MRP, optionally correcting any invalid MRP records (either stranded records or those built with the old date format).
- ▲ Executing the MRP Rebuild utility (23.25.1 -- mrmpe.p) will also correct these records, but this new program can be executed without rebuilding the entire MRP workfile (should run faster than mrmpe.p and does not require a full regen calculation afterwards).
- ▲ Individual seasonal build records can be corrected by maintaining them using 22.9 Seasonal Build Maintenance (fcfcmt.p).

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MRP-UT-210

Seasonal Build MRP Utility



22.12 Seasonal Build MRP Utility

Seasonal Build MRP Utility x

Seasonal Build MRP Utility: GoTo - Actions -

Site:	<input type="text"/>	To:	<input type="text"/>
Item Number:	<input type="text"/>	To:	<input type="text"/>
Date:	<input type="text"/>	To:	<input type="text"/>
Update:	<input type="checkbox"/>		
Delete:	<input type="checkbox"/>		

Output:
Batch ID:

Course Evaluation

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http://www.surveymonkey.com/s.aspx?sm=EyuOF1cbaGCO9CrHKIOB5g_3d_3d/

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