QAD Enterprise Applications
Enterprise Edition

Training Guide
QAD MRP/CRP

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QAD 2016 Enterprise Edition
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Contents

QAD MRP/CRP Change Summary

The following table summarizes significant differences between this document and the last published version.

Date/Version	Description	Reference
April 2016/v2016 EE	Rebranded for QAD 2016 EE, added links to Preface and book	--
	Updated information about calendars	page 39
April 2015/v2015 EE	Rebranded for QAD 2015 EE	--
March 2014/v2014 SE_EE	Rebranded for QAD 2014 SE_EE	--
September 2013/v2013.1 SE_EE	Rebranded for QAD 2013.1 SE_EE	--
May 2013/v2013 SE_EE	Edited for style and clarity	--
March 2013/v2013 SE_EE	Rebranded for QAD 2013 SE_EE	--
September 2012/v2012.1 SE_EE	Rebranded for QAD 2012.1 SE_EE; Consistency edit	--
March 2012/v2012 SE_EE	Rebranded for QAD 2012 SE_EE	--
September 2011/v2011.1 SE_EE	Rebranded for QAD 2011.1 SE_EE	--

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 let student practice 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 If you are unfamiliar with QAD Enterprise Applications, read *User Guide: Introduction to QAD Enterprise Applications* before attending this class.

Course Scheduling and Credit

This course is typically taught in one day and is valid for six credit hours.

Virtual Environment Information

This guide applies to both the Standard Edition and the Enterprise Edition of QAD Enterprise Applications. Use the hands-on exercises in this book with the latest Enterprise Edition learning environment in the 10USA > 10USACO workspace. When prompted to log in, specify *demo* for user ID and *qad* for password.

Note If you use Standard Edition. complete the exercises in the EE environment; the concepts are the same in both environments and can be applied to Standard Edition. Features that only apply to Enterprise Edition are noted in the text.

Additional Resources

If you encounter questions on QAD software that are not addressed in this book, several resources are available. The QAD corporate Web site provides product and company overviews. From the main site, you can access the QAD Learning or Support site and the QAD Document Library. Access to some portions of these sites depends on having a registered account.

http://www.qad.com/

QAD Learning Center

To view available training courses, locations, and materials, use the QAD Learning Center. Choose Education under the Services tab to access this resource. In the Learning Center, you can reserve a learning environment if you want to perform self-study and follow a training guide on your own.

QAD Document Library

To access release notes, user guides, training guides, and installation and conversion guides by product and release, visit the QAD Document Library. Choose Document Library under the Support tab. In the QAD Document Library, you can view HTML pages online, print specific pages, or download a PDF of an entire book.

For more information, see *QAD Manufacturing User Guide*.

To find a resource, you can use the navigation tree on the left. You can also use cross-document search, which finds all documents matching your search terms and lets you refine the search by book type, product suite or module, and date published.

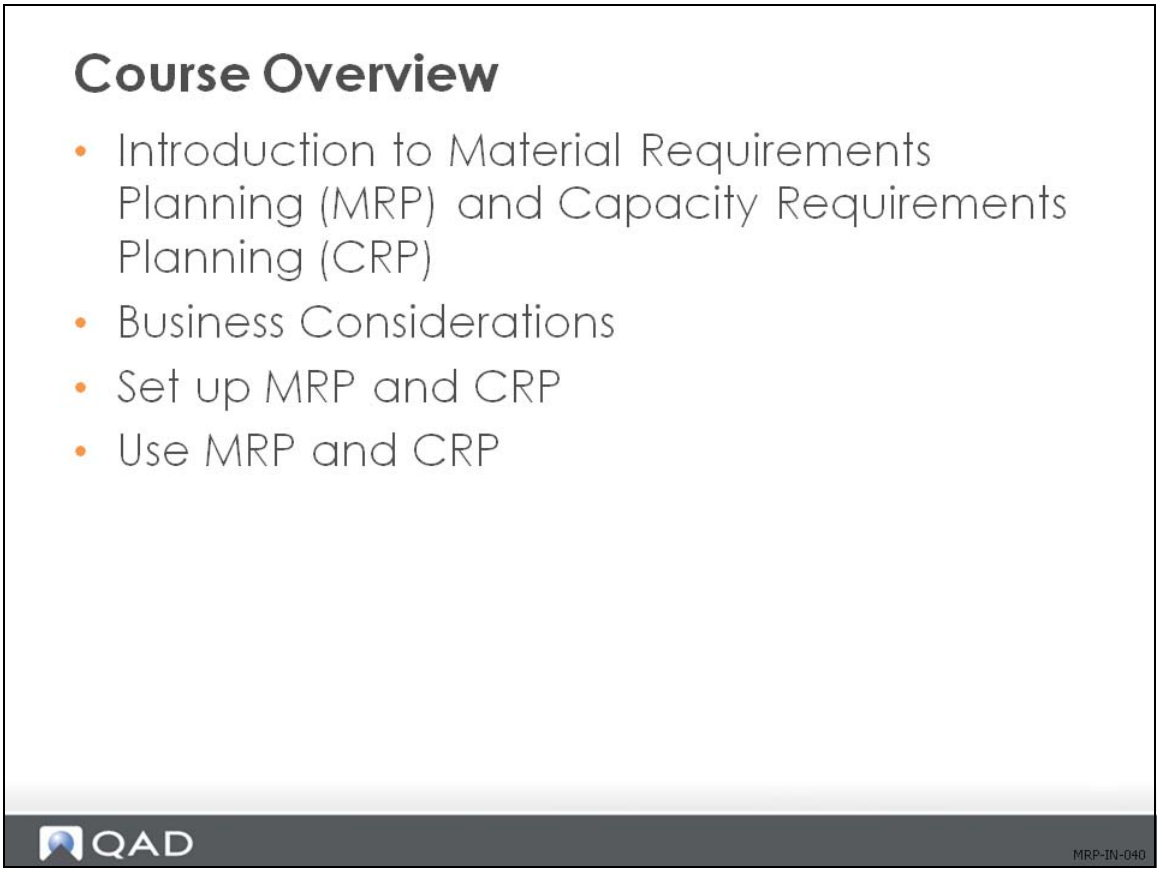
QAD Support

Support also offers an array of tools depending on your company’s maintenance agreement with QAD. These support resources include the Knowledgebase and QAD Forums, where you can post questions and search for topics of interest. To access the Knowledgebase or QAD Forums, choose Visit Online Support Center under the Support tab.

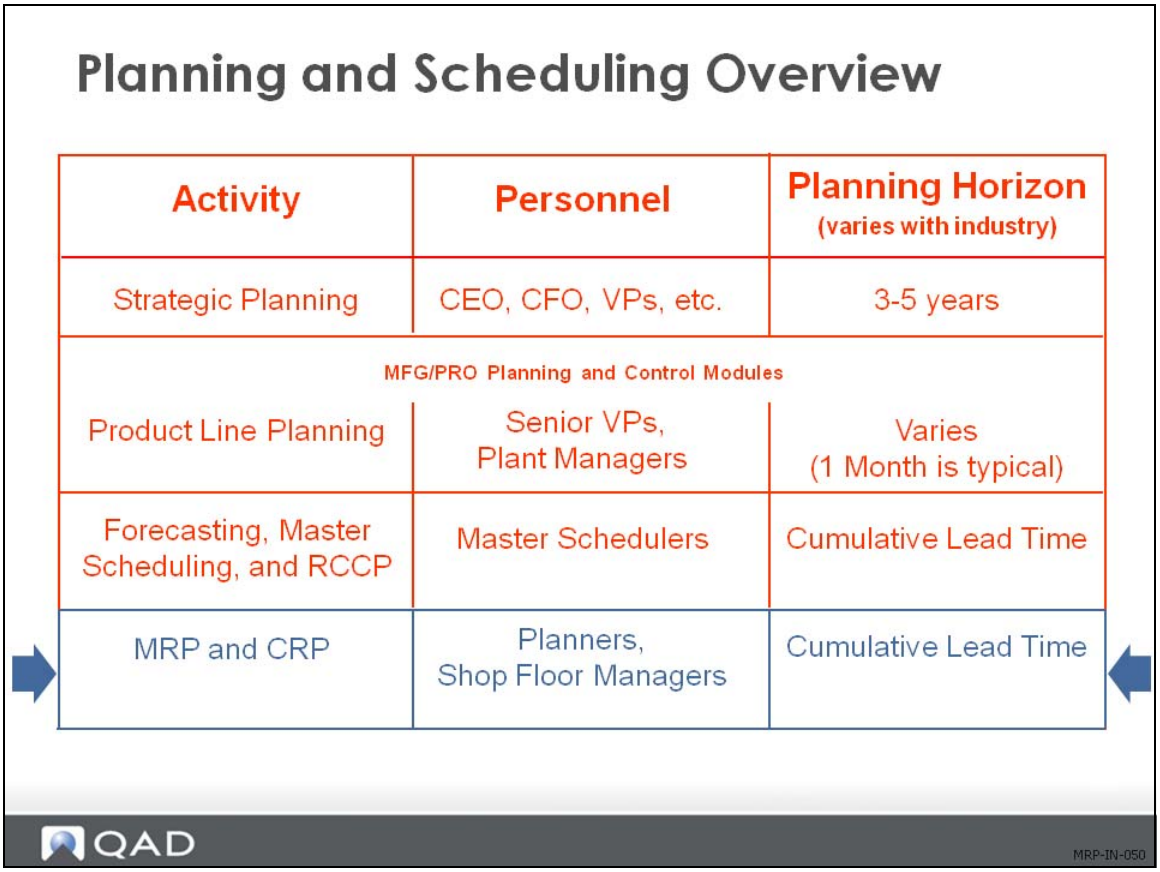
Chapter 1

Introduction to MRP and CRP

Course Overview



Planning and Scheduling Overview



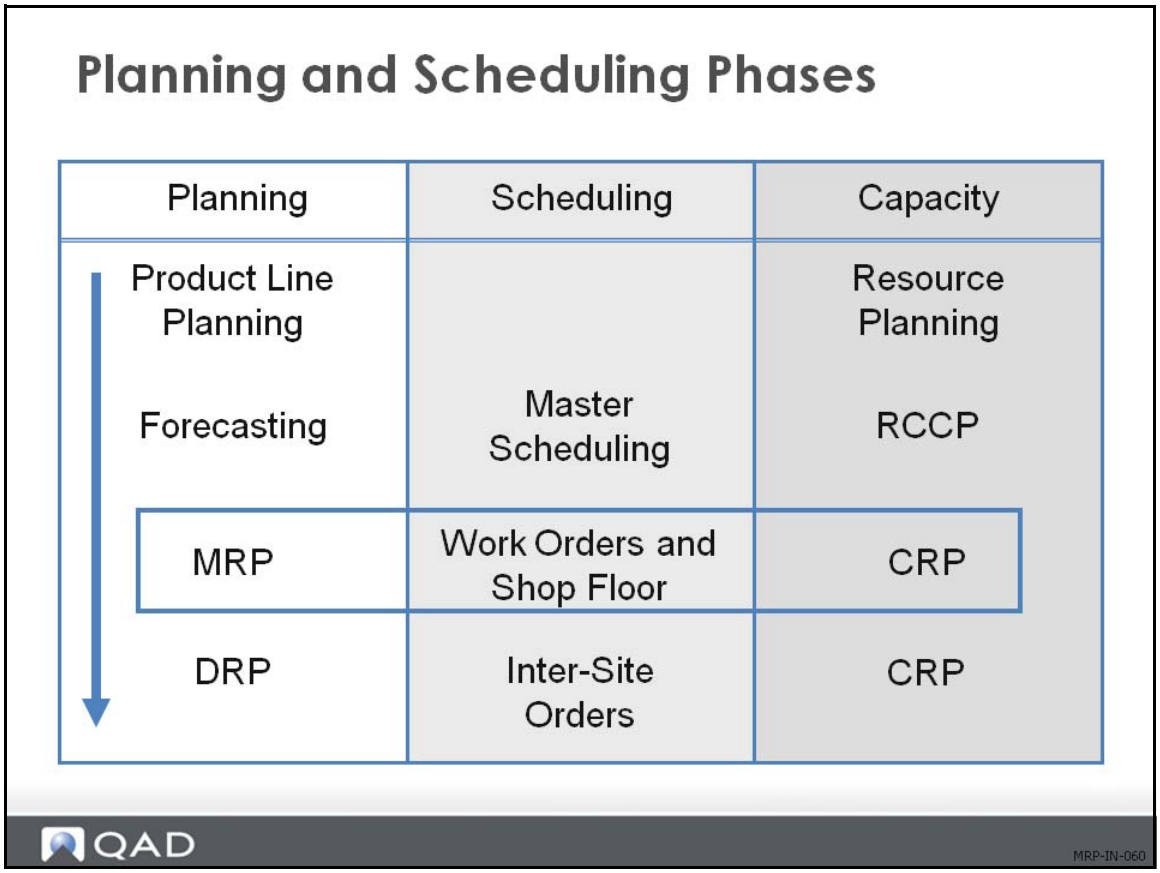
Component planning takes place in the Material Requirements Plan (MRP) module and the plans are checked against capacity in the Capacity Requirement Plan (CRP) module.

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

Component planning enables you to determine which work centers and components are 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 are 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



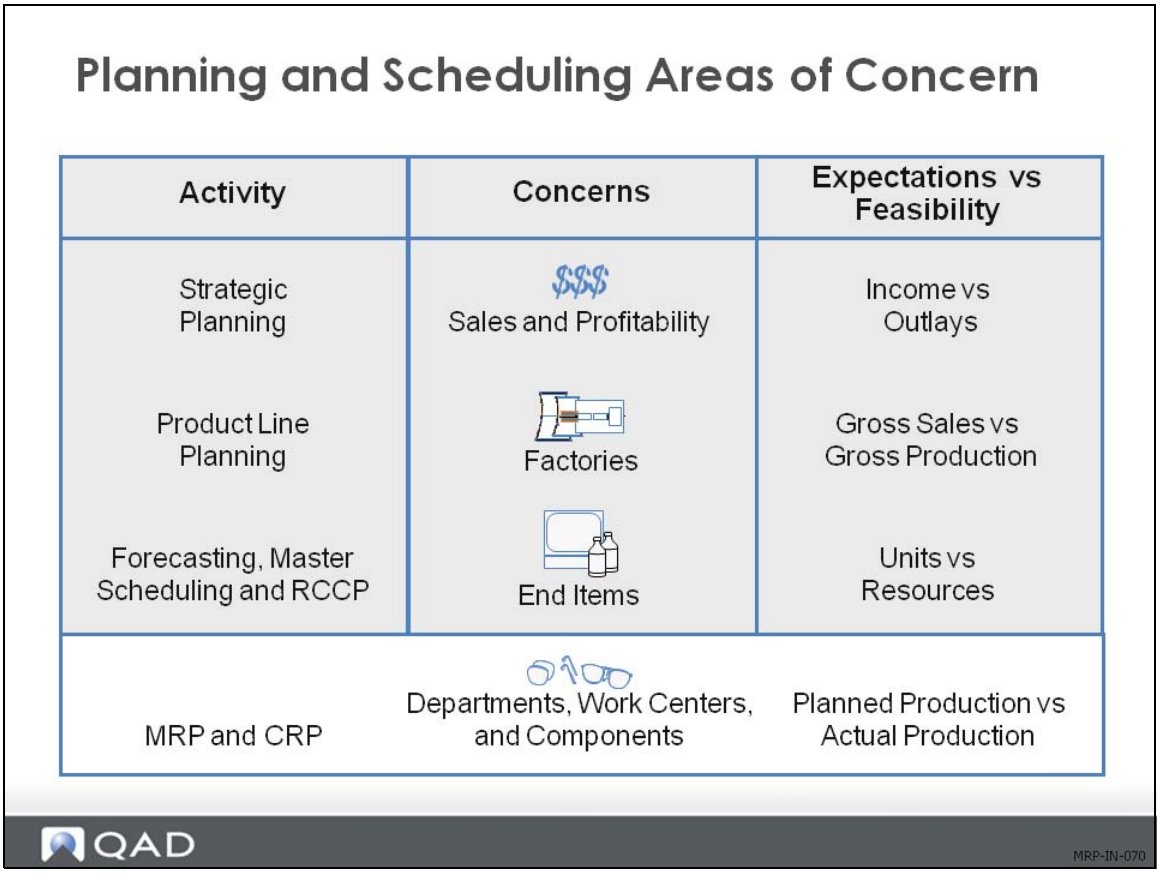
Planning and execution generally move down and to the right through the matrix shown here.

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.

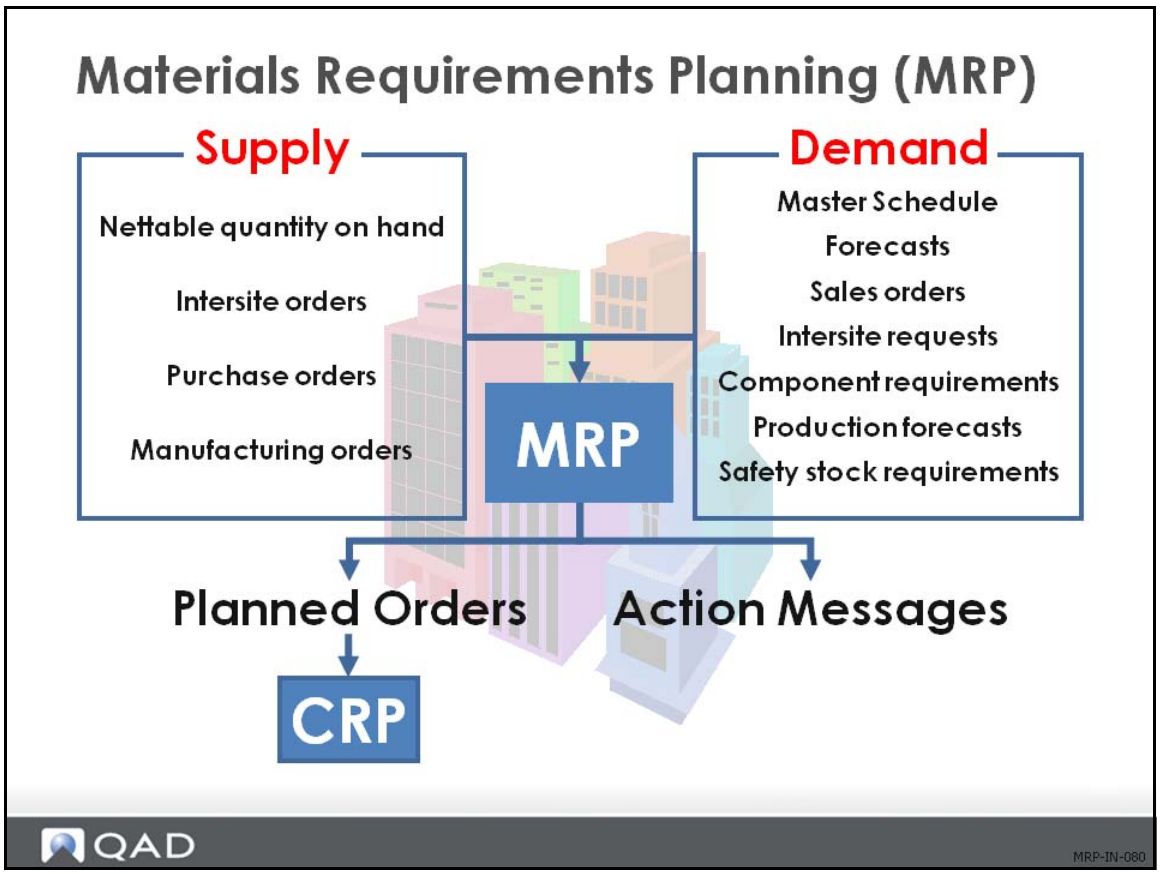
Planning and Scheduling Areas of Concern



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

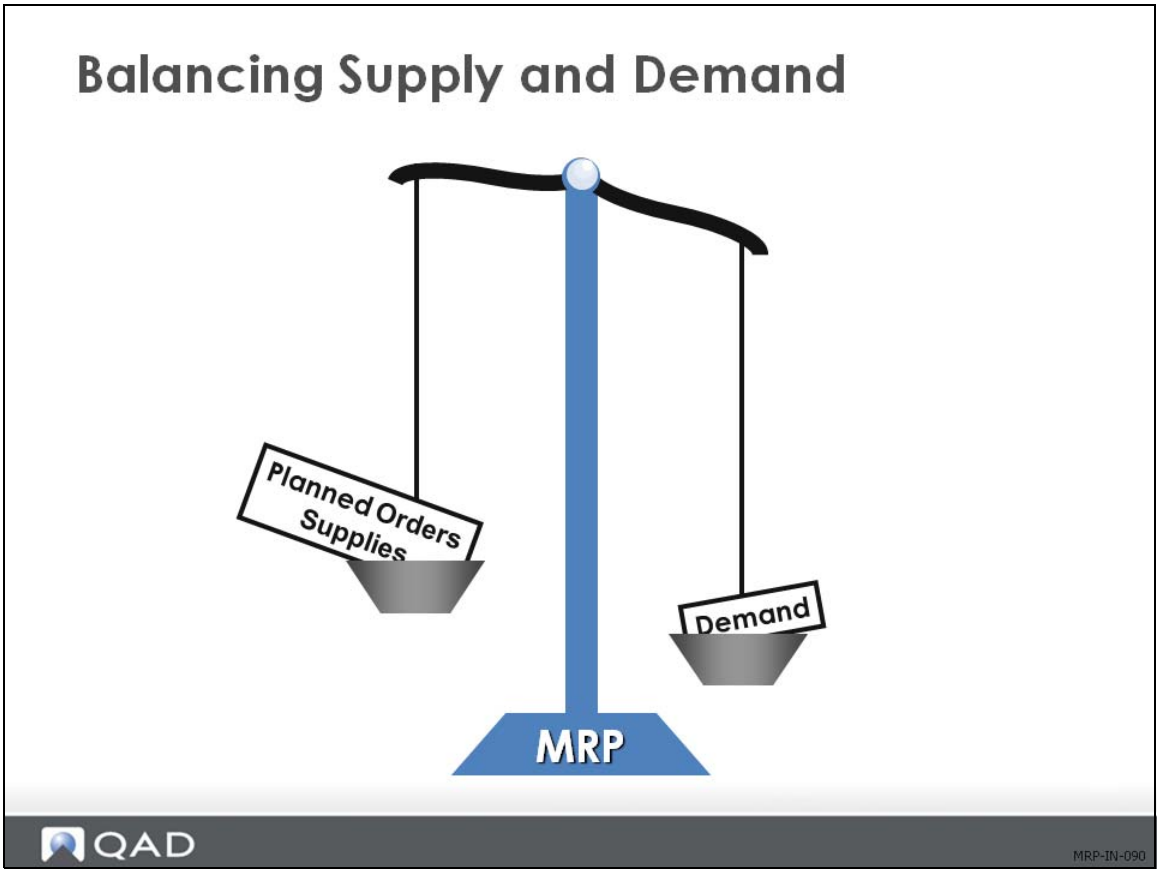
MRP then generates planned orders suggesting how many of each item to buy or make and when to do so

MRP performs planning activity by site. Each site's material plan is 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

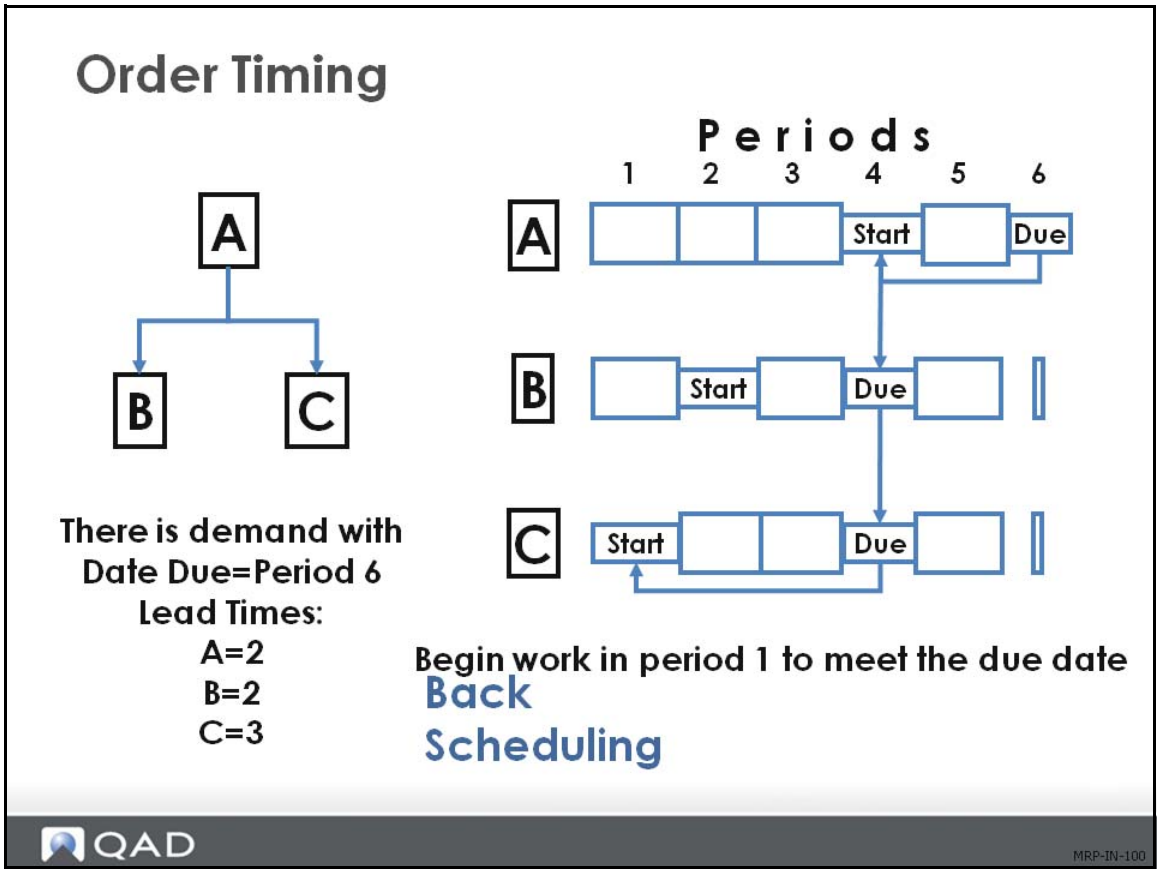
Balancing Supply and Demand



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

Order Timing

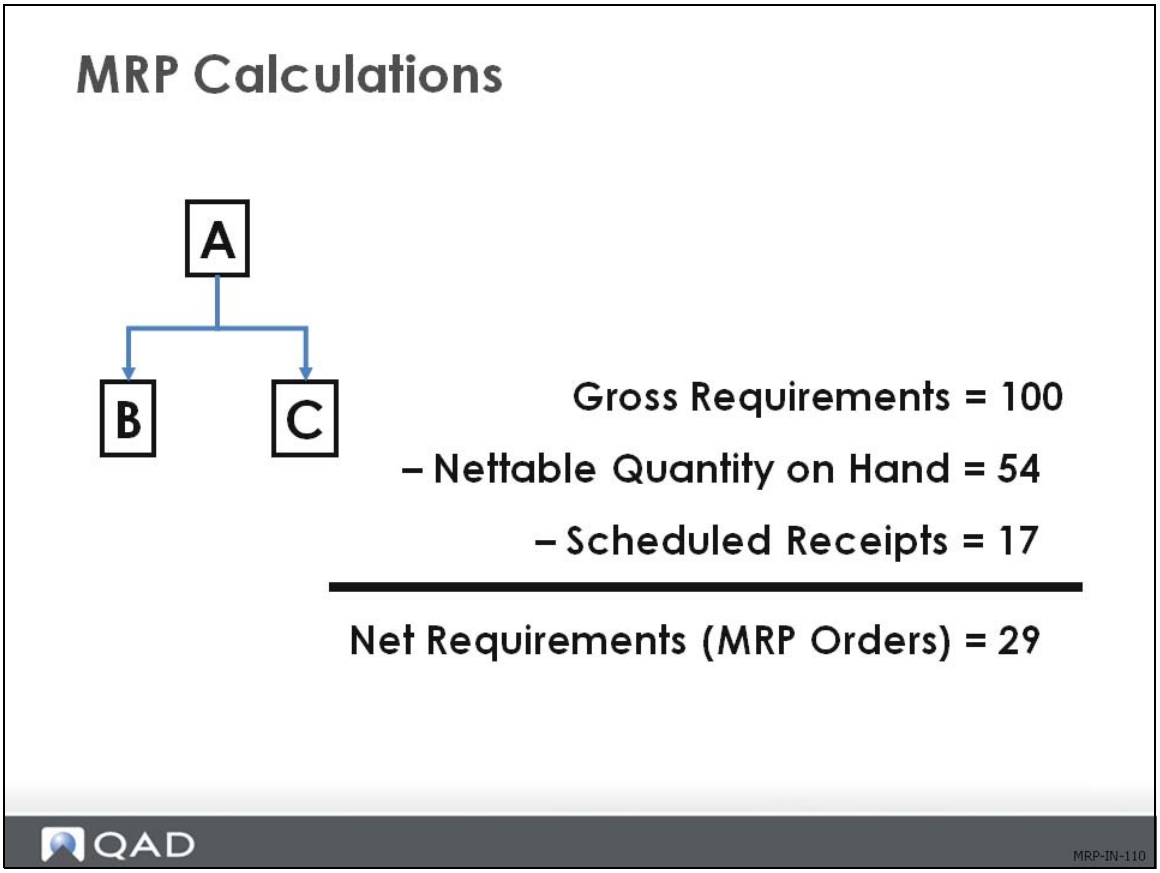


The master schedule sets the overall plan on which MRP bases the timing.MRP uses backward scheduling to determine the start date. In backward scheduling, the lead time is subtracted from the due date to arrive at the start date. MRP performs this calculation on all planned orders.

Some guidelines of MRP:

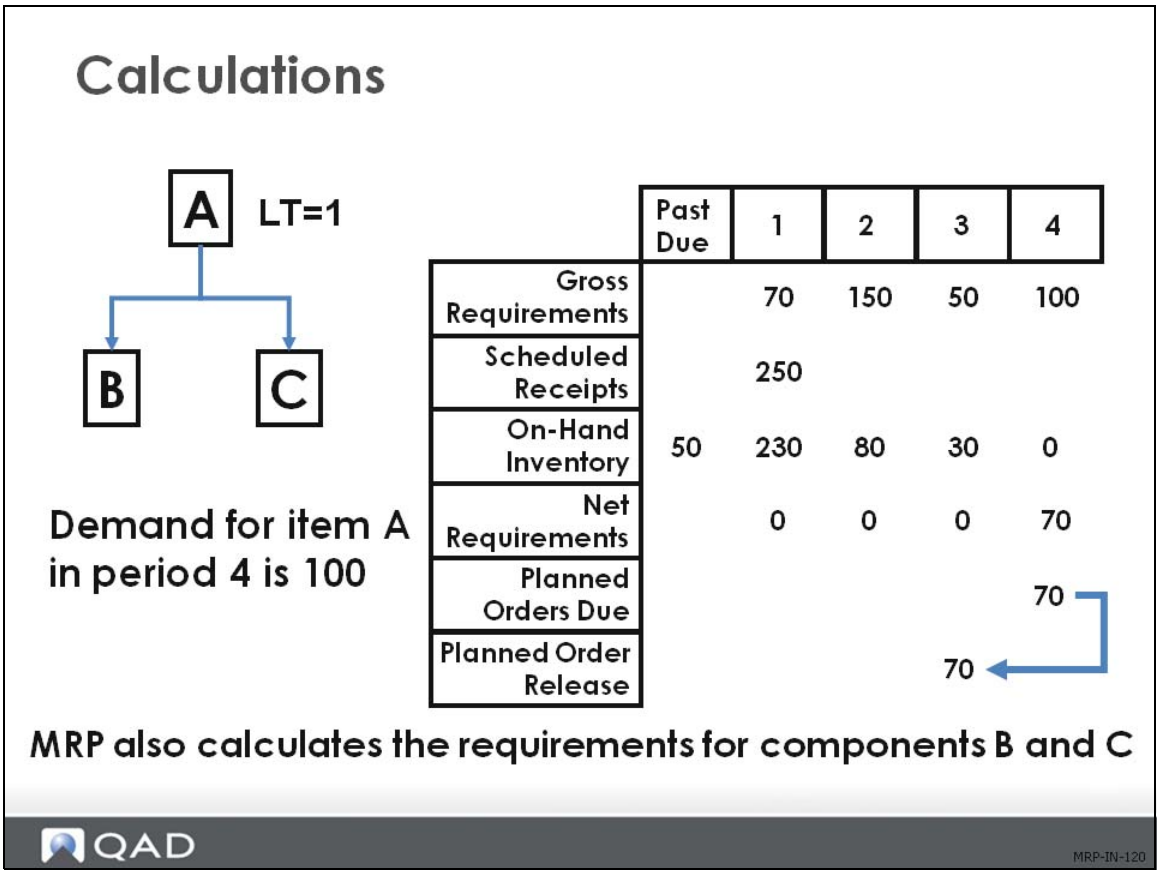
- A component due date is generally the parent item's release date; however, lead time offsets adjust the component due date.
- For all non-purchased items, MRP counts only work days as defined in the shop calendar.
- For purchased items, MRP uses regular calendar days; if the release date is a non-workday,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

MRP Calculations



MRP uses this calculation for each period.

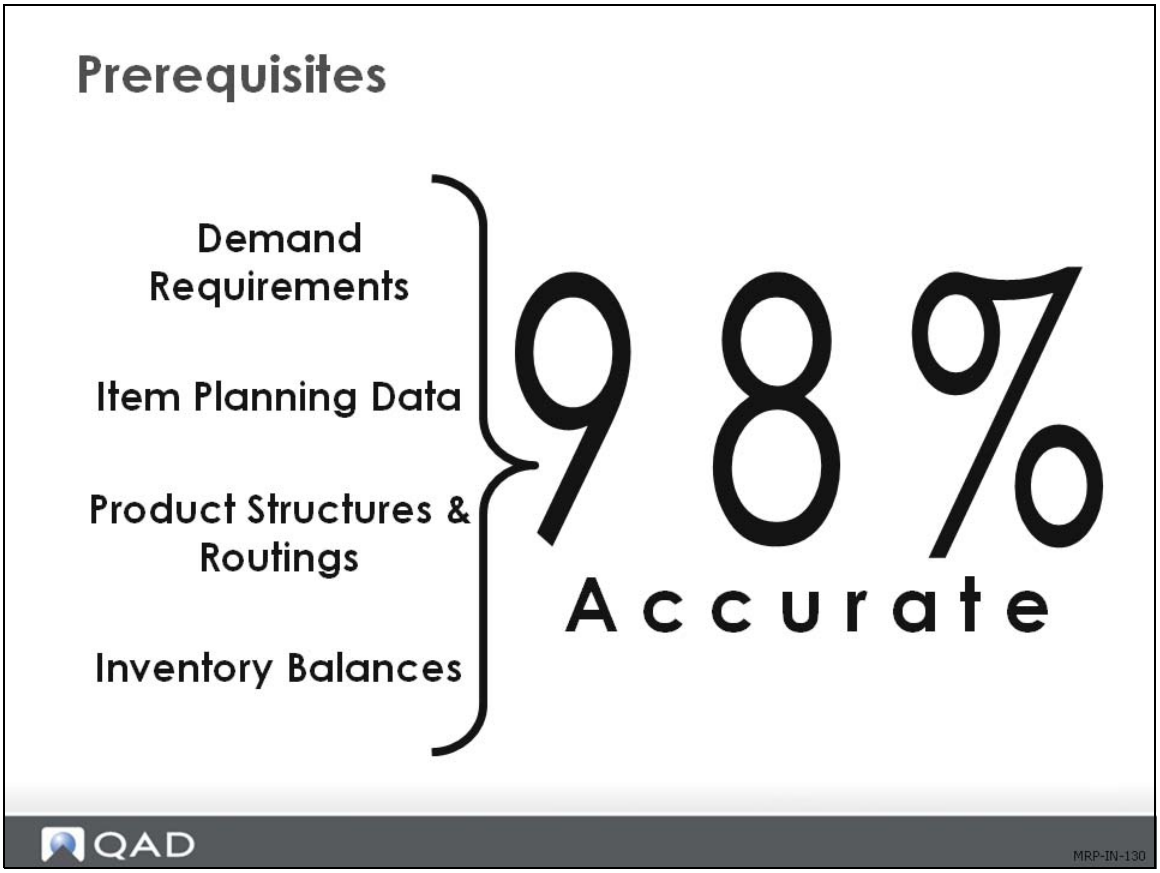
- Maintaining the balance across the planning horizon complicates the calculations



The illustration here shows the calculations for end item A. MRP also calculates the requirements for all components

Net Req. = Gross Req. - Scheduled Receipts - Nettable On Hand

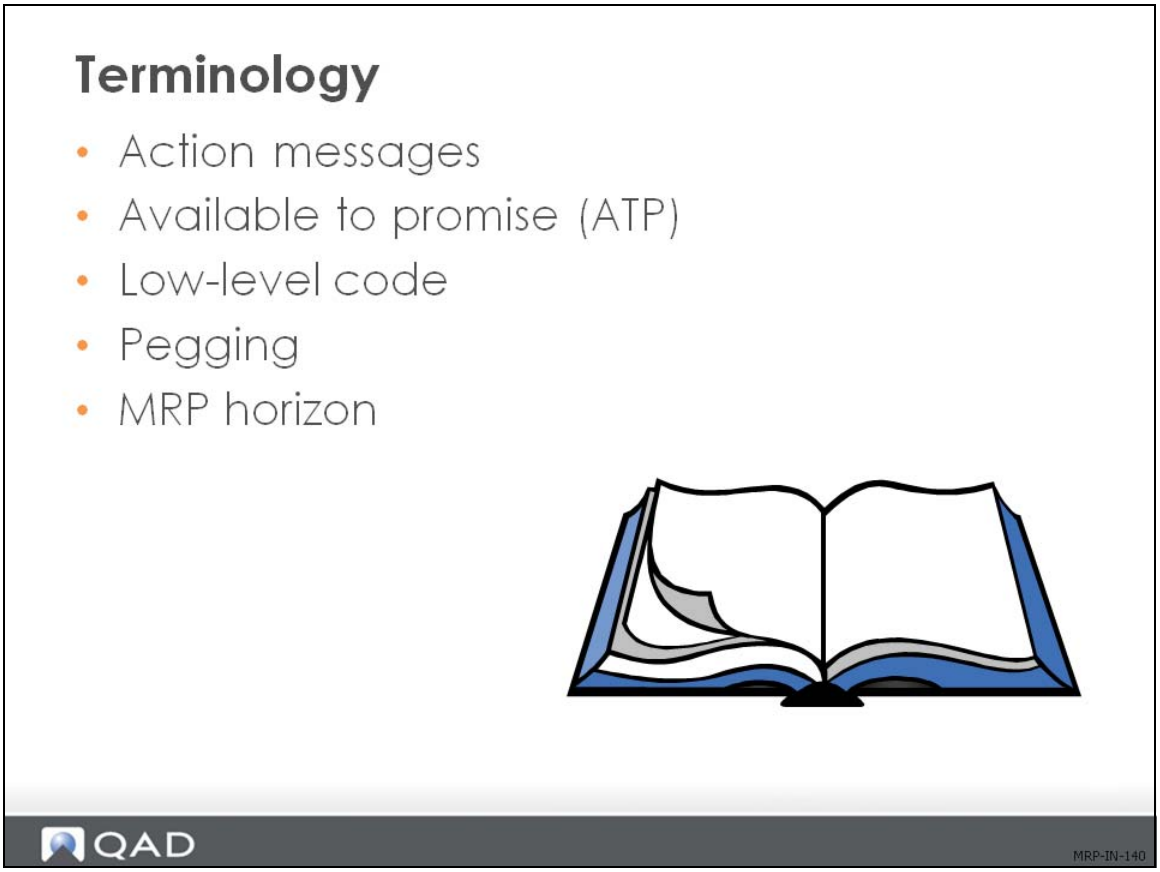
MRP Prerequisites



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

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

Terminology



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

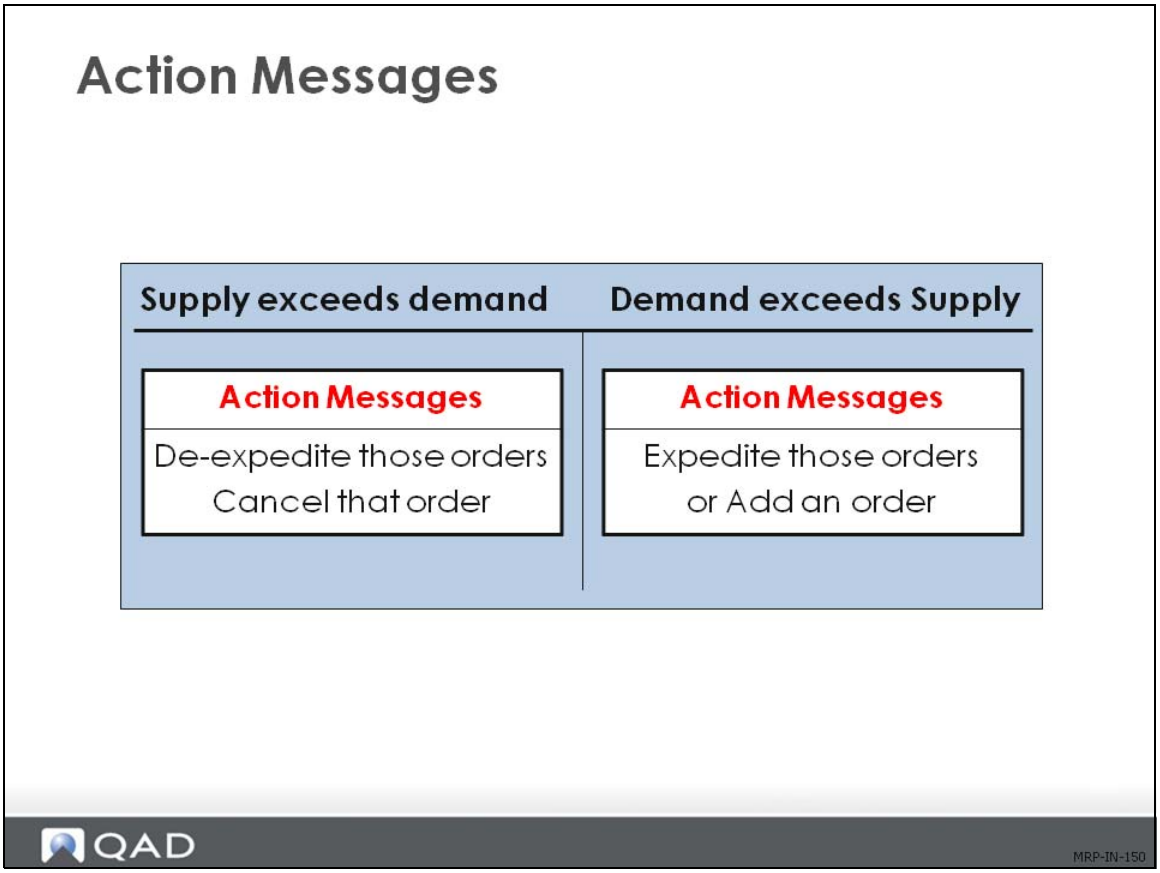
Available to Promise (ATP). The uncommitted portion of inventory or planned production, maintained in the master schedule to support customer order promising. ATP quantity is the uncommitted inventory balance in the first period and is normally calculated for each period in which a Master Production 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. The system normally calculates and maintains this value automatically.

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

MRP Horizon. Also known as the MRP planning horizon. The MRP horizon is how far to plan forward in time. How far ahead demand is known and the lead times through the manufacturing operation determine its value.

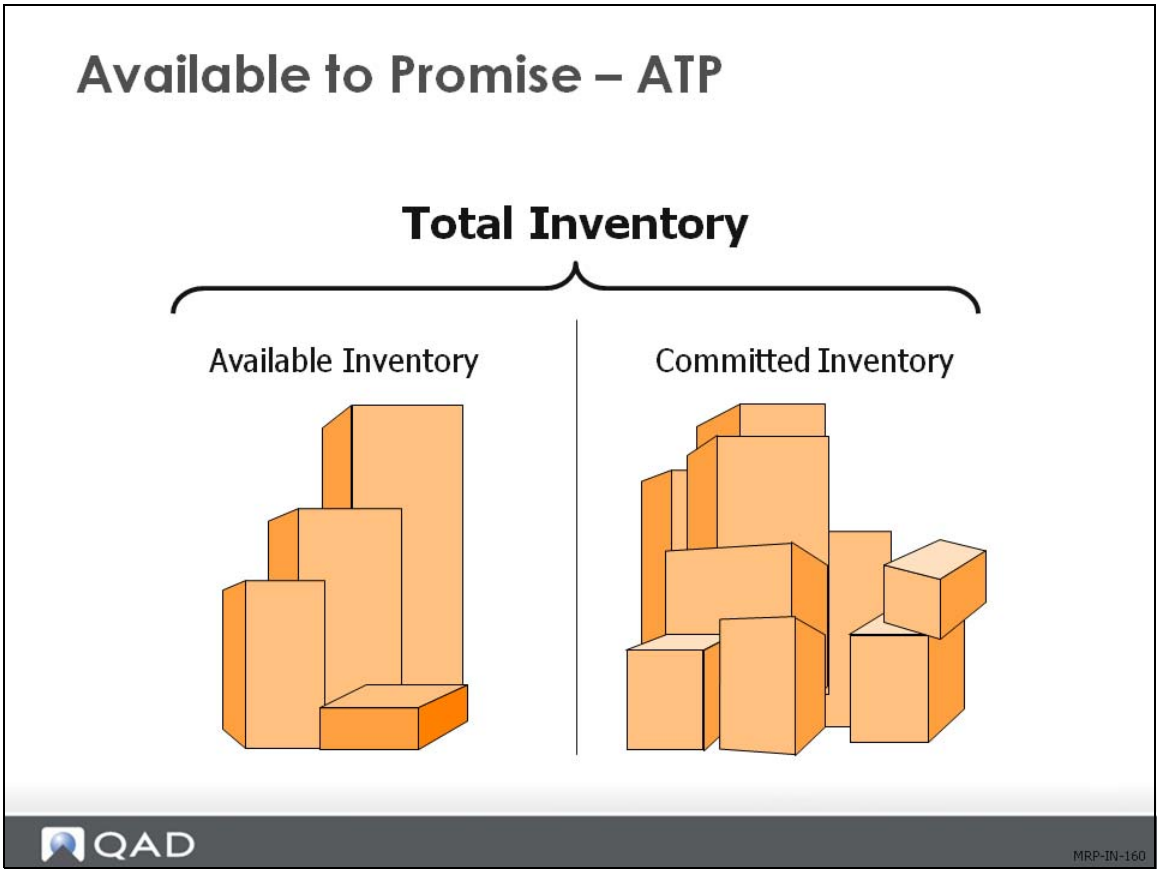
Action Messages



Action messages recommend the actions a planner takes 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 that the system does not recognize are planned as LFL (lot for lot).

Available to Promise



Available-to-promise (ATP) is the uncommitted portion of inventory or planned production that 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:

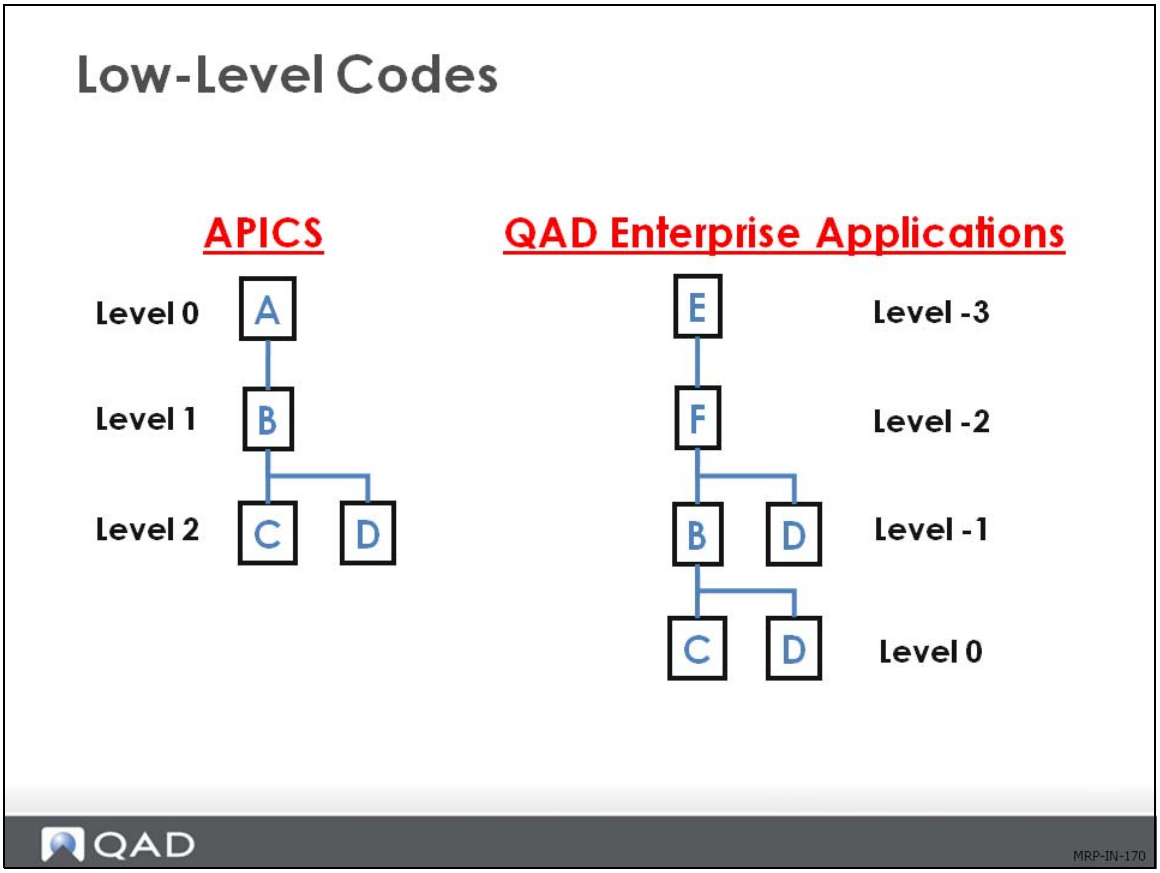
- Real demand includes requirements for work order components, sales orders, and required ship schedules
- Real demand excludes forecast and production forecast
- Real supply includes quantity-on-hand, purchase orders, work orders, and repetitive schedules
- A net decrease in demand increases ATP, while a net increase in demand decreases ATP

Traditionally ATP was only displayed for periods that had a master schedule quantity. ATP from a prior period was not carried forward. QAD EA lets you display ATP in the traditional format and also in a cumulative format that allows 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 indicates that there is insufficient quantity of the item on the date requested, but lets you take the order anyway. An ATP error does not allow the item to be processed.

You can 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



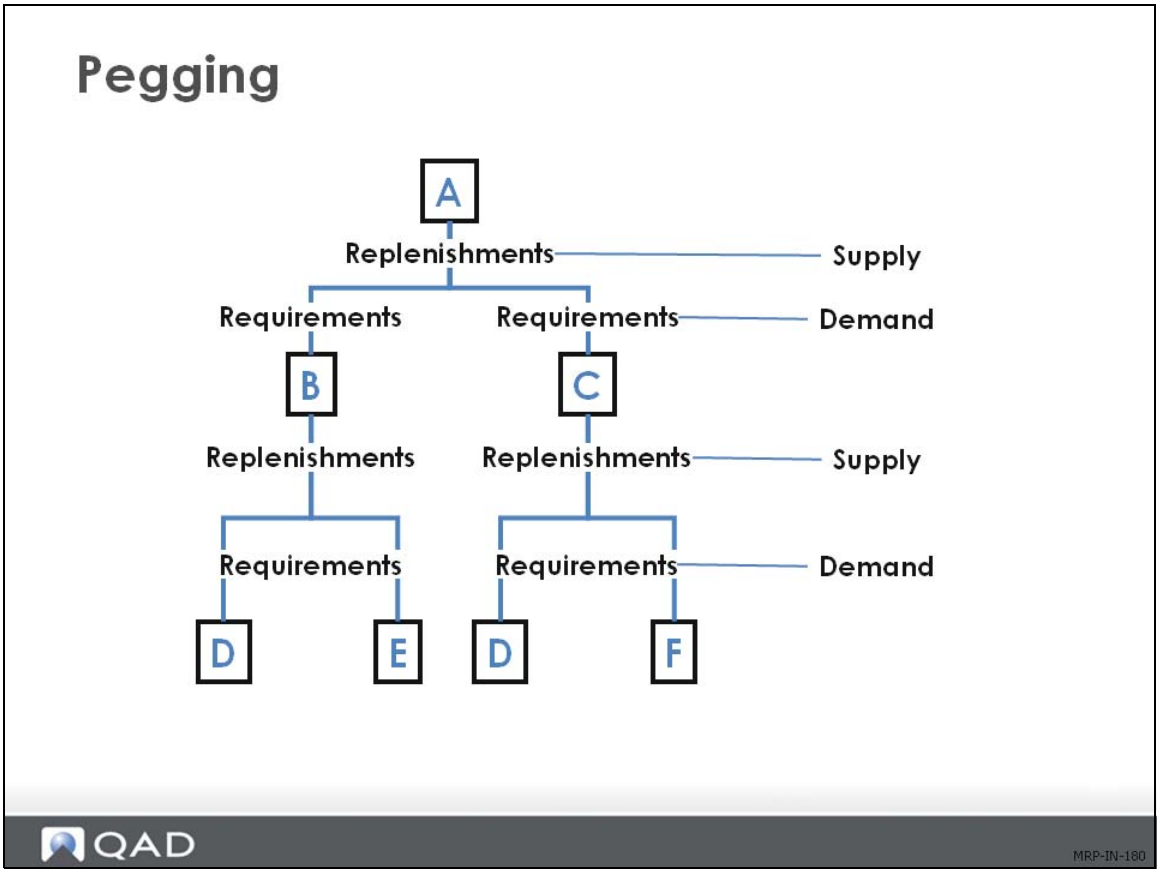
Low-level codes indicate the relative position of each item within the product structures. MRP uses low-level codes to ensure that all dependent demands from parent items are included. In the diagram, the product structure for Item E determines the low-level code of Item C, not the low-level code of 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, run Low Level Code Update (23.22).

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

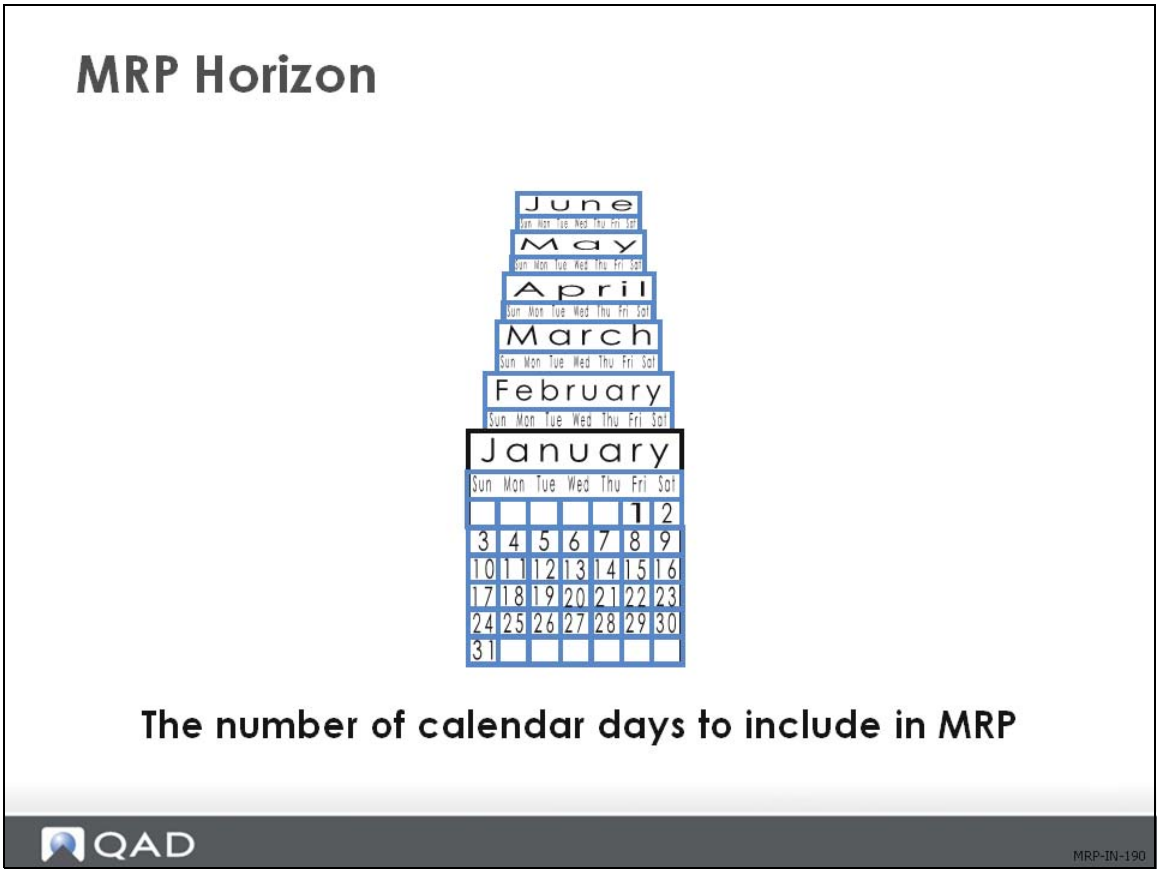
Pegging



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 example, you can see that the requirement for E came from B, and the requirement for B came from A. However, you cannot inquire about E and see that its requirement comes from A.

MRP Horizon

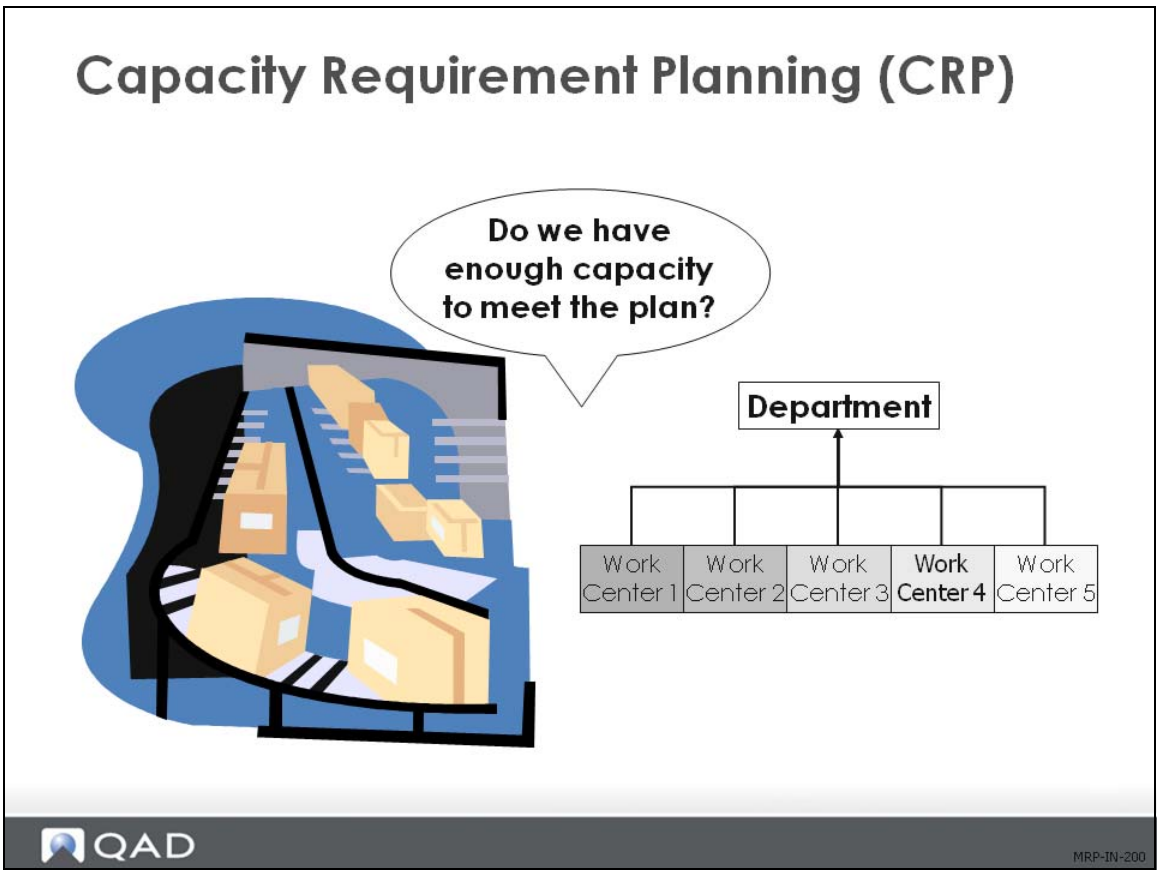


The MRP horizon or planning horizon is the number of calendar days to be planned forward in time. How far ahead demand is known and the lead times through the manufacturing operation determine the MRP horizon.

- MRP only processes material requirements within this planning horizon, ignoring activity outside this horizon
- Make this horizon 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).

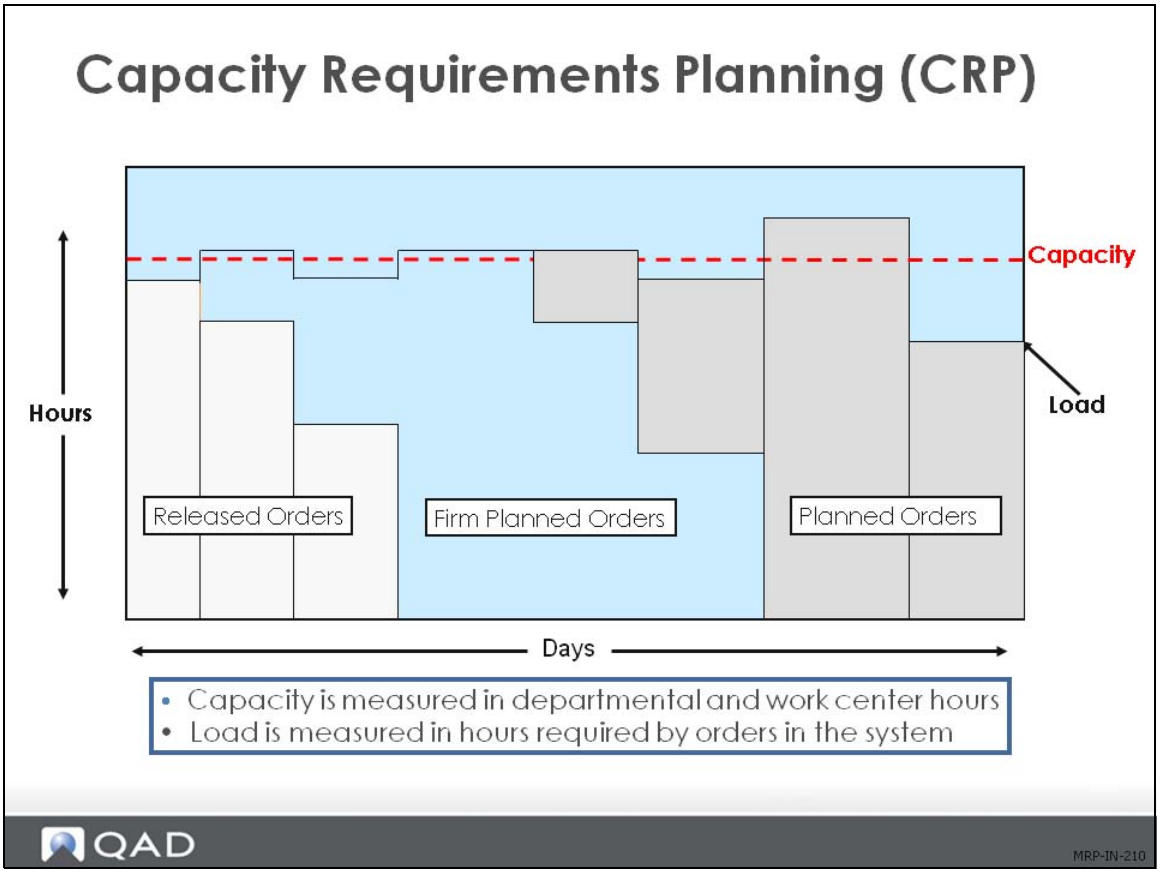
Capacity Requirements Planning



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) have removed most of the capacity constraints before MRP is run.

Note Discussed in *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 subassembly 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).

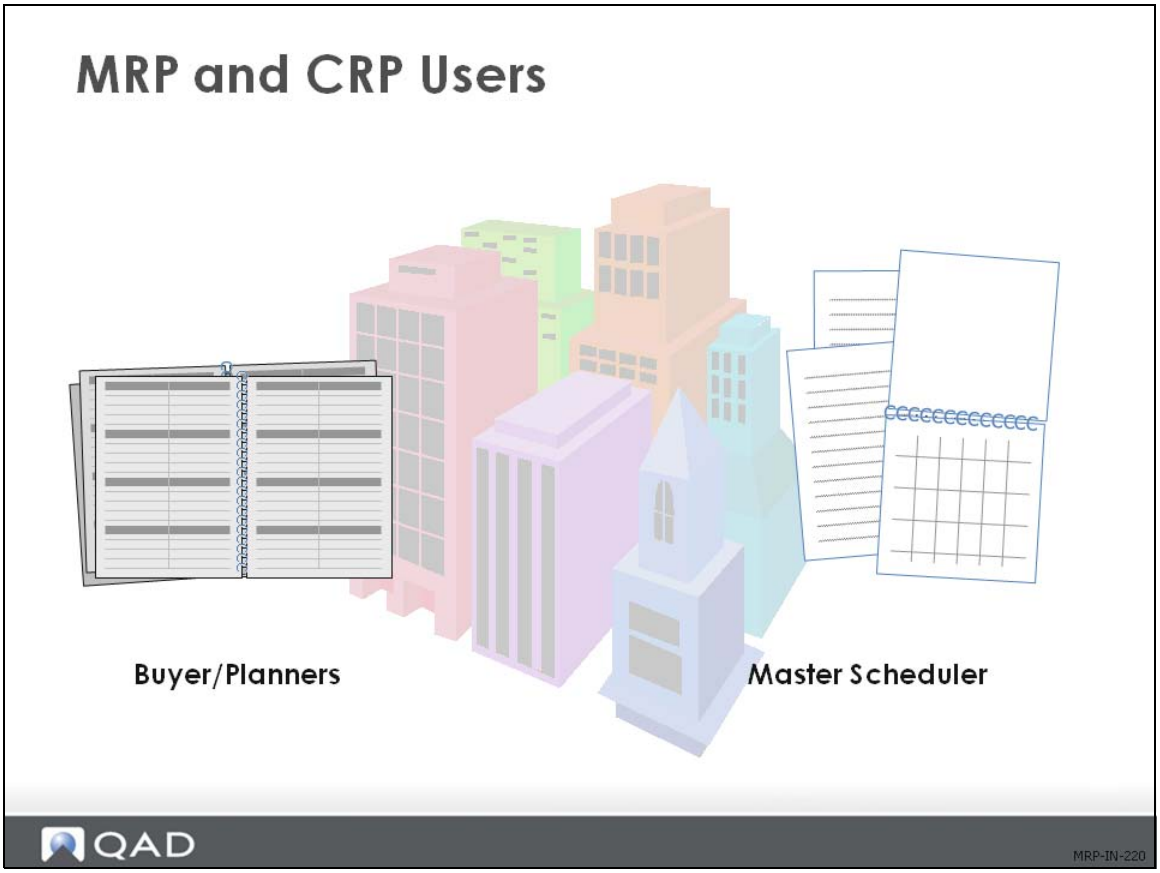
CRP provides a Department Load Summary that shows the total load hours for all the work centers in a department against the total capacity. This function can be a useful quick check on load conditions. However, be aware that labor from one work center may not be interchangeable with other work centers 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 Work Center Calendar Maintenance (14.18.1).

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 are using which work centers and when.

MRP and CRP Users



MRP and CRP are high-level operations. Control access to these functions with security so only qualified employees use them.

Chapter 2

Business Considerations

Business Considerations

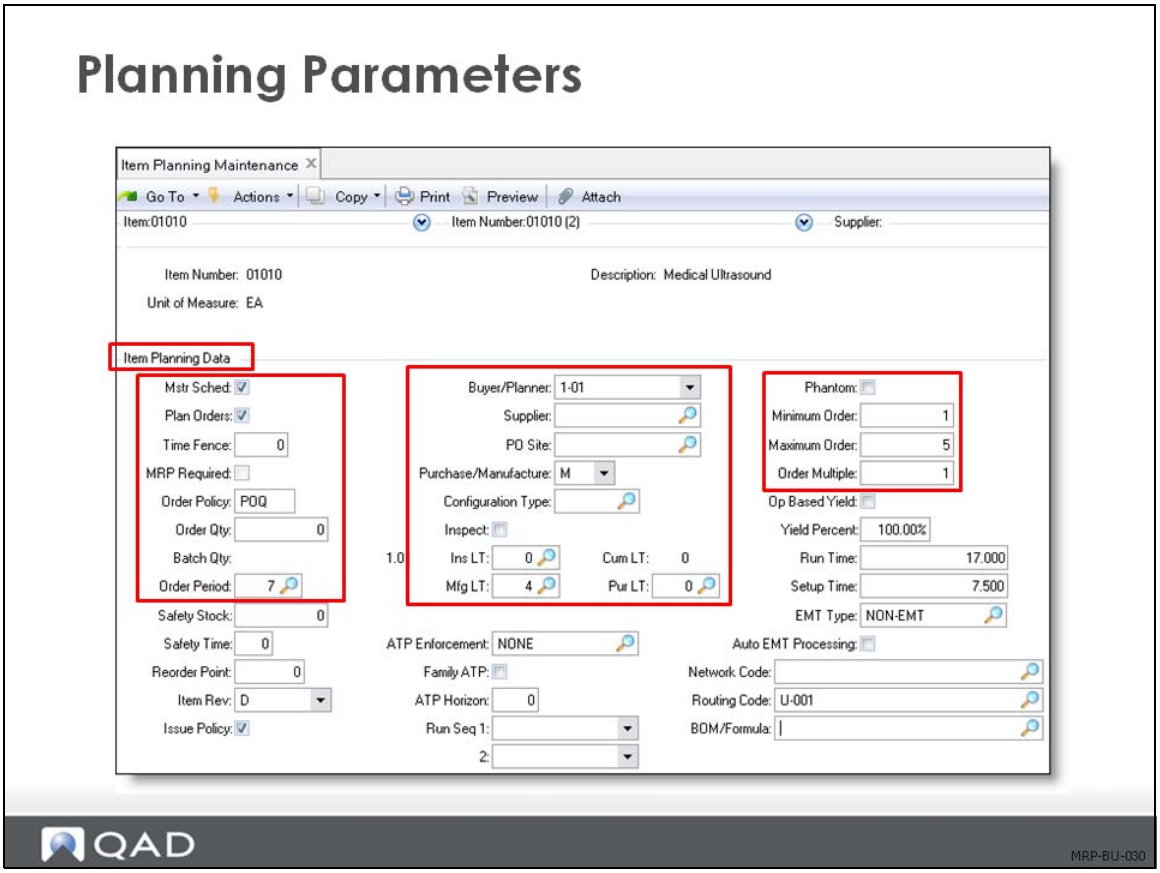
In this section, you learn how to identify some key business considerations before setting up MRP and CRP in QAD Enterprise Applications.

There are several business issues to consider 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.

Planning Parameters



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

Definition

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; 98% or greater accuracy in your planning parameters is required for best results.

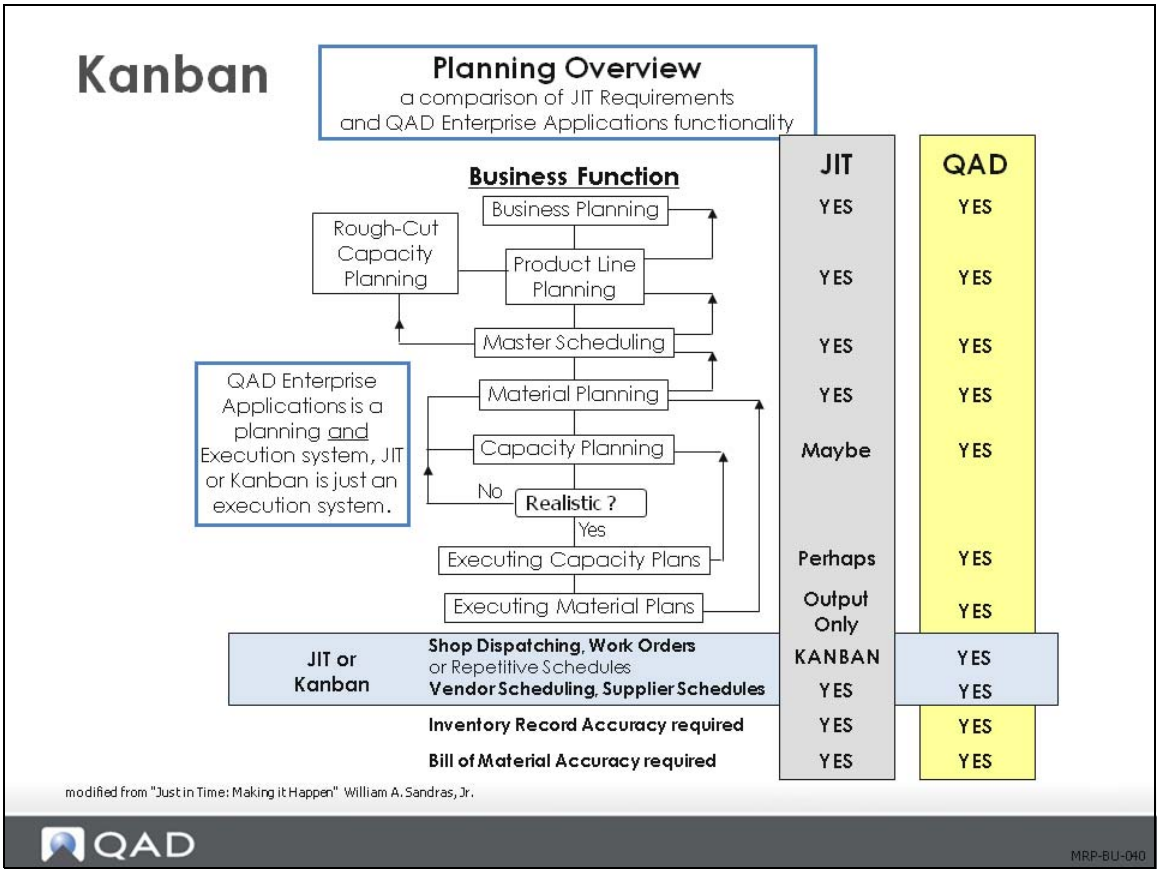
Functionality in QAD Enterprise Applications

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 when 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

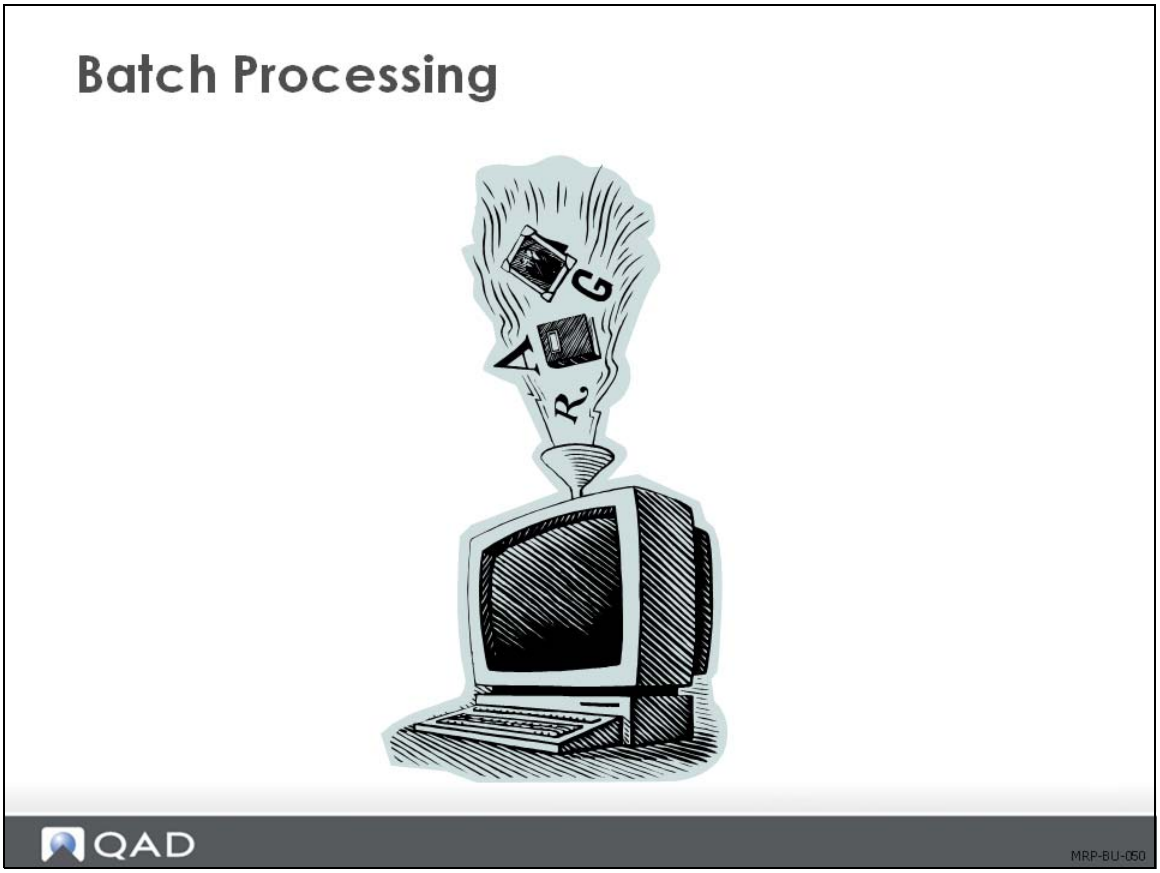
Planning parameters in Item Planning Maintenance (1.4.7) can be set to meet kanban needs.

- Set Order Policy to POQ with a period of one or two 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 has a significant impact on setting your planning parameters. This choice 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



Definition

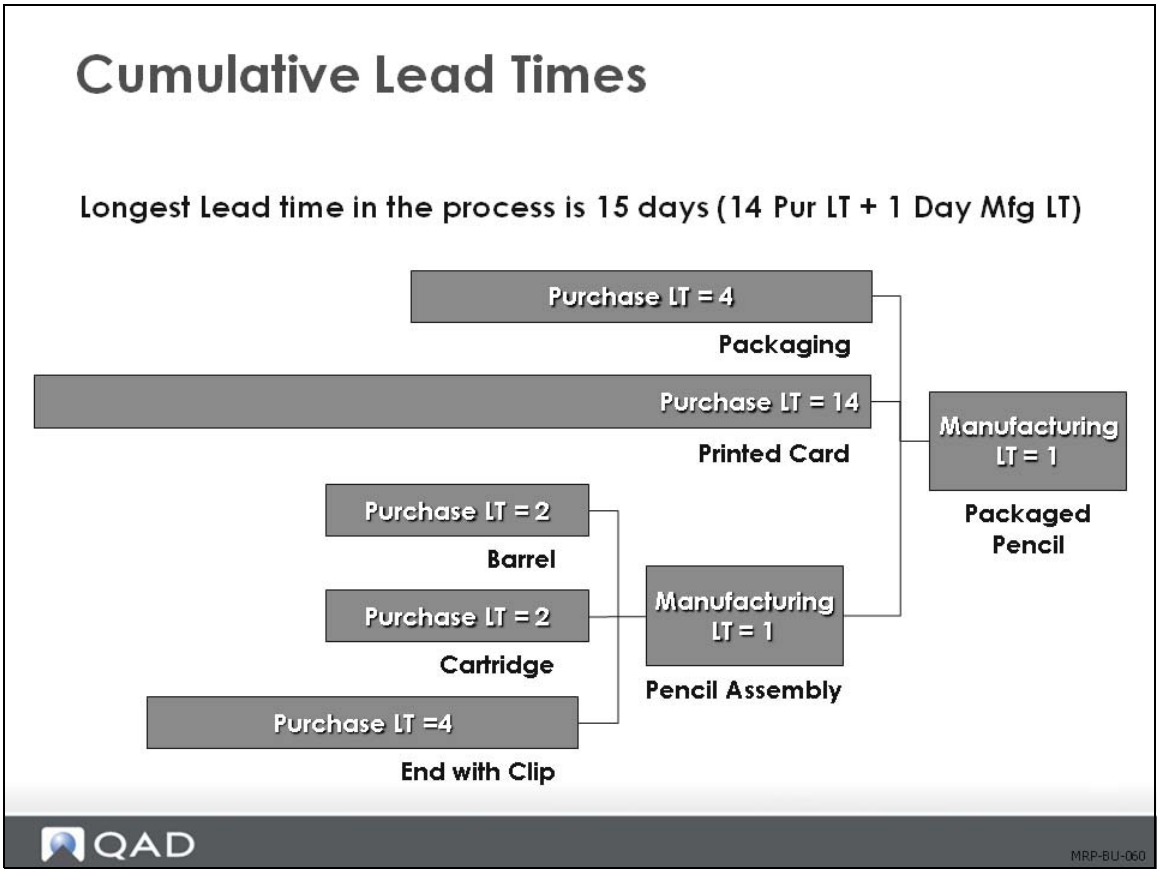
A computer technique where transactions are accumulated and processed together.

Why Consider?

MRP runs can take a long time. 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?

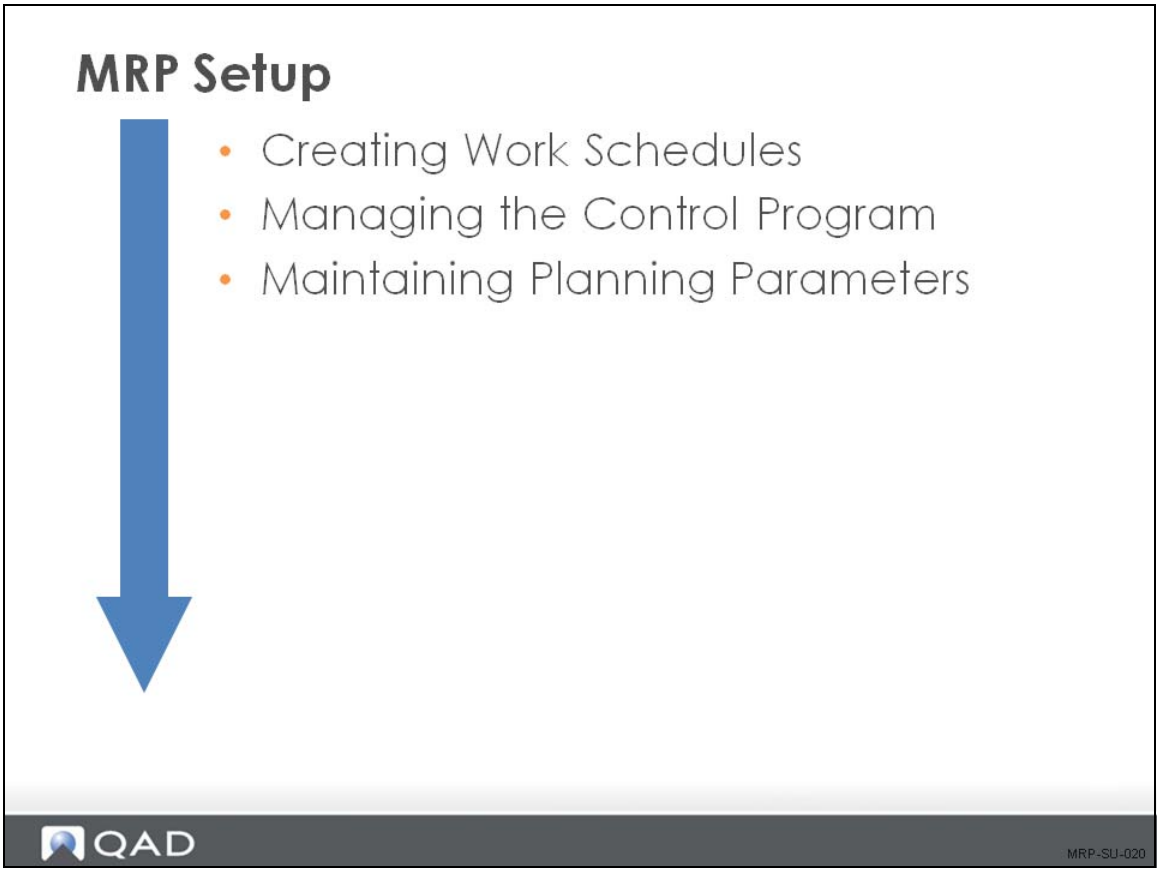
- MRP considers component lead times in generating its plan
- Inaccurate lead times result in faulty plans
- MRP horizon must be at least one day longer than longest cumulative lead-time

Discussed in *Training Guide: Product Structures and Formulas.*

Chapter 3

Set Up MRP

MRP Setup



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

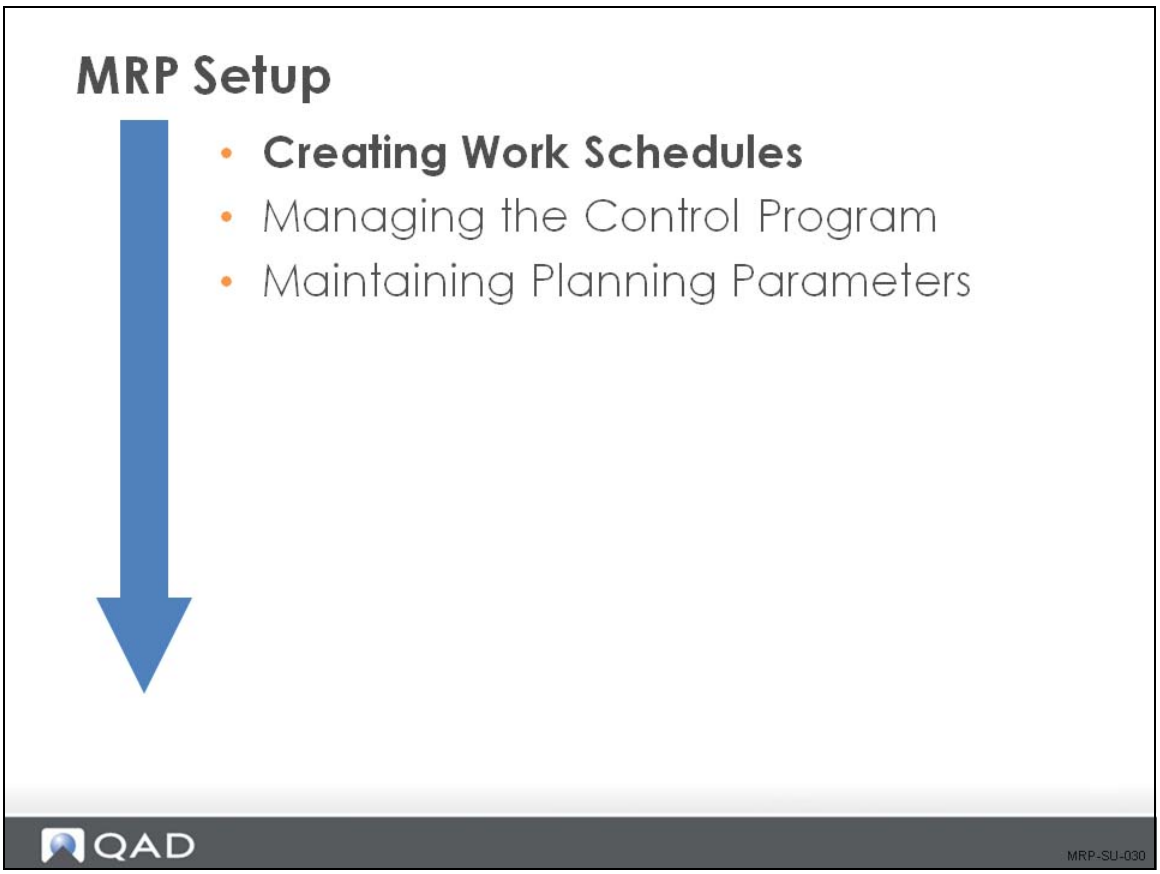
Reading the Training Flow

- The current step is highlighted
- Optional steps are marked (optional)

A suggested setup sequence for MRP includes three steps:

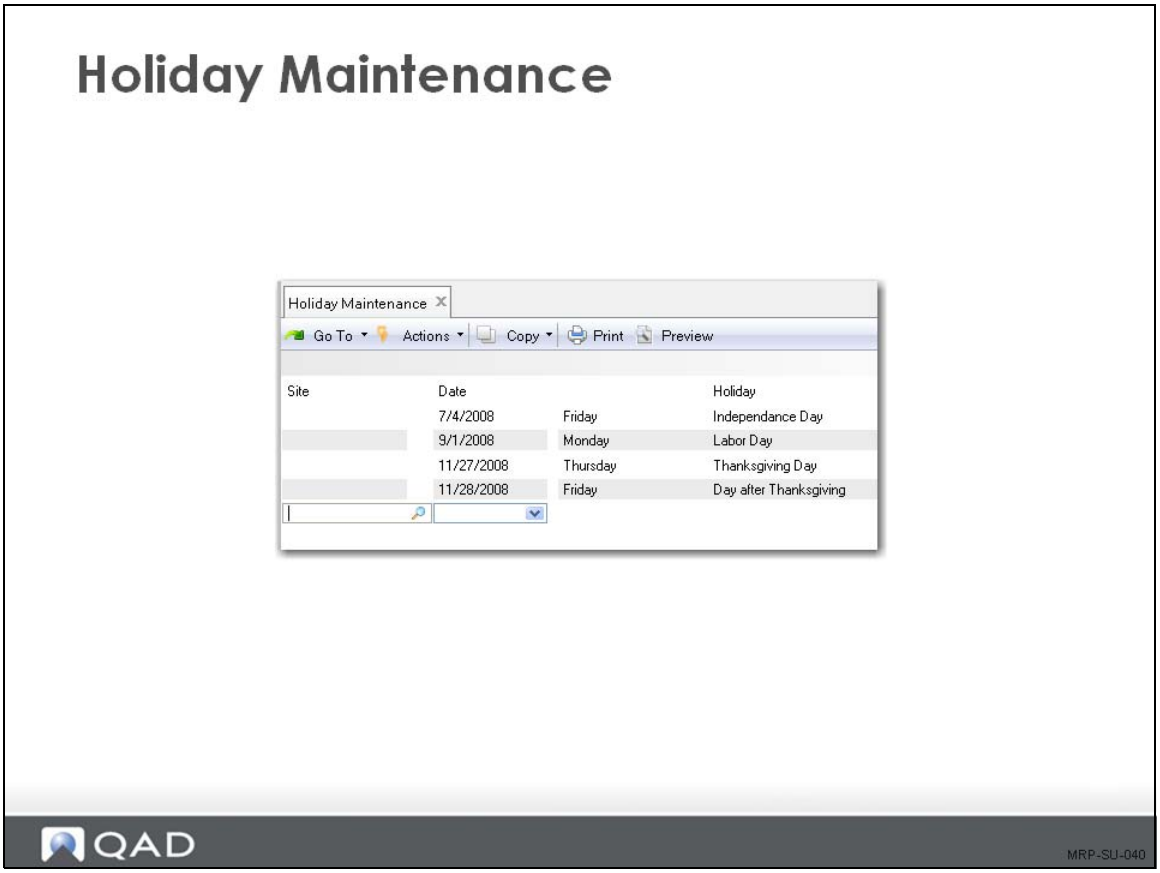
- First, verify the accuracy of your work schedules and holidays so that MRP can properly plan your activities.
- Second, set up or maintain the MRP control program.
- Third, verify the planning parameters of your items so that MRP can properly process them.

Creating Work Schedules



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

Holiday Maintenance



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

Field Definitions

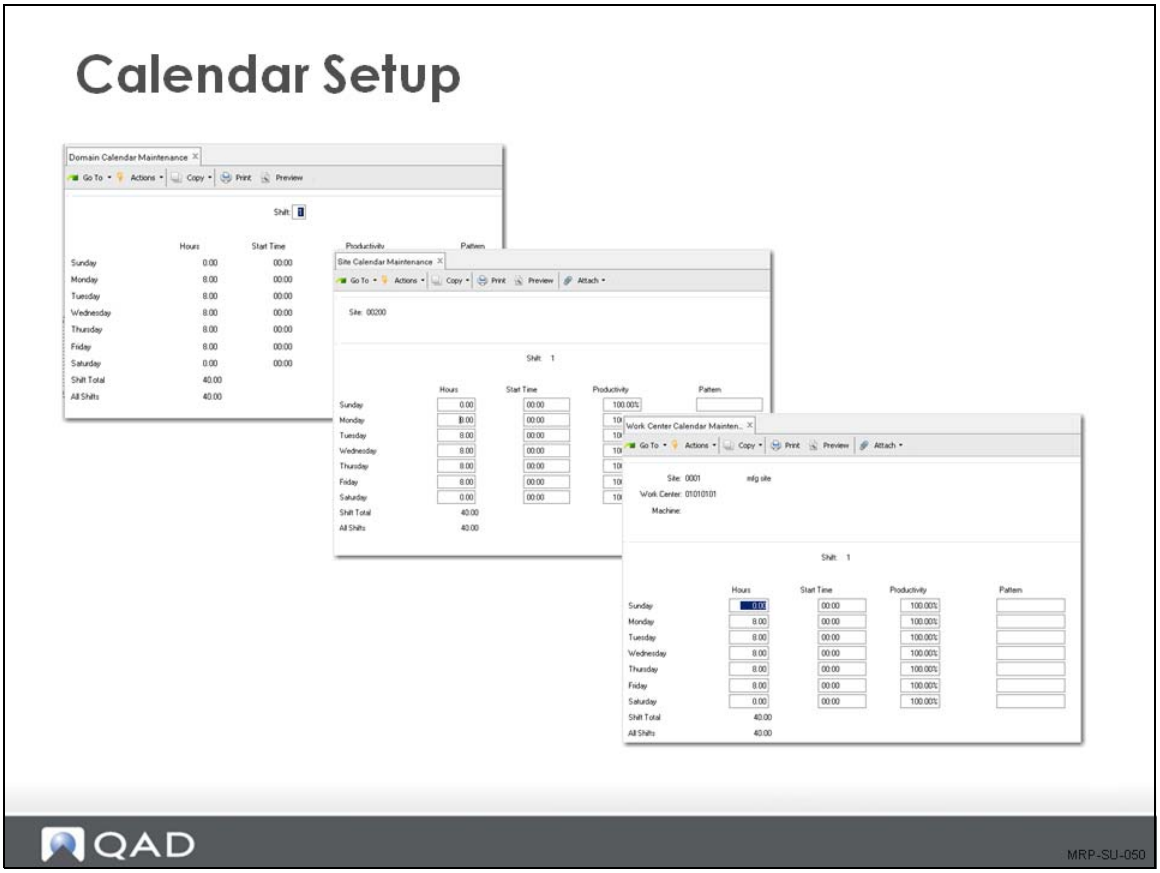
The information shown describes the key fields in the screen.

Site. The site to which the holiday applies.

Date. The holiday date.

Holiday. A brief, reference-only description.

Calendar Setup



Calendars provide the basis for MRP scheduling functions. Calendars define the standard work week for the domain, the site, the work centers in it. They also define exceptions to the normal calendar, such as scheduled overtime or shutdown periods.

To implement shop calendars correctly:

- Create a domain calendar in Domain Calendar Maintenance
- Create a calendar for each site in Site Calendar Maintenance. This is the calendar used by CRP to calculate capacity, including holidays
- Create Work Center calendars in Work Center Calendar Maintenance
- As needed, create calendar exceptions in the associated programs:
  - Domain Calendar Exceptions Maint
  - Site Calendar Exceptions Maint
  - Work Center Calendar Excpt Maint

QAD Enterprise Applications looks first for a calendar for the specific site, work center, machine combination.

- If none is found, it looks for a work center calendar match on Site and Work Center with Machine blank
- If none is found, it looks for a site calendar match
- If none is found, it uses the domain calendar

To schedule exceptions in the associated calendar exception program for each level, enter the Reference and specify the number of hours per shift (positive for overtime, negative for downtime, for example).

Example If you normally work 8 hours in a shift, enter -8 hours for a shutdown date.

Field Definitions

The following information describes the key fields in the calendar setup screen. It applies to all calendar types.

Shift. Enter a code identifying the work shift associated with this calendar entry.

If you have just one shift, enter the information under Shift 1. The system considers each day with a positive number of hours as a work day.

Hours. Enter the number of work hours for this shift and day of the week. If you do not enter a number of hours, the system considers this a non-work day.

Start Time. Enter the time of day (based on a 24-hour clock) that this workday begins on the selected shift.

Productivity. When a shift is more or less productive than a normal shift (for example, because it has a larger or smaller crew), enter an adjustment. Less than 100% indicates a less productive shift; more than 100% indicates increased productivity.

Example A production line has three shifts, and the third shift has only 20% of the employees of the first two shifts. Enter a shift adjustment factor of 20% for that shift.

The system rates shift capacity as:

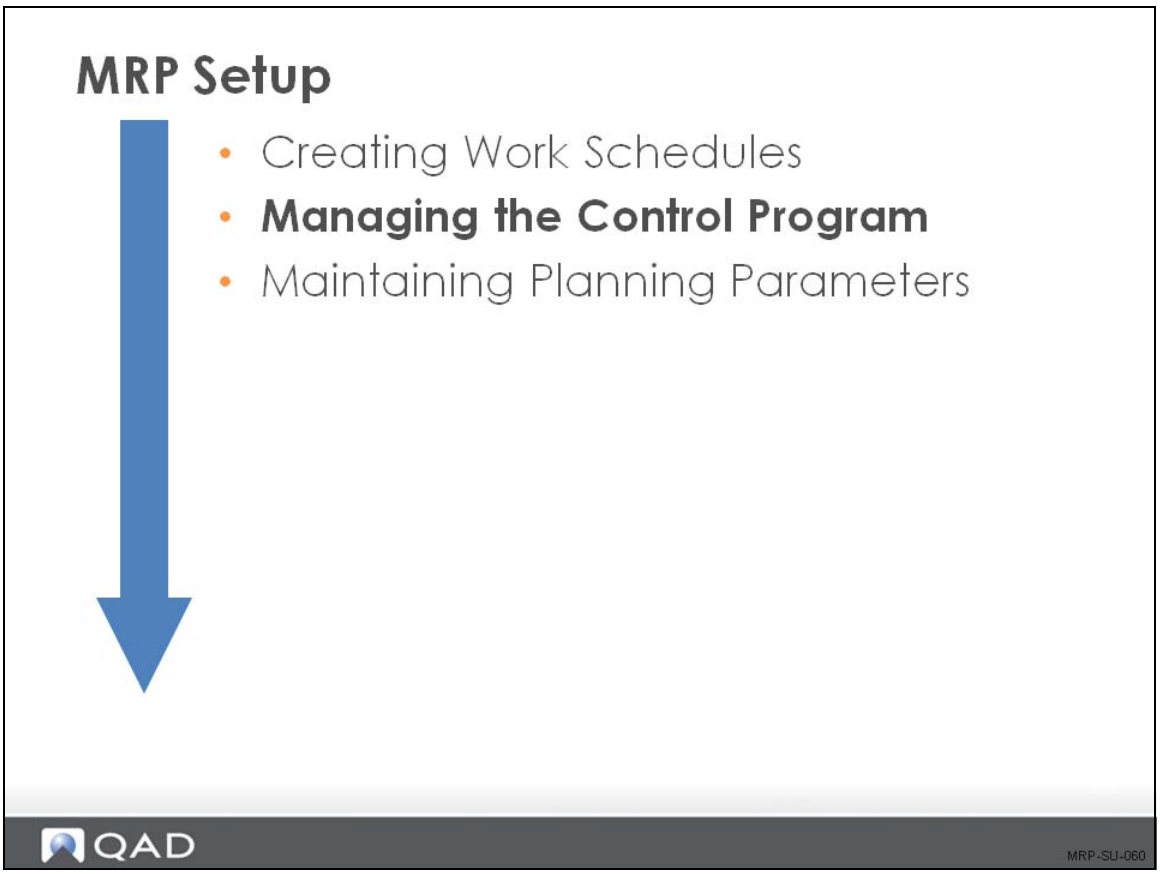
*Shift Capacity = Production Rate * Hours * Productivity*

Note This Productivity field has no connection to productivity measures elsewhere in the system.

Pattern. Optionally, identify a pattern that applies to this day on this shift, such as a recurring event. For example, you might add a code to indicate that two hours of maintenance is performed during shift 1 on the first Monday of each month. This could serve as a reminder to define a -2.0 hour exception.

This field is for reference only. It is not used in any system processing.

Maintaining the Control Program



The MRP control program sets some basic parameters.

MRP Control

Enter appropriate values in MRP Control (23.24).

Field Definitions

MRP Horizon. The period, in calendar days, which MRP plans. MRP calculations ignore data outside this time period. Set the horizon 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, affected 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 also be planned with 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 can be recalculated only using the MRP functions

Yes: MRP planned items can be recalculated using the DRP planning functions

Choosing 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, then MRP
- If you are supplying component items between sites, you can usually run MRP, then 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 start.

Order Release Horizon. The number of calendar days before planned order release that an action message appears.

- MRP assigns *Release Due* action messages to orders with release dates within this release horizon

  For example, if you set the release horizon to seven days, all orders due to be released within the week have a *Release Due* action message
- Setting this date gives planners time to take appropriate actions
- Set the order release horizon to reflect your normal paperwork lead time and how often you run MRP

  If you run MRP once a week, set the release horizon to at least seven 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.

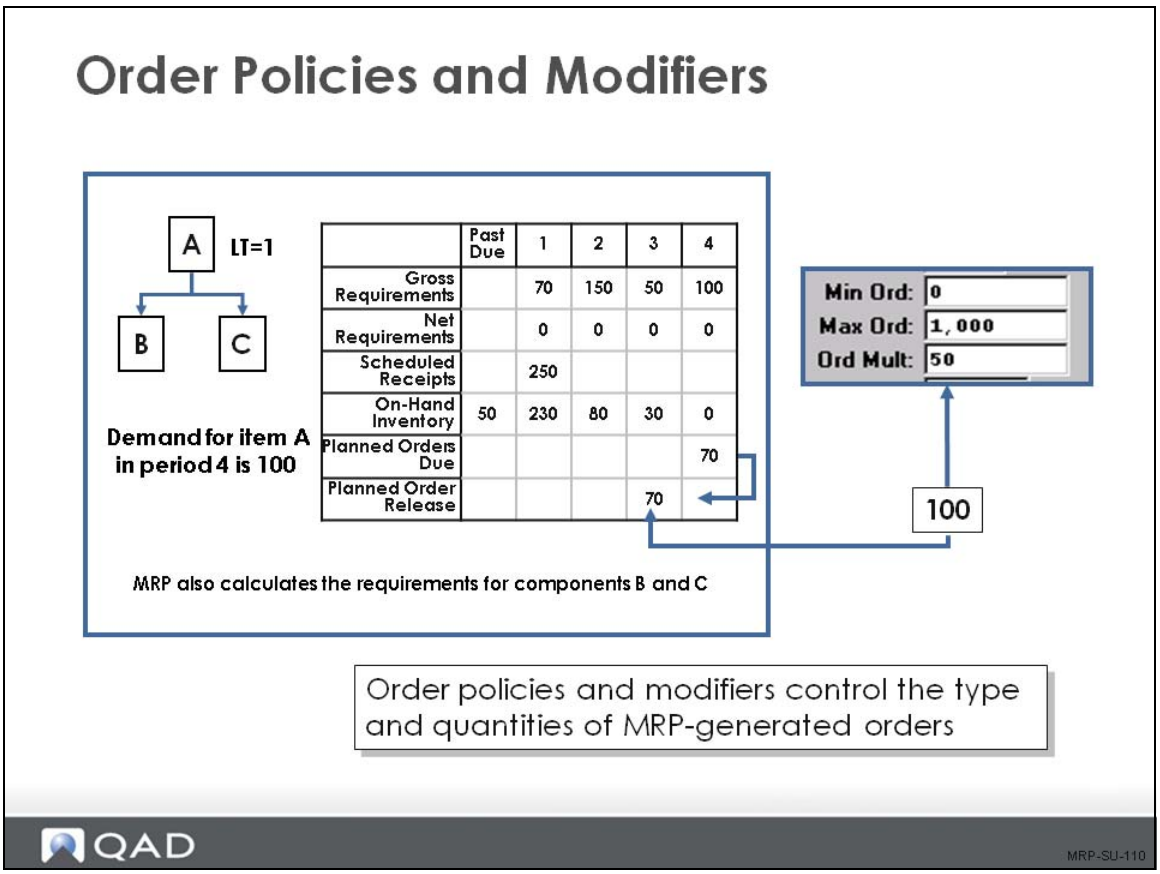
Note Even when Enable Op Based Yield is Yes, this calculation method is only used for parent items with Operation Based Yield set to Yes in either Item Planning Maintenance or Item-Site Planning Maintenance.

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 value can be any integer up to 99.

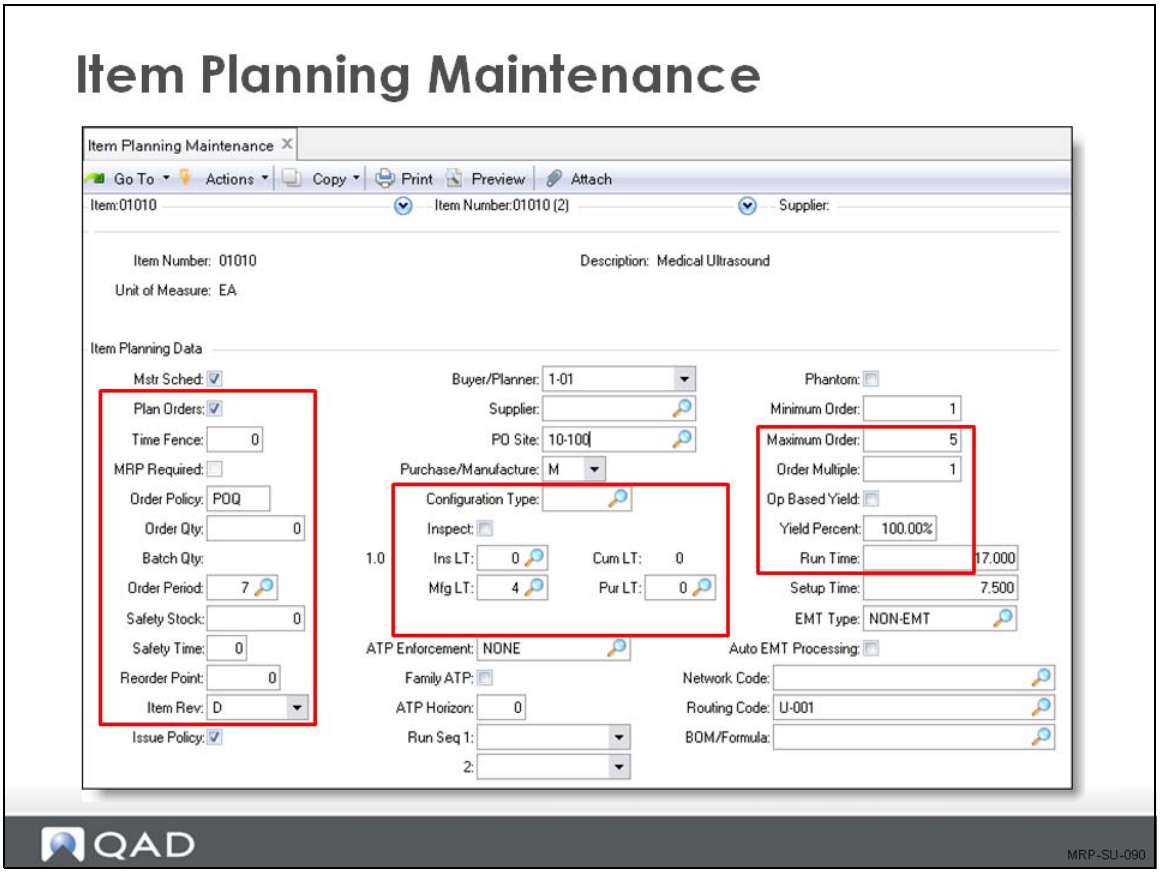
Maintaining Planning Parameters



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.

Understanding these parameters is essential so that buyer/planners can set them appropriately for your company.

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. In contrast, MRP plans dependent demand items, except for items replenished according to a reorder point policy. The 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 rollup 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 company's 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

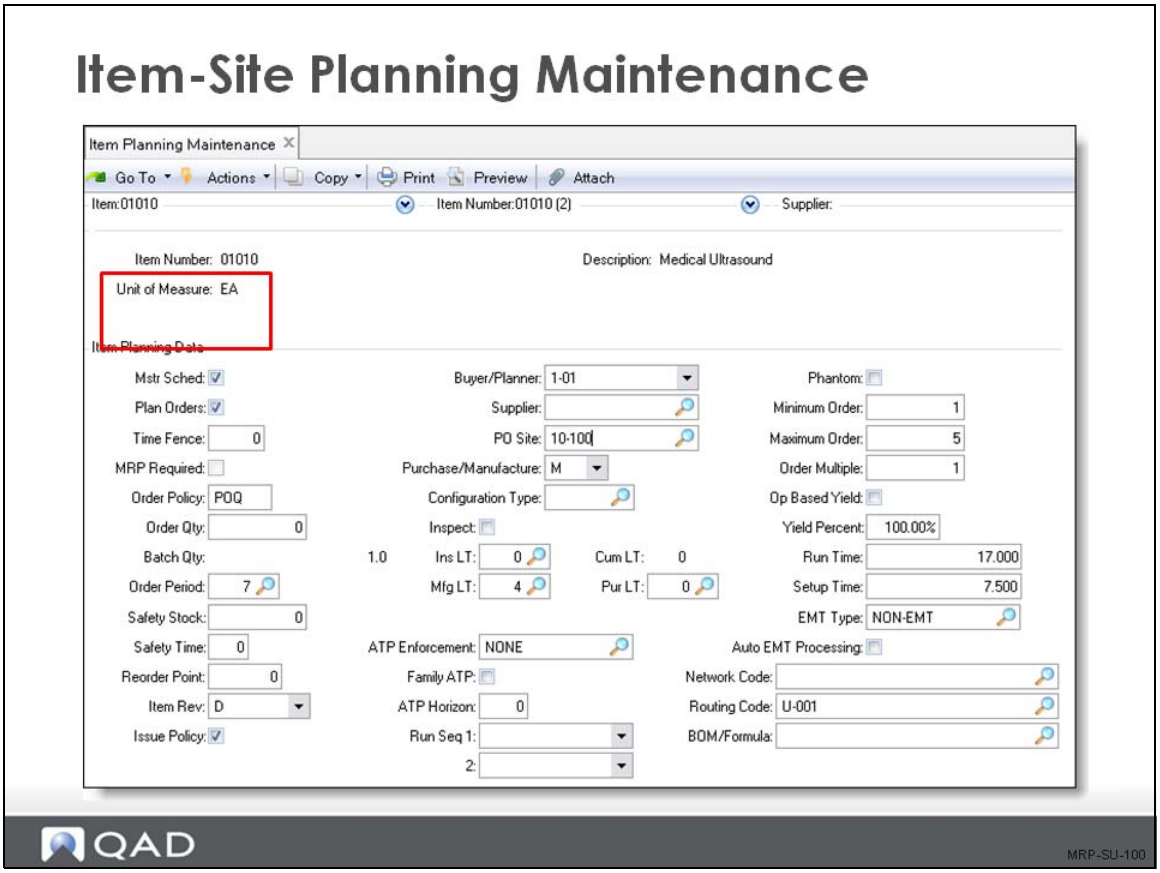
- Master Schedule: No
  - Yes if there is spare part or other independent demand usage to be master scheduled
- Plan Orders: Yes
- Time Fence: Optional
- Order Policy: Any policy except blank

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)

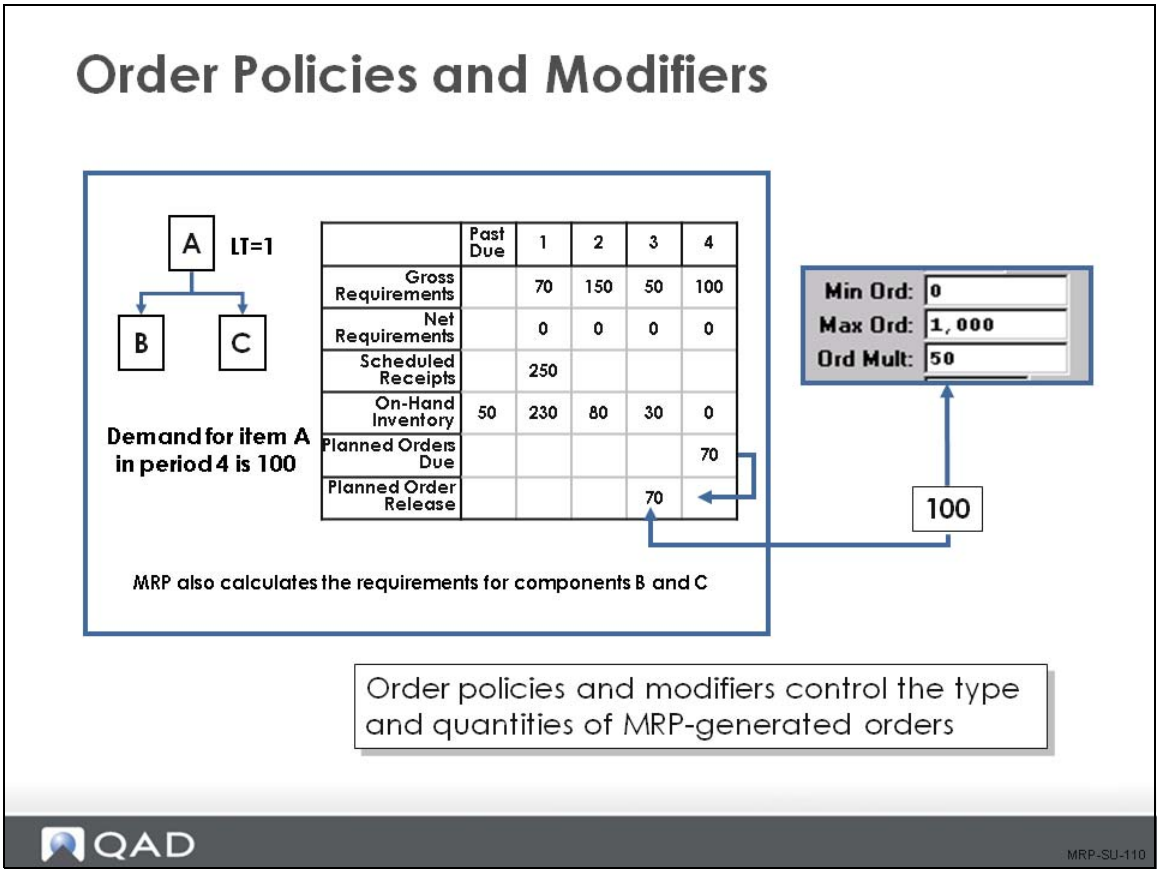
For details, see “Order Policies and Modifiers” on page 48.

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 often has different product structures, routes, and planning data. This generally results in a different lead time.

Order Policies and Modifiers



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

Order Policies

Lot-for-Lot (LFL). Planned orders are created for the net requirement quantities for each demand. LFL consumes on hand available and on order available before creating a supply order to cover this demand.

Period Order Quantity (POQ). Planned orders are 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 are created for the quantity specified in the Order Quantity field.

One Time Only (OTO). A planned order is made for a quantity of one only. As long as one order exists, another is not created. This choice is useful for prototypes.

No Order Policy (blank). MRP does not plan the item even when the Plan Orders field is Yes.

Order Modifiers

Order modifiers change planned order quantities.

Order Quantity. A specified quantity used 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 service levels. This modifier applies to all order policies, including a blank. The system never plans to use safety stock, but always replaces it when consumed.

Minimum Order Quantity. This value is the smallest order quantity that can be planned. Vendors often set minimum quantities for purchased items. This value could be a case or pallet quantity or a quantity established for a quantity discount. For manufactured items, this value is often the minimum quantity required to incur the setup costs for the item. Use minimum quantities 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 can tie up a resource so that other orders are delayed unnecessarily. Further, setting a quantity limit can uncover data entry errors (for example, entry of 1,000 instead of 100).

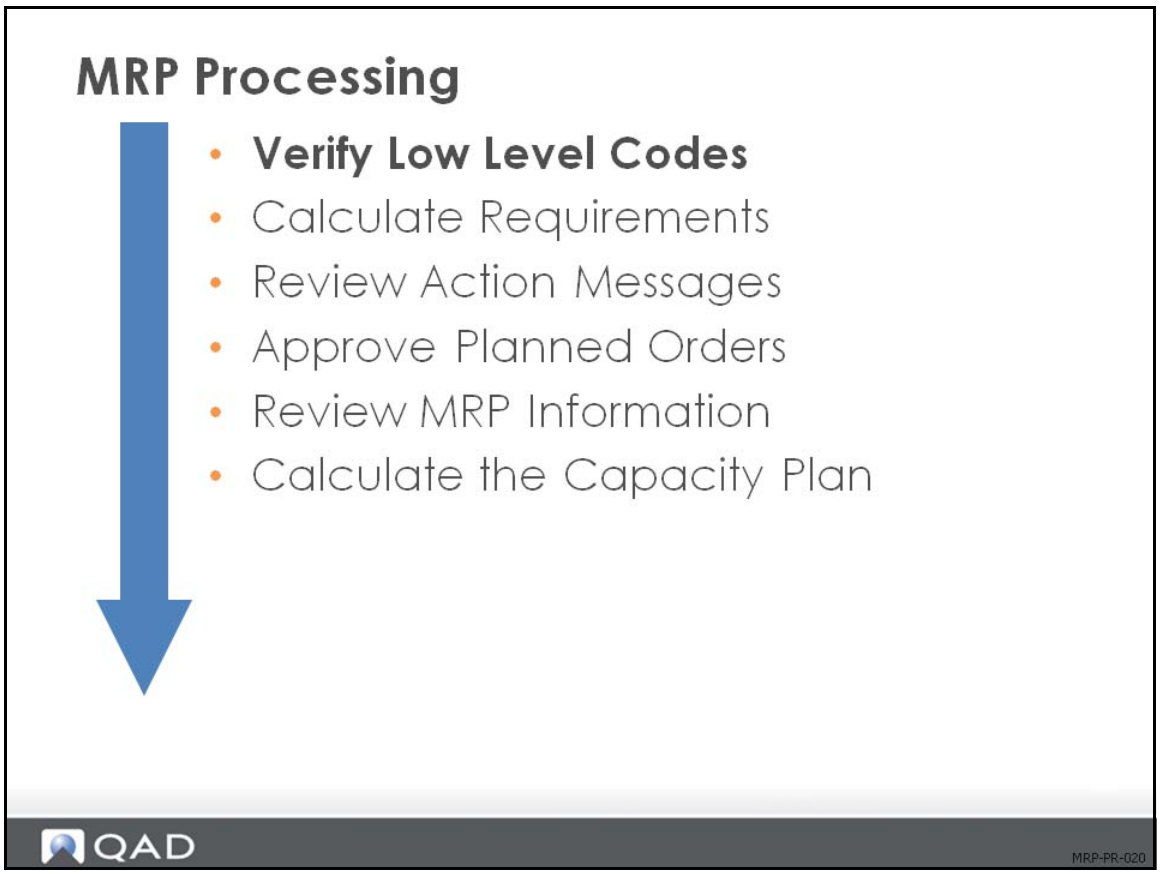
Order Quantity Multiple. Planned orders are created in multiples of this quantity. That is, if the order multiple is 100, planned orders are only created for quantities of 100, 200, 300, and so on. Order multiples are appropriate, for example, with multiple cavity molding applications and packaging.

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 can be forced to a whole number by setting the multiple to one, or any whole number.

Chapter 4

Use MRP and CRP

Use MRP and CRP



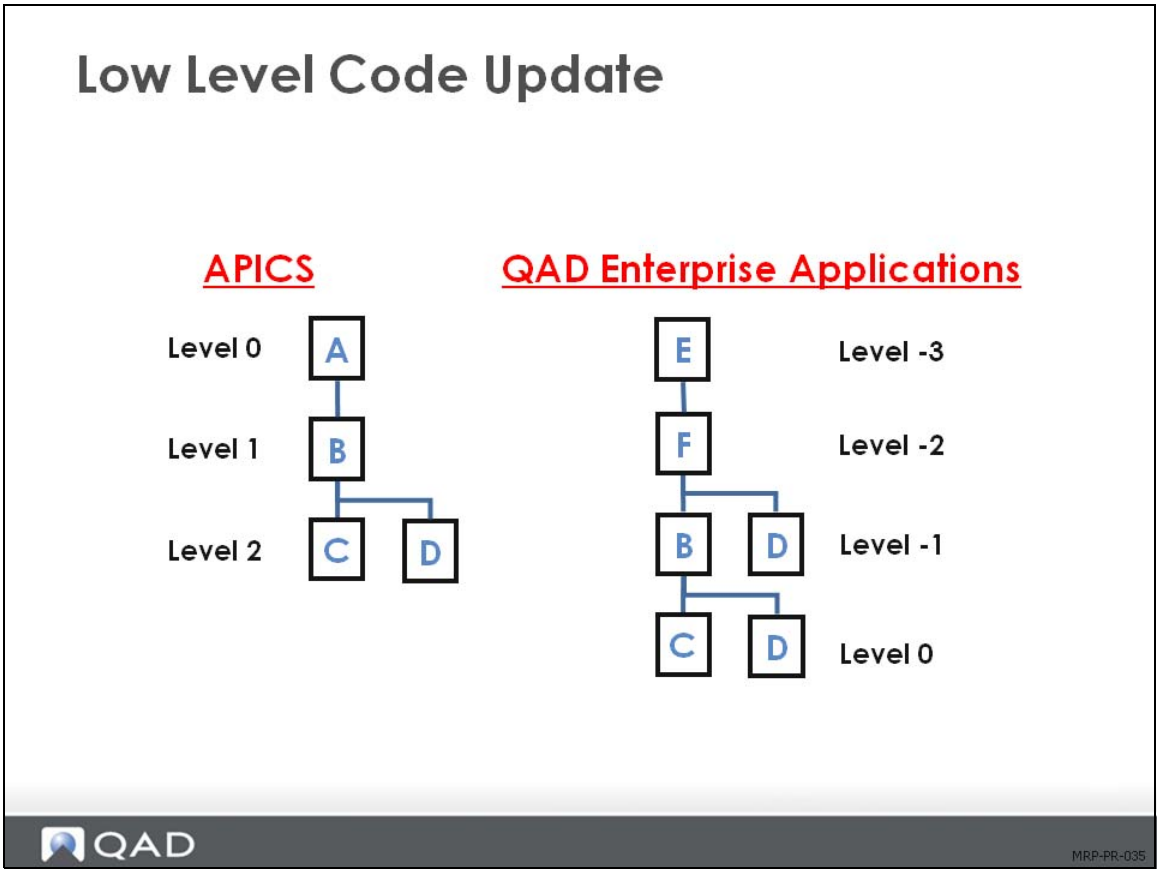
In this section, you learn how to use MRP and CRP in QAD Enterprise Applications.

The slide shown is a suggested sequence of steps for processing MRP based on information that flows from one step to another and the prerequisites for each of those steps.

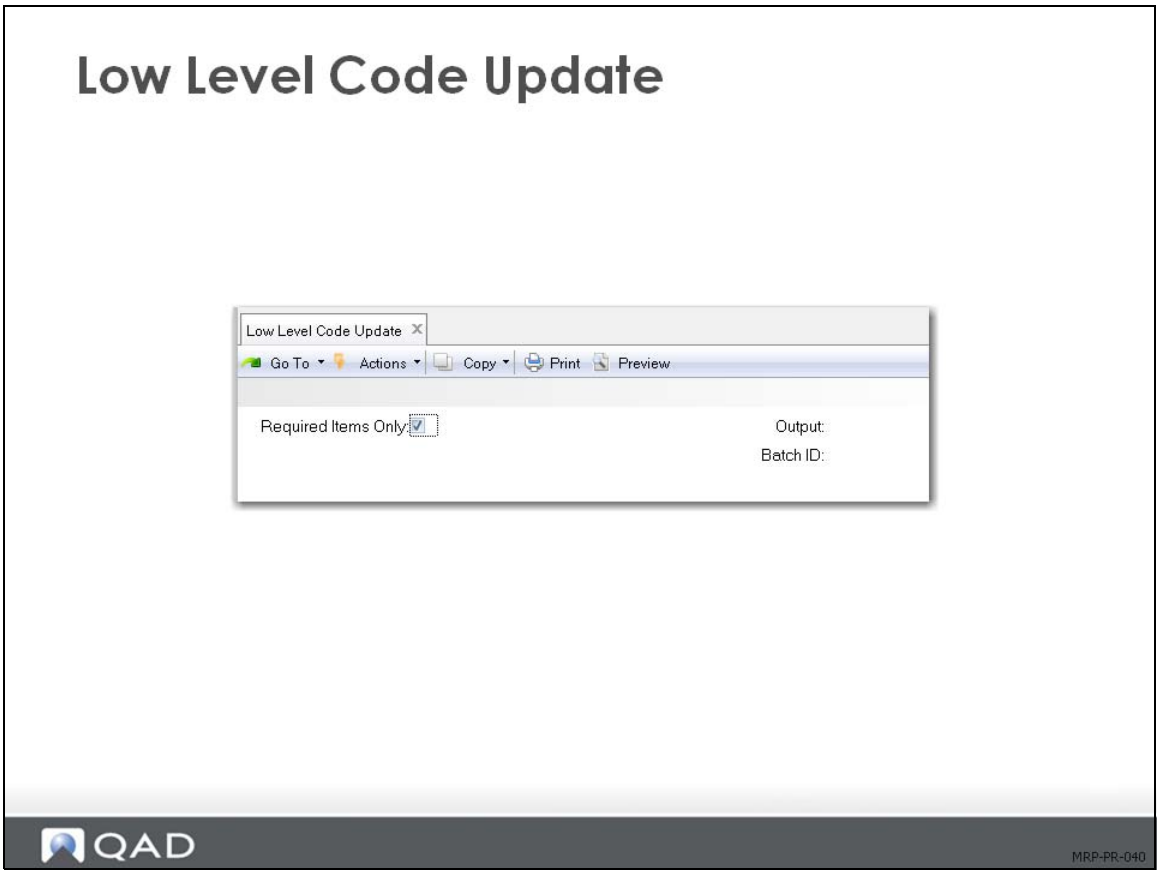
The diagram shows the steps that are covered in this course:

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



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

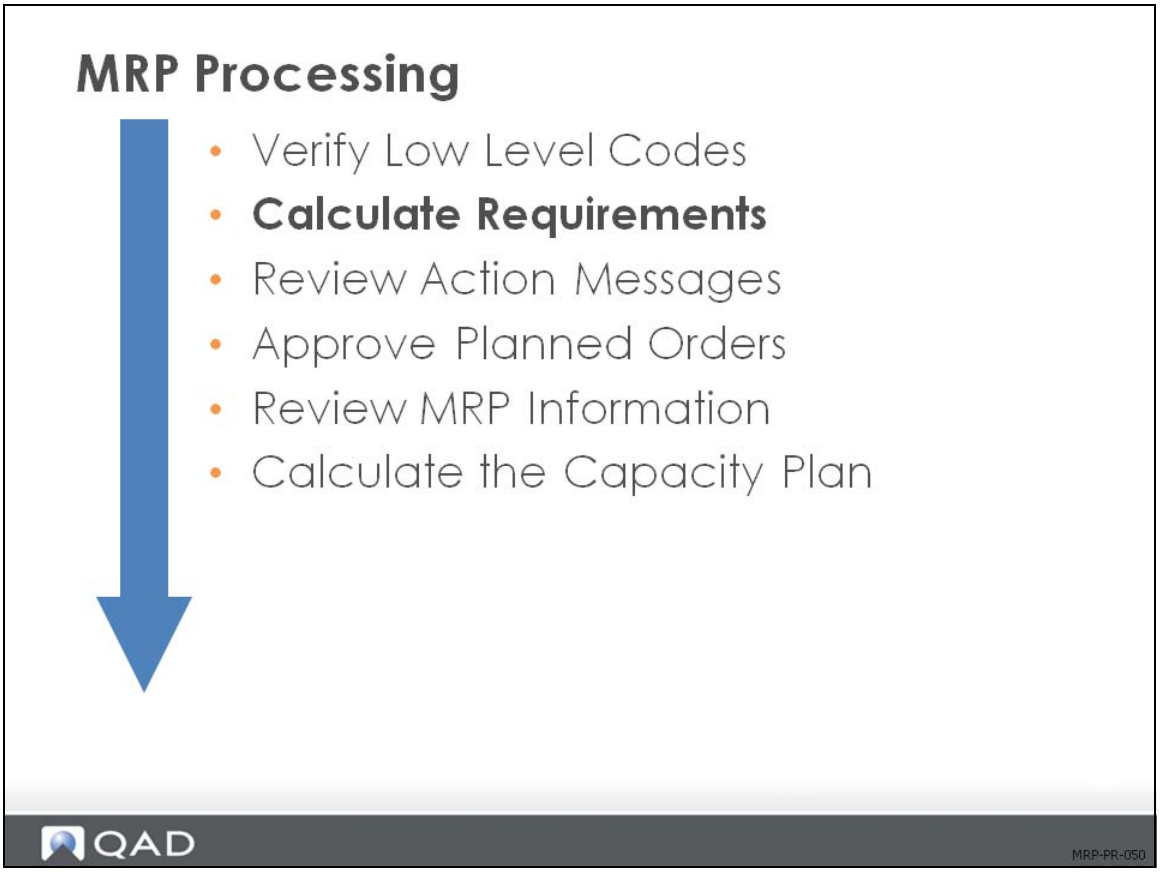


You can update these codes anytime with Low Level Code Update (23.22) as shown here. You can also do this update through Selective Materials Plan (23.3).

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

This process is discussed in *Training Guide: Product Structures and Formulas.*

Calculate Requirements

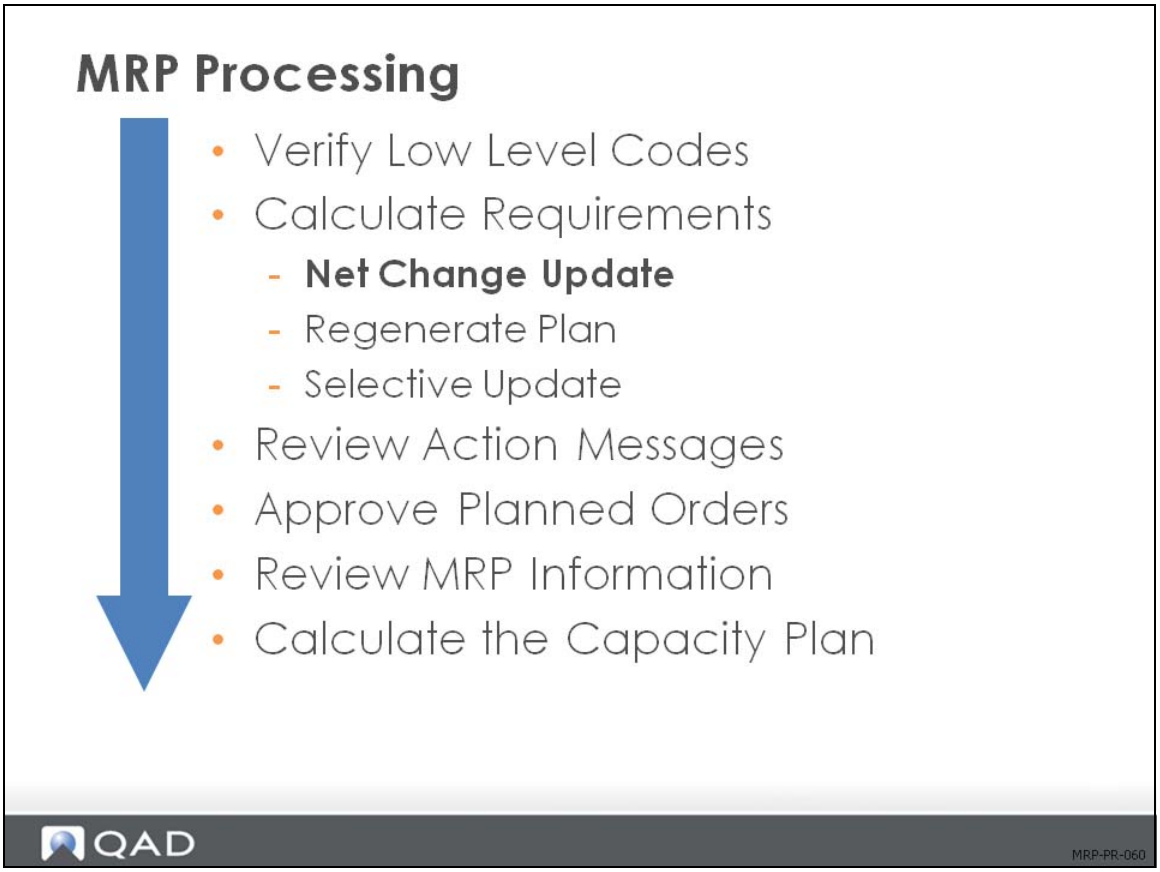


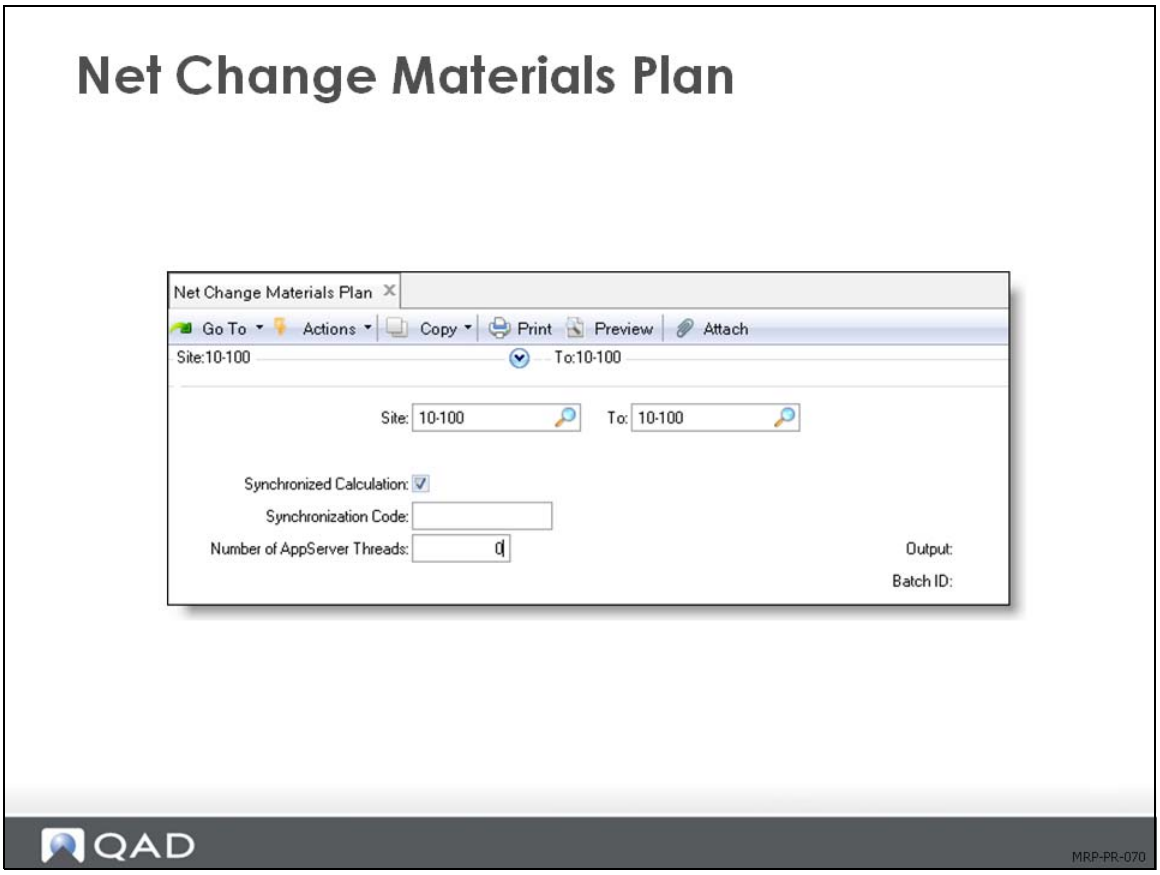
QAD Enterprise Applications offers three ways to run MRP:

- 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.

Net Change Materials Plan





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 takes some time to process. Consider submitting it in batch.
- It does not see demand or forecast for items moving into the MRP horizon as time passes.
- Many companies use it 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 regeneration.

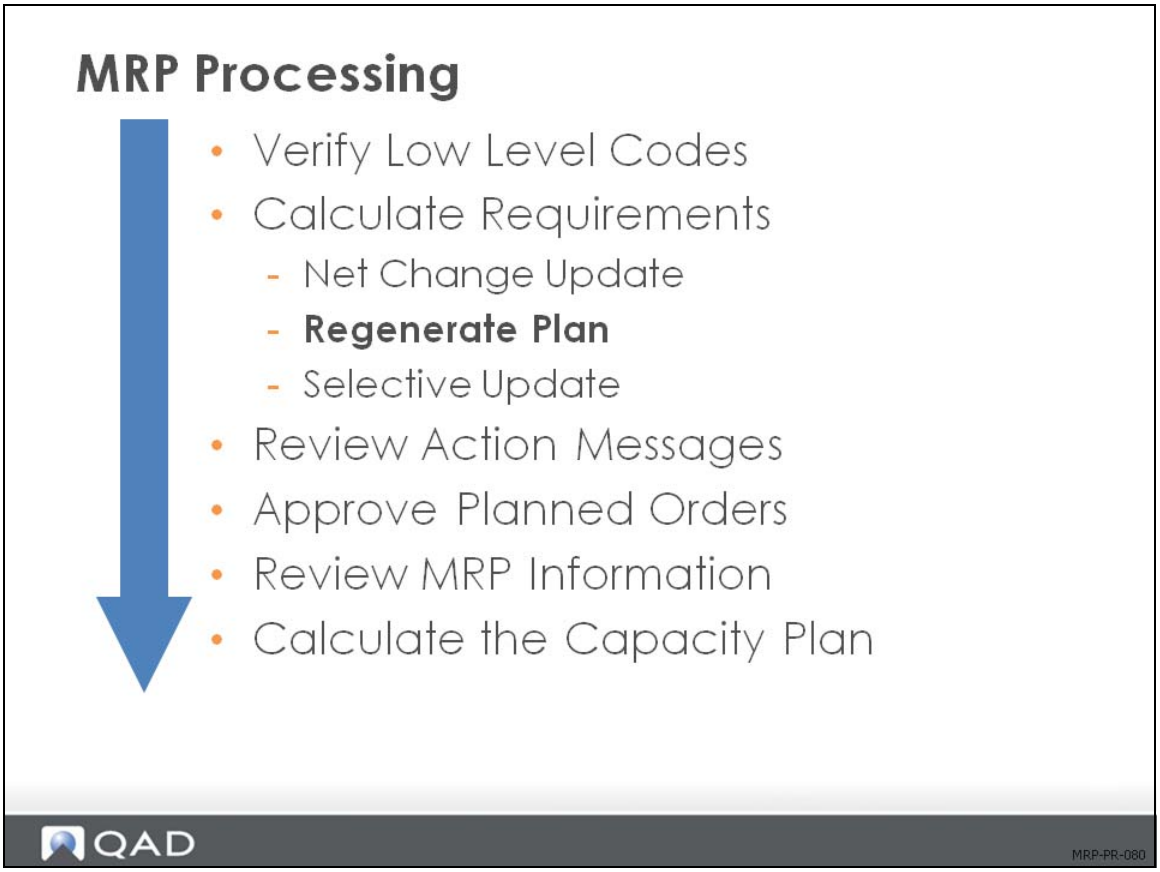
Field Definitions

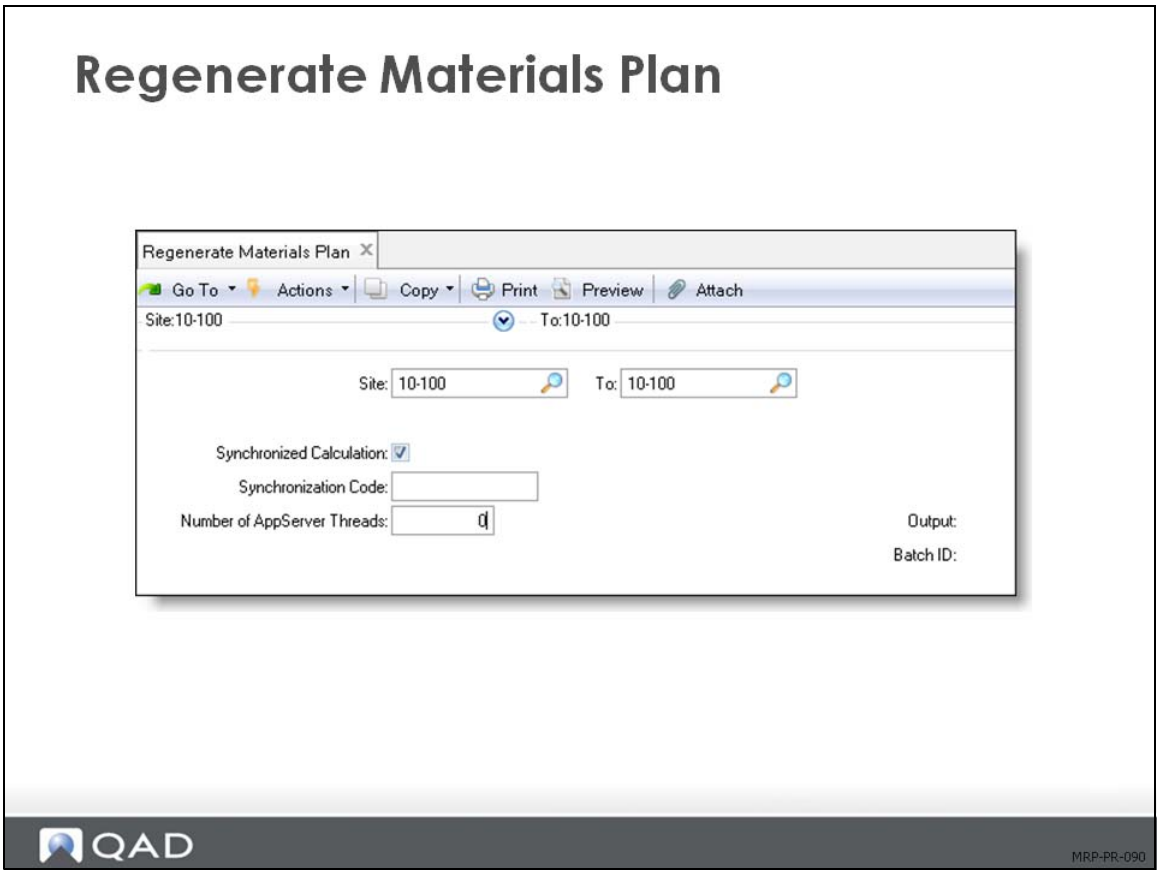
The key fields in Net Change Materials Plan (23.1) are:

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

Synchronized Calculation . Determines whether this MRP/DRP calculation runs simultaneously with other calculations sharing synchronization code. Synchronized calculations benefit you if you have Symmetric Multiple Processor (SMP) computers.

Regenerate Materials Plan



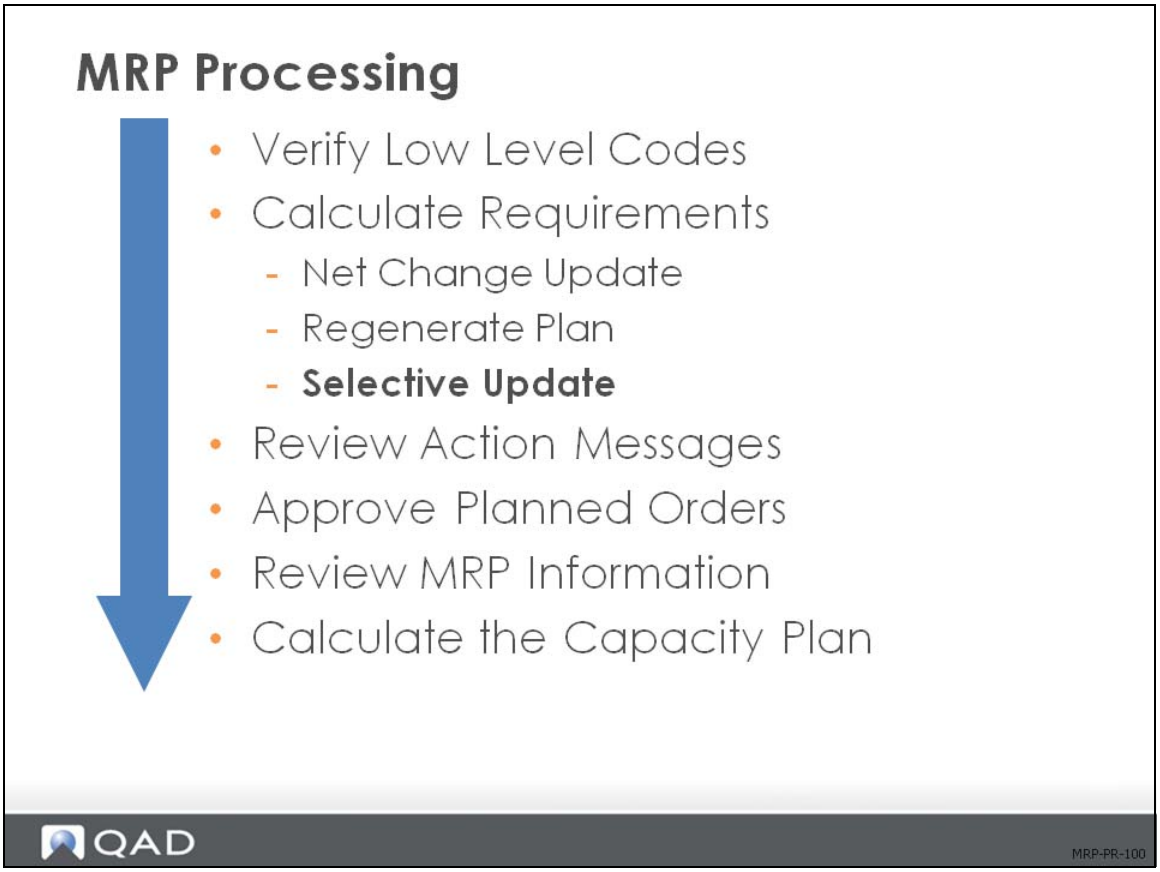


Regenerate Materials Plan (23.2) recalculates demand and plans supply for all items in the site. This method generates a plan for all items, not just the items that have changed since the last run. The outputs of net change and regenerative MRP are the same. However, net change MRP generally runs faster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

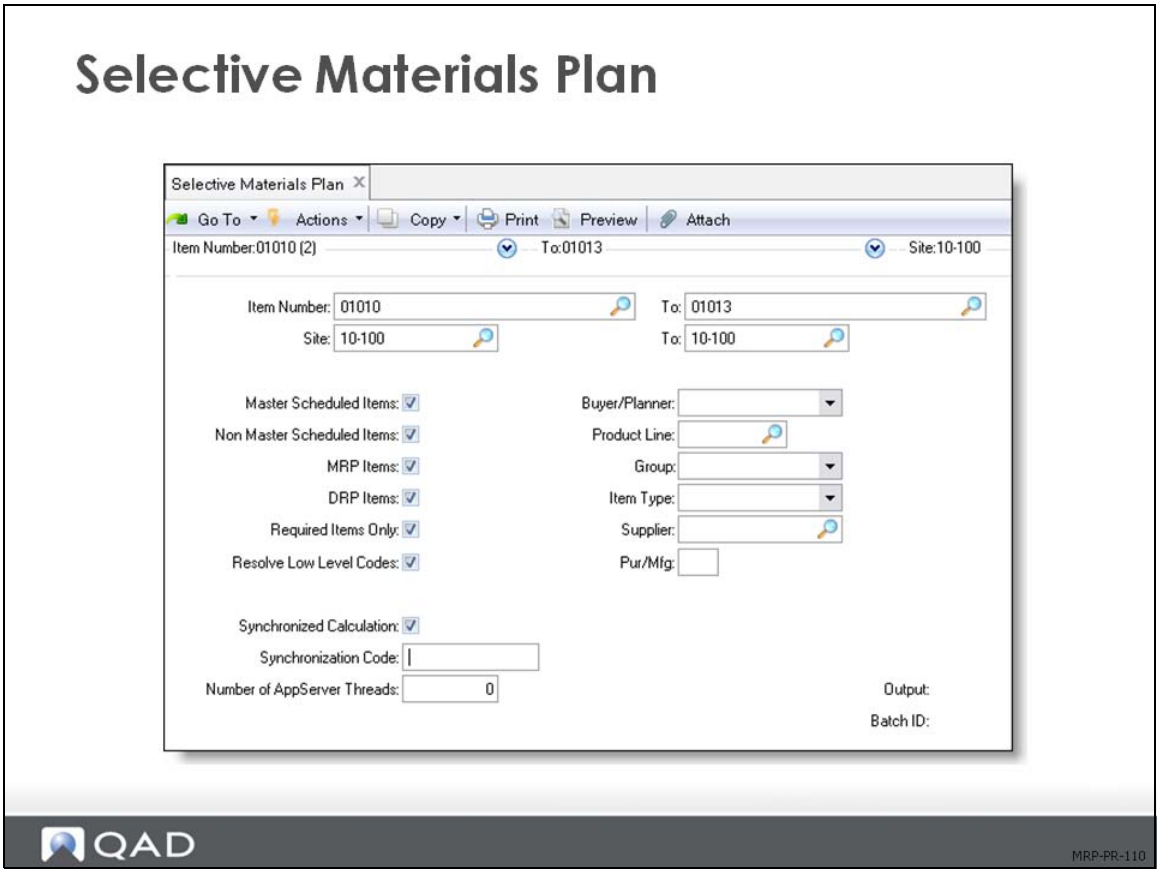
Guidelines:

- Run MPR in regenerative mode the first time you use it.
- 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, it is useful to run MRP at 12:01 a.m. Monday.

Selective Update



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. You can also plan small groups of items by using buyer/planner, product line, group, type, supplier, or any combination as selection criteria.

Guidelines:

- Limit program use to master schedulers only.
- This program plans down one level only.
- You can use Selective Materials Plan (23.3) to plan master schedule items separately from other items. You can also plan small groups of items by using buyer/planner, product line, group, type, supplier, or any combination as selection criteria.

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

Field Definitions

This section 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 with Master Sched set to Yes in Item Planning Maintenance (1.4.7).

No: Ignore these items.

Non Master Scheduled Items.

Yes: Replan items with Master Sched set to No in Item Planning Maintenance (1.4.7).

No: Ignore these items.

MRP Items.

Yes: Replan items with Plan Orders set to Yes in Item Planning Maintenance (1.4.7).

No: Ignore these items.

DRP Items.

Yes: Replan distribution items. These items have Pur/Mfg set to D in Item Planning Maintenance (1.4.7)

This field can only be set to Yes if the DRP/MRP Combined field is set to Yes in DRP Control. Typically, these items are planned using DRP calculations.

No: Ignore these items.

Required Items Only.

Yes: Include only items marked 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.

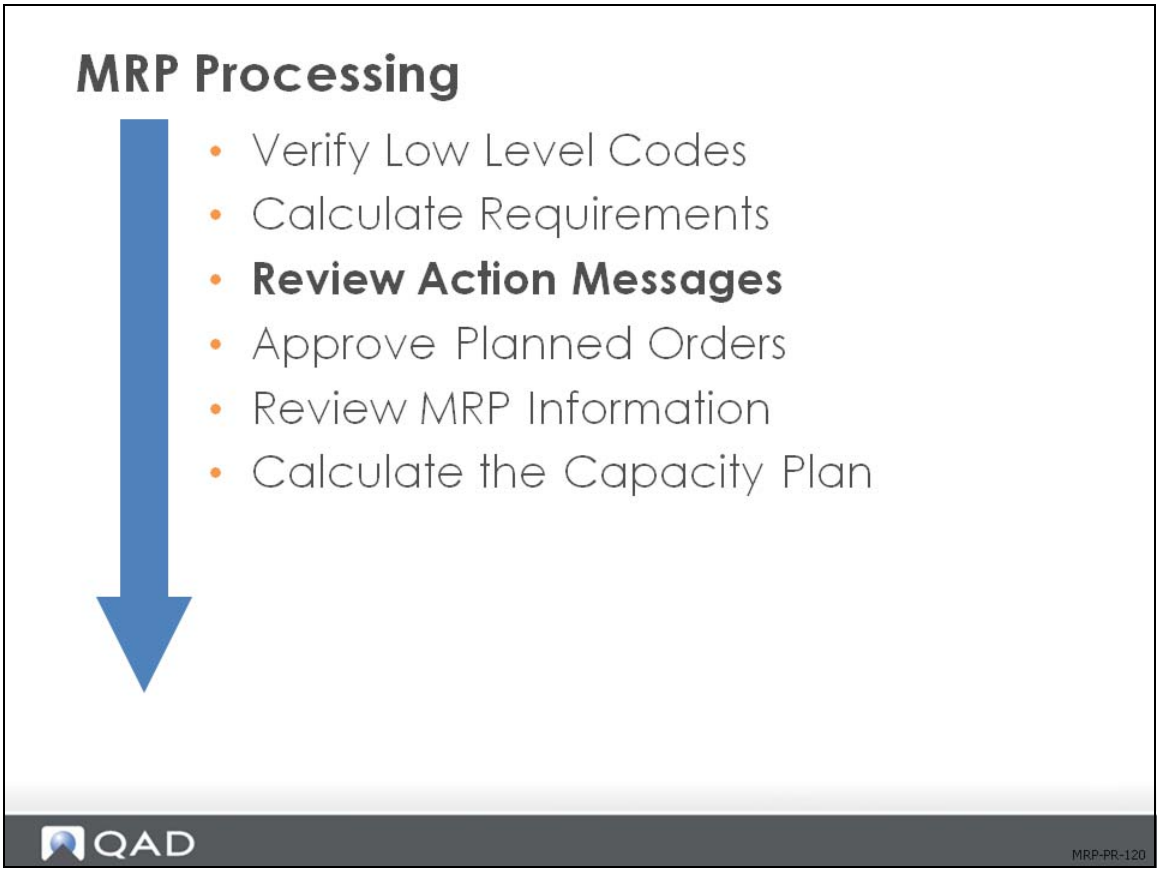
Note If low-level codes are unresolved when MRP is run, the results of the MRP run can be inaccurate.

Synchronized Calculation. Determines whether this MRP/DRP calculation runs simultaneously with other calculations sharing this synchronization code. Synchronized calculations benefit you if you have Symmetric Multiple Processor (SMP) computers.

Synchronization Code. A user-defined alphanumeric code that multiple, concurrent synchronized MRP/DRP calculations share.

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.

Review Action Messages

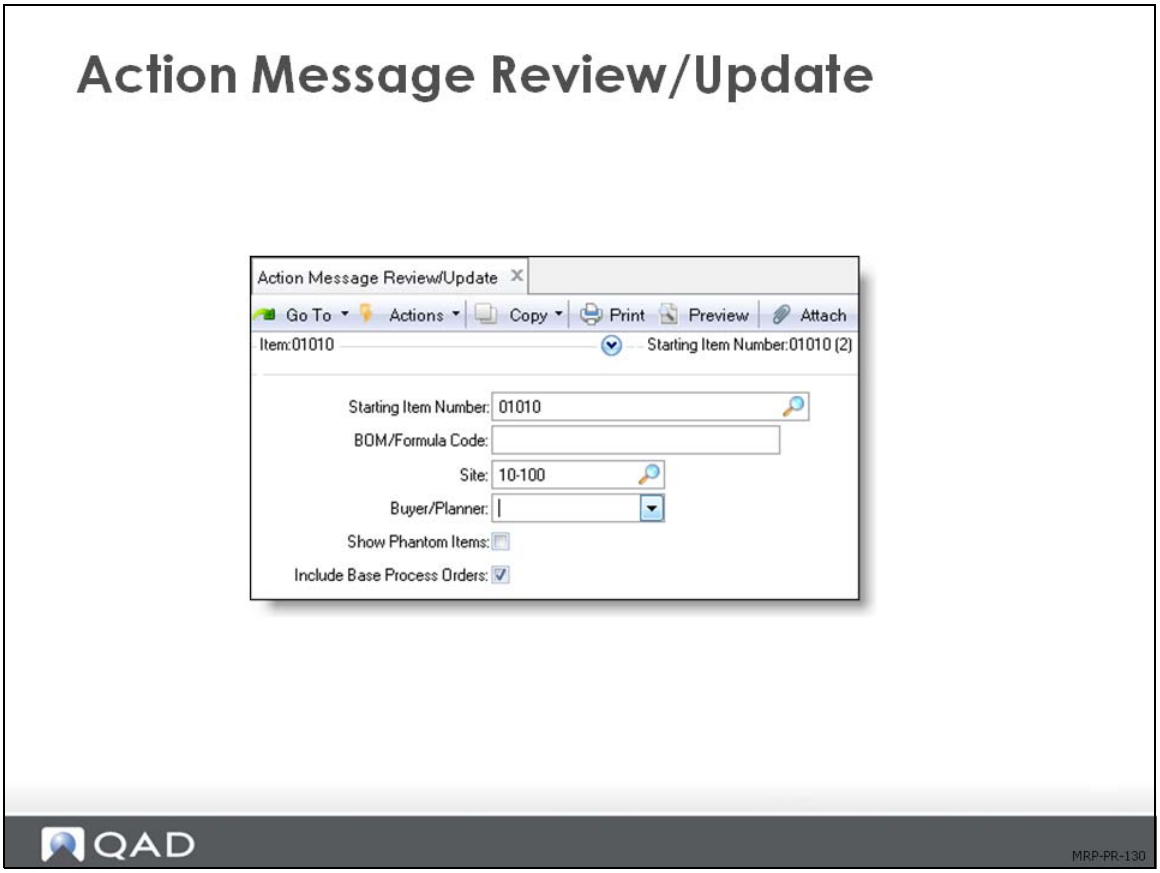


Action messages suggest courses of action to resolve problems MRP finds. The following table lists common action messages.

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 negative projected on hand balance requires creation of a supply order. 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. Delay the order or reschedule demand rescheduled to an earlier date.
Expedite	Indicates that a scheduled supply order is due after it is needed. Reschedule the order to an earlier date, or reschedule demand to a later date.
Cancel	Indicates that a scheduled supply order is no longer needed. Delete the order.
Release Due For	Indicates that a supply order is ready for release. If it is a planned order, approval is also required. Use the Order Release Horizon field in MRP Control (23.24) to specify the number of days before 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. Either release or expedite the order now or reschedule demand for a later date.

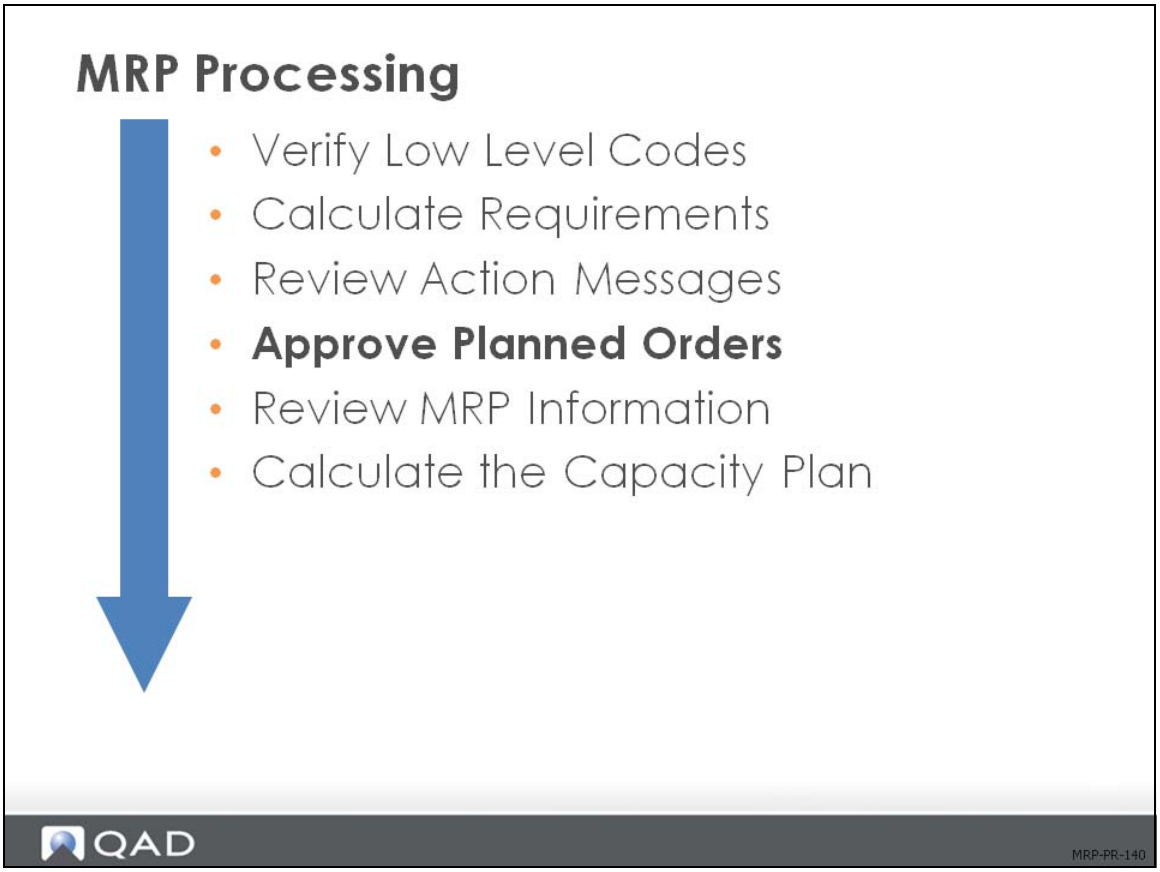
Message	Meaning
Quantity Less than Minimum	Indicates that a supply order was created for a quantity less than the minimum quantity set in the item planning data.
Quantity Exceeds Maximum	Indicates that a supply order was created for a quantity greater than the maximum quantity set in the item planning 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. 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. Act at the source site to ensure that the order is received on time.
Shipment Past Due	Indicates that a shipment for an intersite request item is past due. 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 item site has generated the maximum allowable number of 9999 planned orders per day. Calculation for other items is not affected.

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.

Approve Planned Orders

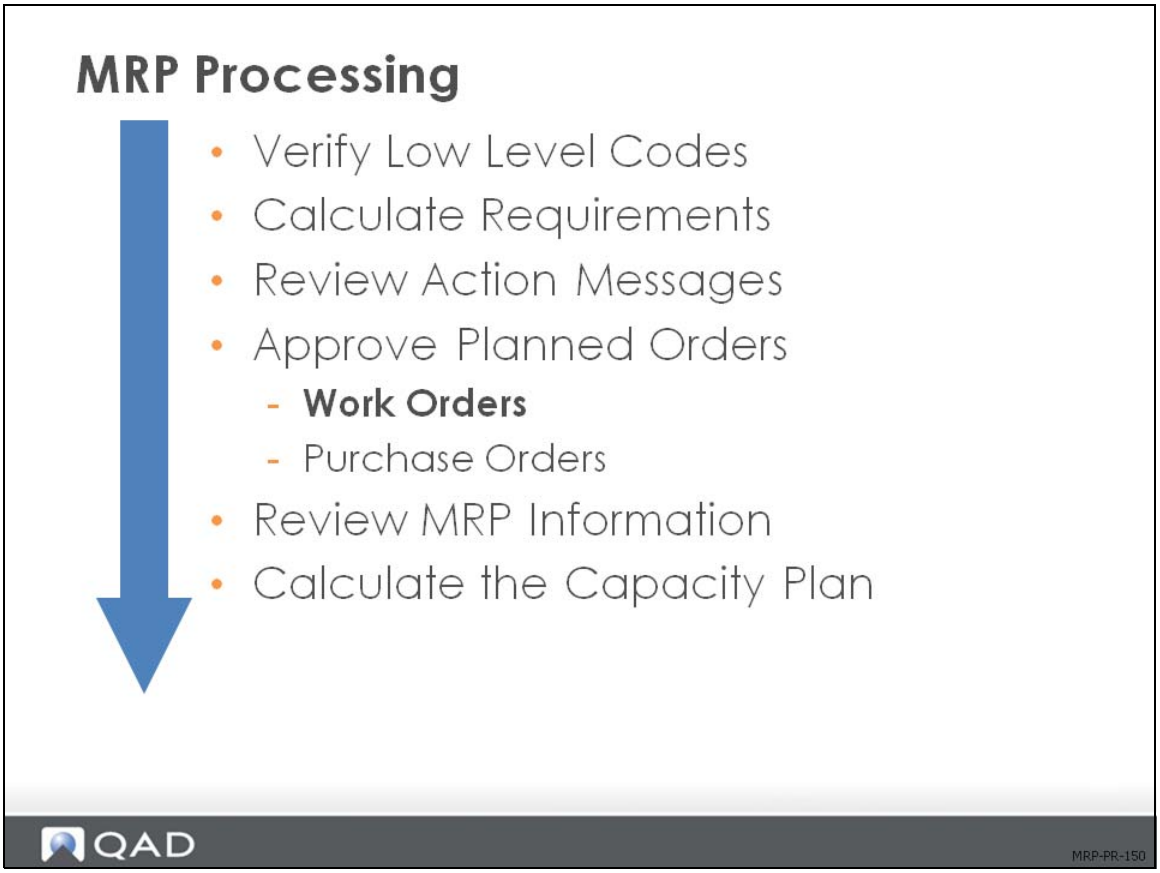


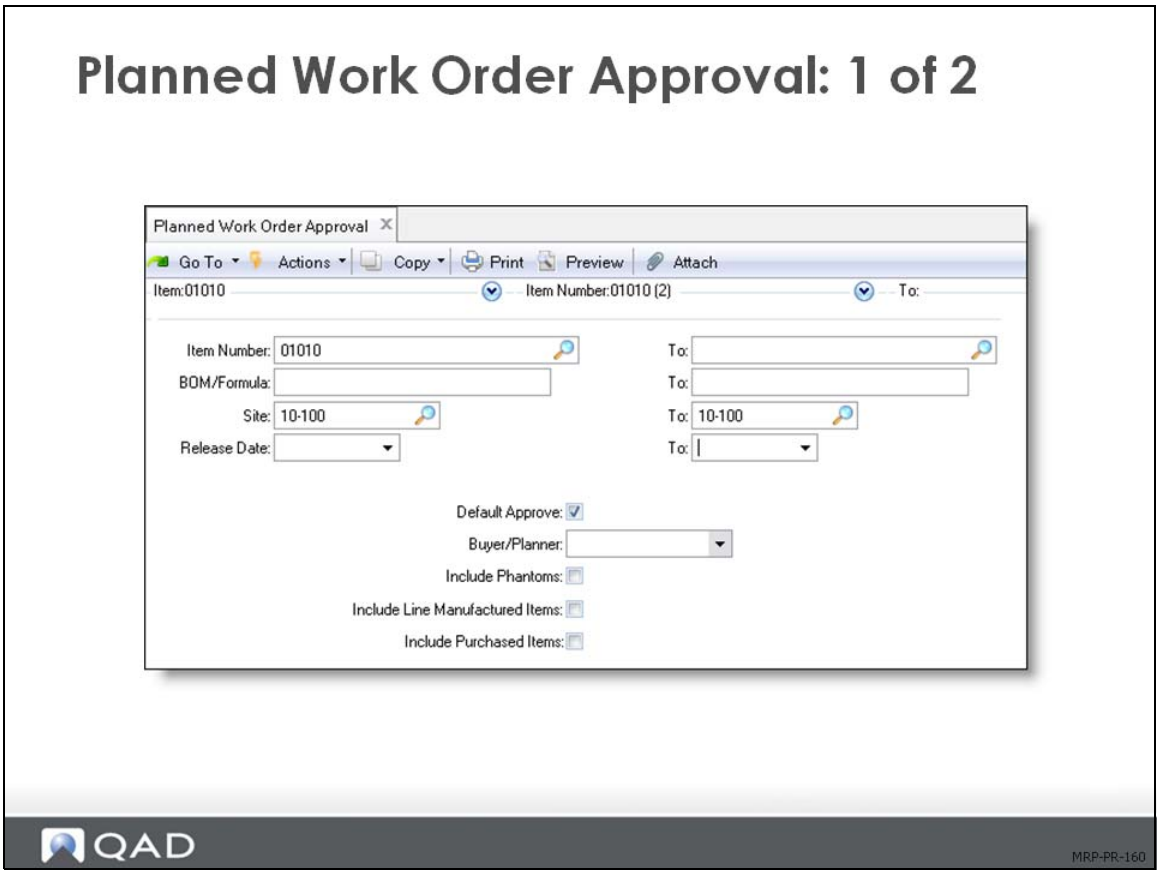
MRP produces orders based on demand. The status of these orders is planned. They can be for manufactured and purchased items and work orders:

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

Subsequent MRP runs can change planned orders. To move these orders out of the control of MRP, you approve them.

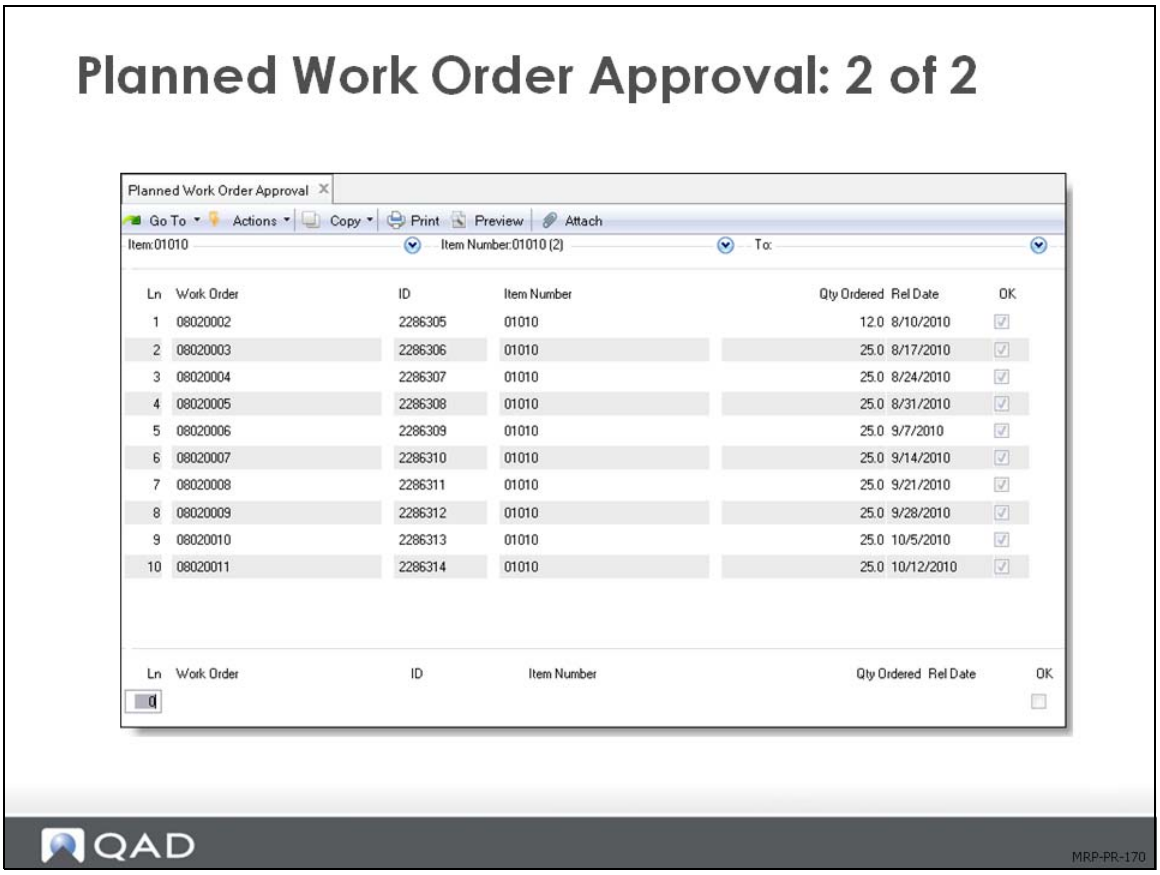
Planned Work Order Approval





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.

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 key fields on the screen are described here.

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

Work Order. The MRP-assigned number.

ID / Item Number / Qty Ordered / Release. Display-only fields.

OK.

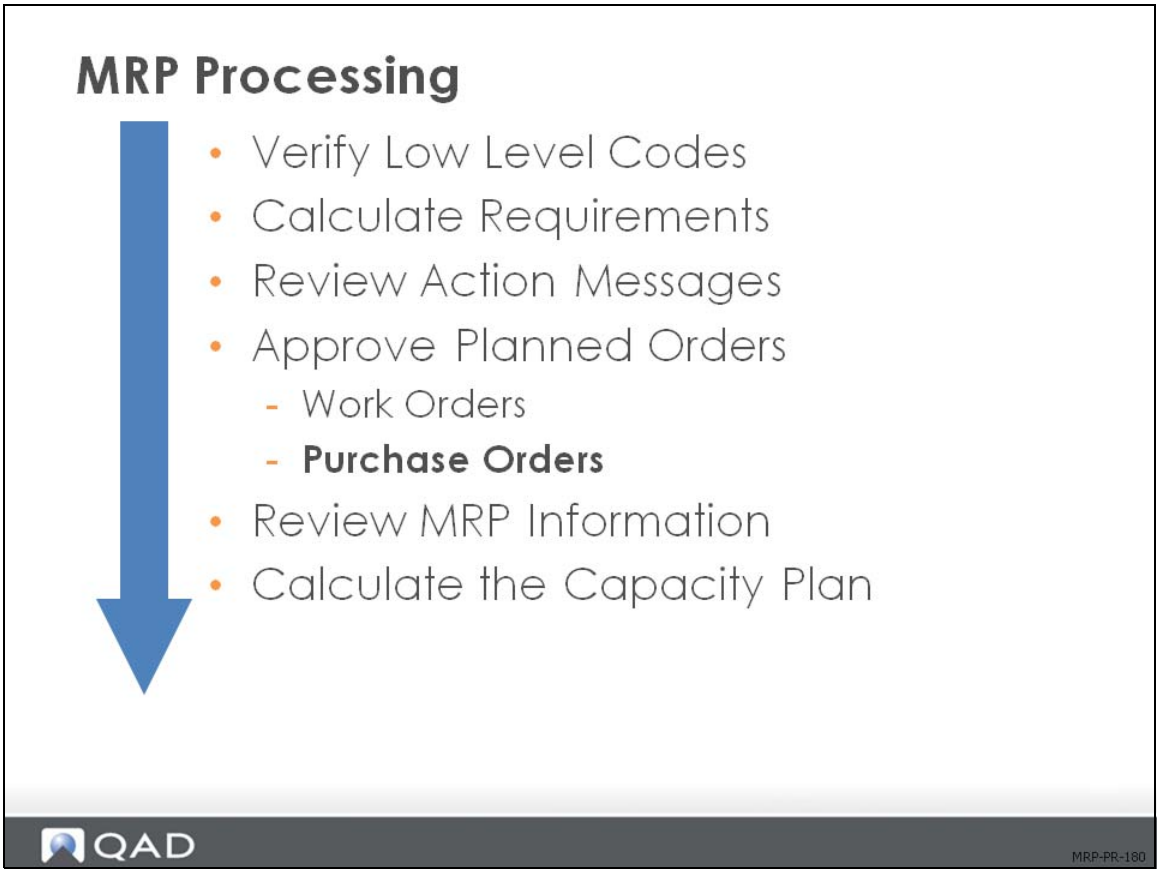
- Yes to release the order, place a check mark in the box by cursor clicking in the box.
- No to prevent its release.

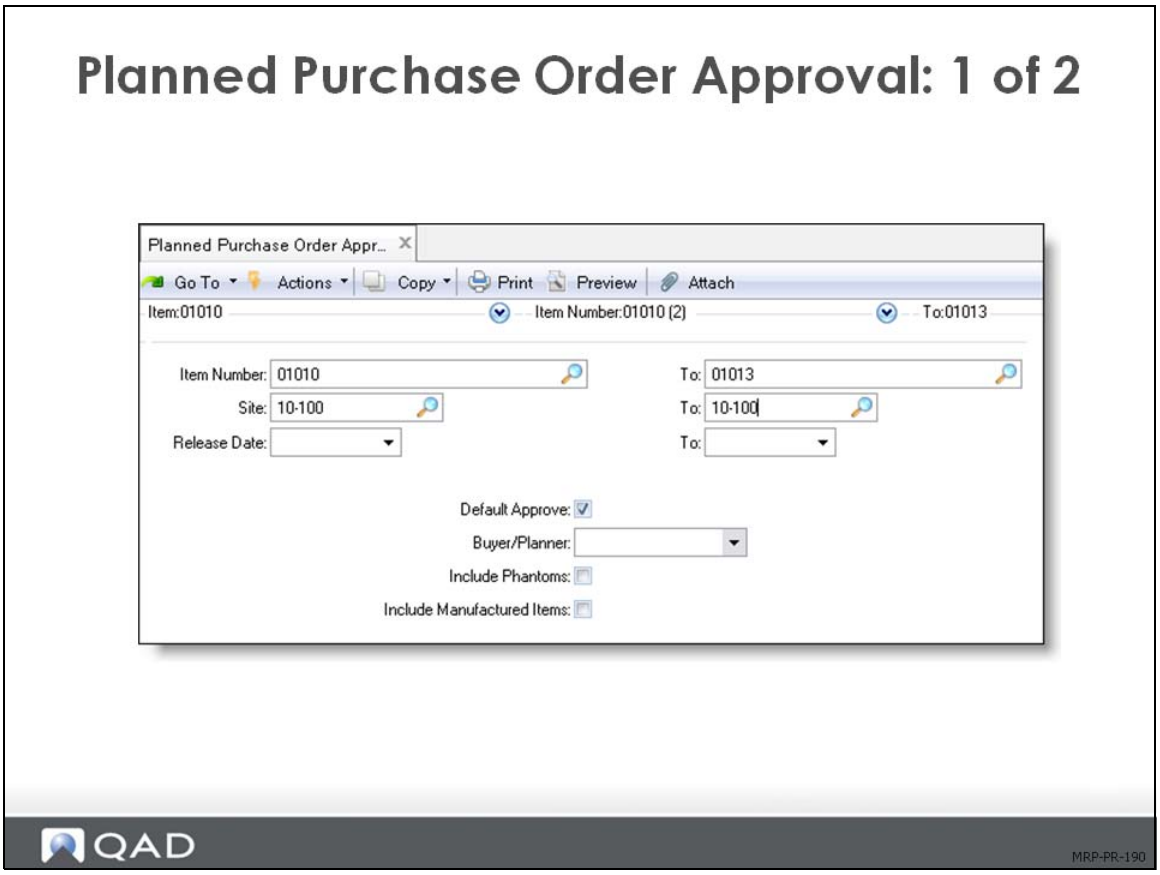
Is all information correct?

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

Discussed in *Training Guide: Work Orders*

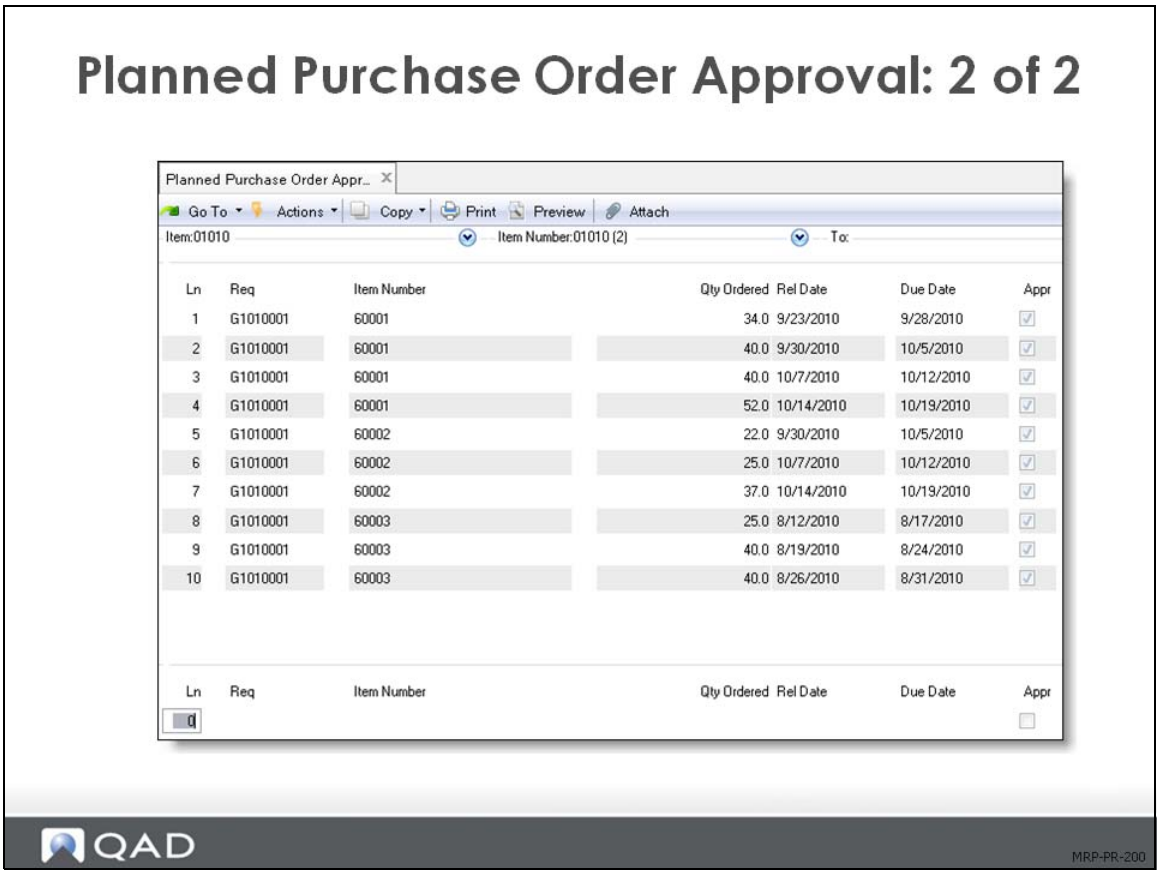
Planned Purchase Order Approval





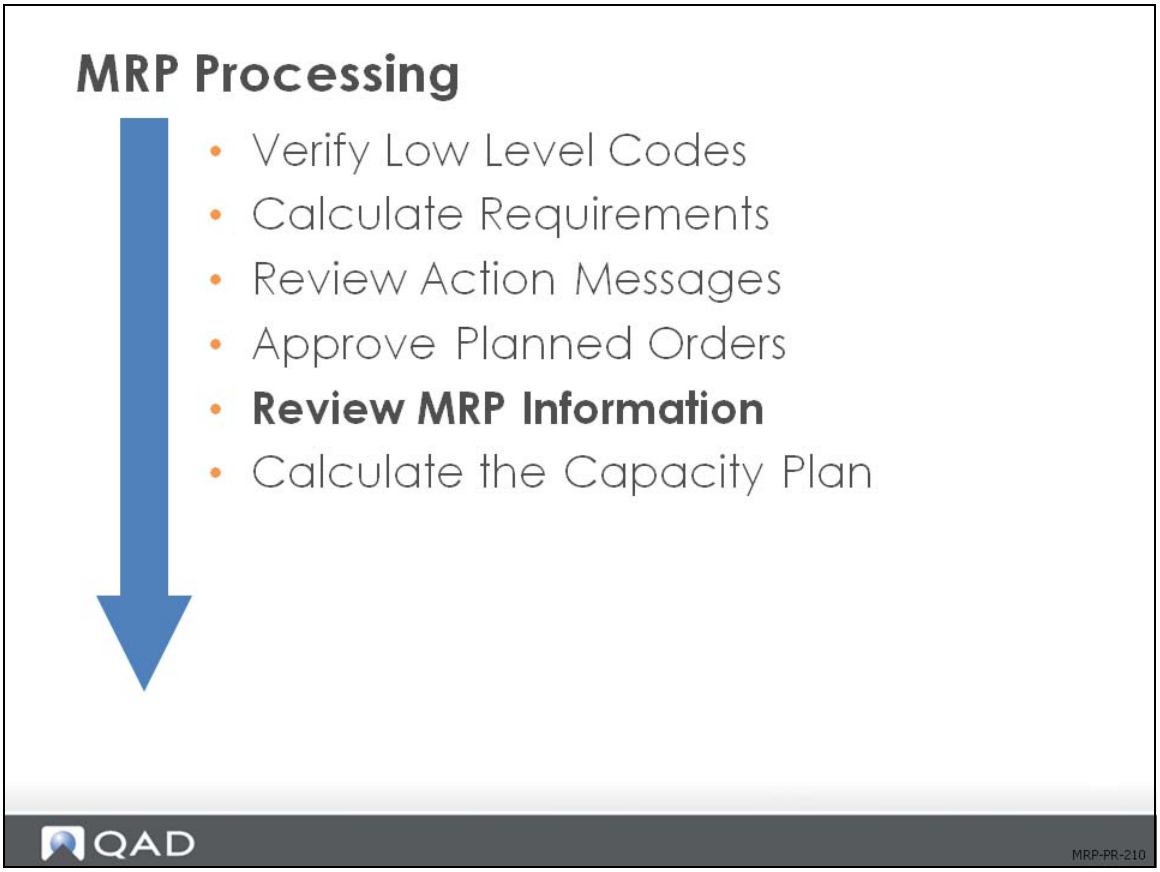
Planned Purchase Order Approval (23.11) approves the MRP plan, generating purchase requisitions for the amount of each planned order. From here, the requisitions are ready to print. This action moves the purchase orders out of the MRP module and into the purchasing module.

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



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.

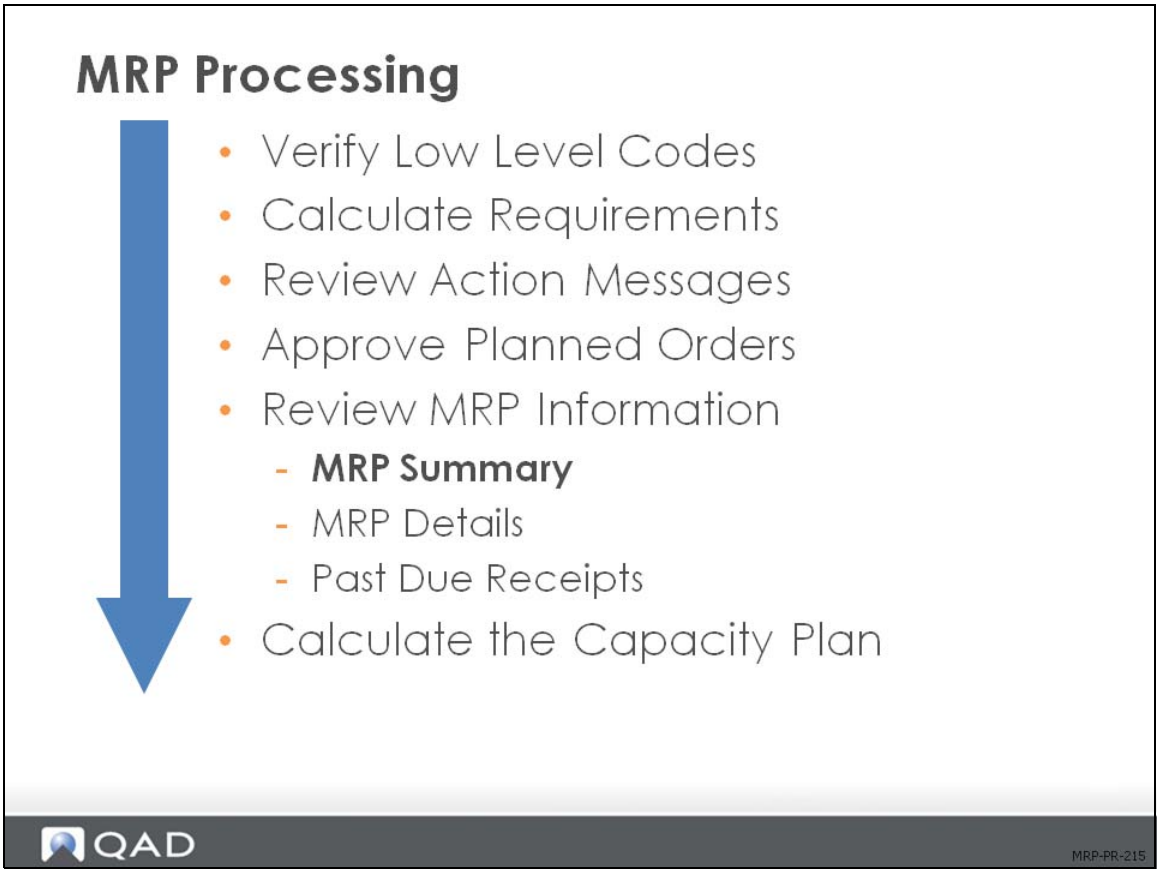
Review MRP Information



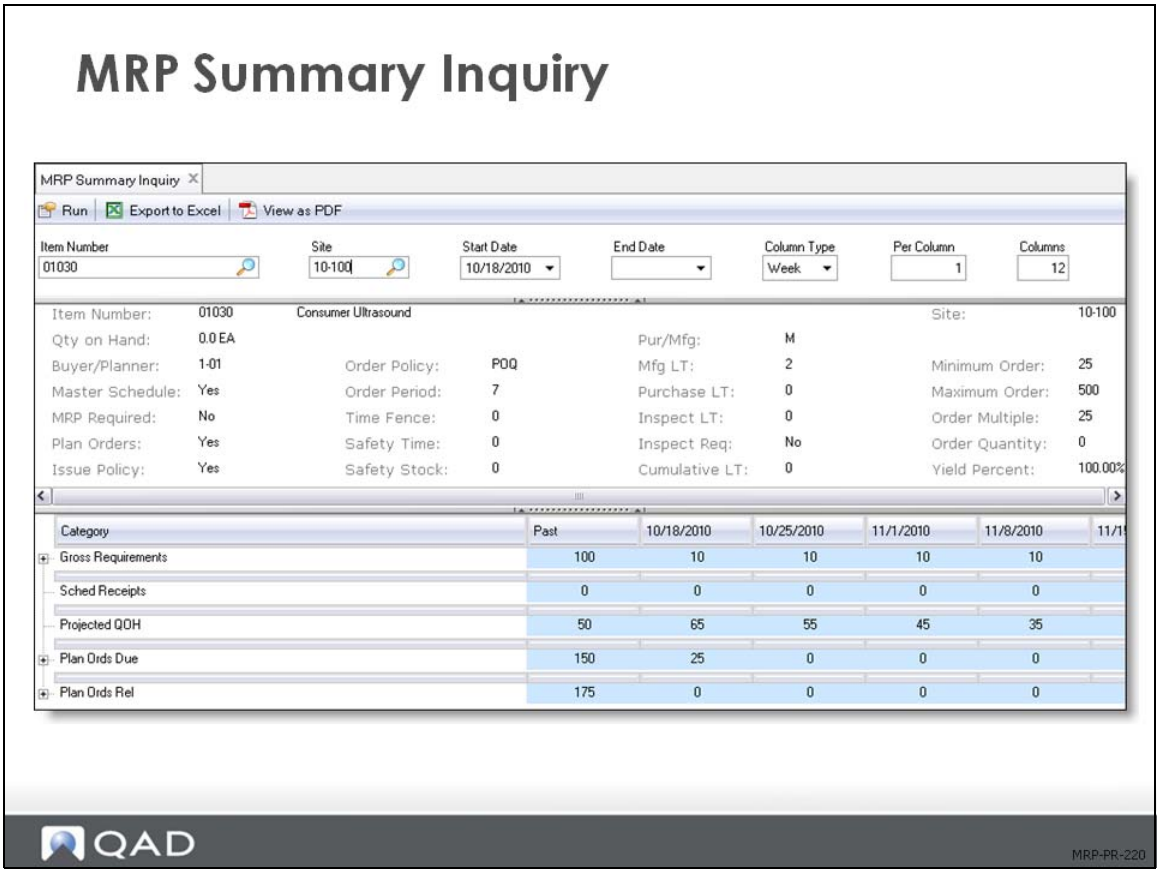
This section covers:

- MRP Summary
- MRP Details
- Past Due Receipts

MRP Summary


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
QAD
MRP-PR-215

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. You can specify the periods in days, weeks, months, or General Ledger calendar periods. The display defaults to weeks. In addition, you can specify how many periods to display in each vertical column. For example, selecting months and two periods per bucket displays a year of data in a single row.

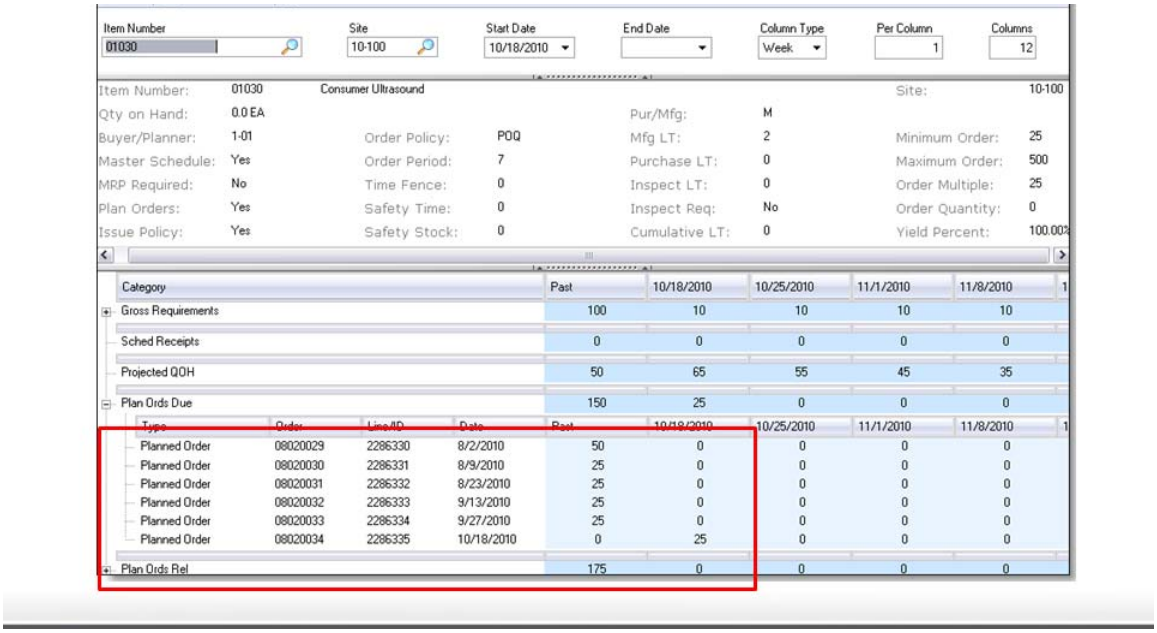
The second line shows Sched Receipt (Scheduled Receipts). Scheduled Receipts are released orders, either purchase or work orders due to be received in the period the quantity appears in.

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 MRP-planned, not--yet-released orders intended for receipt in the period.

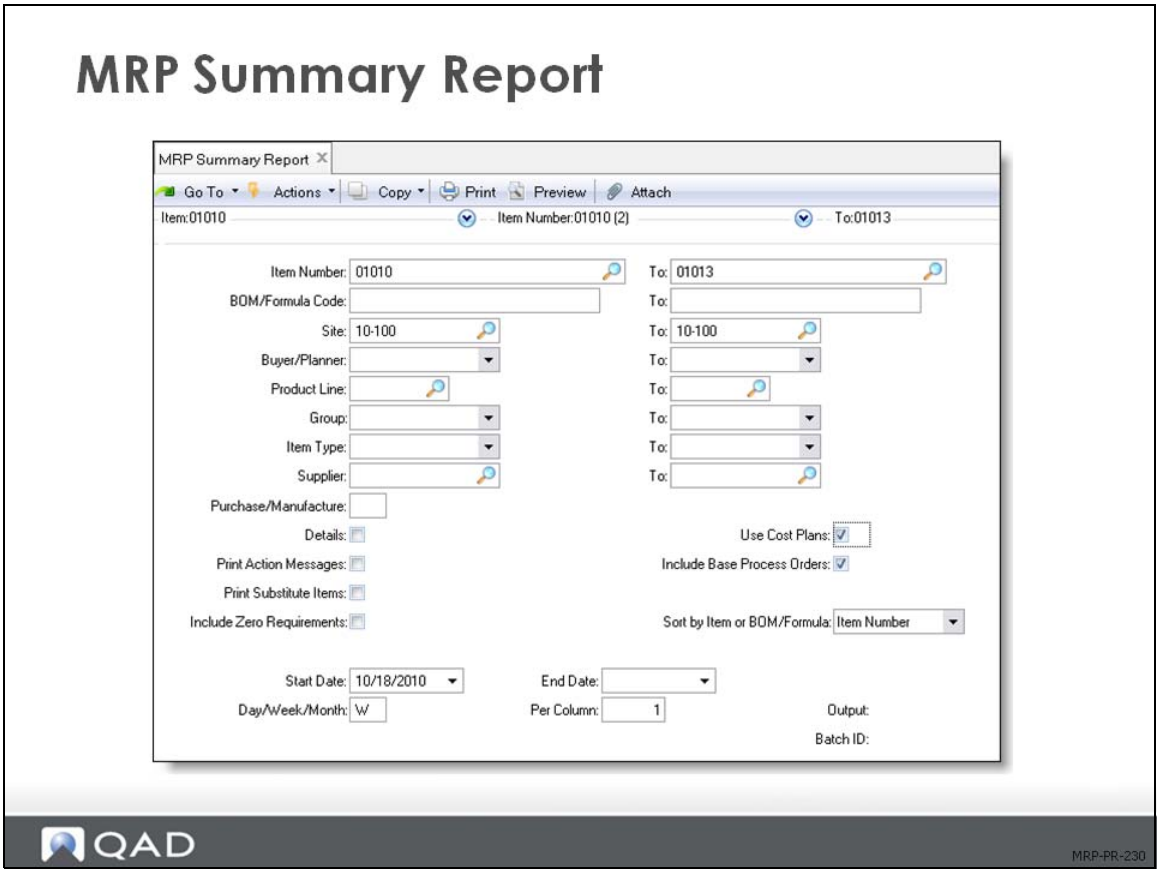
The last line, Plan Ords Rel (Planned Orders to Be Released) is the quantity of items on planned, not-yet-released orders in the period.

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



Note Drill down detail shown on the screen.

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 before the start date appears in the first column under the label Past.

Select the data according to the criteria displayed.

Print Detail. Allows to print order details following the summary. Useful to help resolve shortage situations. This function 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.

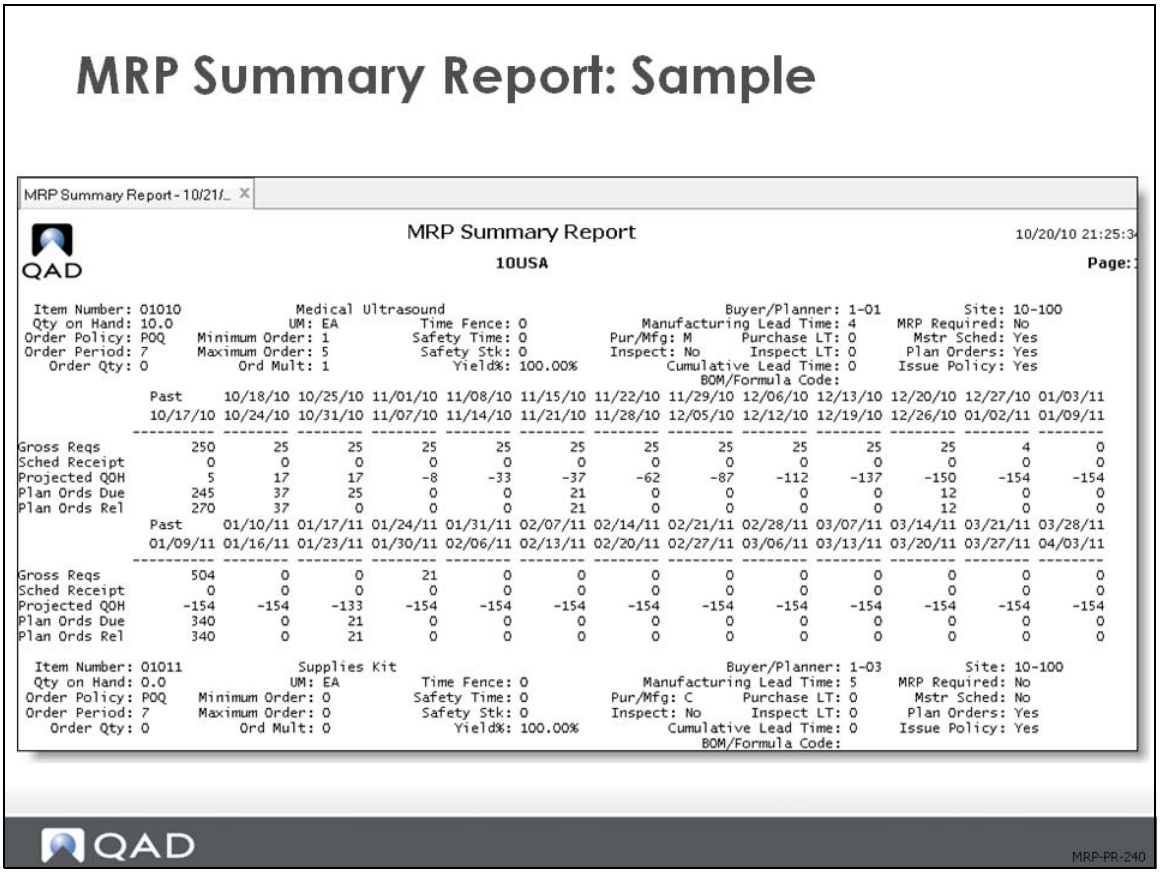
Costs plans are entered in the Cost Management module and they allow you to project future cost changes. This function is useful for commodities or seasonal items.

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:

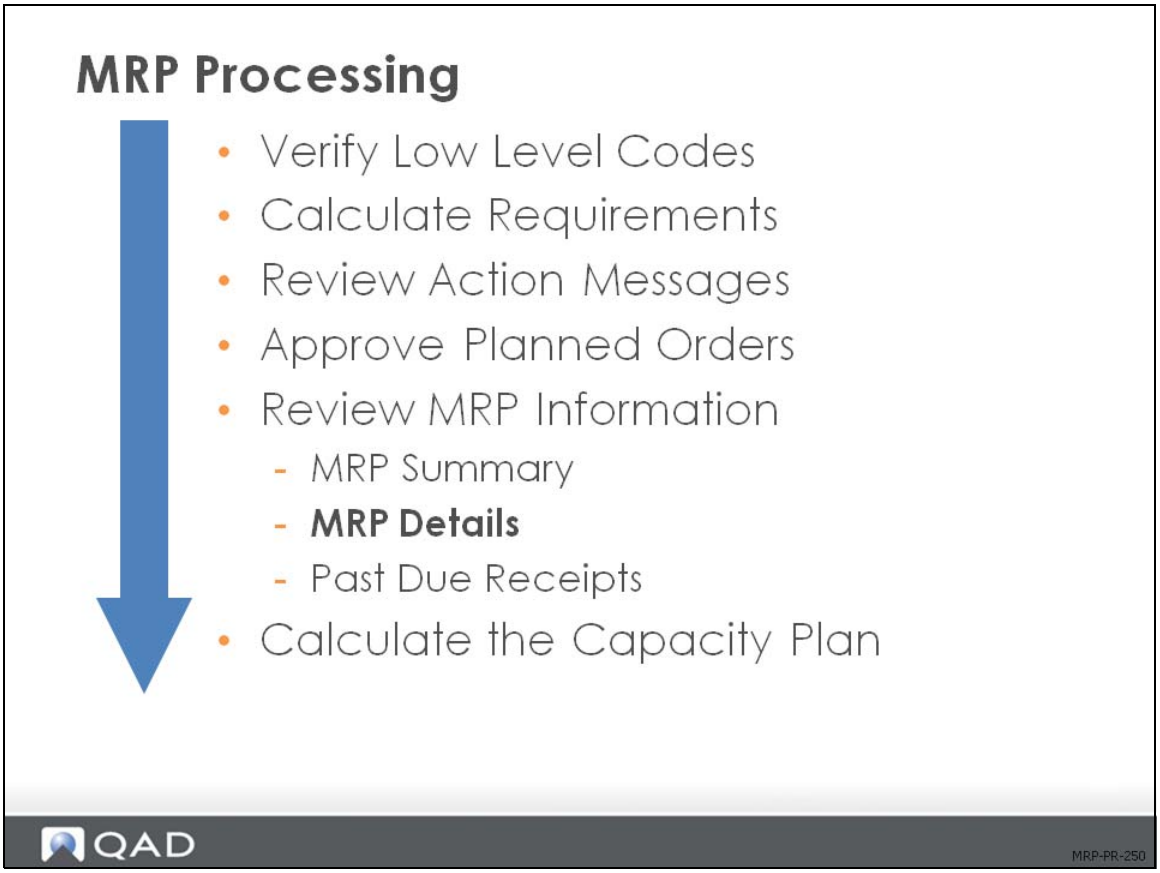
- D for Day
- W for Week
- M for Month (requires that you set the Per Column field to 1)
- P for GL calendar period (works only if you are using the General Ledger module)

Sample MRP Summary Report

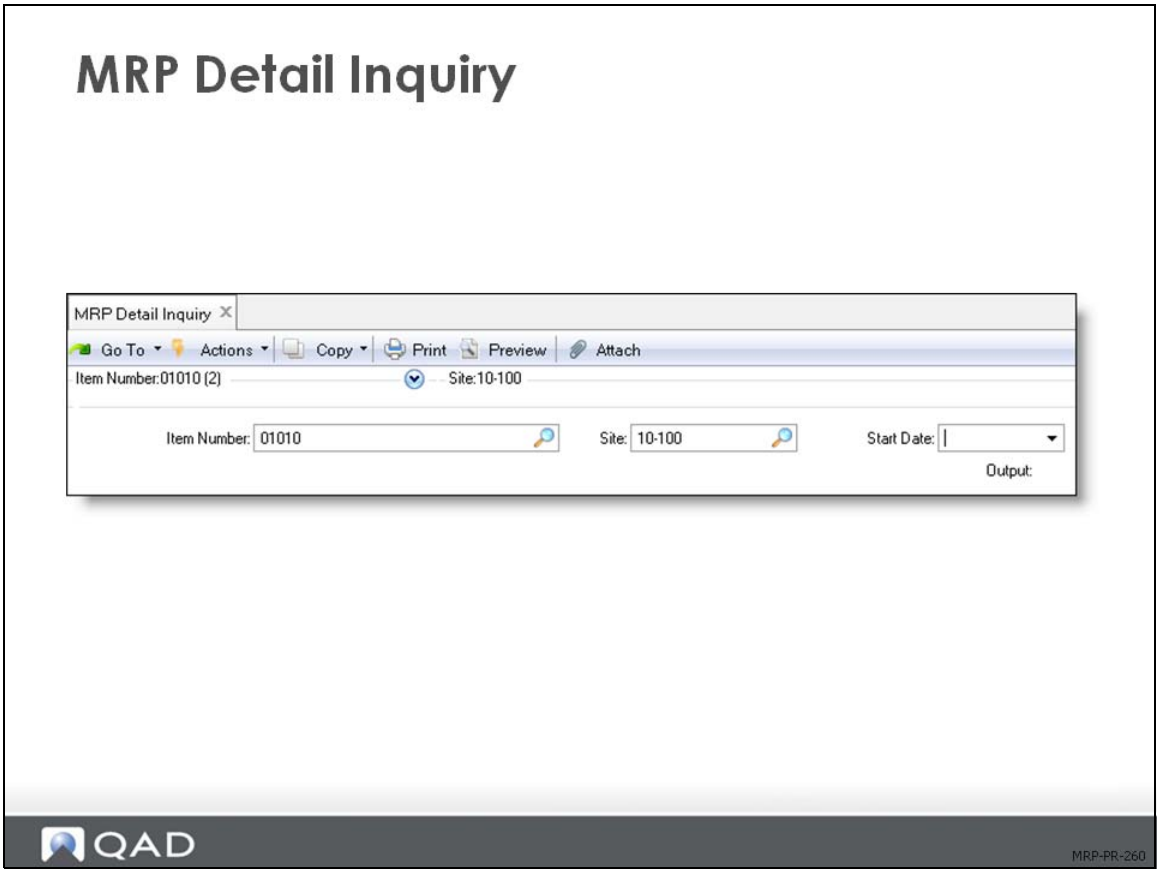


The summary report shows the same information as the summary inquiry.

MRP Details

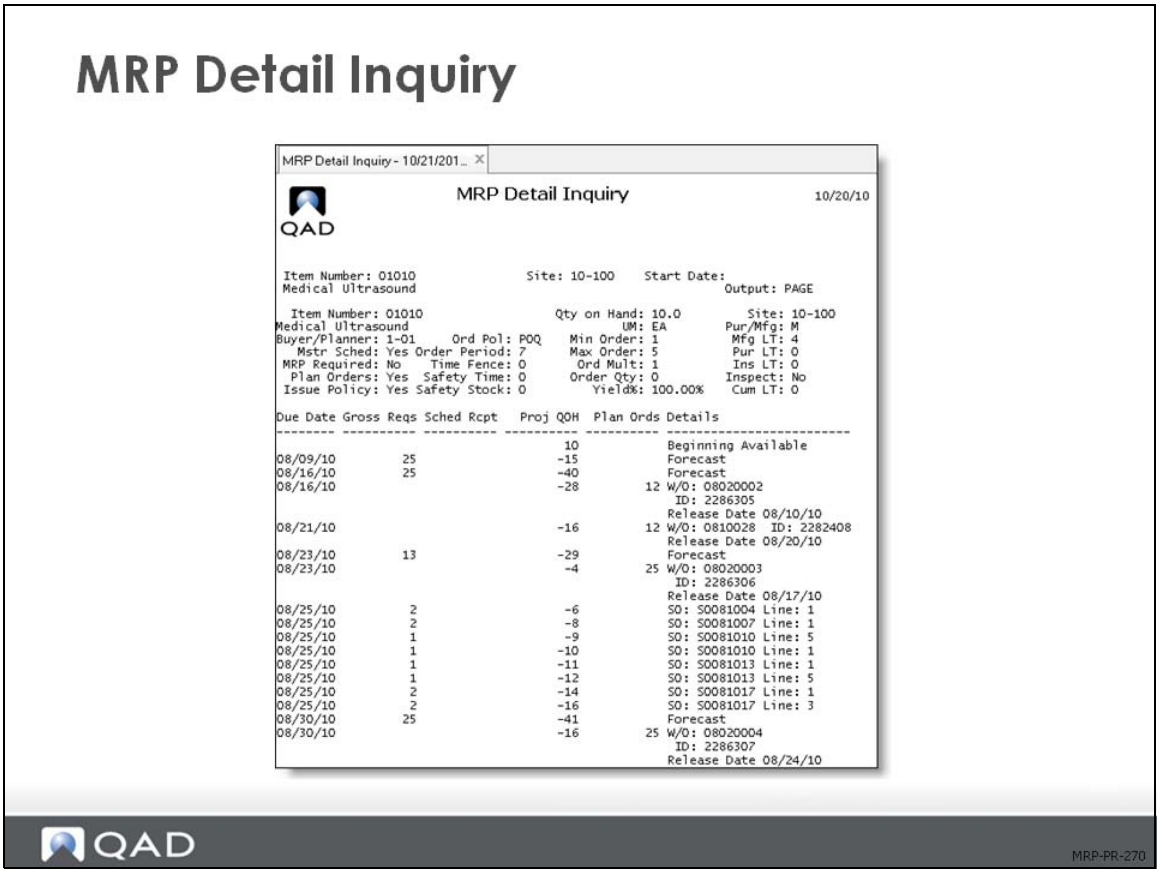

MRP Processing
Verify Low Level Codes
Calculate Requirements
Review Action Messages
Approve Planned Orders
Review MRP Information
MRP Summary
MRP Details
Past Due Receipts
Calculate the Capacity Plan
QAD
MRP-PR-250

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.

Sample MRP Detail Inquiry

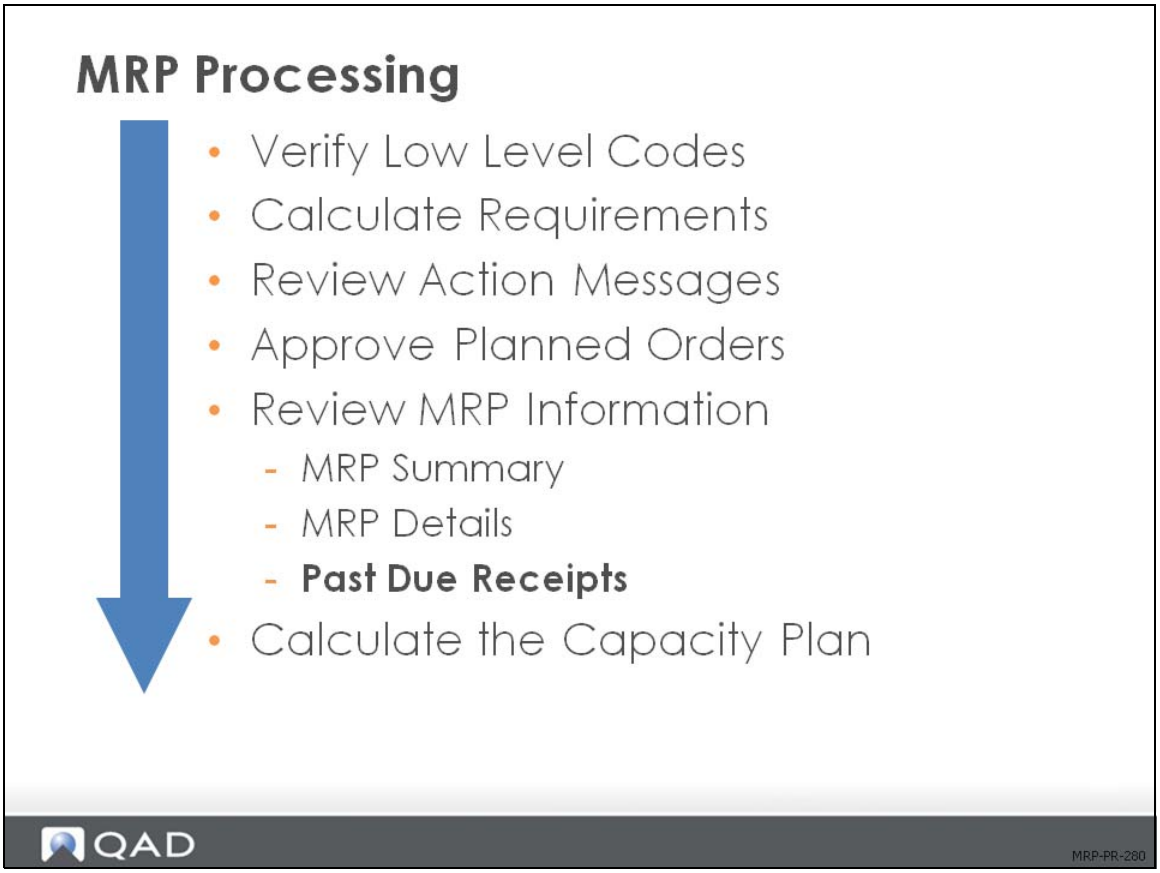


The top of the Detail Inquiry screen shows the item planning data and current quantity on hand.

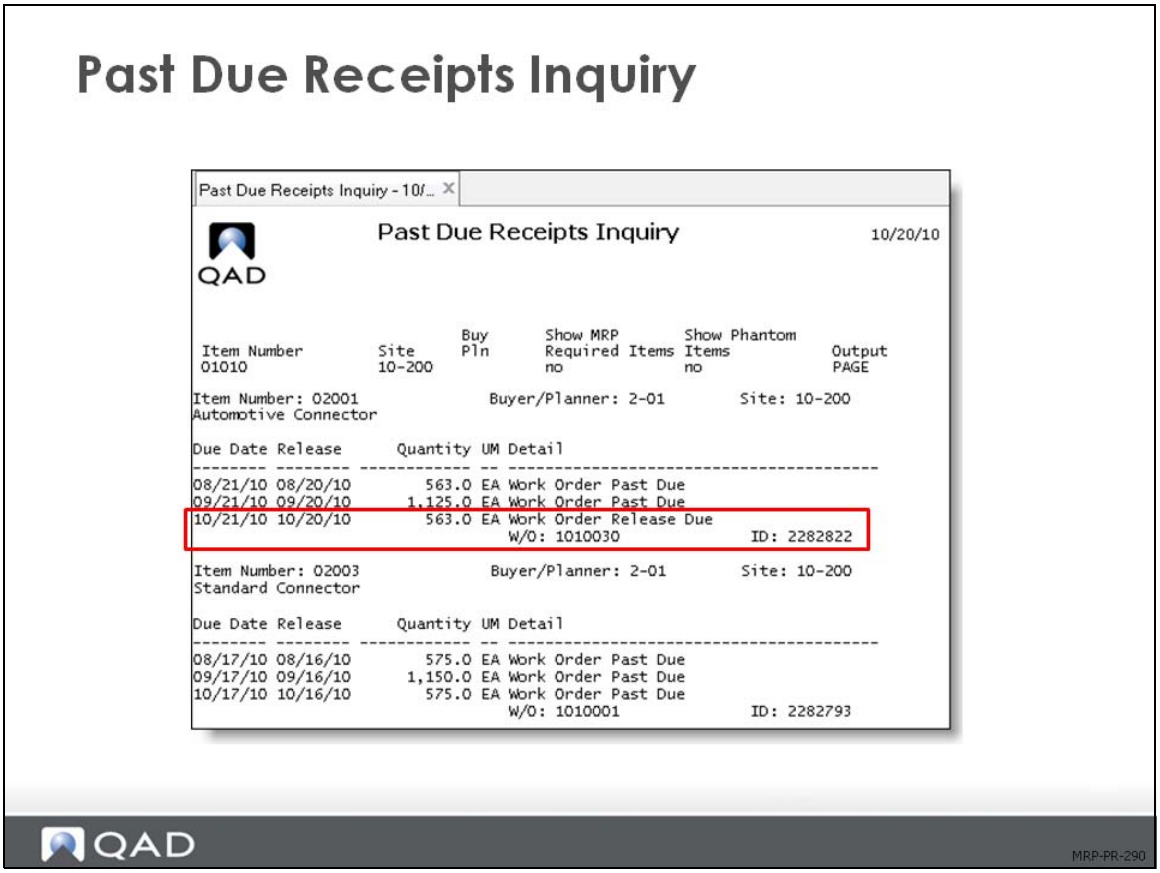
The body of the inquiry displays, in date order, all the transactions for the item. Only dates that have transactions are displayed. The second column is the gross requirement. The third column is the projected quantity on hand based on these transactions. The fourth column is the plan order quantity 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, line item, and work order numbers are given as part of the detail.

Past Due Receipts



Past Due Receipts Inquiry

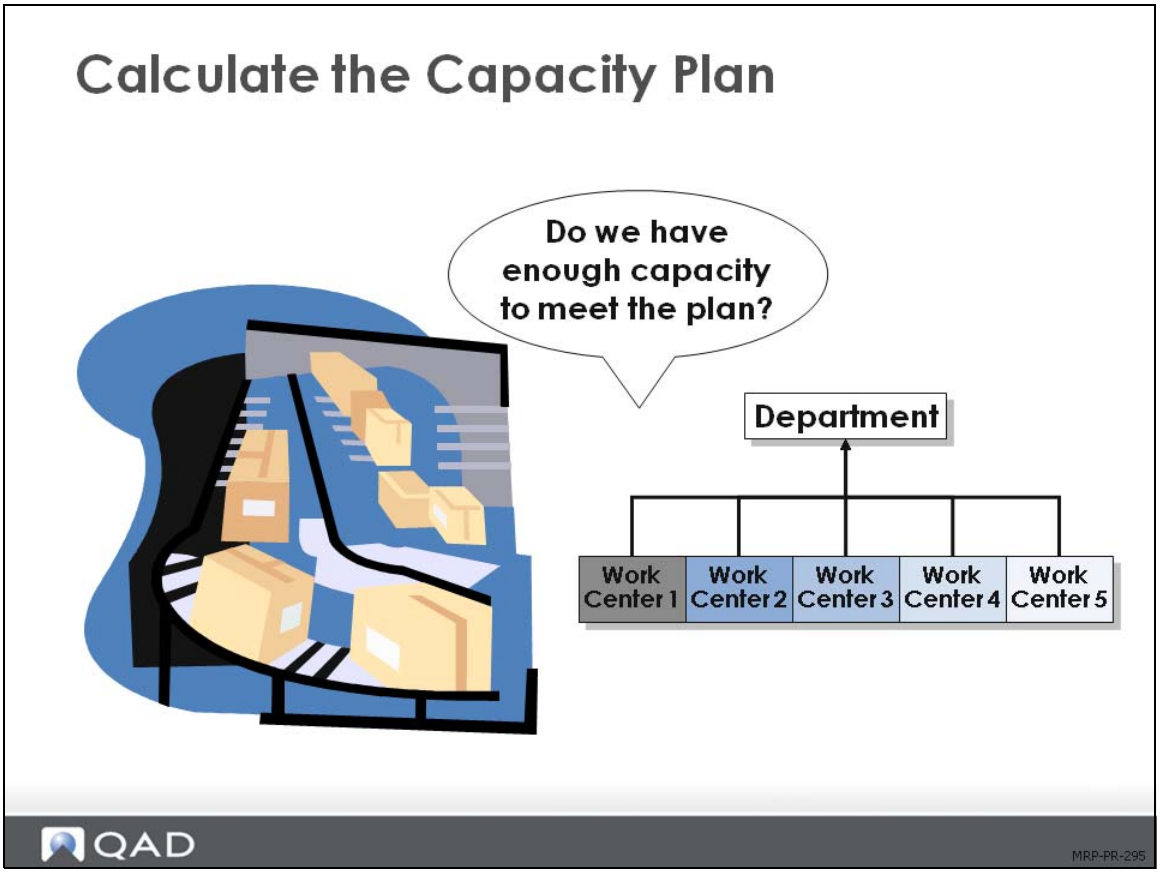


Past Due Receipts Inquiry (23.19) shows you past due receipts.

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 lumped into the first column of the summary inquiry screen as past due.

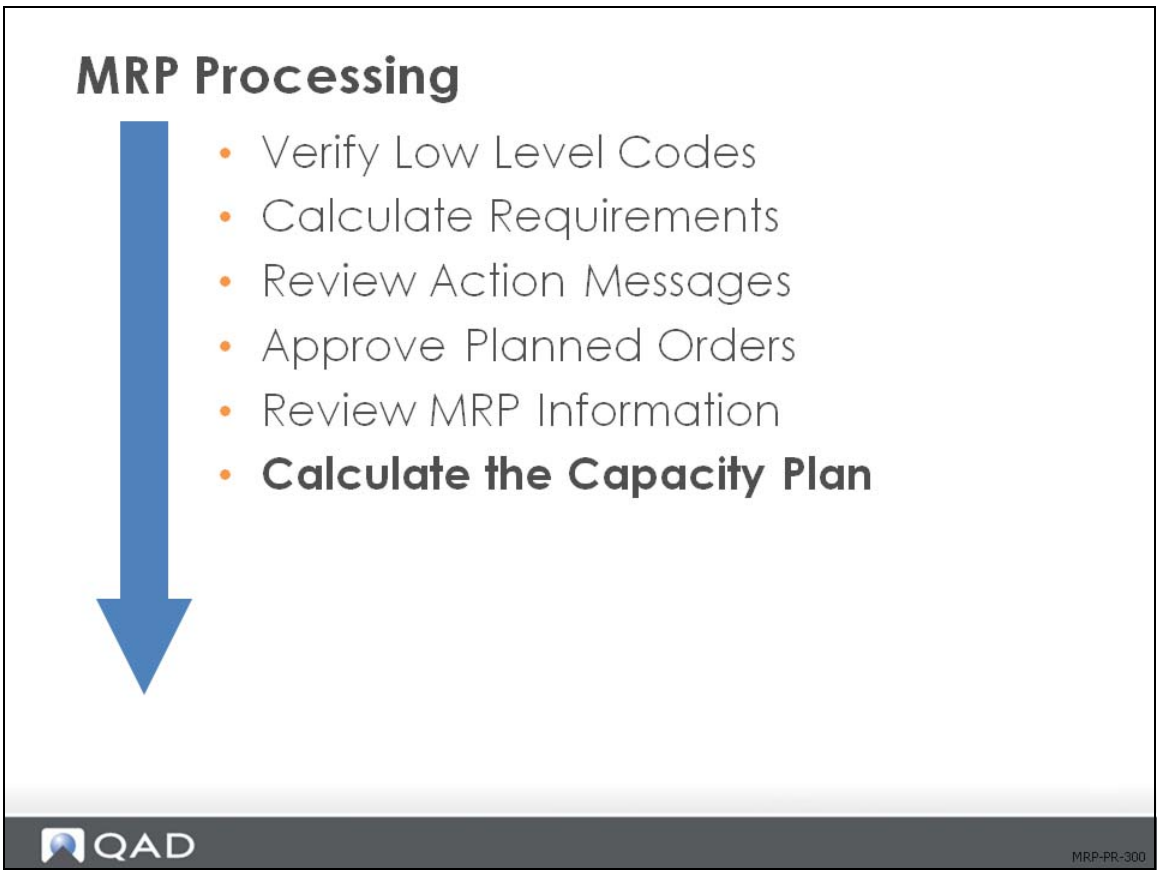
Calculate the Capacity Plan



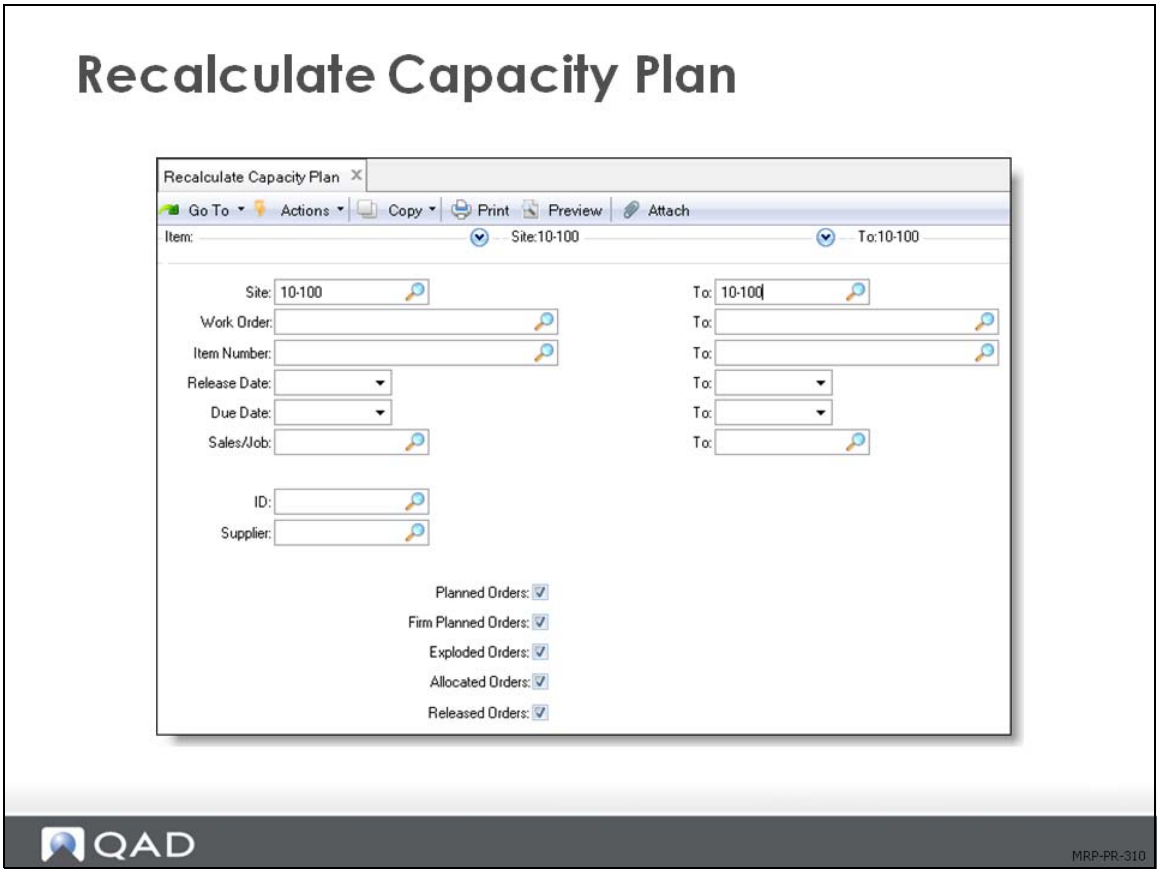
Once the MRP has been reviewed and action messages acted upon, the capacity plan can be run. The MRP output is the direct input to CRP. Capacity Requirements Planning uses all work orders on the system to calculate the load.

All capacity planning and reporting is organized around work center/machine.

Calculate the Capacity Plan



Recalculating the Capacity Plan



Capacities and Load

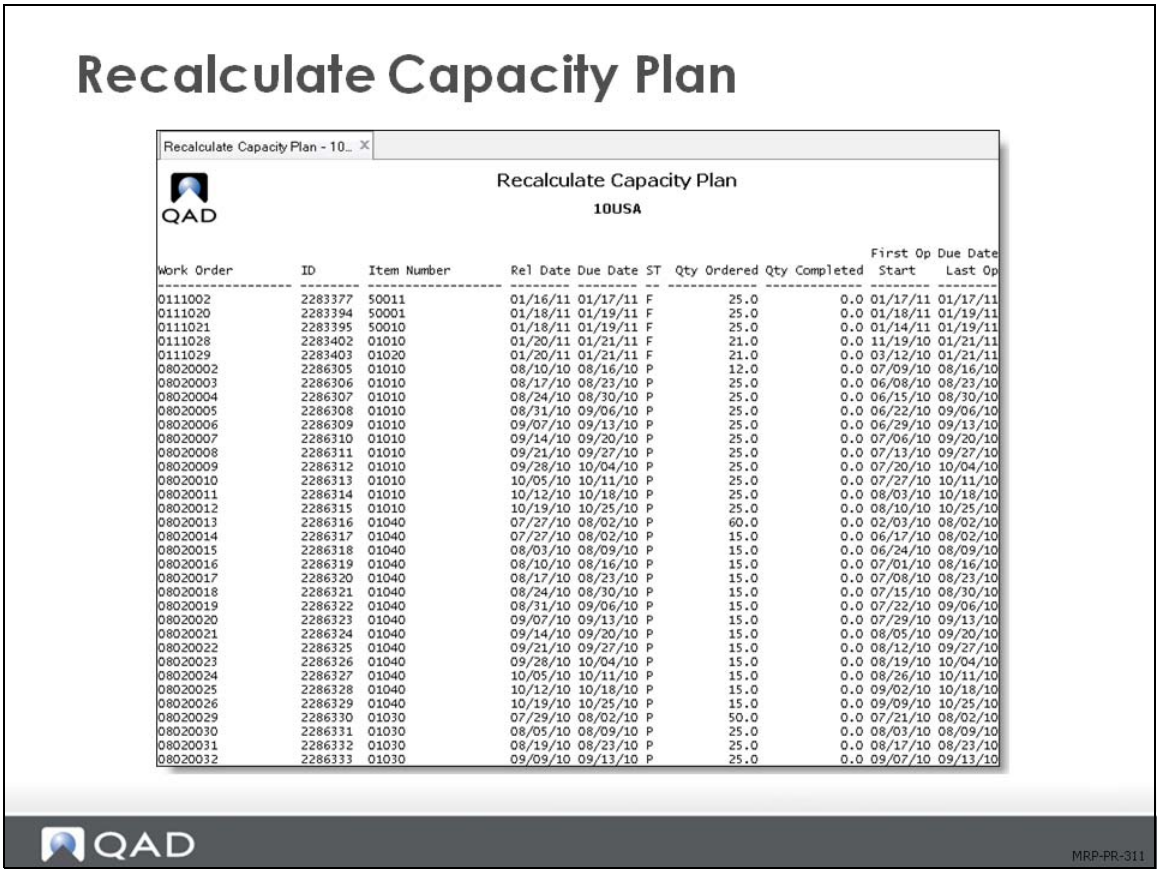
The capacity plan is recalculated after an MRP run. CRP looks at the available hours or machines for departments and work centers. CRP then loads the work center by locating all orders that meet the selection criteria and applies them to operations by start date, using backward scheduling from the orders'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

Note This recalculation takes some time to process. Consider submitting it in batch mode.

Additional discussion in *Training Guide: Work Centers, Routings, and WO Subcontracting*

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

Recalculate Capacity Plan



Recalculate Capacity Plan - 10...

QAD

Recalculate Capacity Plan

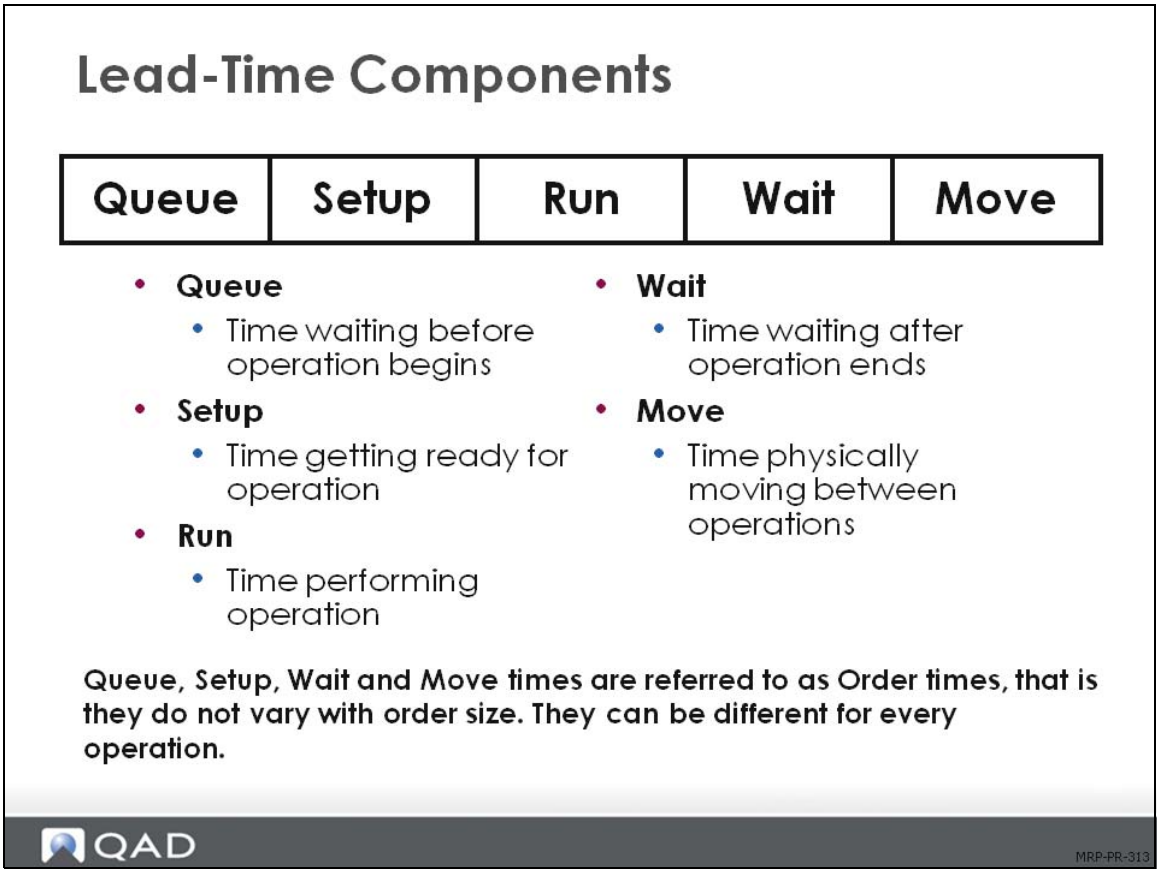
10USA

Work Order	ID	Item Number	Rel Date	Due Date	ST	Qty Ordered	Qty Completed	First Op Start	Due Date Last Op
0111002	2283377	50011	01/16/11	01/17/11	F	25.0	0.0	01/17/11	01/17/11
0111020	2283394	50001	01/18/11	01/19/11	F	25.0	0.0	01/18/11	01/19/11
0111021	2283395	50010	01/18/11	01/19/11	F	25.0	0.0	01/14/11	01/19/11
0111028	2283402	01010	01/20/11	01/21/11	F	21.0	0.0	11/19/10	01/21/11
0111029	2283403	01020	01/20/11	01/21/11	F	21.0	0.0	03/12/10	01/21/11
08020002	2286305	01010	08/10/10	08/16/10	P	12.0	0.0	07/09/10	08/16/10
08020003	2286306	01010	08/17/10	08/23/10	P	25.0	0.0	06/08/10	08/23/10
08020004	2286307	01010	08/24/10	08/30/10	P	25.0	0.0	06/15/10	08/30/10
08020005	2286308	01010	08/31/10	09/06/10	P	25.0	0.0	06/22/10	09/06/10
08020006	2286309	01010	09/07/10	09/13/10	P	25.0	0.0	06/29/10	09/13/10
08020007	2286310	01010	09/14/10	09/20/10	P	25.0	0.0	07/06/10	09/20/10
08020008	2286311	01010	09/21/10	09/27/10	P	25.0	0.0	07/13/10	09/27/10
08020009	2286312	01010	09/28/10	10/04/10	P	25.0	0.0	07/20/10	10/04/10
08020010	2286313	01010	10/05/10	10/11/10	P	25.0	0.0	07/27/10	10/11/10
08020011	2286314	01010	10/12/10	10/18/10	P	25.0	0.0	08/03/10	10/18/10
08020012	2286315	01010	10/19/10	10/25/10	P	25.0	0.0	08/10/10	10/25/10
08020013	2286316	01040	07/27/10	08/02/10	P	60.0	0.0	02/03/10	08/02/10
08020014	2286317	01040	07/27/10	08/02/10	P	15.0	0.0	06/17/10	08/02/10
08020015	2286318	01040	08/03/10	08/09/10	P	15.0	0.0	06/24/10	08/09/10
08020016	2286319	01040	08/10/10	08/16/10	P	15.0	0.0	07/01/10	08/16/10
08020017	2286320	01040	08/17/10	08/23/10	P	15.0	0.0	07/08/10	08/23/10
08020018	2286321	01040	08/24/10	08/30/10	P	15.0	0.0	07/15/10	08/30/10
08020019	2286322	01040	08/31/10	09/06/10	P	15.0	0.0	07/22/10	09/06/10
08020020	2286323	01040	09/07/10	09/13/10	P	15.0	0.0	07/29/10	09/13/10
08020021	2286324	01040	09/14/10	09/20/10	P	15.0	0.0	08/05/10	09/20/10
08020022	2286325	01040	09/21/10	09/27/10	P	15.0	0.0	08/12/10	09/27/10
08020023	2286326	01040	09/28/10	10/04/10	P	15.0	0.0	08/19/10	10/04/10
08020024	2286327	01040	10/05/10	10/11/10	P	15.0	0.0	08/26/10	10/11/10
08020025	2286328	01040	10/12/10	10/18/10	P	15.0	0.0	09/02/10	10/18/10
08020026	2286329	01040	10/19/10	10/25/10	P	15.0	0.0	09/09/10	10/25/10
08020029	2286330	01030	07/29/10	08/02/10	P	50.0	0.0	07/21/10	08/02/10
08020030	2286331	01030	08/05/10	08/09/10	P	25.0	0.0	08/03/10	08/09/10
08020031	2286332	01030	08/19/10	08/23/10	P	25.0	0.0	08/17/10	08/23/10
08020032	2286333	01030	09/09/10	09/13/10	P	25.0	0.0	09/07/10	09/13/10

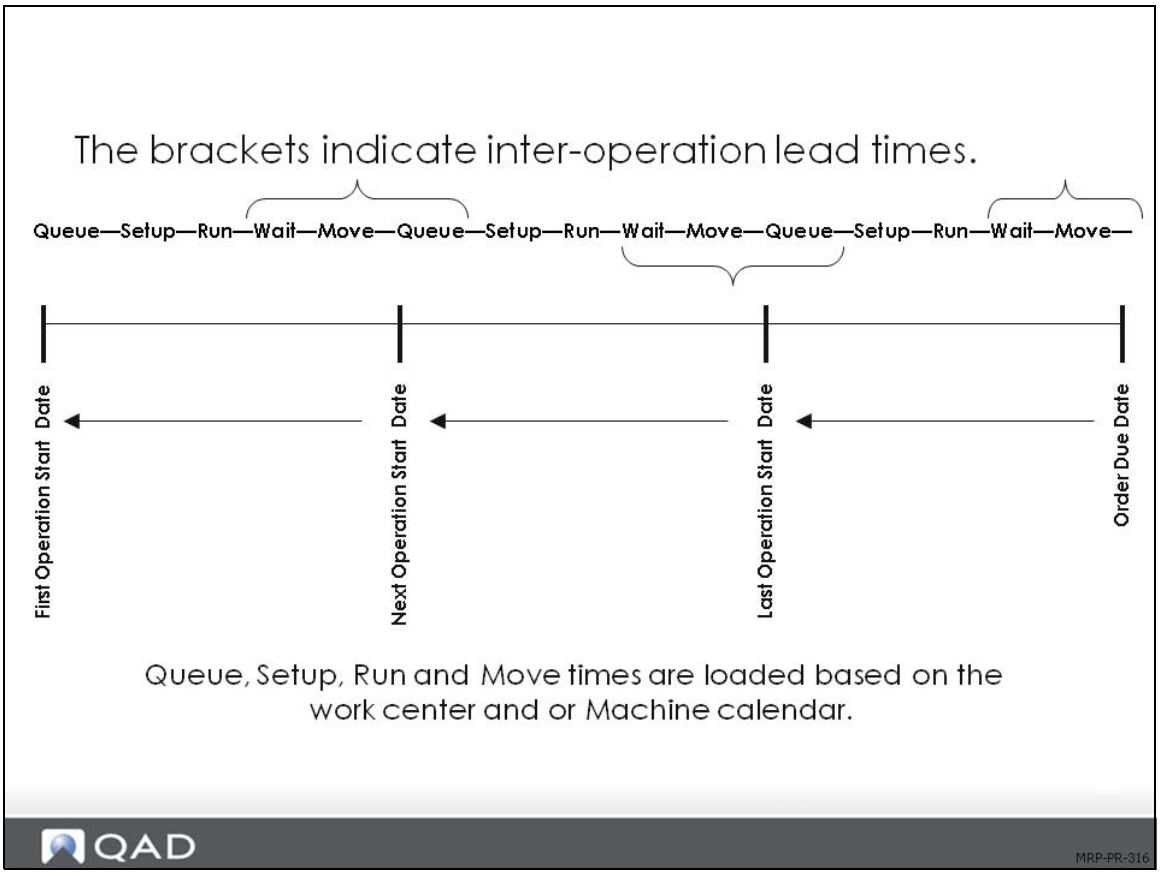
QAD

MRP-PR-311

CRP Planning



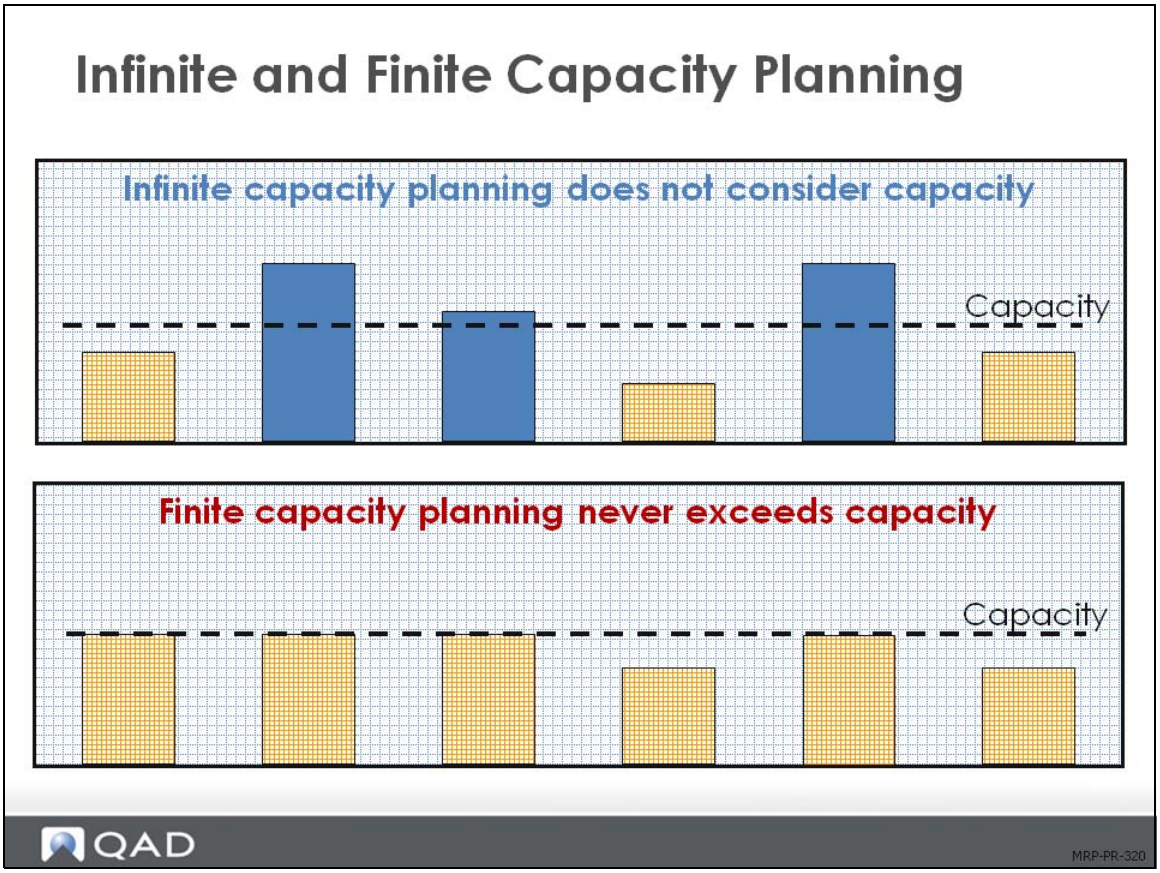
CRP uses different logic than MRP to calculate load. MRP offsets from a demand due date the fixed lead time to arrive at a release date for the supply order. CRP calculates from the same due date, but backward schedules all the five elements of lead time from the specific work order route, which is based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



Each element of lead time is added up backwards from the order due date. Each work center/machine has its own calendar. The system uses the actual order quantity, which is sometimes different from 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 reasons, it is entirely possible for CRP to calculate a first operation start date before the order release date from MRP. This situation generates 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. The Advanced Repetitive Workbench uses finite loading:

- Loading to finite capacity extends deliveries; as a result, the Master Schedule requires changes.
- Finite capacity looks at capacity and determines how much to produce, or how long it takes to produce it.

The Plan

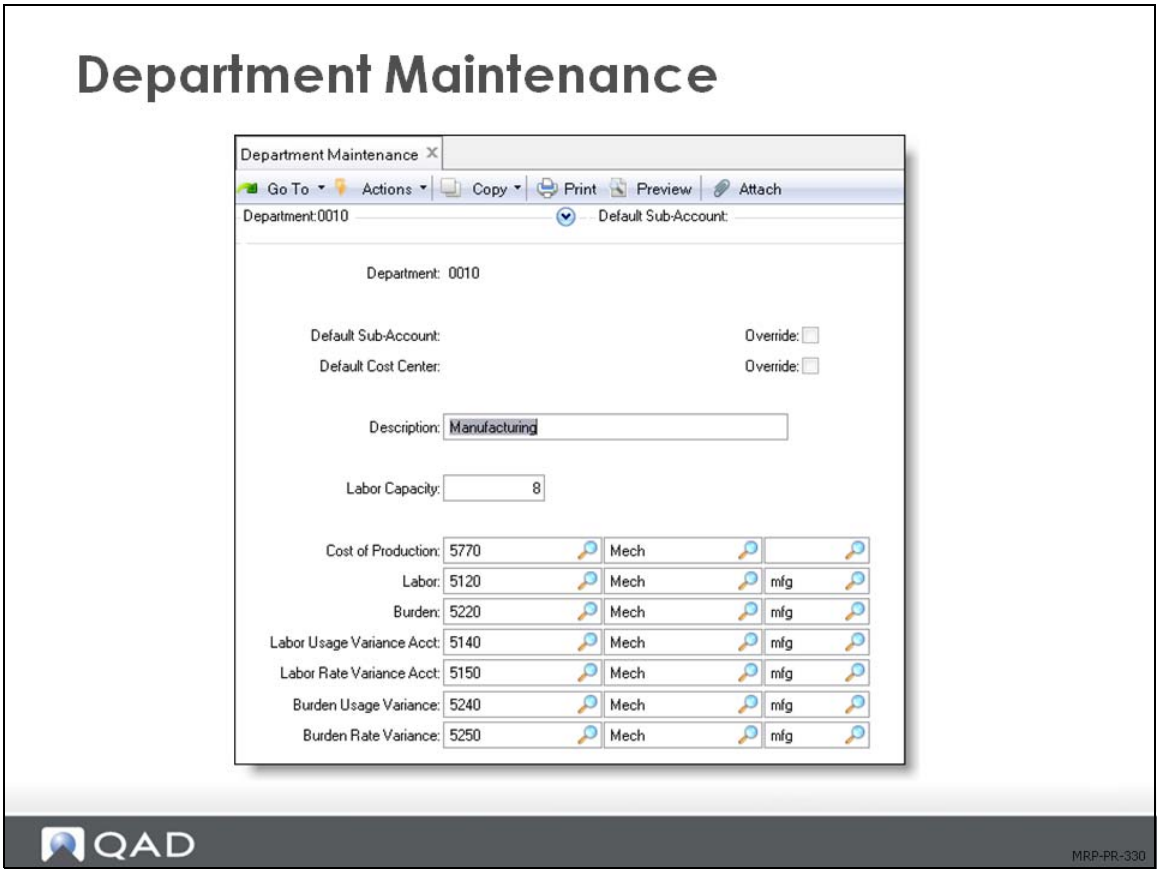
The capacity plan is sorted by:

- 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

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.

High level rough cut capacity information can be obtained using Department Load Summary and Detail Inquiries.

Consider this situation:

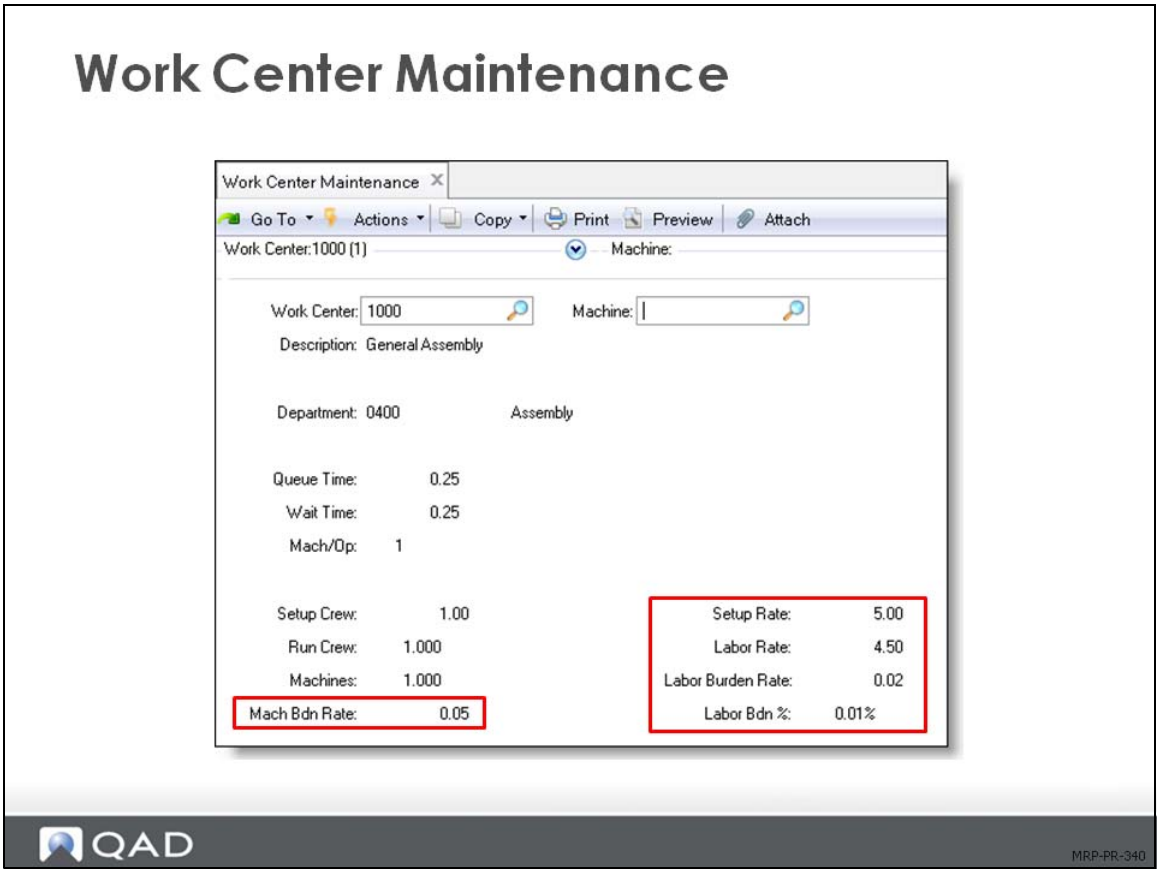
- A department has four work centers
- Each work center has four people
- Each person is available to work for 7.5 hours per day

The total labor for the department per day is 120 hours. (4 x 4 x 7.5 = 120) This assumes that the labor in a department is relatively interchangeable between work centers.

Note The labor capacity field is the only field that capacity planners or shop floor personnel maintain. Restrict all the account codes fields to appropriate finance personnel. See the appropriate user guide for information on implementing role permissions and security:

For more information, see *QAD Security and Controls User Guide*.

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). This value is multiplied by work hours, as defined in the shop calendar.

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.

Capacity. Adjust capacity using one of the following functions:

Calendar setup functions

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

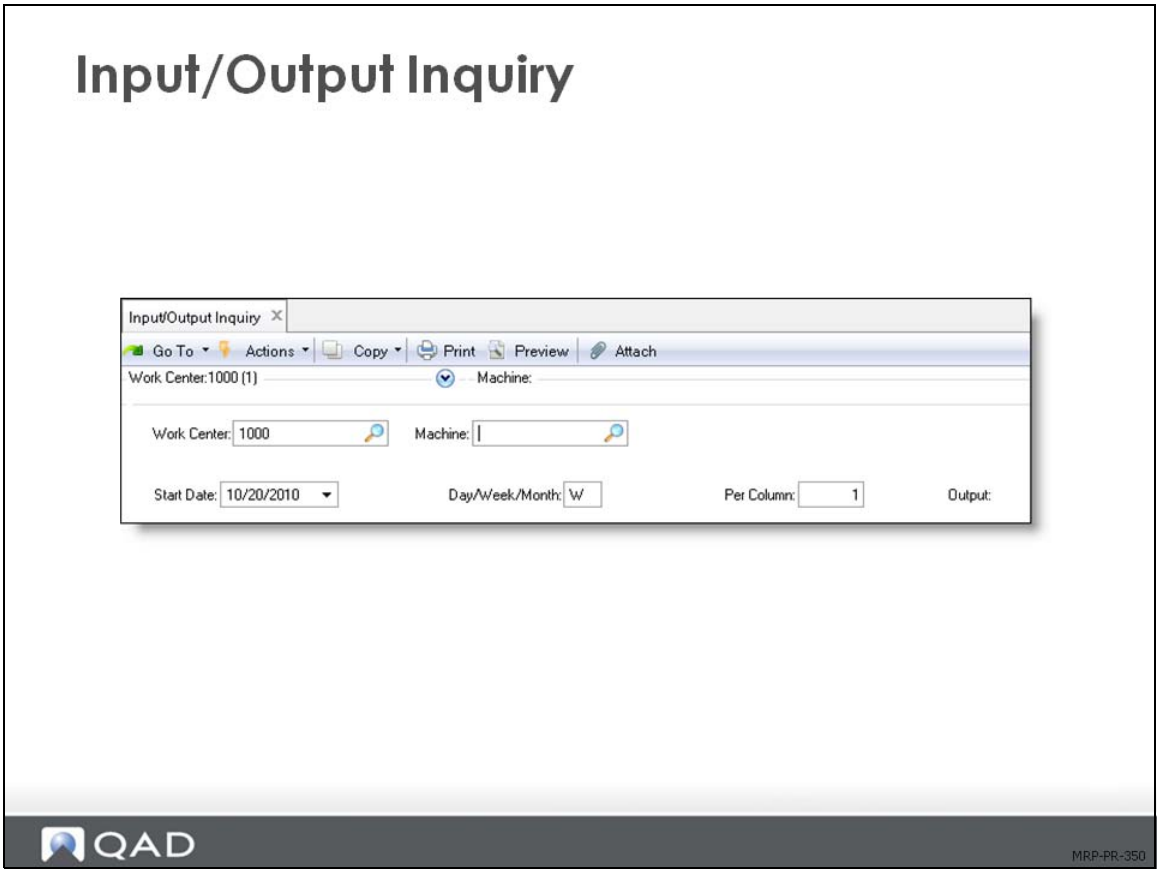
Operation lead time components

Repetitive schedules

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

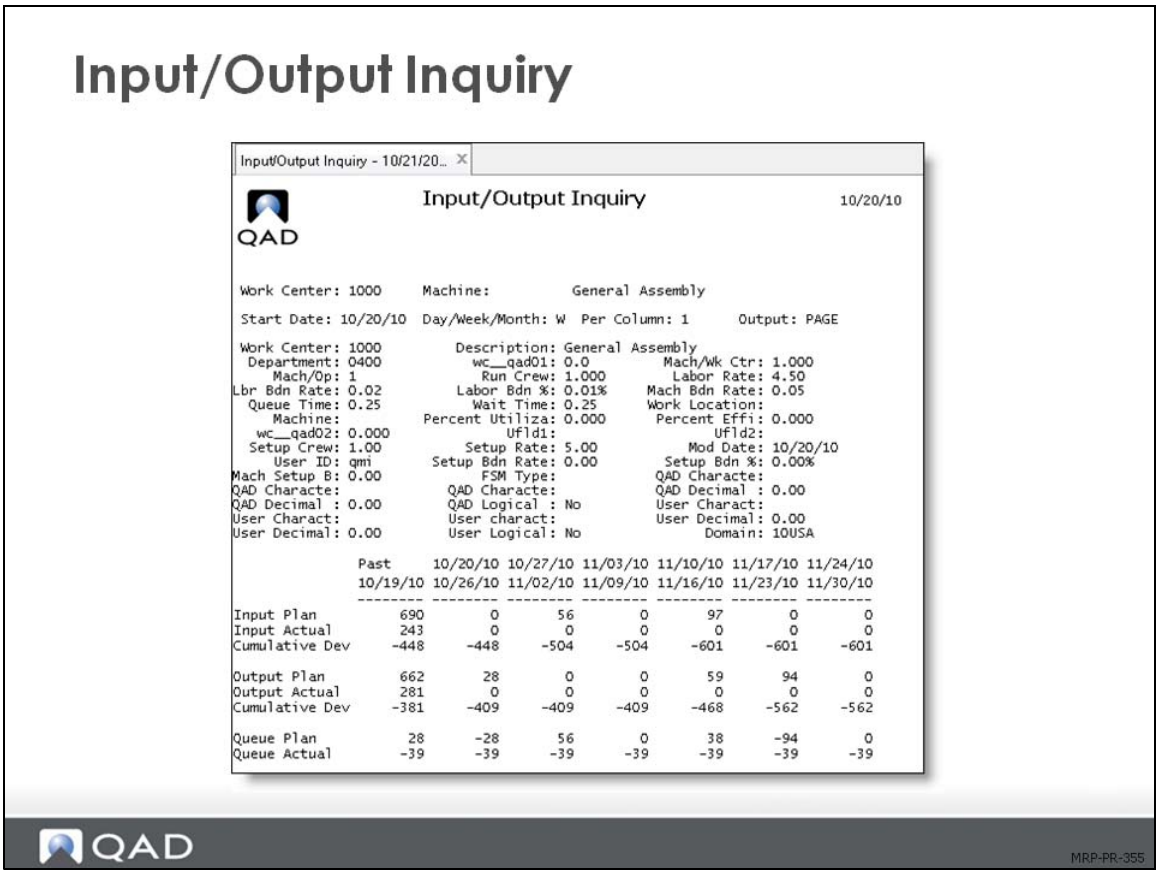
In addition, repetitive schedules sometimes have multiple shifts and each shift sometimes has a productivity factor that increases or decreases the line production rate.

Input/Output Inquiry



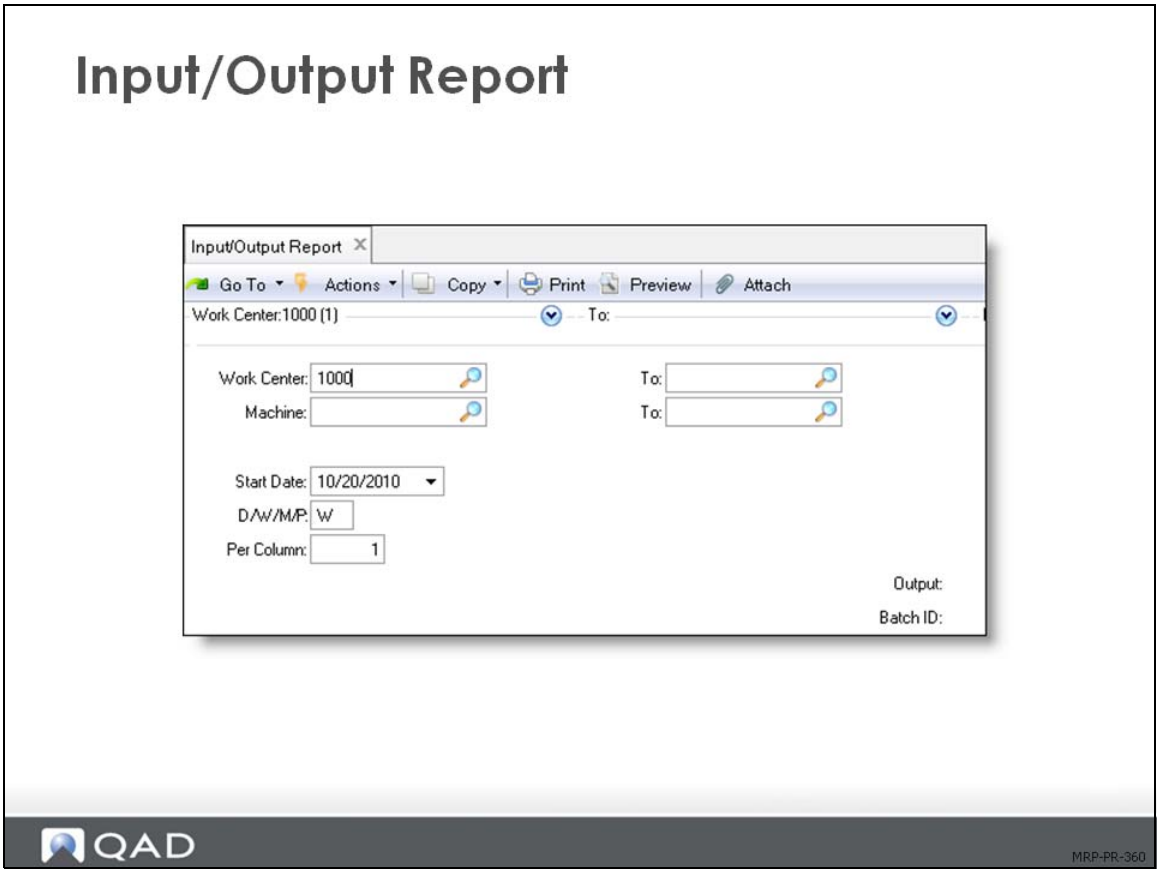
To provide shop floor data about planned versus actual results, compare the planned load input and output for a work center/machine with the actual load and output hours against that load. Input/Output Inquiry (24.4) and Input/Output Report (24.5) help evaluate a work center or machine's response to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



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.

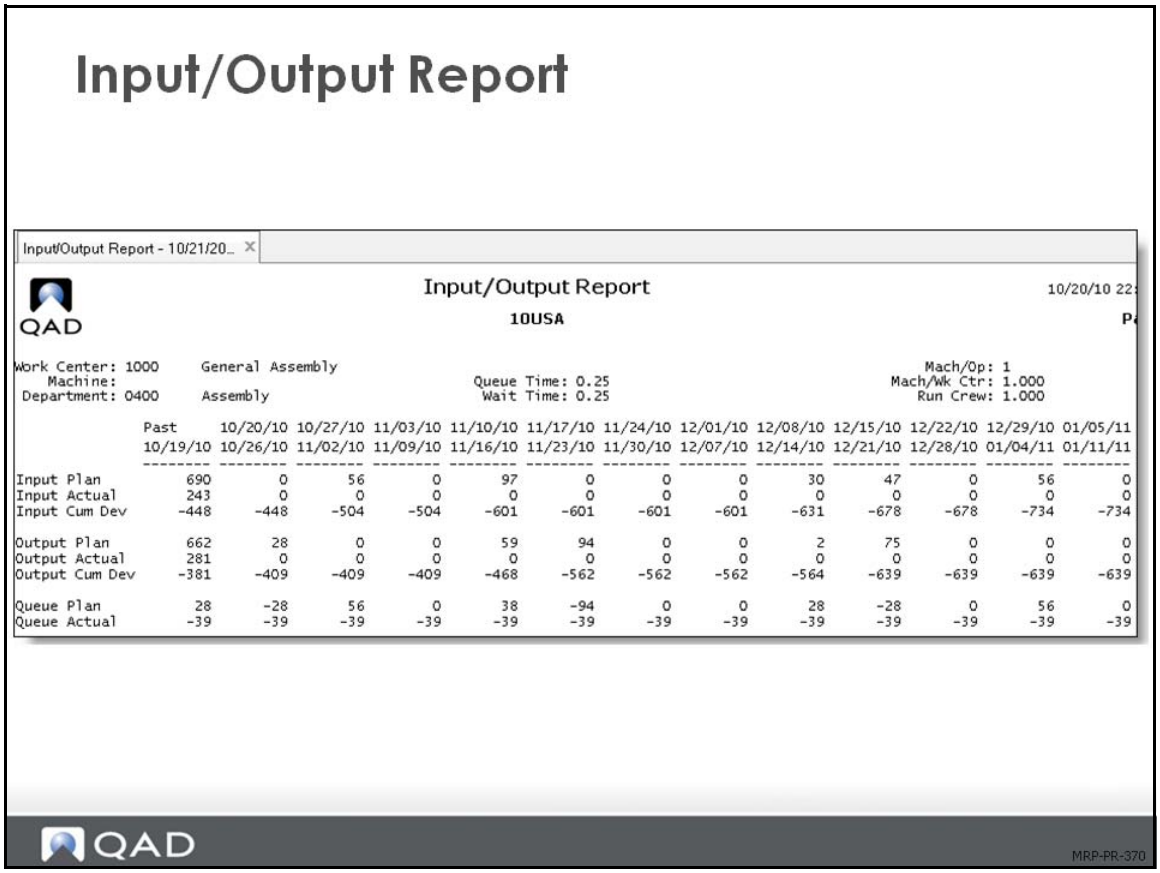
Input/Output Report



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.

Note Enterprise Edition includes an additional enhanced version of Input/Output Report for .NET UI users.

Input/Output Report Sample



This section describes the key fields in the Input/Output report

Planned Input. The load on a work center or machine expressed as work order operations scheduled to start in a reporting period. It is determined using the following calculation:

*Standard Setup + (Standard Run * 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 and 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).*

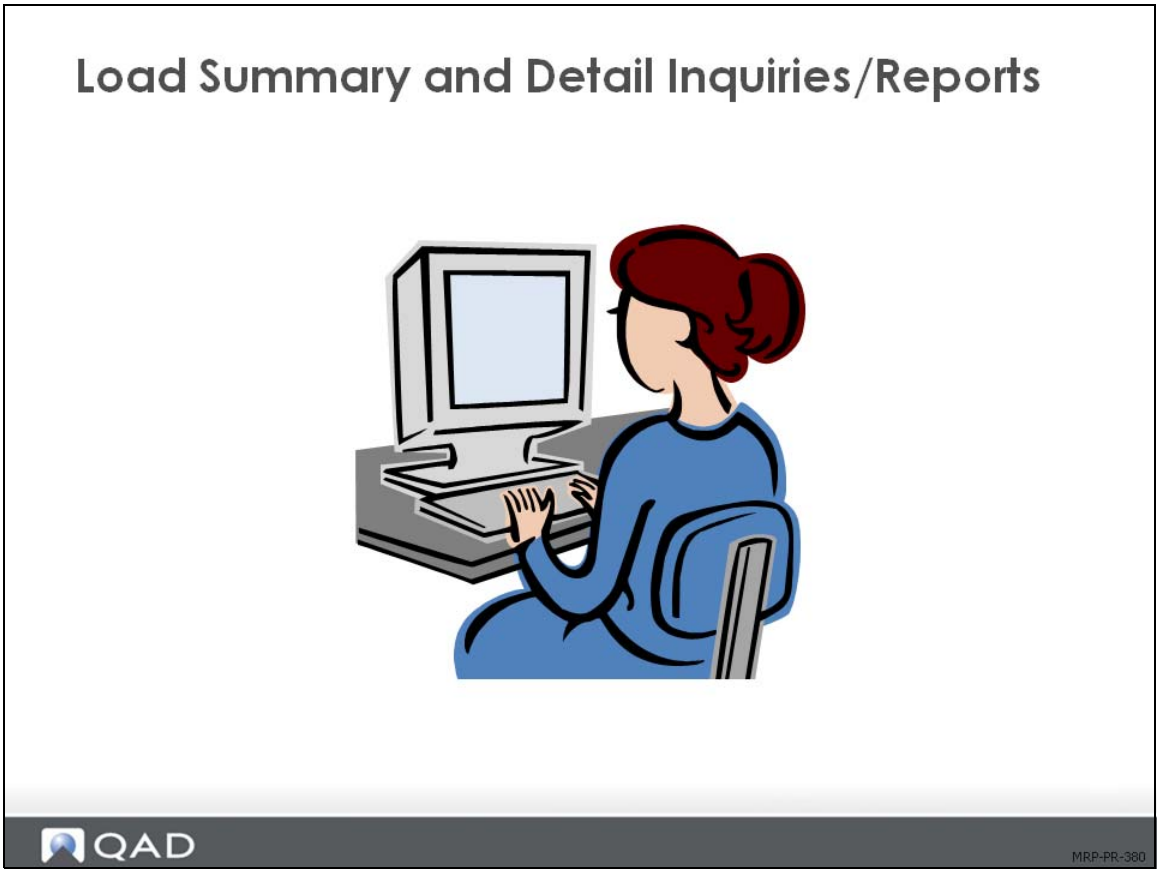
Planned Queue. Difference between planned input and planned output

Actual Queue. Difference between actual input and actual output

Experienced shop floor planners 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 is an indicator work is building up or running out.

Note Use Shop Floor Control (17.24) in order for this report to be helpful

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.

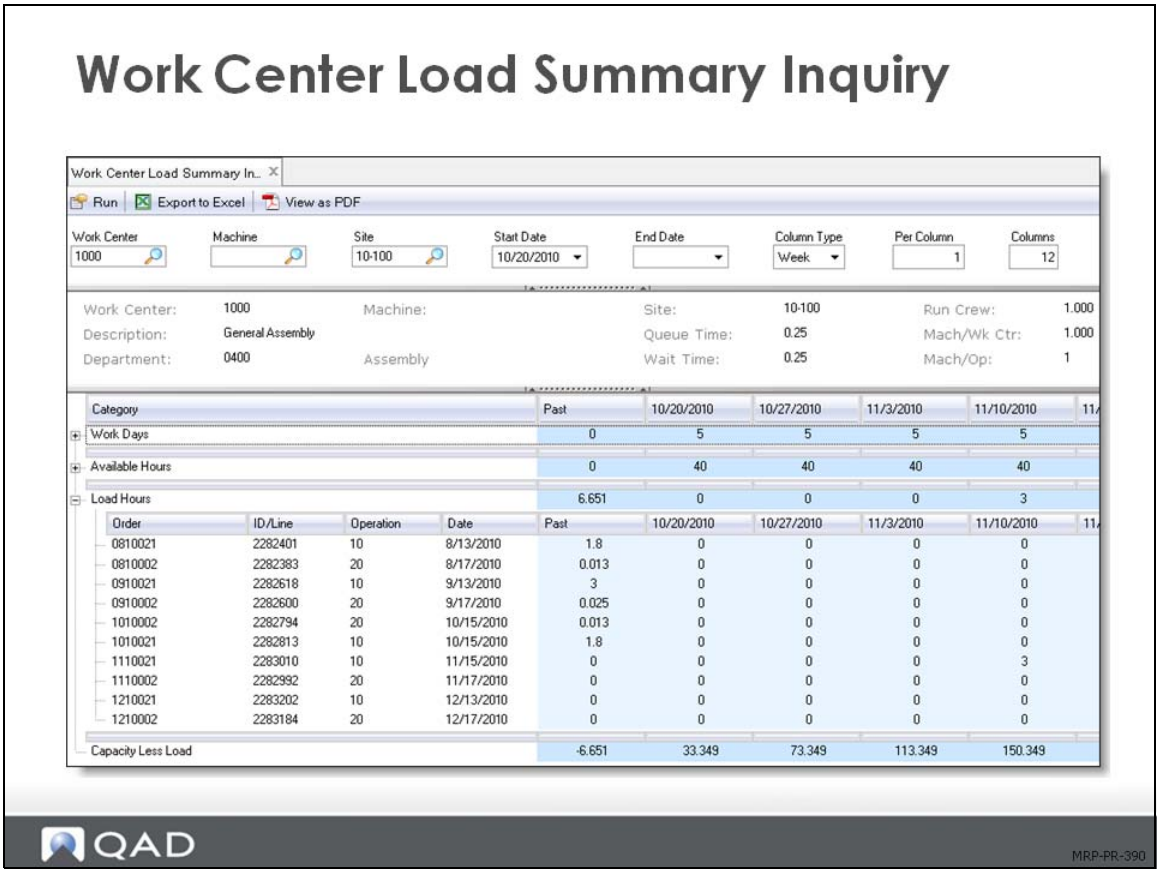
CRP determines the load an operation exerts on a work center using the following calculation:

*Operation Load = Setup Time + (Run Hours/Unit * 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 and Report

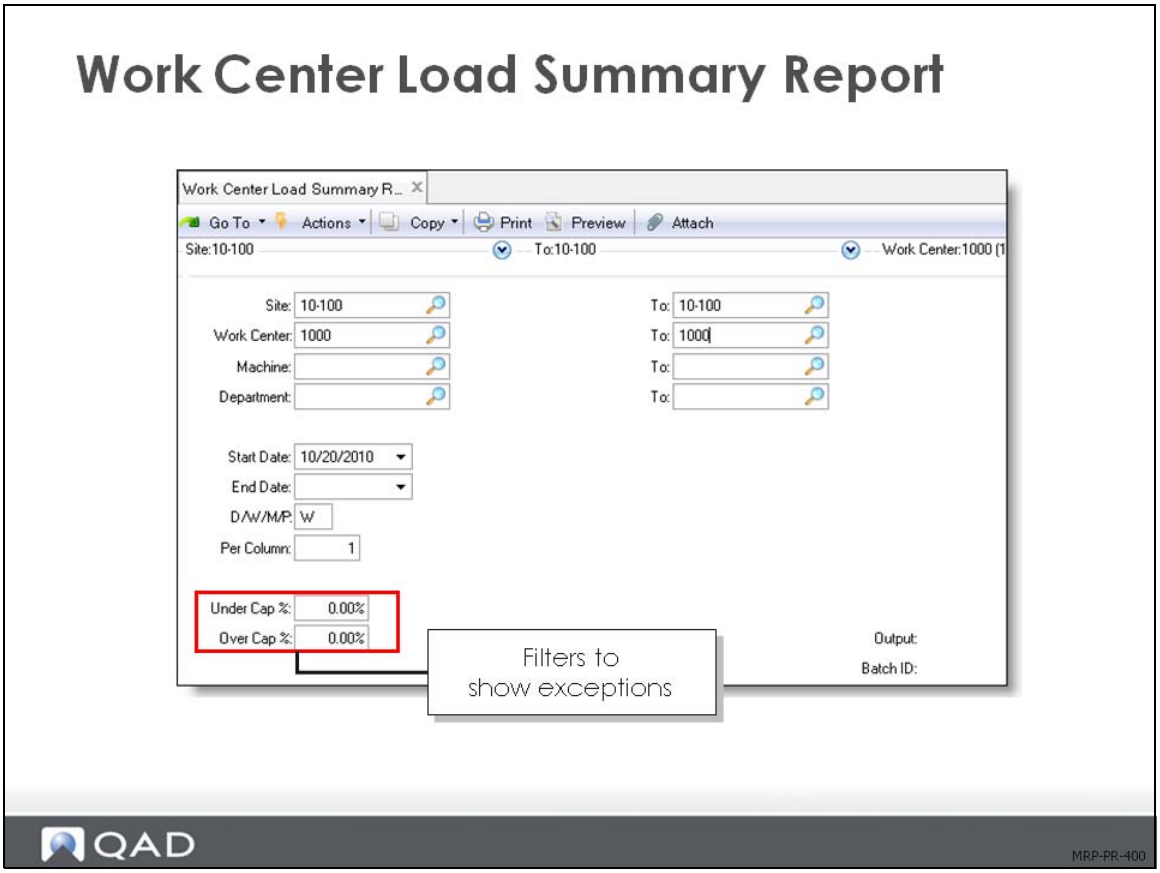


Inquiry

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.

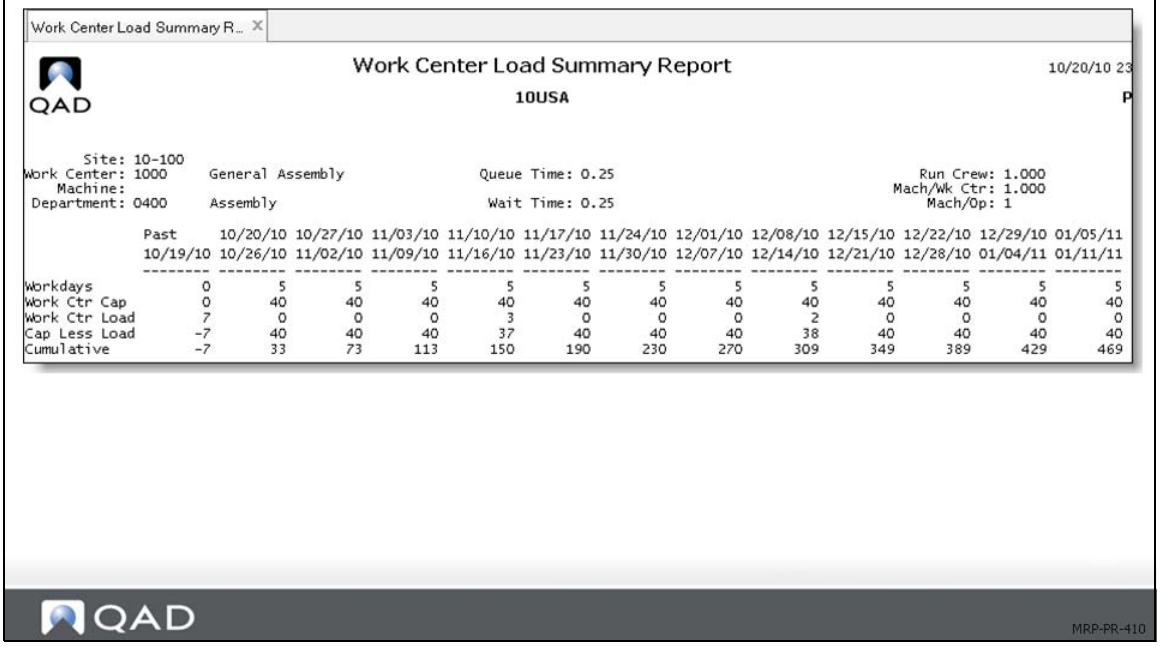
A cumulative difference that continues to move in one direction is a sure indication of an imbalance to address.

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. Direct the output to page to view this report on your terminal.

Work Center Load Summary Report



Work Center Load Summary R...

QAD

Work Center Load Summary Report

10/20/10 23

10USA

P

Site: 10-100
Work Center: 1000 General Assembly
Machine:
Department: 0400 Assembly

Queue Time: 0.25
Wait Time: 0.25

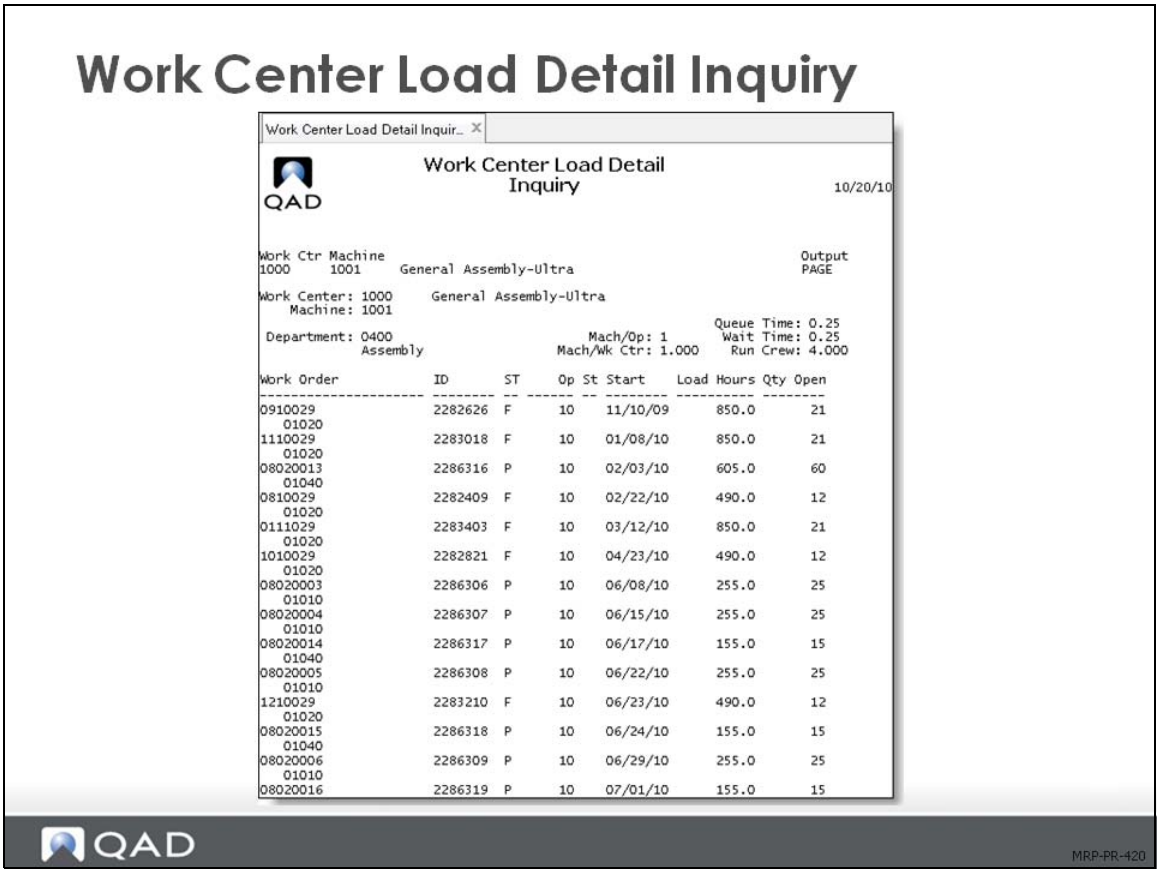
Run Crew: 1.000
Mach/Wk Ctr: 1.000
Mach/Op: 1

	Past	10/20/10	10/27/10	11/03/10	11/10/10	11/17/10	11/24/10	12/01/10	12/08/10	12/15/10	12/22/10	12/29/10	01/05/11
	10/19/10	10/26/10	11/02/10	11/09/10	11/16/10	11/23/10	11/30/10	12/07/10	12/14/10	12/21/10	12/28/10	01/04/11	01/11/11
Workdays	0	5	5	5	5	5	5	5	5	5	5	5	5
Work Ctr Cap	0	40	40	40	40	40	40	40	40	40	40	40	40
Work Ctr Load	7	0	0	0	3	0	0	0	2	0	0	0	0
Cap Less Load	-7	40	40	40	37	40	40	40	38	40	40	40	40
Cumulative	-7	33	73	113	150	190	230	270	309	349	389	429	469

QAD

MRP-PR-410

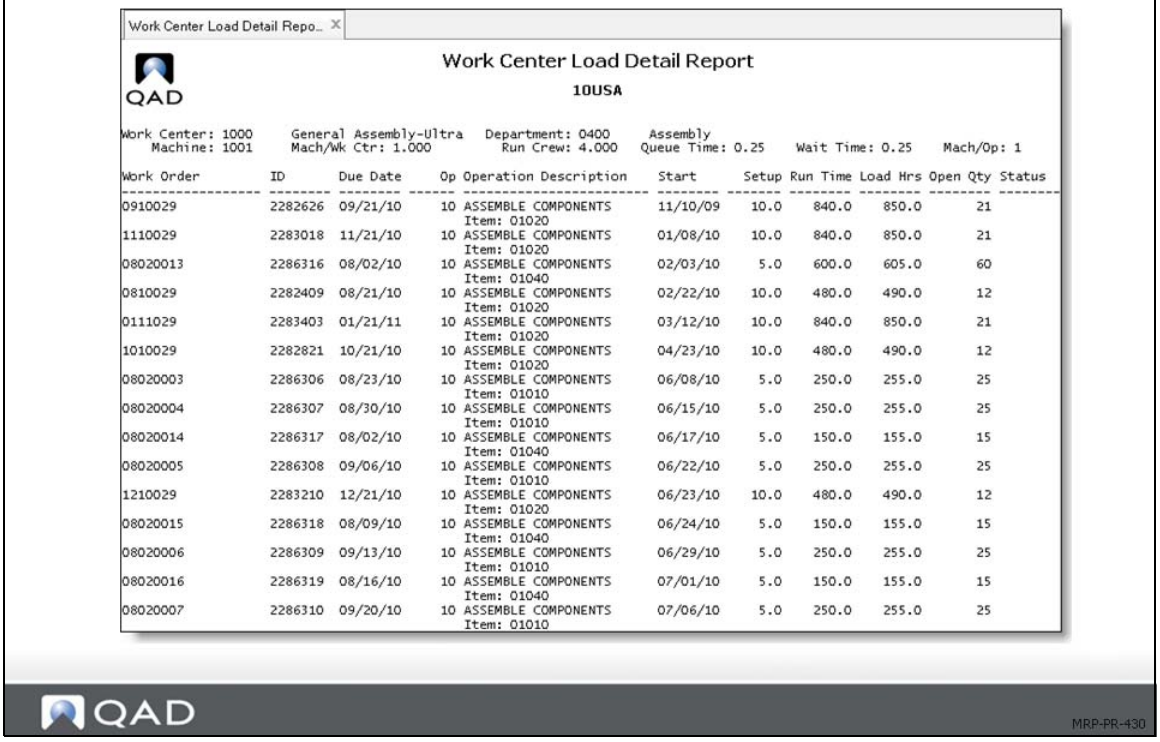
Work Center Load Detail Inquiry and Report



The work center load detail inquiry and report display the order detail associated with the load shown in the summary inquiry. If the summary inquiry indicates that there is no problem, the planner is finished. If the summary, however, indicates an overloaded condition, the next step is to look at the load detail inquiry to see which orders and which operations are causing the overload.

The planner can then decide which orders (or operations) to reschedule or move to a different work center.

Work Center Load Detail Report



Work Center Load Detail Repo...

QAD

Work Center Load Detail Report

10USA

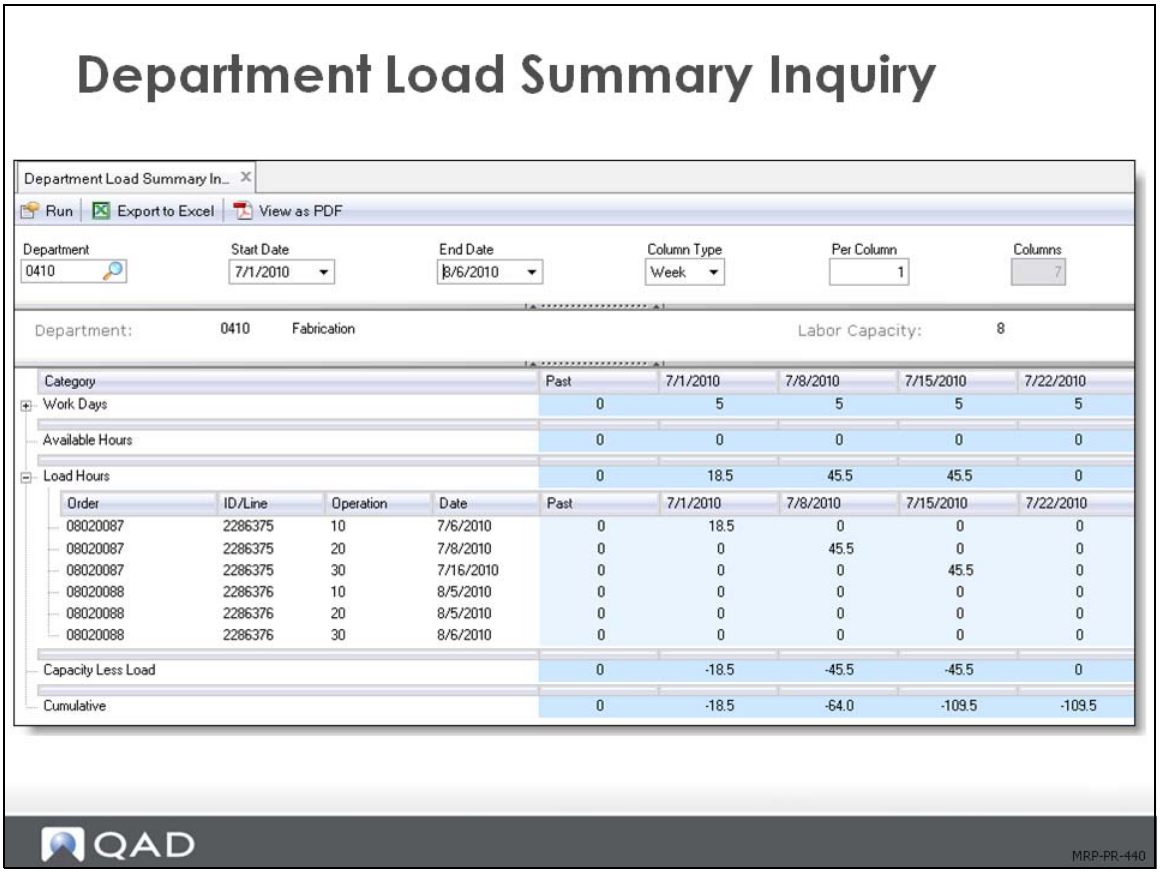
Work Center: 1000 General Assembly-Ultra Department: 0400 Assembly
Machine: 1001 Mach/Wk Ctr: 1.000 Run Crew: 4.000 Queue Time: 0.25 Wait Time: 0.25 Mach/Op: 1

Work Order	ID	Due Date	Op	Operation Description	Start	Setup	Run Time	Load Hrs	Open Qty	Status
0910029	2282626	09/21/10	10	ASSEMBLE COMPONENTS Item: 01020	11/10/09	10.0	840.0	850.0	21	
1110029	2283018	11/21/10	10	ASSEMBLE COMPONENTS Item: 01020	01/08/10	10.0	840.0	850.0	21	
08020013	2286316	08/02/10	10	ASSEMBLE COMPONENTS Item: 01040	02/03/10	5.0	600.0	605.0	60	
0810029	2282409	08/21/10	10	ASSEMBLE COMPONENTS Item: 01020	02/22/10	10.0	480.0	490.0	12	
0111029	2283403	01/21/11	10	ASSEMBLE COMPONENTS Item: 01020	03/12/10	10.0	840.0	850.0	21	
1010029	2282821	10/21/10	10	ASSEMBLE COMPONENTS Item: 01020	04/23/10	10.0	480.0	490.0	12	
08020003	2286306	08/23/10	10	ASSEMBLE COMPONENTS Item: 01010	06/08/10	5.0	250.0	255.0	25	
08020004	2286307	08/30/10	10	ASSEMBLE COMPONENTS Item: 01010	06/15/10	5.0	250.0	255.0	25	
08020014	2286317	08/02/10	10	ASSEMBLE COMPONENTS Item: 01040	06/17/10	5.0	150.0	155.0	15	
08020005	2286308	09/06/10	10	ASSEMBLE COMPONENTS Item: 01010	06/22/10	5.0	250.0	255.0	25	
1210029	2283210	12/21/10	10	ASSEMBLE COMPONENTS Item: 01020	06/23/10	10.0	480.0	490.0	12	
08020015	2286318	08/09/10	10	ASSEMBLE COMPONENTS Item: 01040	06/24/10	5.0	150.0	155.0	15	
08020006	2286309	09/13/10	10	ASSEMBLE COMPONENTS Item: 01010	06/29/10	5.0	250.0	255.0	25	
08020016	2286319	08/16/10	10	ASSEMBLE COMPONENTS Item: 01040	07/01/10	5.0	150.0	155.0	15	
08020007	2286310	09/20/10	10	ASSEMBLE COMPONENTS Item: 01010	07/06/10	5.0	250.0	255.0	25	

QAD

MRP-PR-430

Department Load Summary Inquiry and Report

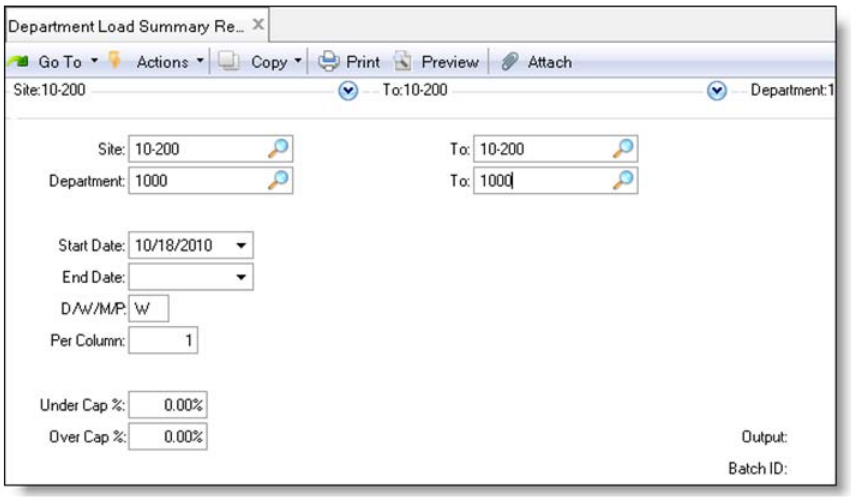


The department inquires and reports work the same as the work center inquires and reports except they are summarized for all work center/machines in the department. The value of these reports and inquires depends on how you have set up your department/work center relationships.

Where work centers and machines in a department are relatively similar and it is possible to share between them, a department level overview gives a good indication things are OK.

In the case where work centers and machines are different, the high-level overview could be meaningless. In this situation, one work center could be overloaded and another underloaded, but the department view makes the situation look manageable. Yet because the work centers are so different, you cannot shift work from one center to the other to adjust the load.

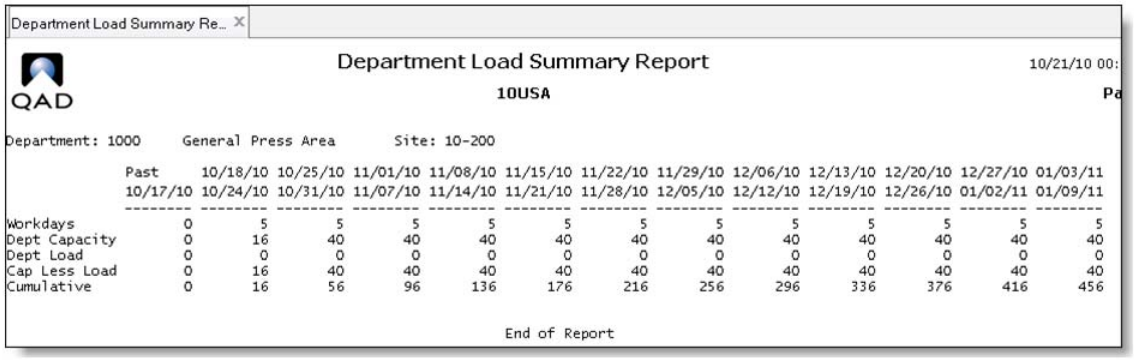
Department Load Summary Report



QAD

MRP-PR-450

Department Load Summary Report



Department Load Summary Re...

QAD

Department Load Summary Report

10/21/10 00:

10USA

Pa

Department: 1000 General Press Area Site: 10-200

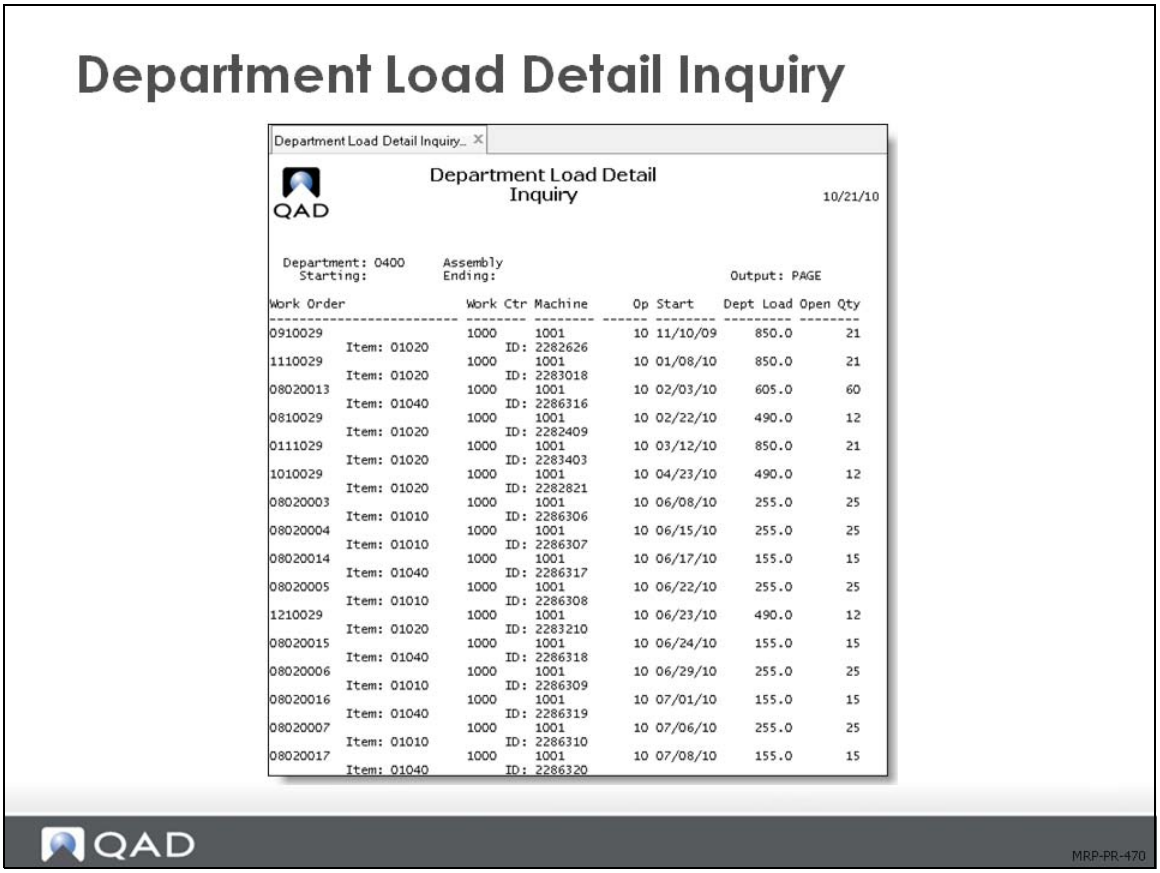
	Past	10/18/10	10/25/10	11/01/10	11/08/10	11/15/10	11/22/10	11/29/10	12/06/10	12/13/10	12/20/10	12/27/10	01/03/11
	10/17/10	10/24/10	10/31/10	11/07/10	11/14/10	11/21/10	11/28/10	12/05/10	12/12/10	12/19/10	12/26/10	01/02/11	01/09/11
Workdays	0	5	5	5	5	5	5	5	5	5	5	5	5
Dept Capacity	0	16	40	40	40	40	40	40	40	40	40	40	40
Dept Load	0	0	0	0	0	0	0	0	0	0	0	0	0
Cap Less Load	0	16	40	40	40	40	40	40	40	40	40	40	40
Cumulative	0	16	56	96	136	176	216	256	296	336	376	416	456

End of Report

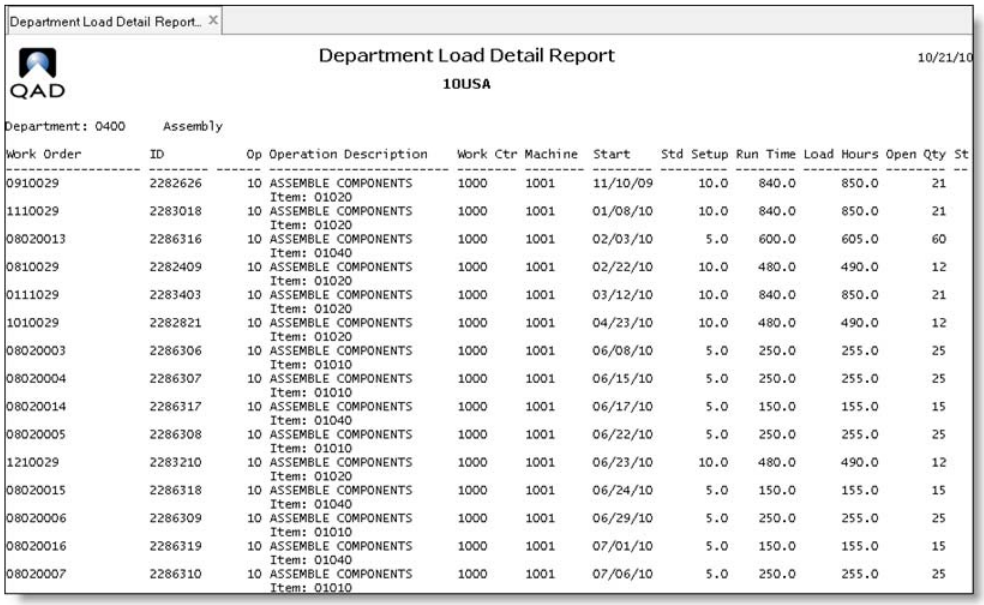
QAD

MRP-PR-460

Department Load Detail Inquiry and Report



Department Load Detail Report



Department Load Detail Report...

QAD

Department Load Detail Report 10/21/10

10USA

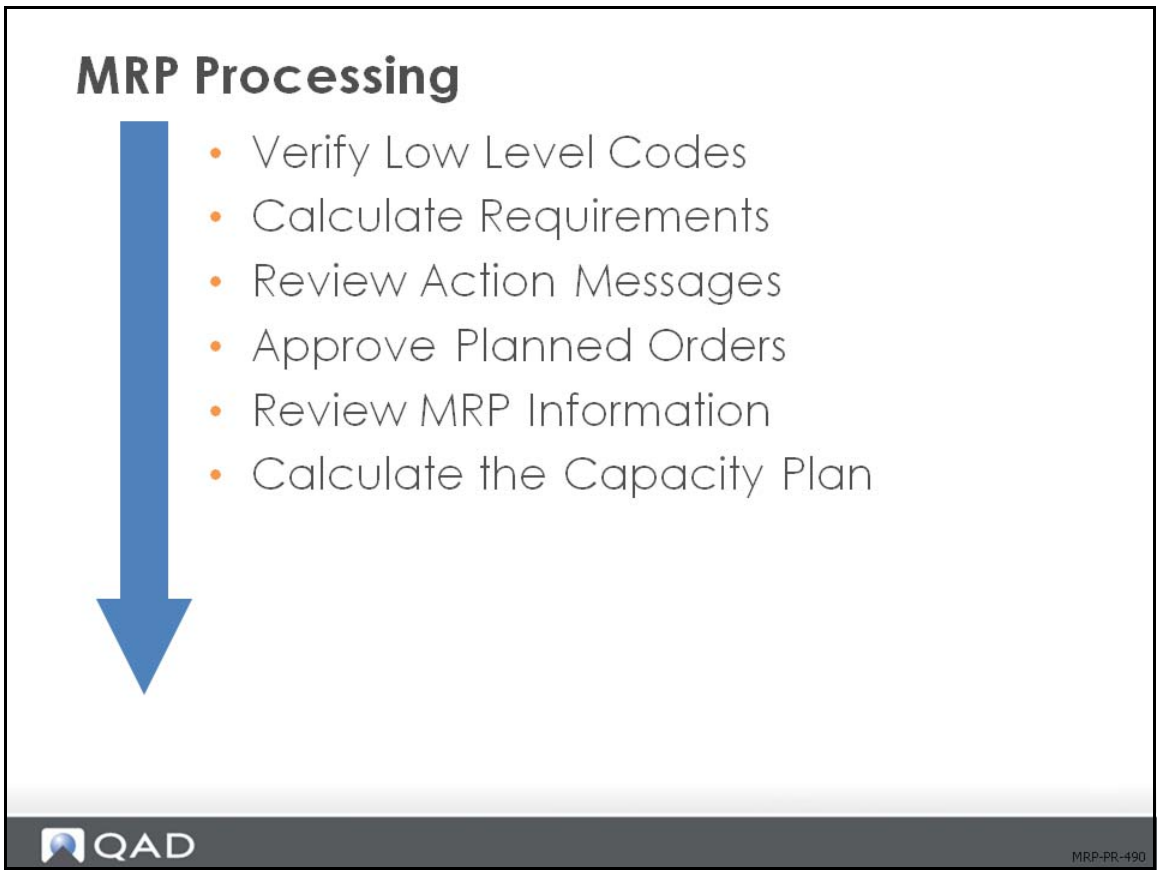
Department: 0400 Assembly

Work Order	ID	Op	Operation Description	Work Ctr	Machine	Start	Std Setup	Run Time	Load Hours	Open Qty	St
0910029	2282626	10	ASSEMBLE COMPONENTS Item: 01020	1000	1001	11/10/09	10.0	840.0	850.0	21	
1110029	2283018	10	ASSEMBLE COMPONENTS Item: 01020	1000	1001	01/08/10	10.0	840.0	850.0	21	
08020013	2286316	10	ASSEMBLE COMPONENTS Item: 01040	1000	1001	02/03/10	5.0	600.0	605.0	60	
0810029	2282409	10	ASSEMBLE COMPONENTS Item: 01020	1000	1001	02/22/10	10.0	480.0	490.0	12	
0111029	2283403	10	ASSEMBLE COMPONENTS Item: 01020	1000	1001	03/12/10	10.0	840.0	850.0	21	
1010029	2282821	10	ASSEMBLE COMPONENTS Item: 01020	1000	1001	04/23/10	10.0	480.0	490.0	12	
08020003	2286306	10	ASSEMBLE COMPONENTS Item: 01010	1000	1001	06/08/10	5.0	250.0	255.0	25	
08020004	2286307	10	ASSEMBLE COMPONENTS Item: 01010	1000	1001	06/15/10	5.0	250.0	255.0	25	
08020014	2286317	10	ASSEMBLE COMPONENTS Item: 01040	1000	1001	06/17/10	5.0	150.0	155.0	15	
08020005	2286308	10	ASSEMBLE COMPONENTS Item: 01010	1000	1001	06/22/10	5.0	250.0	255.0	25	
1210029	2283210	10	ASSEMBLE COMPONENTS Item: 01020	1000	1001	06/23/10	10.0	480.0	490.0	12	
08020015	2286318	10	ASSEMBLE COMPONENTS Item: 01040	1000	1001	06/24/10	5.0	150.0	155.0	15	
08020006	2286309	10	ASSEMBLE COMPONENTS Item: 01010	1000	1001	06/29/10	5.0	250.0	255.0	25	
08020016	2286319	10	ASSEMBLE COMPONENTS Item: 01040	1000	1001	07/01/10	5.0	150.0	155.0	15	
08020007	2286310	10	ASSEMBLE COMPONENTS Item: 01010	1000	1001	07/06/10	5.0	250.0	255.0	25	

QAD

MRP-PR-480

MRP/CRP Processing Summary

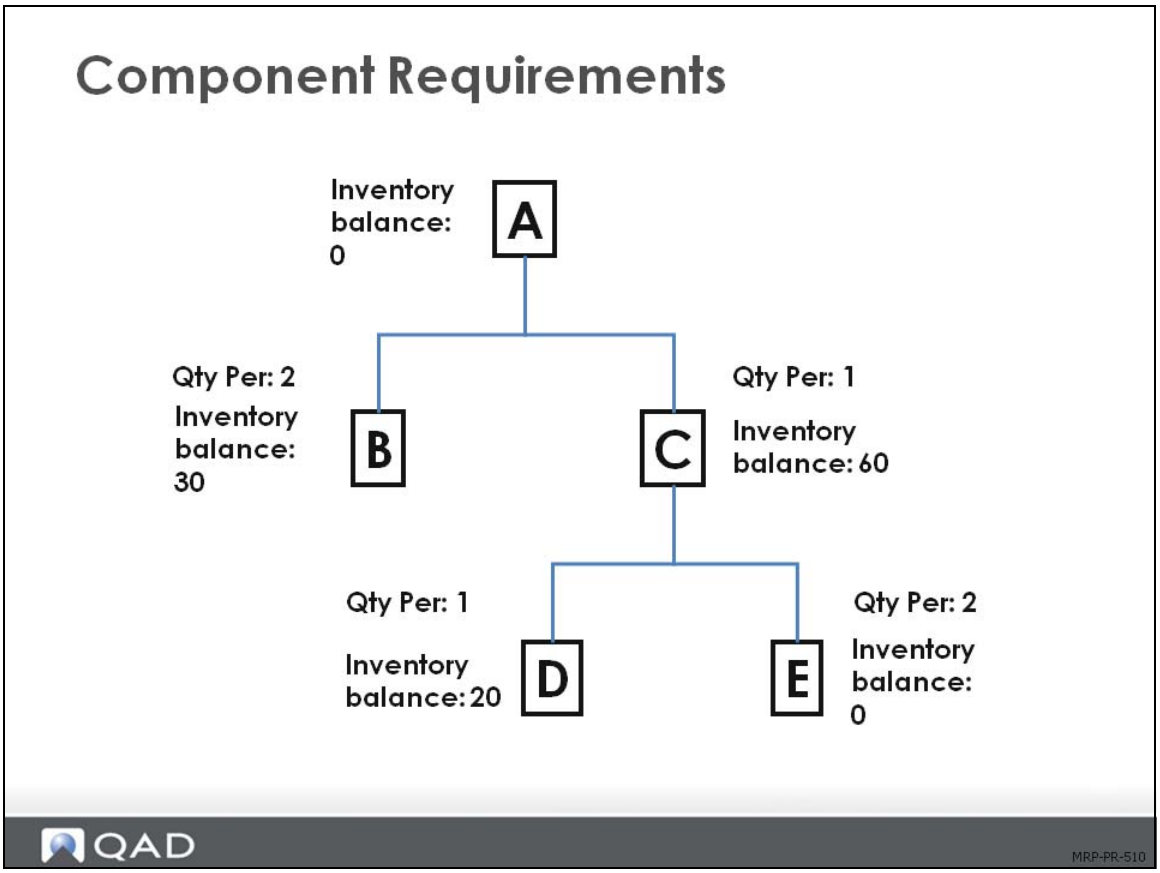


Processing Exercises

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

Note If you use Standard Edition, complete the exercises in the EE environment. The concepts are the same in both environments. The data referenced in the following exercises is not found in the SE training database.

Exercise: Component Requirement Calculations



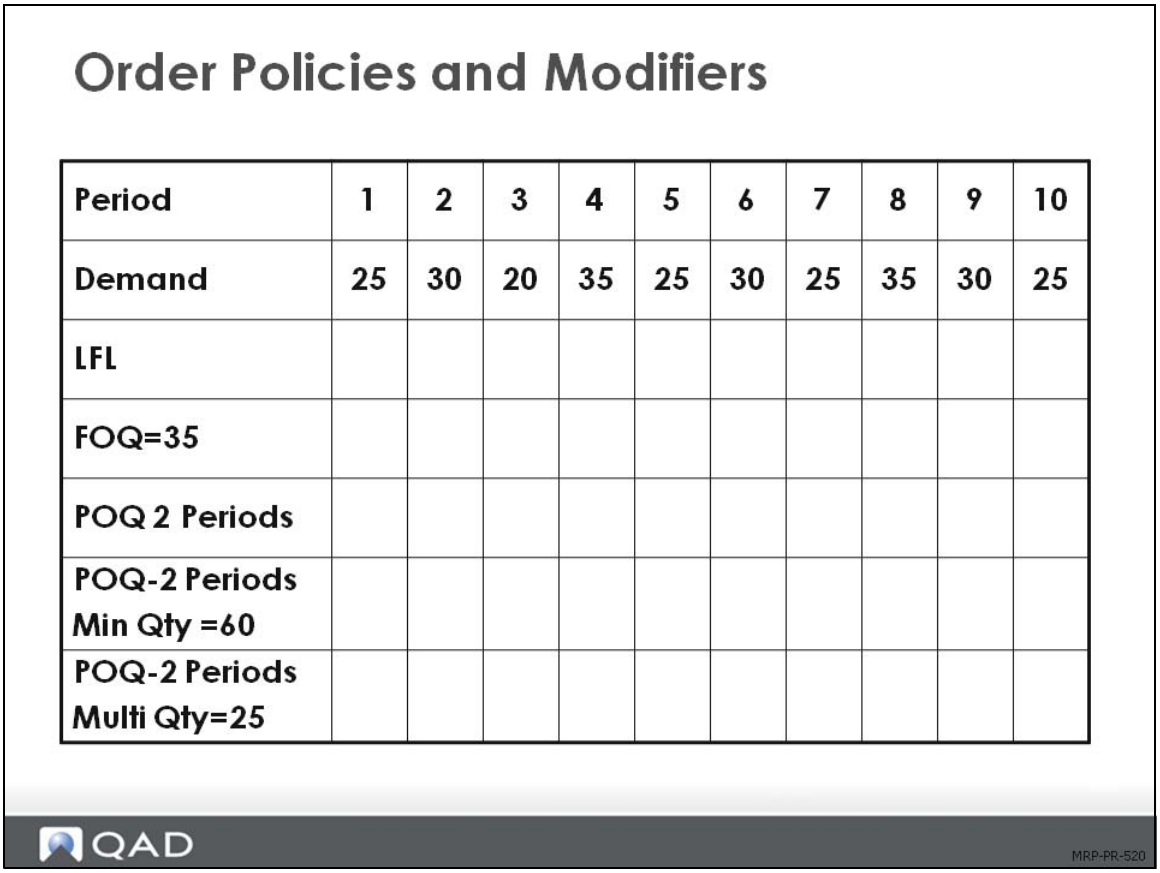
In this exercise, you describe the determination of gross requirements (product structure explosion) and the subsequent determination of net requirements.

Instruction

Using the product structure shown here, 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.

Exercise: Order Policies and Modifiers

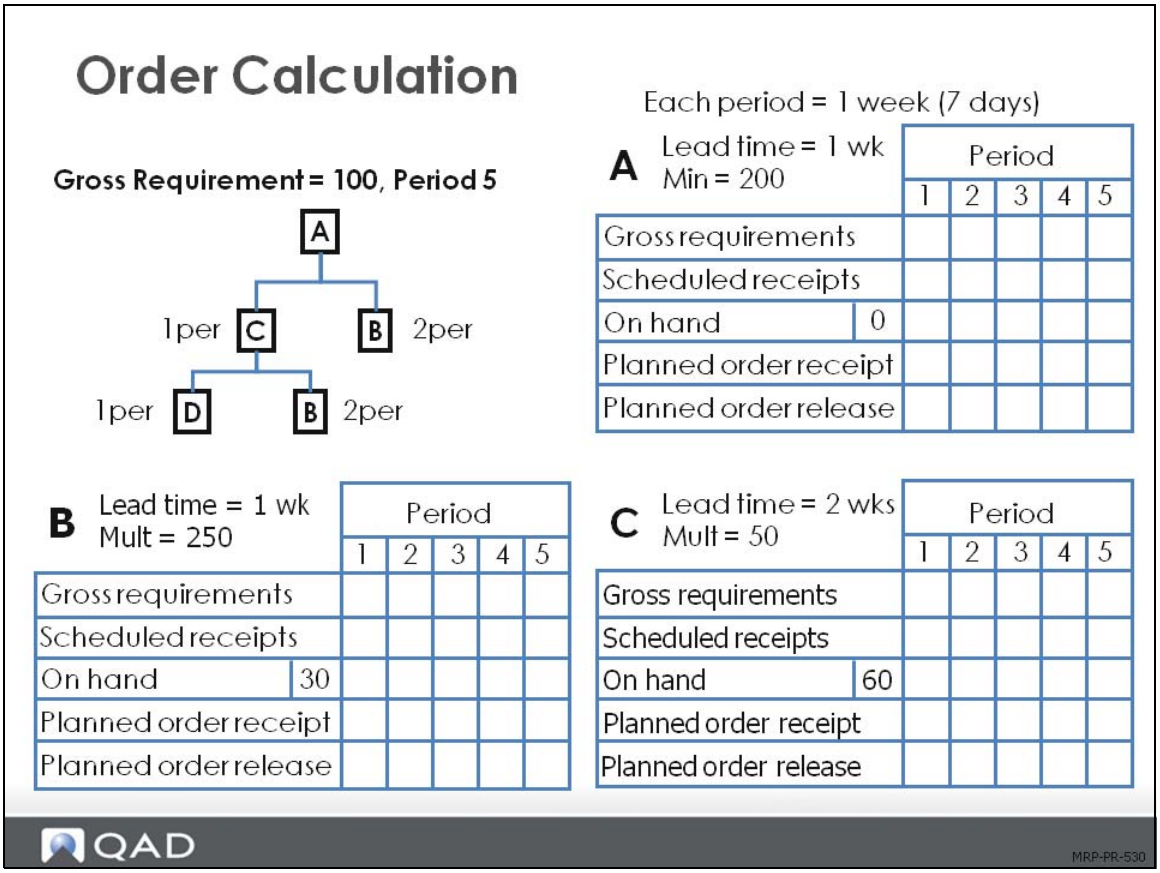


This exercise tests your knowledge of order policies and modifiers.

Instruction

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

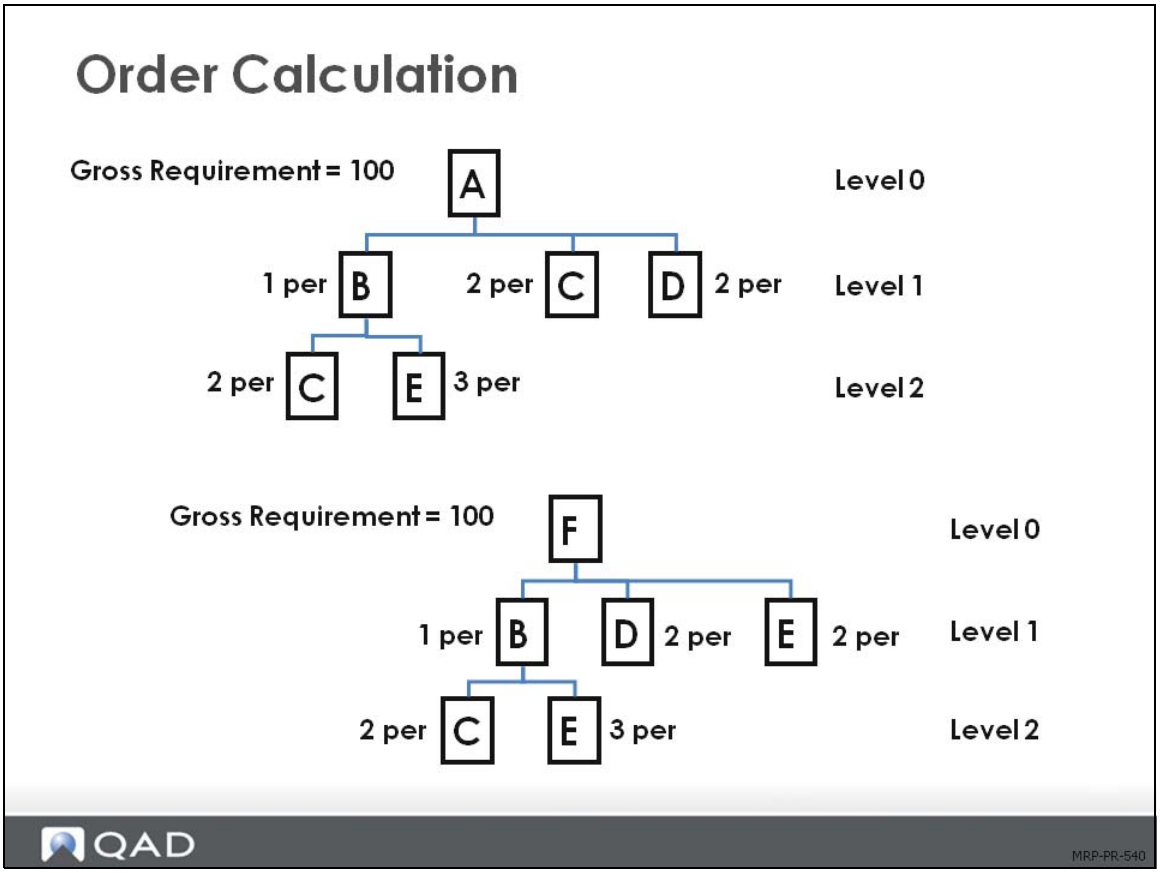
Exercise: Order Calculation (1 of 2)



Instruction

This exercise 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 product structures shown, determine the required quantities of:

Item:

B =

C =

D =

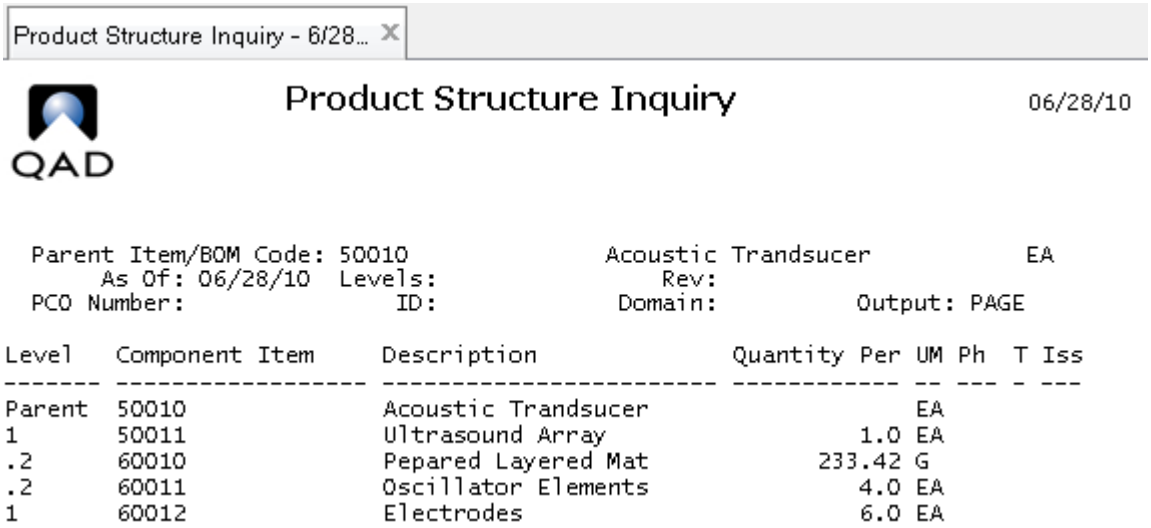
E =

Exercise: Running MRP

In this exercise, you:

- Review the product structure of an item
- Review the item planning data
- Create a forecast for that item
- Review MRP Control
- Run MRP
- Review and act on the results

1 Use Product Structure Inquiry (13.6) to review the product structure for item 50010. This is what a proper structure looks like:


Product Structure Inquiry - 6/28...

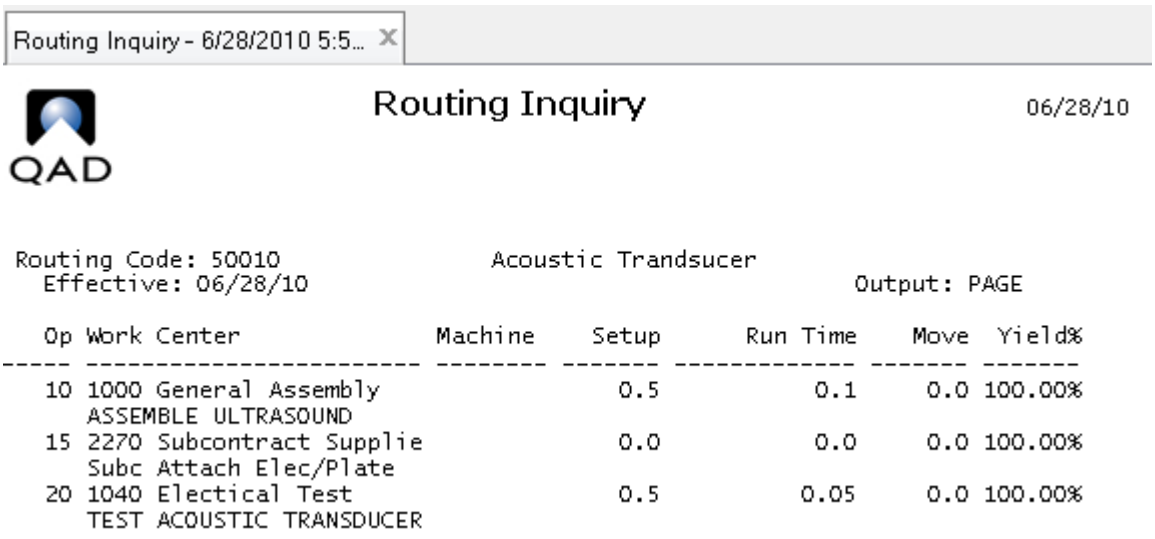
QAD

Product Structure Inquiry 06/28/10

Parent Item/BOM Code: 50010 Acoustic Trandsucer EA
As Of: 06/28/10 Levels: Rev:
PCO Number: ID: Domain: Output: PAGE

Level	Component Item	Description	Quantity Per	UM	Ph	T	Iss
Parent	50010	Acoustic Trandsucer		EA			
1	50011	Ultrasound Array	1.0	EA			
.2	60010	Pepared Layered Mat	233.42	G			
.2	60011	Oscillator Elements	4.0	EA			
1	60012	Electrodes	6.0	EA			

2 Use Routing Inquiry (14.13.3) to review the routing for item 50010. This is what a proper route looks like:


Routing Inquiry - 6/28/2010 5:5...

QAD

Routing Inquiry 06/28/10

Routing Code: 50010 Acoustic Trandsucer
Effective: 06/28/10 Output: PAGE

Op	Work Center	Machine	Setup	Run Time	Move	Yield%
10	1000 General Assembly ASSEMBLE ULTRASOUND		0.5	0.1	0.0	100.00%
15	2270 Subcontract Supplie Subc Attach Elec/Plate		0.0	0.0	0.0	100.00%
20	1040 Electical Test TEST ACOUSTIC TRANSDUCER		0.5	0.05	0.0	100.00%

3 Use Item Planning Maintenance (1.4.7) to review item planning data for item 50010. Verify the following information:

Field	Data
Order Policy	POQ
Order qty	0
Mfg LT	4

4 Use Item Planning Maintenance (1.4.7) to review item planning data for item 50011, 60010, 60011, and 60012.

Note Item 60012 has order policy FOQ with a quantity of 1,000 and a yield of 100%

5 Use Forecast Maintenance (22.1) to enter a forecast, starting next week for the following three weeks for item 50010 at site 10-100:

Field	Data
Item	50010
Site	10-100
Next Week	1000
Week + 1	1250
Week + 2	1500
Week + 3	1750

6 In MRP Control (23.24), set MRP horizon to 60 days and set Order Release Horizon to 7 days.

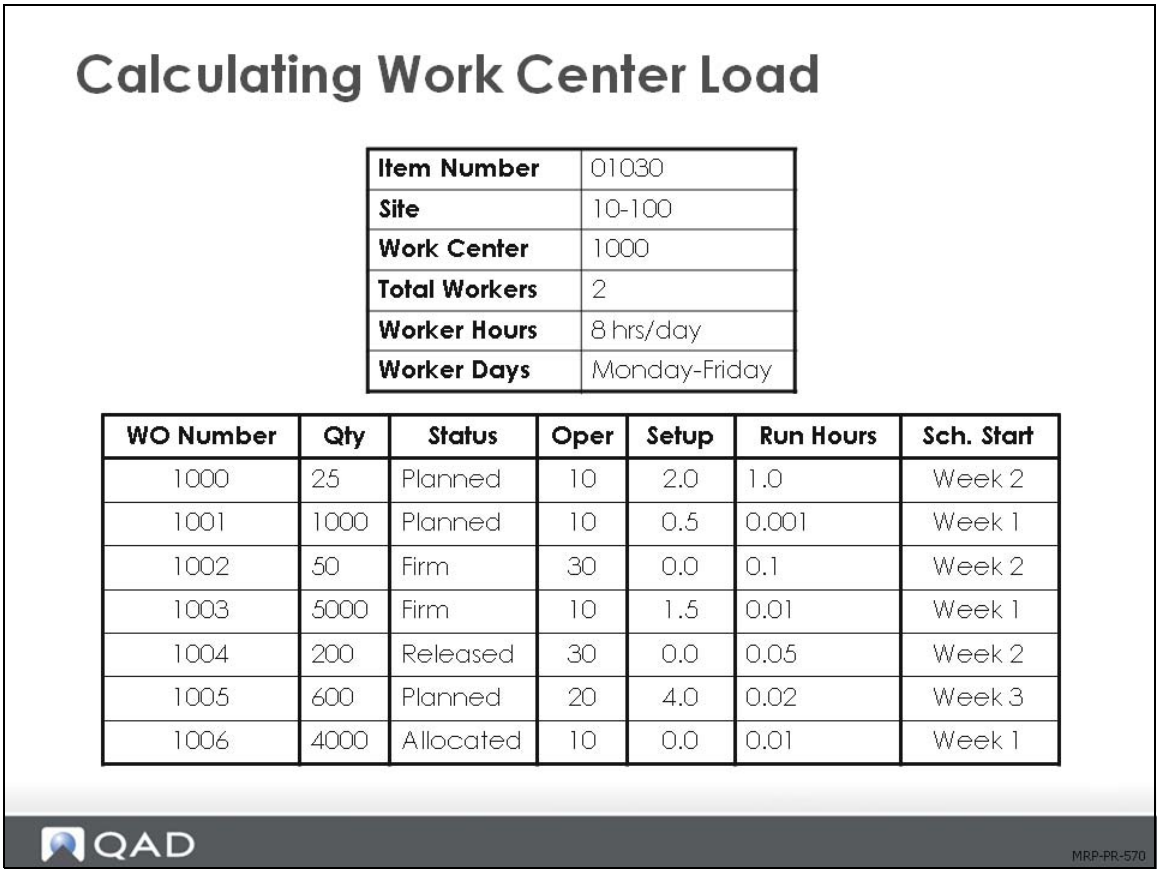
7 Use Regenerate Materials Plan (23.2) to run MRP at site 10-100. Set Output to mrp.

8 Use Master Schedule Summary Inquiry (22.18) to review items 50010, 50011, 60010, 60011, and 60012.

9 Use MRP Detail Inquiry (23.16) to review each of these items. The program displays pegging information, such as the scrap requirements, seasonal builds, forecasts, and product structure requirements

10 Use Action Message Browse (23.6) to examine the action message details for these items.

Exercise: Calculating Work Center Load



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

Use item number 01030 at site 10-100, work center 1000. 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 graph to calculate your answers.

1 Determine the total run time and the total load for 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

	Week 1	Week 2	Week 3
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 situation affect the cumulative load calculations?

	Week 1	Week 2	Week 3
Load	93	42	124
Capacity	80 + (2 x 5 x 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 exercise, you recalculate the capacity plan and then review the changes in the work center resulting from the recalculation

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

Site:	10-100		To: 10-100
Item Number:	50010		To: 50010

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 is usually 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 Inquiry (24.13) for work center 1000 at site 10-100. Use today as the start date.

a How is the work center capacity calculated?

b How is the work center load determined?

c 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 1000.

4 Can you tie these work orders to the work center load from Work Center Load Summary Inquiry (24.13)?

5 What can you do to rebalance the load at this work center? Spend some time balancing the work center.

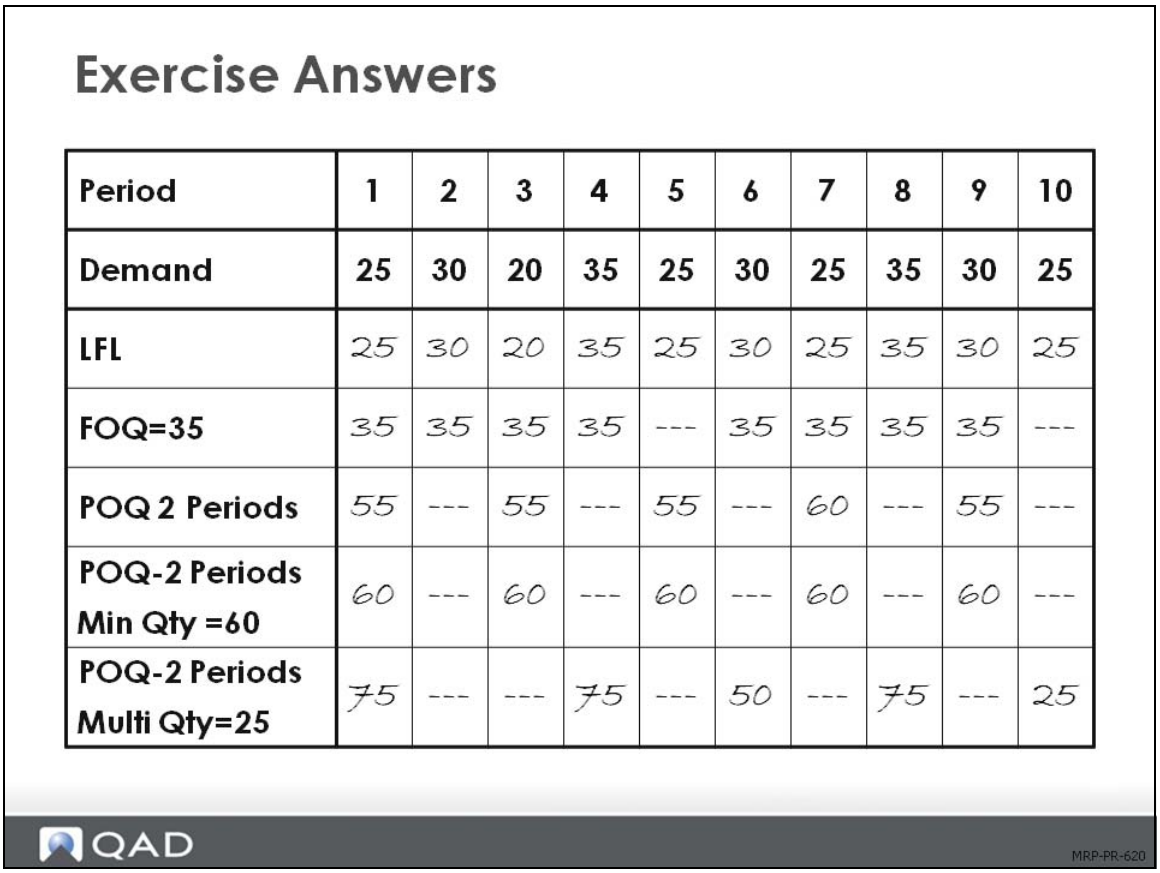
Exercise: Approving MRP Suggestions

1. Use Planned Work Order Approval (23.10) to approve work orders for item 50010 requiring release before the end of this week.
2. Use Planned Purchase Order Approval (23.11) to approve purchases for the components associated with item 50010 requiring release before the end of this week.
3. Go to Work Order Browse (16.2) to see if status of the planned order changed from P (Planned) to F (Firm Planned) when you approved the Planned Work Order.

   The work orders you approved now have a status of F (Firm). The work orders you did not approve still have a status of P (Planned).
4. Go to Purchase Requisition Browse (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.

Answers to Exercises

Answer to: “Exercise: Order Policies and Modifiers” on page 114



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

QAD

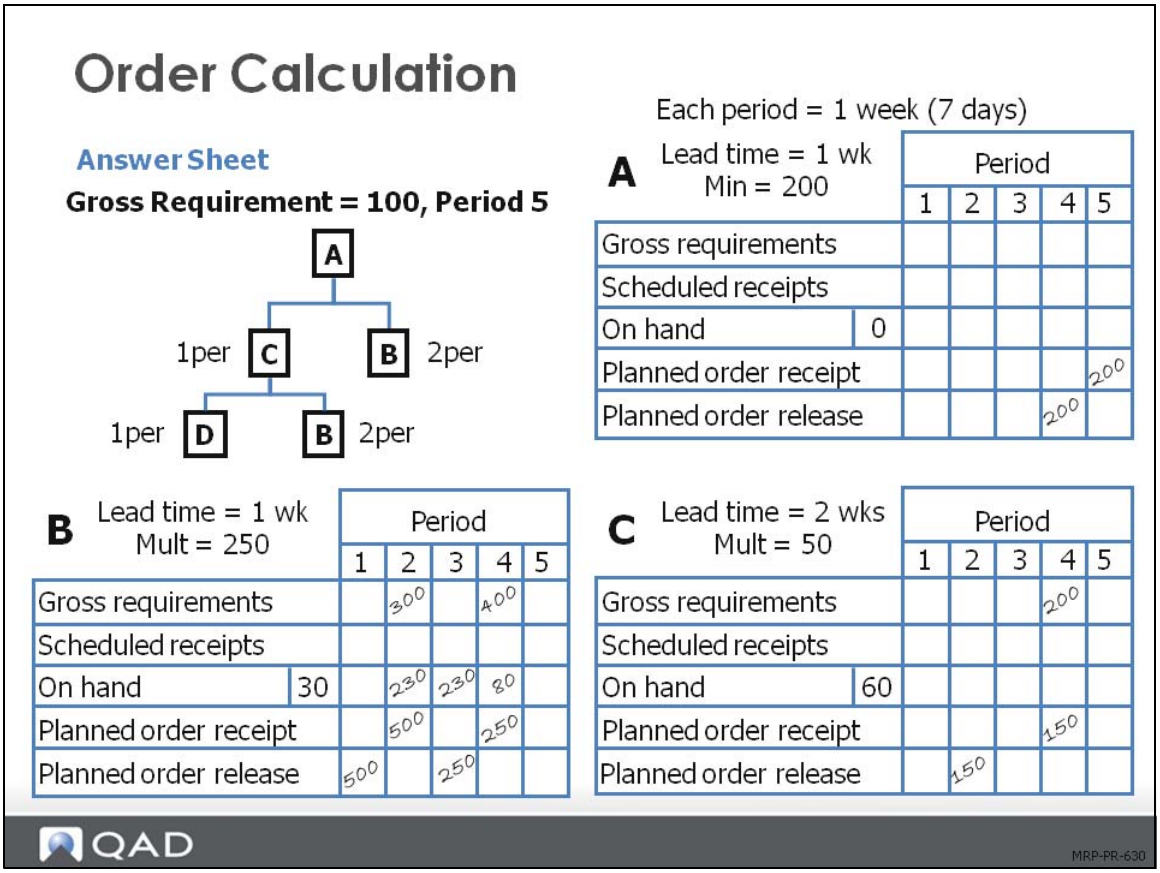
MRP-PR-620

Component Requirement Calculation

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

Order Policies and Order Modifiers

Answer to: "Exercise: Order Calculation (1 of 2)" on page 115



Answer to: "Exercise: Order Calculation 2 of 2" on page 116

Using the these product structures, determine the required quantities of:

Item:

B =200

C =600

D =400

E =800

Answer to: "Exercise: Calculating Work Center Load" on page 119

1 Determine the total run time and the total load for 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

WO Number	Total Run Time	Setup Time	Total Load
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 situation affect the cumulative load calculations?

	Week 1	Week 2	Week 3
Load	93	42	124
Capacity	80 + (2 x 5 x 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 Applications.

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

Item Planning Maintenance			
Set A		**Set B**	
Master Sched	Yes	Master Sched	No
Plan Orders	No	Plan Orders	Yes
Time Fence	0	Time Fence	

3 What MRP Item Planning data field would ensure that 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 automatically reschedules firm planned orders as long as the regenerative mode is selected.

True False

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

True False

Answers to Study Questions

1. *Net Change* plans only those items that have 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, Browses

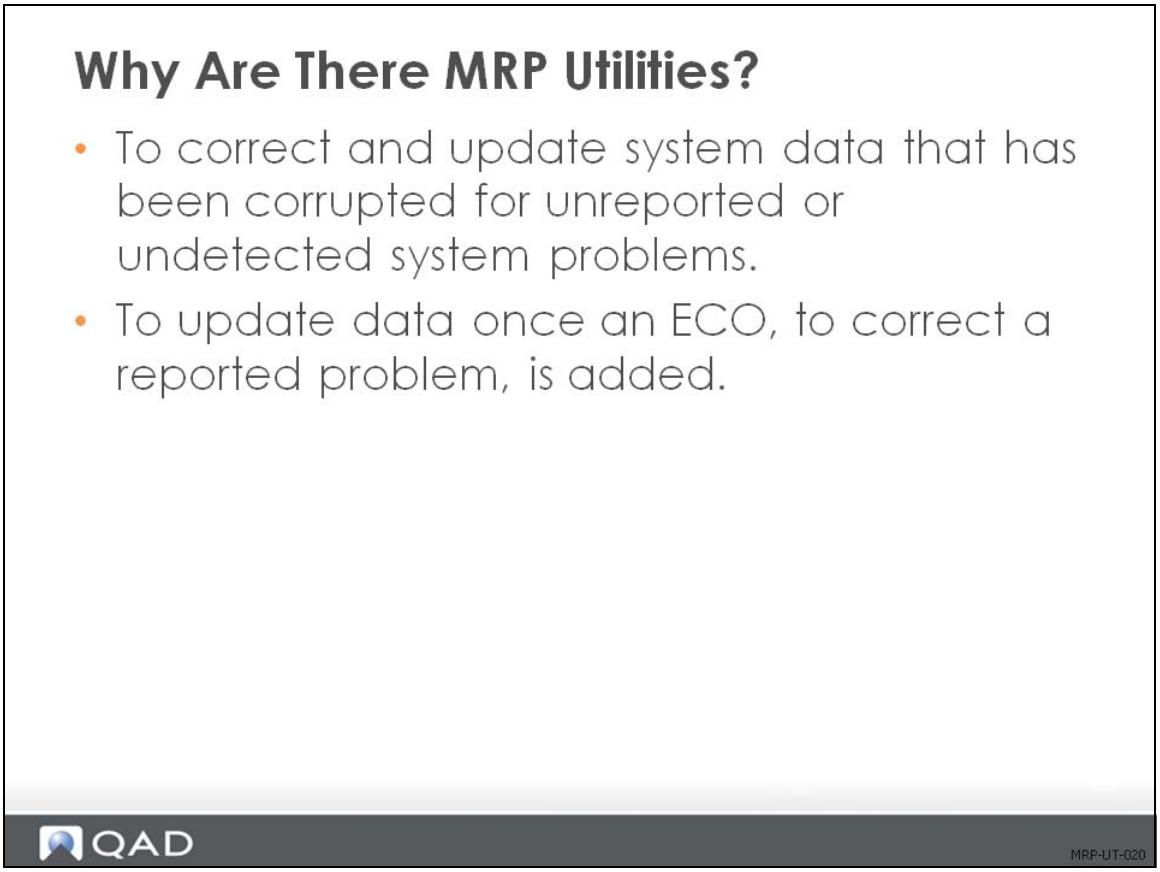
MRP and CRP
Reports, Inquiries, and Browses

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. In Enterprise Edition, an additional enhanced version of the report is available to .NET UI users.
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?

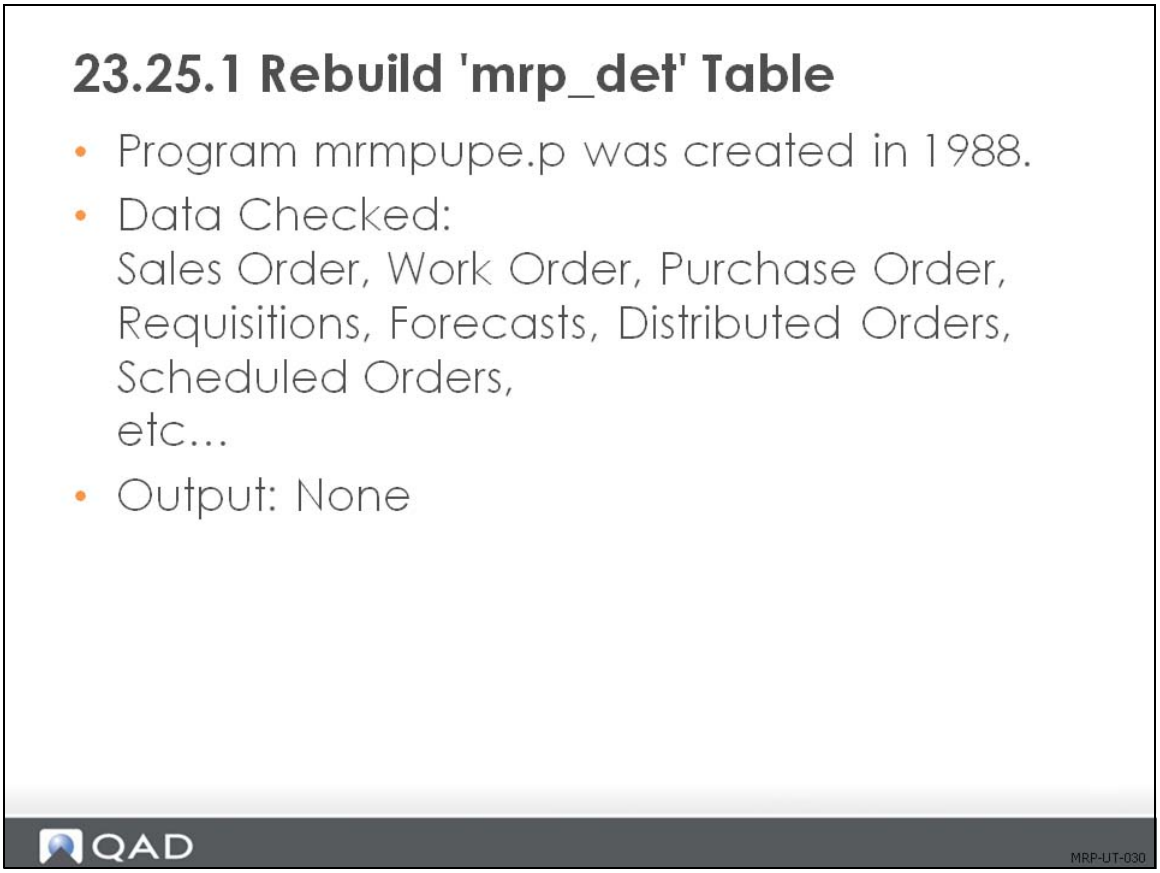


In general, these utilities are used when a problem is detected in your MRP run. The first step is to contact QAD Support and initiate a call. The main concern of Support is to identify and resolve the cause of the problem, not address only the symptoms with utilities.

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 before running MRP as a precaution. Do not use utilities to continually mask a recurrent problem.

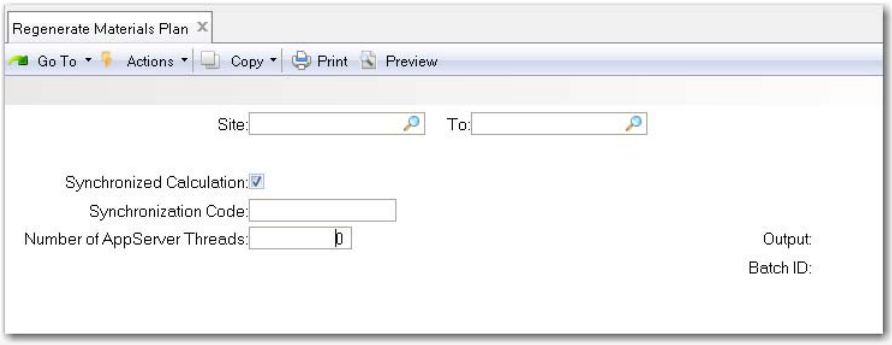
Rebuild ‘mrp_det’ Table




23.25.1 Rebuild ‘mrp_det’ Table
Rebuild 'mrp_det' Table
Rebuild 'mrp_det' Table: GoTo Actions
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
yes
no
QAD
MRP-UT-040

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.



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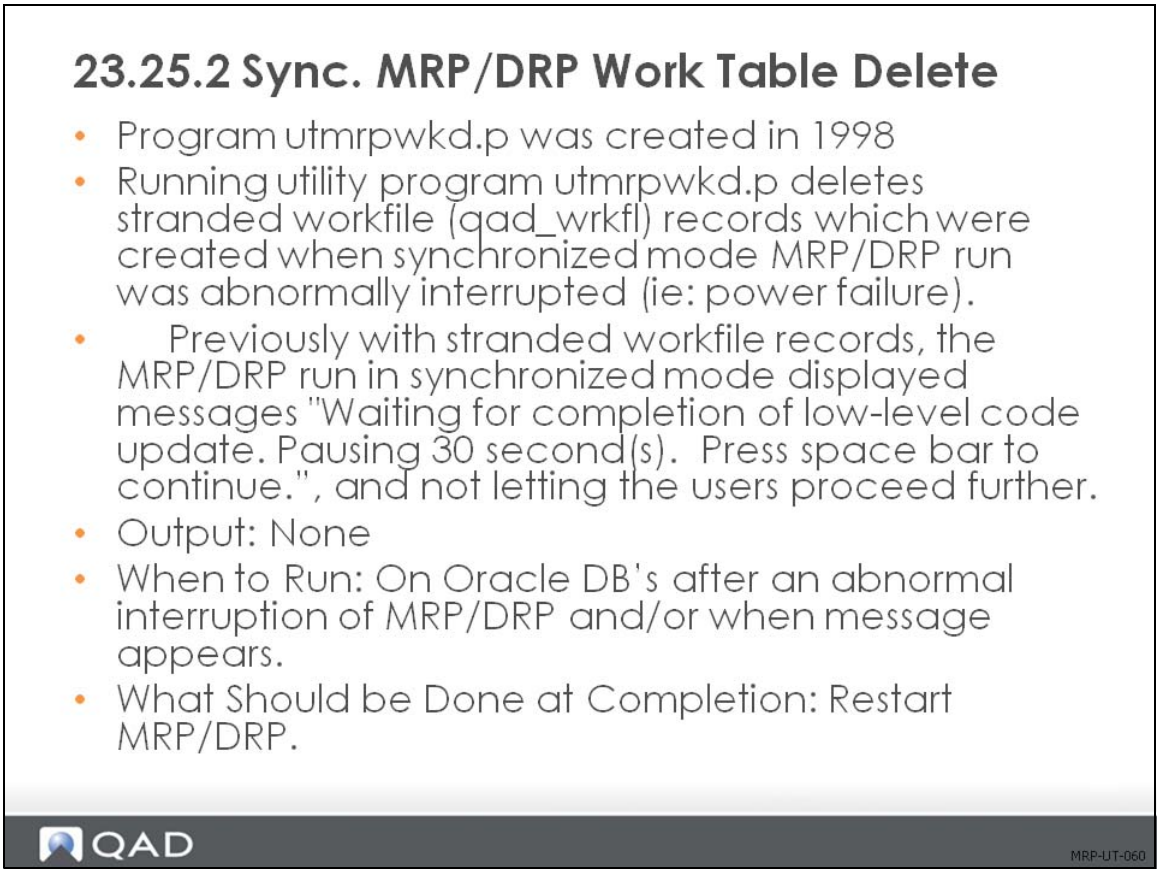
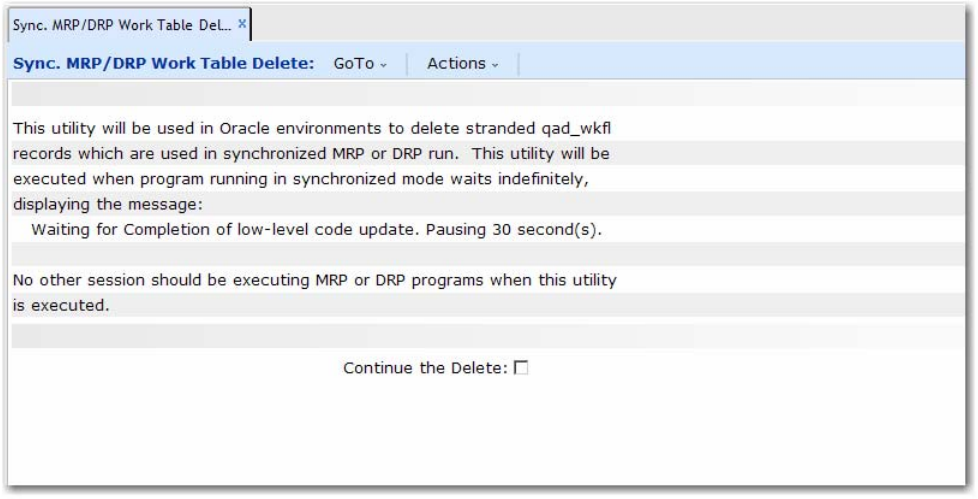
MRP-UT-050

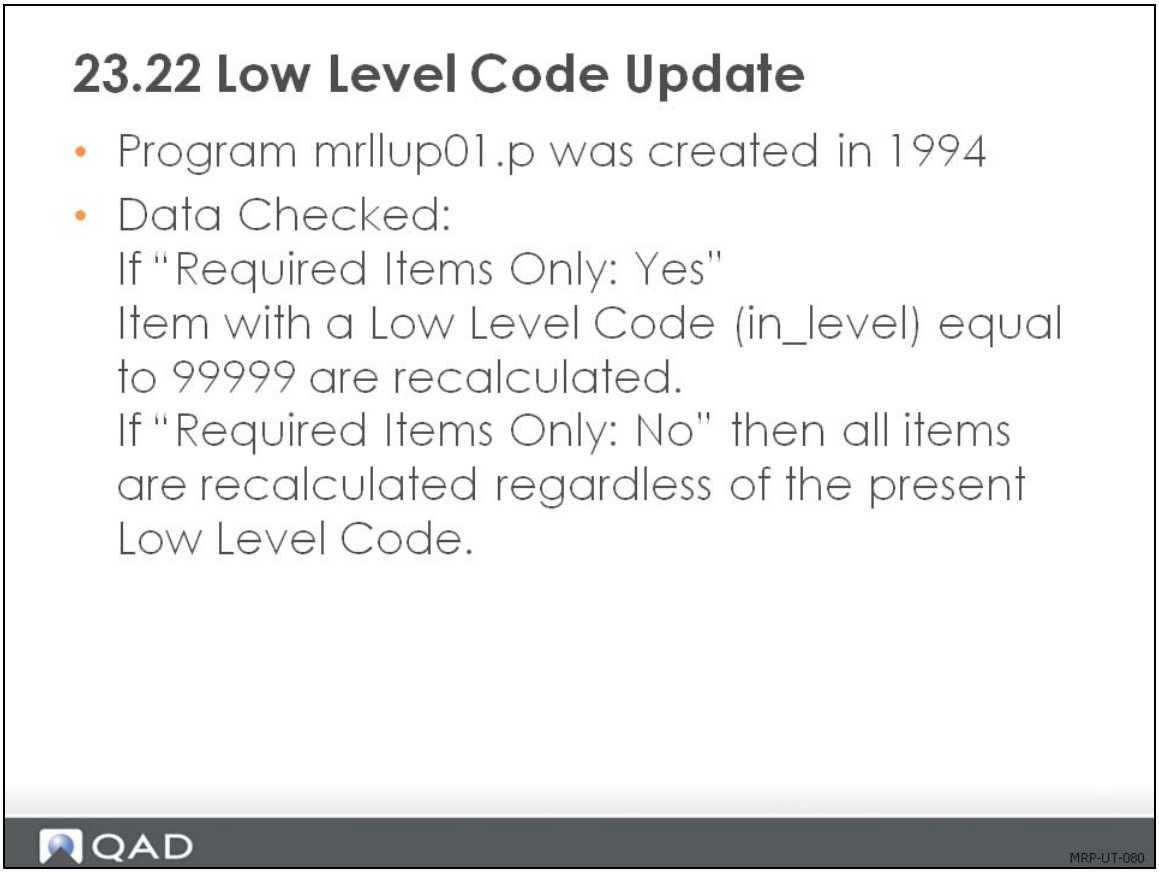
Sync. MRP/DRP Work Table Delete



23.25.2 Sync. MRP/DRP Work Table Delete



Low Level Code Update



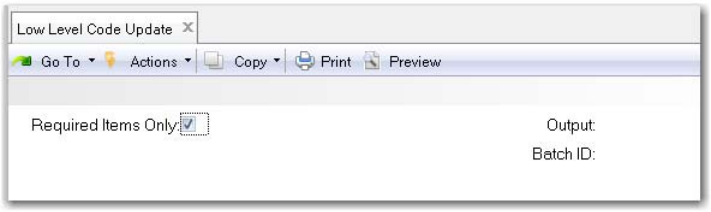
23.22 Low Level Code Update

- 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…..)

QAD

MRP-UT-090

23.22 Low Level Code Update



QAD

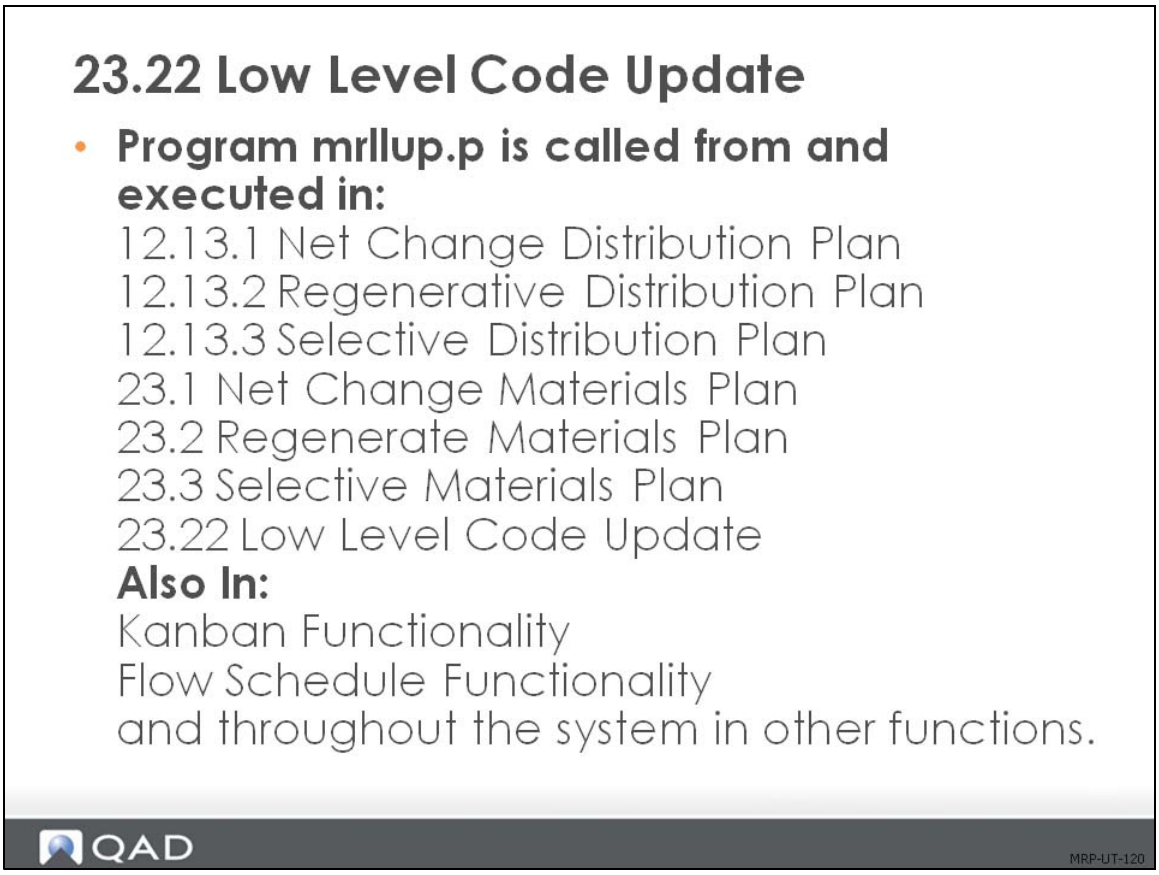
MRP-UT-100

23.22 Low Level Code Update

- Program mrllup.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.

QAD

MRP-UT-110


23.22 Low Level Code Update
Program mrllup.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.
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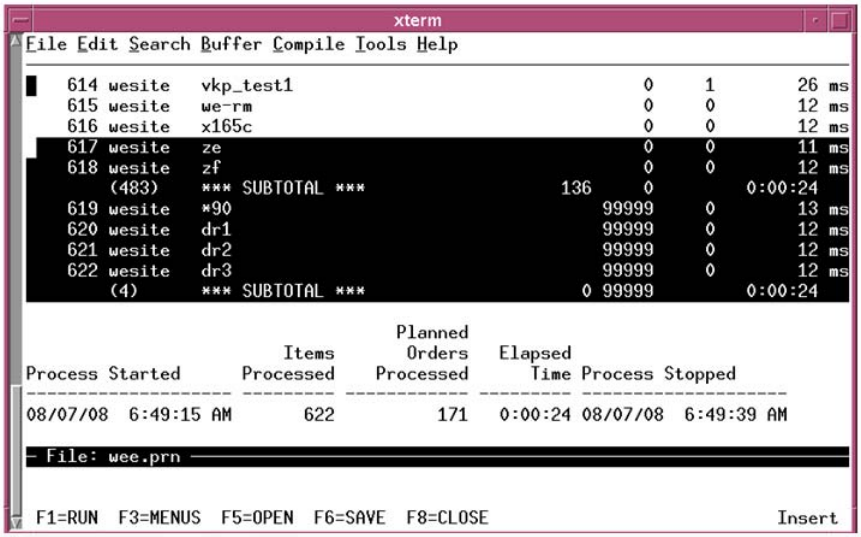
MRP-UT-120

23.22 Low Level Code Update

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



QAD

MRP-UT-130

23.22 Low Level Code Update

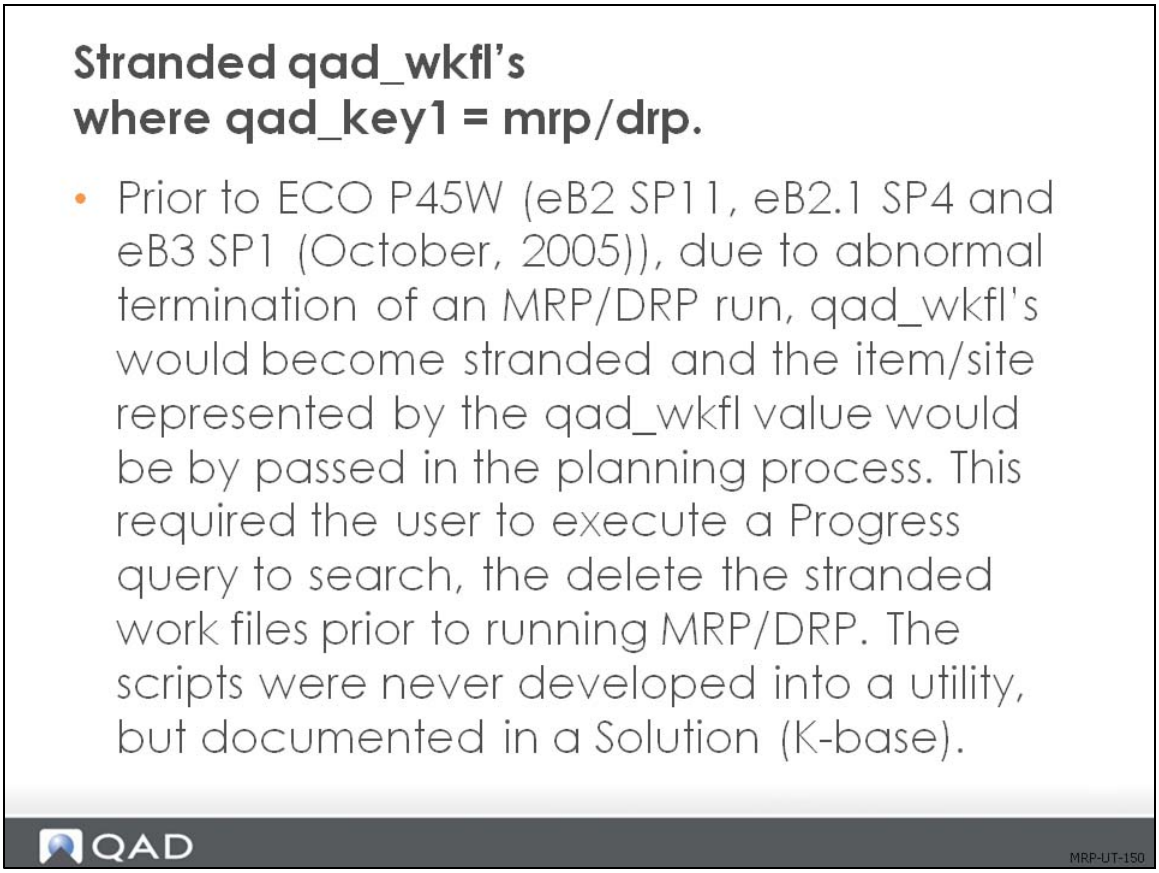
- Output: The output 23.22

```
mrllup01.p 2+                          23.22 Low Level Code Update                          Date: 08/07/08
Page:    1                                   coli41 RAD eB2.1 DEMO1                       Time: 06:47:00

                                  Unresolved Inventory Master Low Level Codes
                                                                                          Invalid  Invalid  Possibly
      Item Number       Description             Site     P/M BOM/Formula Code   Network Code  Item     Site    Cyclic
      ----------------- ----------------------- -------- --- ------------------ ------------ -------- -------- --------
    1 0820              test part               wesite1  P                                             X
    2 0115                                      wesite   M                                  X
    3 1004                                      P43L     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



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.

QAD

MRP-UT-160

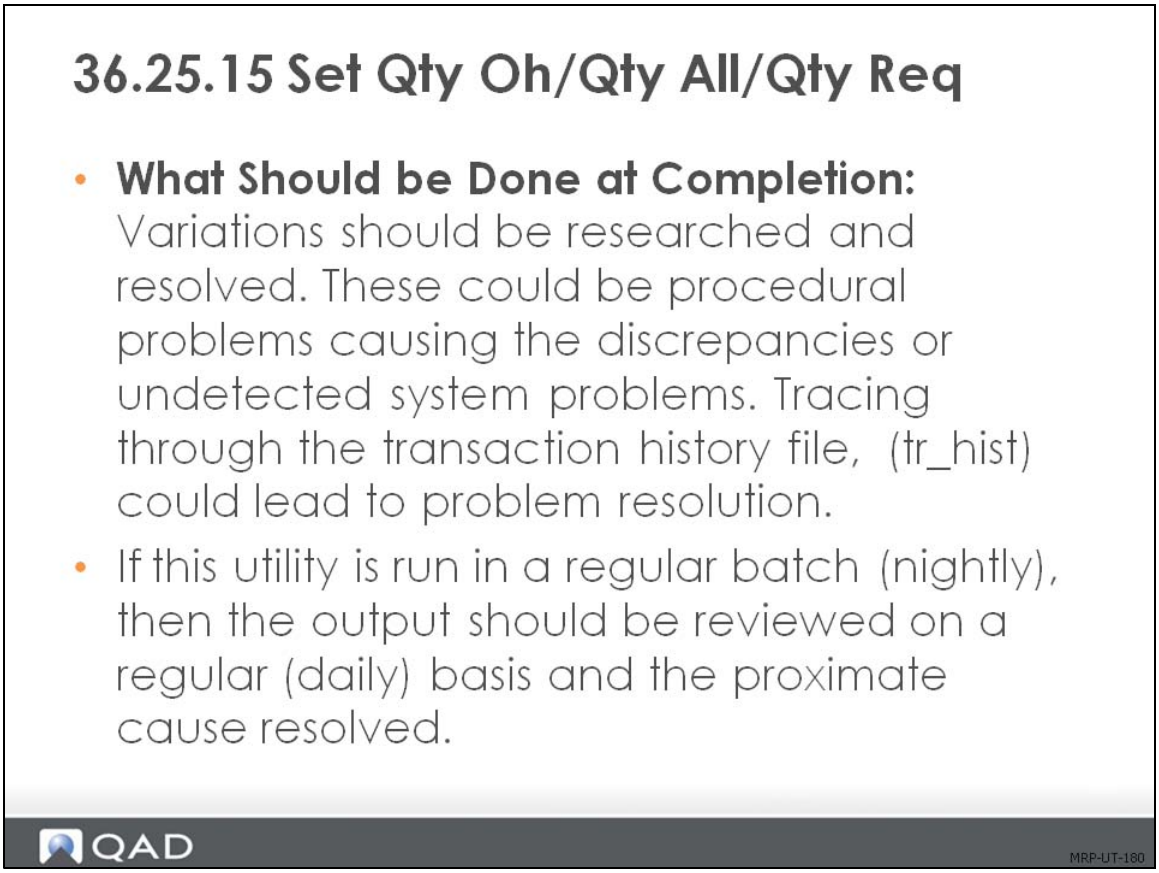
Stranded qad_wkfl's where qad_key1 = mrp/drp.

- After the introduction of P45W (eB2 SP11, eB2.1 SP4 and eB3 SP1 (October, 2005)), the above scripts were incorporated into program gpmpup.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.

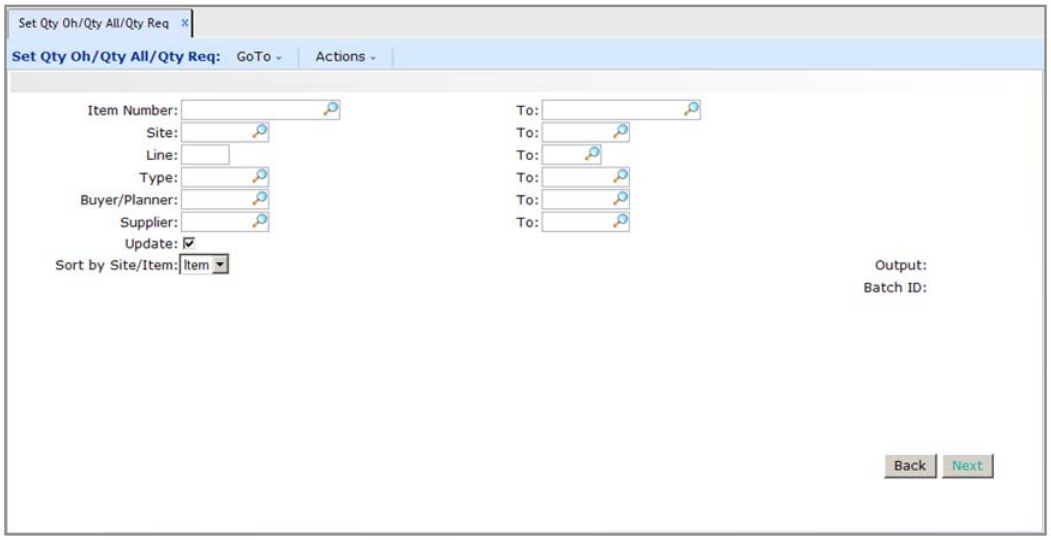
QAD

MRP-UT-170

Set Qty Oh/Qty All/Qty Req

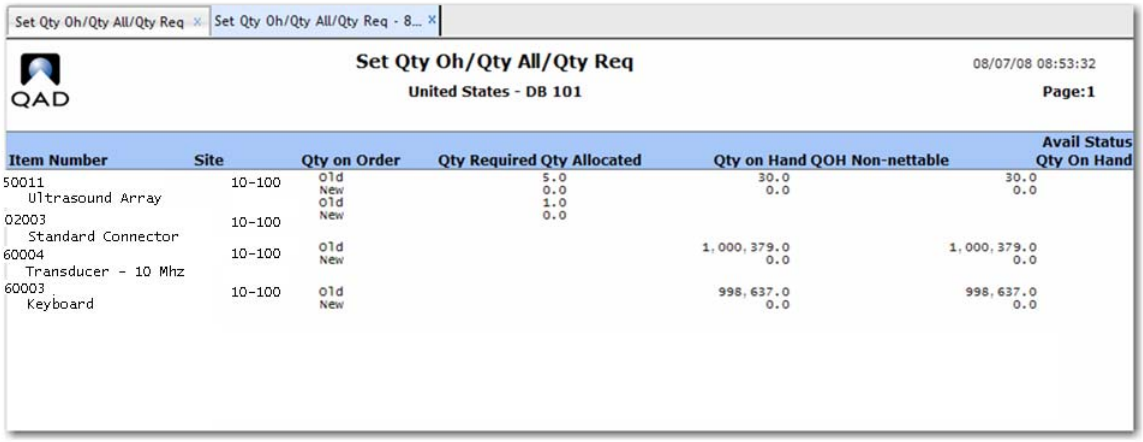


36.25.15 Set Qty Oh/Qty All/Qty Req



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

United States - DB 101

08/07/08 08:53:32

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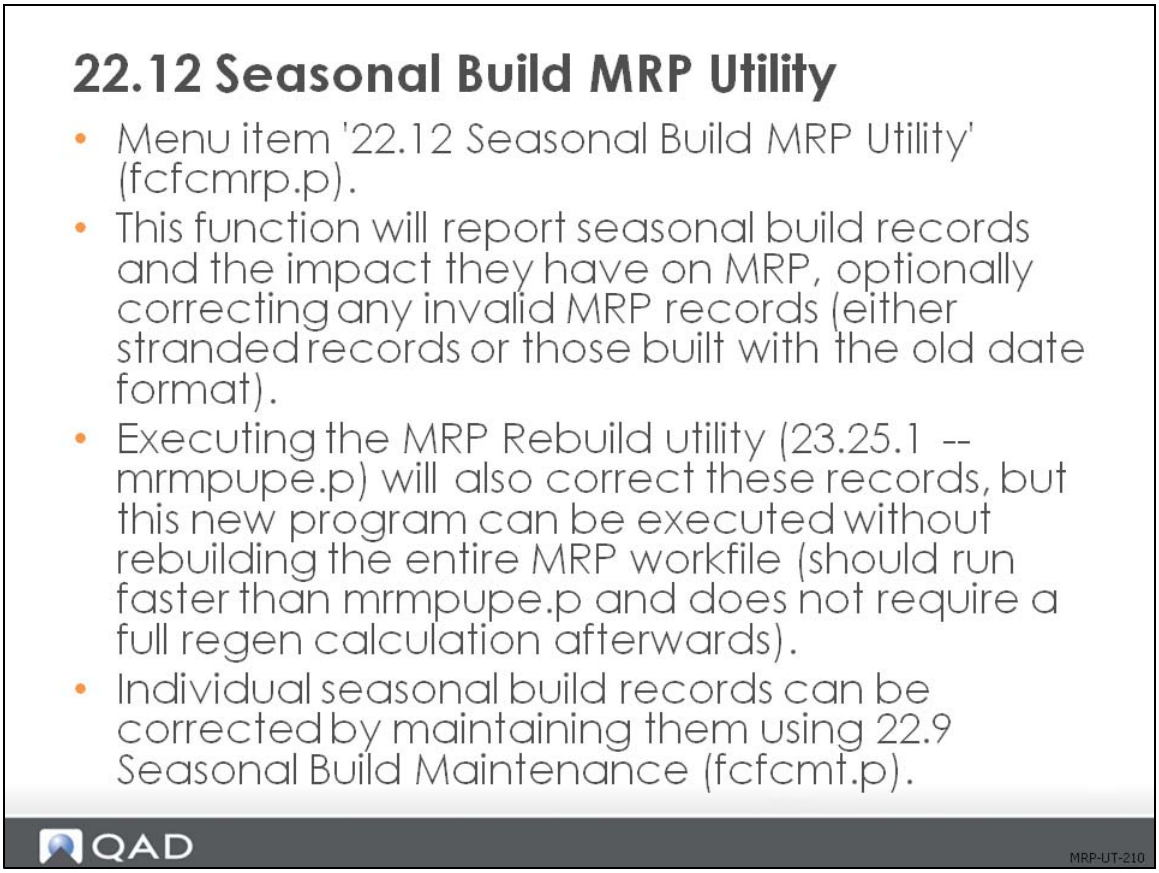
Item Number	Site		Qty on Order	Qty Required	Qty Allocated	Qty on Hand	QOH Non-nettable	Avail Status Qty On Hand
50011	10-100	Old		5.0		30.0		30.0
Ultrasound Array		New		0.0		0.0		0.0
		Old		1.0				
		New		0.0				
02003	10-100							
Standard Connector								
60004	10-100	Old				1,000,379.0		1,000,379.0
Transducer - 10 Mhz		New				0.0		0.0
60003	10-100	Old				998,637.0		998,637.0
Keyboard		New				0.0		0.0

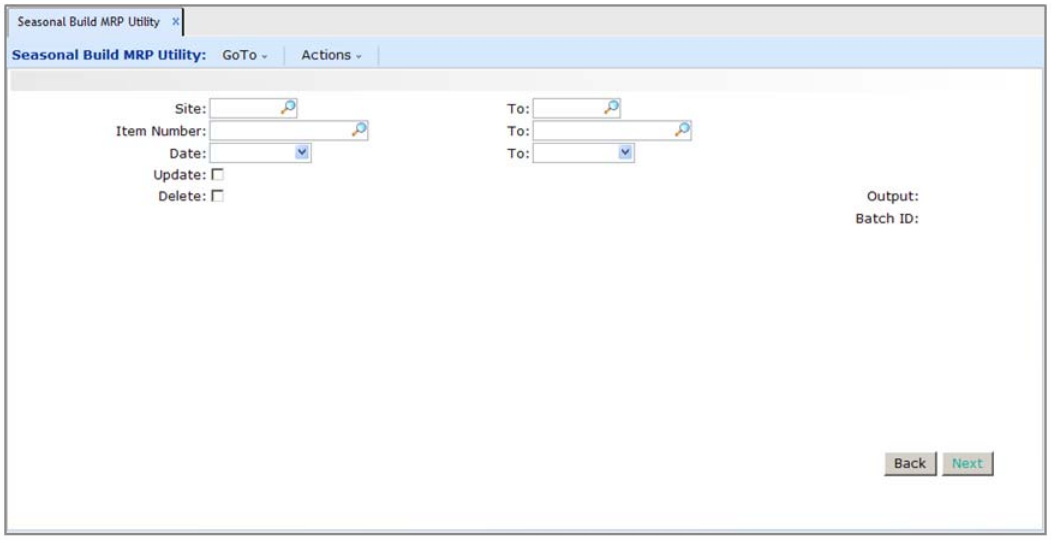
QAD

MRP-UT-200

Seasonal Build MRP Utility



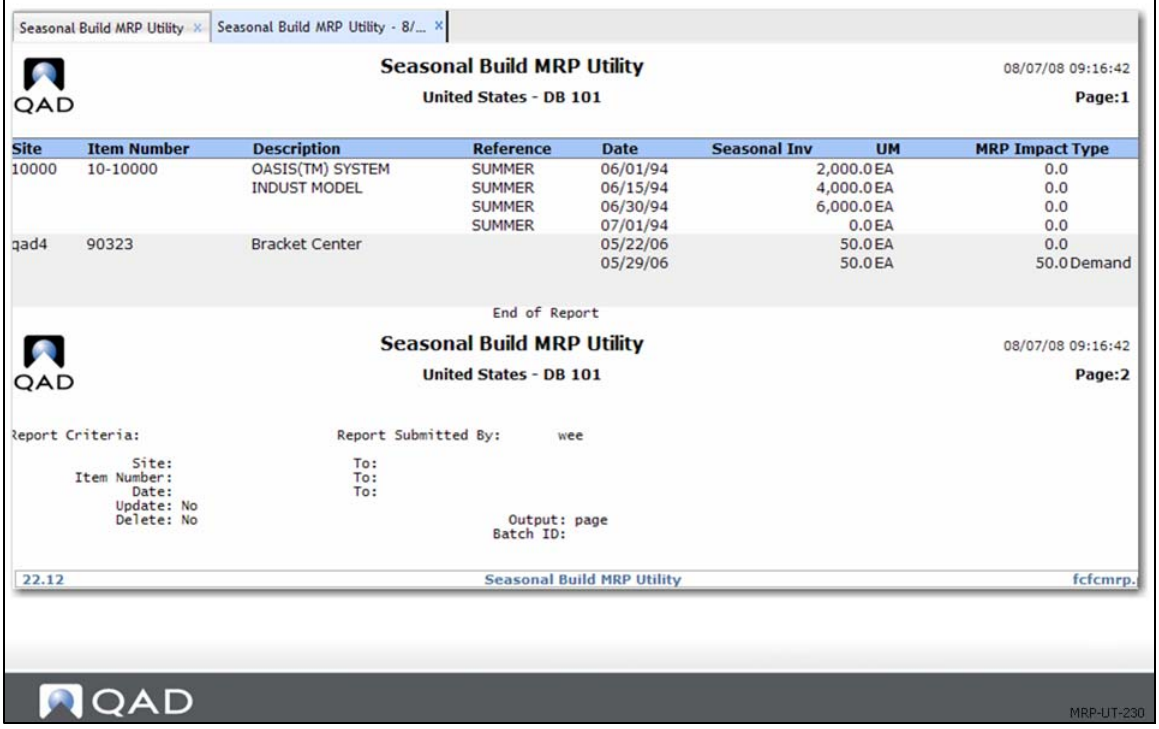
22.12 Seasonal Build MRP Utility



QAD

MRP-UT-220

22.12 Seasonal Build MRP Utility



Seasonal Build MRP Utility | Seasonal Build MRP Utility - 8/...

QAD

Seasonal Build MRP Utility 08/07/08 09:16:42

United States - DB 101 **Page:1**

Site	Item Number	Description	Reference	Date	Seasonal Inv	UM	MRP Impact Type
10000	10-10000	OASIS(TM) SYSTEM	SUMMER	06/01/94	2,000.0	EA	0.0
		INDUST MODEL	SUMMER	06/15/94	4,000.0	EA	0.0
			SUMMER	06/30/94	6,000.0	EA	0.0
			SUMMER	07/01/94	0.0	EA	0.0
qad4	90323	Bracket Center		05/22/06	50.0	EA	0.0
				05/29/06	50.0	EA	50.0 Demand

End of Report

QAD

Seasonal Build MRP Utility 08/07/08 09:16:42

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Report Criteria: Report Submitted By: wee

Site: To:
Item Number: To:
Date: To:
Update: No
Delete: No

Output: page
Batch ID:

22.12 Seasonal Build MRP Utility fcfcmrp.

QAD MRP-UT-230

Product Information Resources

QAD offers a number of online resources to help you get more information about using QAD products.

QAD Forums (community.qad.com)
Ask questions and share information with other members of the user community, including QAD experts.

QAD Knowledgebase (knowledgebase.qad.com)*
Search for answers, tips, or solutions related to any QAD product or topic.

QAD Document Library (www.qad.com/documentlibrary)
Get browser-based access to user guides, release notes, training guides, and so on; use powerful search features to find the document you want, then read online, or download and print PDF.

QAD Learning Center (learning.qad.com)*
Visit QAD's one-stop destination for all courses and training materials.

*Log-in required

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