



QAD Enterprise Applications
Enterprise Edition & Standard Edition

Training Guide Master Scheduling and RCCP

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About This Course

Course Description

QAD designed this course to cover the basics of preparing to implement Master Scheduling and Rough-Cut Capacity Planning (RCCP) in QAD Enterprise Applications. The course includes:

- An introduction to Master Scheduling and RCCP
- An overview of key business considerations
- Setting up Master Scheduling and RCCP
- Using Master Scheduling and RCCP
- Activities and exercises throughout the course
 - Students practice key concepts and processes in Master Scheduling and RCCP

Course Objectives

By the end of this class, students will:

- Analyze some key business issues before setting up Master Scheduling and RCCP
- Set up and use Master Scheduling and RCCP

Audience

- Materials managers and analysts
- Planners, schedulers, and master schedulers
- Implementation consultants, members of implementation teams, and key users

Prerequisites

Recommended training courses:

- Initial QAD Enterprise Applications Setup
- Product Structures and Formulas
- Work Orders
- Work Centers, Routings, and WO Subcontracting
- Forecast Simulation
 - General knowledge of the manufacturing industry
 - Working knowledge of QAD Enterprise Applications as it is used in the business

Course Credit and Scheduling

This course is designed to be taught in one day

QAD Resources

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

Product Help

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

QAD Web Resources

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

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

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

QAD Learning Portal for Training Opportunities

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

QAD Support for Product Documentation and the QAD Knowledgebase

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

Choose Support under the Global Services tab.

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

CHAPTER 1

Introduction to Master Scheduling and RCCP




Course Overview

- ▲ Introduction to Master Scheduling and Rough-Cut Capacity Planning (RCCP)
- ▲ Business Considerations
- ▲ Set up Master Scheduling and RCCP
- ▲ Use Master Scheduling and RCCP

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Course Overview



Planning and Scheduling Overview

Activity	Personnel	Planning Horizon (varies with industry)
Strategic Planning	CEO, CFO, VPs, etc.	3-5 years
QAD Enterprise Application Planning and Control Modules		
Product Line Planning	Senior VP's, Plant Managers	Varies
Forecasting, Master Scheduling, and RCCP	Master Schedulers	Cumulative Lead Time
MRP and CRP	Planners, Shop Floor Managers	Cumulative Lead Time

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Planning and Scheduling Overview

All plans set expectations about how resources are used and provide reality checks to determine if plans can be implemented. Planning is done by different people at many levels throughout a corporation and QAD Enterprise Applications provides an integrated toolset that is useful at most of these levels.

Note Students unfamiliar with the planning process described by the American Production and Inventory Control Society (APICS) may find it useful to look at planning level integration.

Strategic Planning

Strategic plans set guidelines for production and sales. Because they are done for the longest term, they are the least integrated and least precise of the planning levels. Chief Executive Officers and Chief Financial Officers look beyond the immediate year's demands to set expectations for growth. Strategic plans set out the overall mission, goals, and initiatives for an organization, largely in terms of gross sales or overall income.

Planning Levels Supported by QAD Enterprise Applications

The following planning levels are supported by QAD Enterprise Applications:

Product Line and Resource Planning

Production planning is done in the Product Line Planning module of QAD Enterprise Applications. The check against resources is done in the Resource Planning module.

This tool enables you to:

- Balance sales forecasts, production forecasts, and income forecasts for an entire product line
- Determine whether you have enough resources, in aggregate, to meet the plans

The production plan sets expectations for a:

- Factory
- Site
- Division, or
- Department

Sales forecasts, production forecasts, and income expectations are produced by different people. Various sets of expectations must be balanced to determine the plan's feasibility.

Production plans:

- Define manufacturing output and other activities to satisfy current planned levels of sales
- Incorporate and coordinate all activities
- Provide guidance for producing individual items that make up the product line
- Support the corporate objectives of increasing:
 - Net profit

- Return on investment (ROI)
- Cash flow

Product line plans are broken out into end items, planned in the master schedule, and exploded to component plans by MRP.

End-Item Planning

End-item planning is done in the Forecast/Master Plan module of QAD Enterprise Applications. This tool enables you to set production levels in response to actual and forecast demand over a period roughly equivalent to the cumulative lead time.

The cumulative lead time is the longest length of time it takes to produce and ship an item, assuming that nothing is in stock or production.

At this stage, you can develop a rough-cut capacity plan to determine if critical resources will be available. For example, if you want to make 50 items next week but your fabricator only makes 25 in a week, you cannot meet the plan.

The end-item plan sets the number of priority items (end items, level 1 items, service parts, and so forth) that are going to be produced and sets the schedule to produce them.

End-item plans are usually done by master schedulers who:

- Estimate demand for a product
- Determine how many items to produce

Master schedulers modify factory plans to accommodate current situations. The horizon tends to be at least as long as the cumulative lead time.

Component Planning

Component planning is done in the Material Requirements Plan (MRP) module and the plans are checked against capacity in the Capacity Requirements Plan module of QAD Enterprise Applications.

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

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

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

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

Enterprise Resource Planning (ERP)

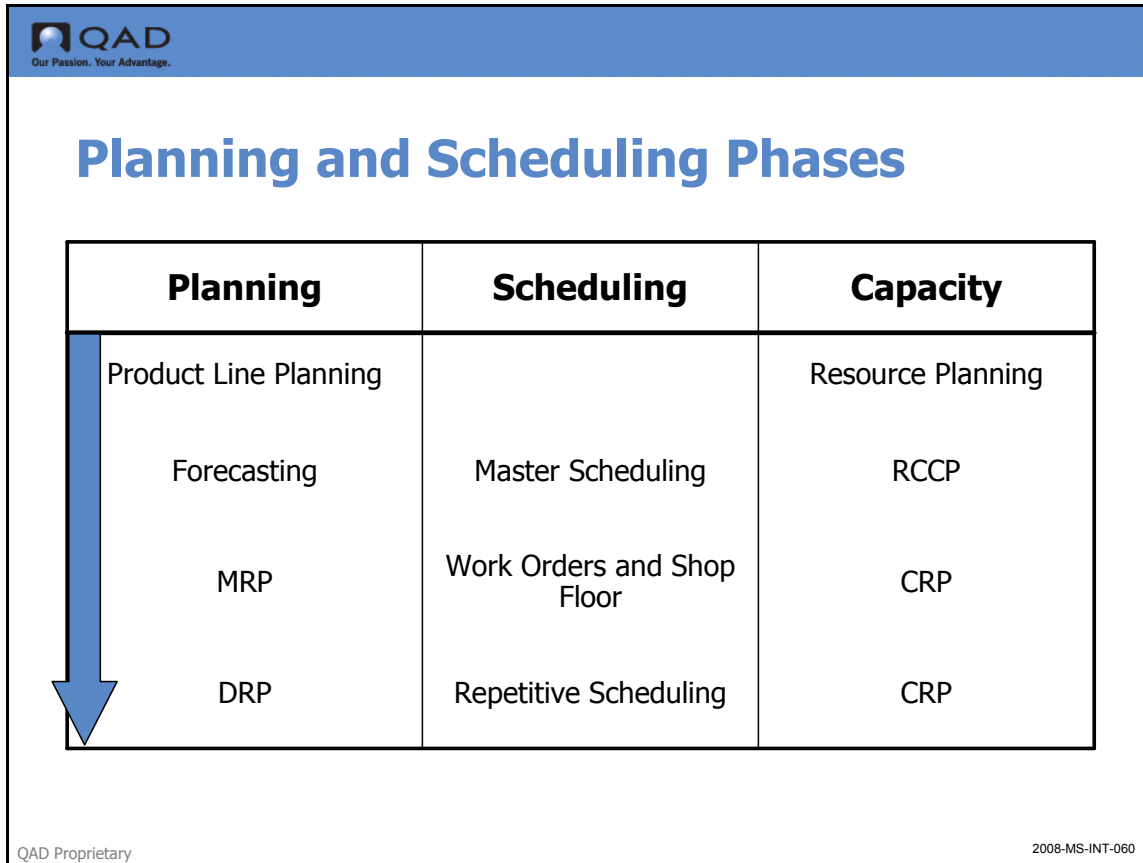
In companies that use Enterprise Resource Planning (ERP), operations planning is the key link between long-term business planning and medium- to short-term planning and execution activities.

ERP calculates target inventory levels that support company objectives for:

- Profitability
- Inventory reduction
- Lead time reduction
- Customer service

ERP also calculates corresponding production demands. These demands eventually pass into:

- Production
- Purchasing
- MRP



Planning and Scheduling Phases

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

The Product Line

Product line plans generally cover 1 to 3 years, usually shown by months and quarters. They are composed of aggregate forecasts that are converted into end-item forecasts. These detailed forecasts provide input that the master scheduler uses to create a statement of production.

The purpose of a product line plan is to:

- Aggregate forecasts
- Establish aggregate production goals (aligned to corporate goals)

- Plan efficient and cost effective use of production resources, such as machines and manpower
- Outline the level of planned manufacturing output
- Convert demand into a master schedule and rough-cut capacity plan
- Balance sales forecasts, production forecasts, and income forecasts for an entire product line
- Determine whether there are enough resources, in aggregate, to meet the plan

Product line plans are broken into:

- End items planned in the master schedule
- Component plans by MRP

The Forecast

Forecasting and sales orders introduce independent demand into QAD Enterprise Applications.

Independent demand is demand for an item that is unrelated to demand for other items. These demands serve as the primary reason for establishing the master schedule in QAD Enterprise Applications.

- Forecasts
 - Estimate future demand for an item
 - Are typically a sales function
 - Can be an integral part of master scheduling
 - Represent one point of input to the master schedule
- Source of independent demand can be created for any item, but is usually created for:
 - End items
 - Critical subassemblies
 - Service parts

The Master Schedule

Developed by site and item, a master schedule is the key plan that provides primary input to MRP. A master schedule is a statement of production determining:

- Which items to schedule
- When orders are needed
- How much to produce

Master scheduling can be done to:

- Anticipate sales as entered in QAD Enterprise Applications
- Control production when no sales orders are used
 - In inventory replenishment or build-to-stock environments, for example

Using master scheduling and MRP is an effective method to:

- Set production levels in response to actual and forecast demand
 - Over a period roughly equivalent to the cumulative lead time
- Determine in a rough way (RCCP) whether critical resources will constrain supply

Qualifications and Responsibilities of A Master Scheduler

A master scheduler must have:

- Expertise in manufacturing
- Comprehensive product knowledge
- General business insight
- The ability to:
 - Reduce lead time to bring new products to market
 - Sell ideas and negotiate compromises
 - Resolve conflict
 - Minimize impact of changing requirements
 - Meet customer goals

A master scheduler must know how to prepare data quickly and verify its accuracy in order to deal effectively with:

- Management (overall goals)
- Marketing and sales (available-to-promise)
- Engineering (changing bills of materials)
- Finance (cash flow)
- Distribution (scheduling)
- Customers (demands)
- Vendors (reliability)

The master scheduler is responsible for providing:

- Manpower
- Materials
- Manufacturing capability
- Money (cash flow)
- Management of all logistical activities

Material Requirements Planning (MRP)

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

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

Supply is scheduled and rescheduled to:

- Meet changing demand
- Maintain valid due dates

Capacity Requirements Planning (CRP)

- Determines how much labor and how many machine resources are required for production
 - Calculates workload for a department, work center, or machine
- Used for medium-range capacity management to:
 - Determine and provide the resources required to meet MRP's detailed item schedules

Distribution Requirements Planning (DRP)

- Balances supply and demand for items transferred between sites. It is done by:
 - Calculating item requirements
 - Creating planned orders
 - Managing shipment schedules and transportation

DRP is the extension of distribution requirements; inclusive planning of the key resources contained in a distribution system, such as warehouse space, workforce, money, trucks, and freight cars.

Planning and Scheduling Areas of Concern

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

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Planning and Scheduling Areas of Concern

Master Schedule

The objective of the master schedule is to:

- Enable implementation of the production plan
- Manage demand and resources
 - Keep priorities in line
 - Plan resources and capacity requirements
 - Ensure good communication between marketing and manufacturing
- Minimize inventory and maximize resource usage

Rough-Cut Capacity Planning (RCCP)

RCCP provides an early warning for schedule problems:

- Provides mid- to long-range capacity planning
- Identifies key material shortages
- Determines labor shortages for critical skills
- Validates the production plan and assists in developing a valid master schedule
- Helps stabilize MRP
- Checks capacity at critical work centers, not at each work center
 - A work center is a specific production area with one or more resources with identical capabilities. It can be considered as one unit for CRP and detailed scheduling.

RCCP Compared to CRP

CRP differs from RCCP by taking inventories, orders, lot sizes, and lead time offsets into account. Even though RCCP indicates that sufficient capacity exists to execute the master schedule, CRP may show that capacity is insufficient during specific time periods. CRP:

- Provides the load by work center (detailed capacity)
- Offers detailed work center planning
- Indicates if capacity is sufficient to execute the master schedule
 - Department and work center levels
- Explodes the routings and processes for MRP planned and firm planned orders
 - Updates or creates work order routings
- Determines 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)

Coordination of planning activities at different levels within a corporation is essential to meeting a company's overall goals. At the plant level, effective coordination of plans will result in:

- Increased throughput
- Decreased inventory
- Reduced operational expense



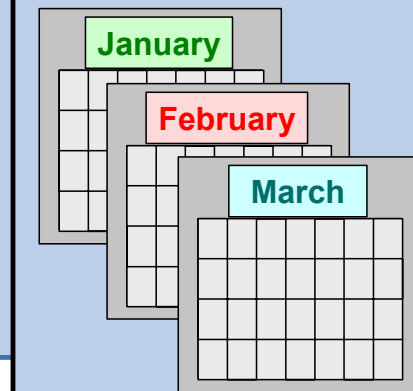
Master Schedule

▲ A Statement of Production

Master Scheduled Items

- End Items
- Critical Subassemblies
- Spares/Service Items
- Key Items
- Key Resources

Plan of Action



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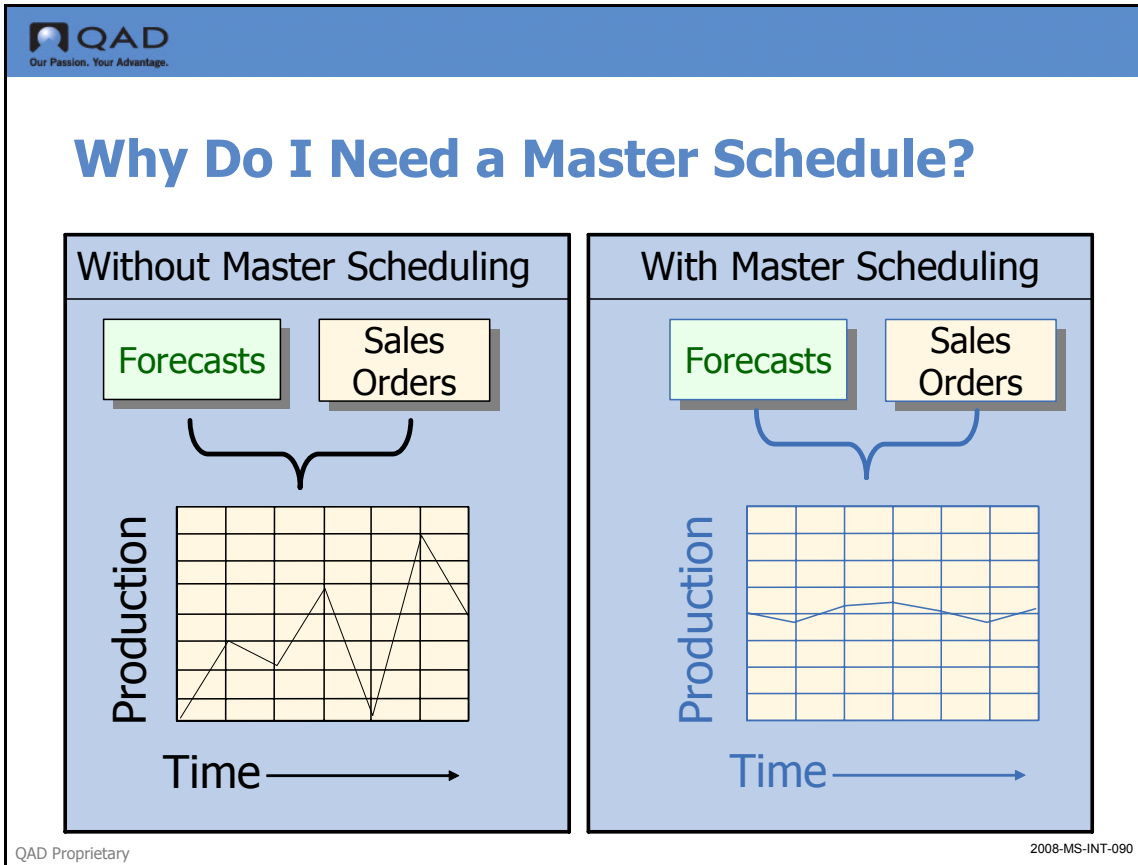
Statement of Production

A master schedule is a statement of production set by the master scheduler. It is the key plan that drives results on the factory floor. Developed by site and item, it provides primary input to MRP.

A valid master schedule provides the foundation for effective:

- Customer delivery
- Use of plant capacity
- Implementation of the production plan
- Trade-offs between the marketing and manufacturing organizations

Master scheduled items require human judgment to evaluate the implications for capacity, material, cost, and customer service.



Benefits of a Master Schedule

The master schedule acts as a buffer between sales and forecast fluctuations and production. In QAD Enterprise Applications forecasts, along with any confirmed sales orders, are used as input to the master schedule and MRP.

Forecasts and sales orders establish a source of independent demand and are used in calculating the gross requirements for an item. For example, if 100 units per week are forecast, MRP will plan orders to cover this forecast.

As long as actual sales orders due in any period are less than or equal to the forecast in that week, the orders already planned by MRP will cover the requirements.

However, if 100 units have been forecast but there are sales orders for 150 units, MRP needs to plan an extra 50 units.

What MRP will plan in any period is the amount of the sales orders plus any net remaining forecast amount.

Independent Demand

- Demand for an item that is unrelated to demand for other products
 - Finished goods
 - Service parts
 - End items
 - Spare items

Dependent Demand

- Directly related to or derived from the bill of material structure for other items or end products
 - Components
 - Raw materials

Planning Issues

Nervousness

- Fluctuations in MRP would result if forecasts and sales orders were modified or canceled

Overstated Demand

- Total demand would be overstated if:
 - The forecast quantity were added to the sales order quantity

These issues are resolved in QAD Enterprise Applications by:

- Use and application of forecast consumption rules
- Creation of a master schedule which:
 - Anticipates sales
 - Stabilizes production
 - Calculates gross requirements

Note Available-to-promise (ATP) in Master Schedule Summary Inquiry (22.18) gives visibility to customer service.



Terminology

- ▲ Available-to-promise (ATP)
- ▲ Available-to-allocate
- ▲ Gross requirements
- ▲ Net requirements
- ▲ Order policies
- ▲ Planning bill of material
- ▲ Seasonal build
- ▲ Time fence



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Terminology

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

It equals the Master Schedule less customer orders due in the period and all subsequent periods before the next Master Schedule scheduled receipt.

Available-to-allocate. Based on the calculation specified in the Sales Order Control program

- The quantity on hand less what has already been promised to other orders
 - Sales orders due to ship in the very near future
 - Manufacturing orders which have been released to the shop floor

Note Future requirements or sources of supply are not considered by this calculation.

Gross Requirements. A gross requirement is the total of independent and dependent demand for a component before the netting of on-hand inventory and scheduled receipts.

Net Requirements. In MRP, the net requirements for a part or an assembly are derived as a result of applying gross requirements and allocations against:

- Inventory on hand
- Scheduled receipts
- Safety stock

Net requirements, lot-sized and offset for lead time, become planned orders.

Order Policies. Order policies are sets of procedures for determining the lot size and other parameters related to an order.

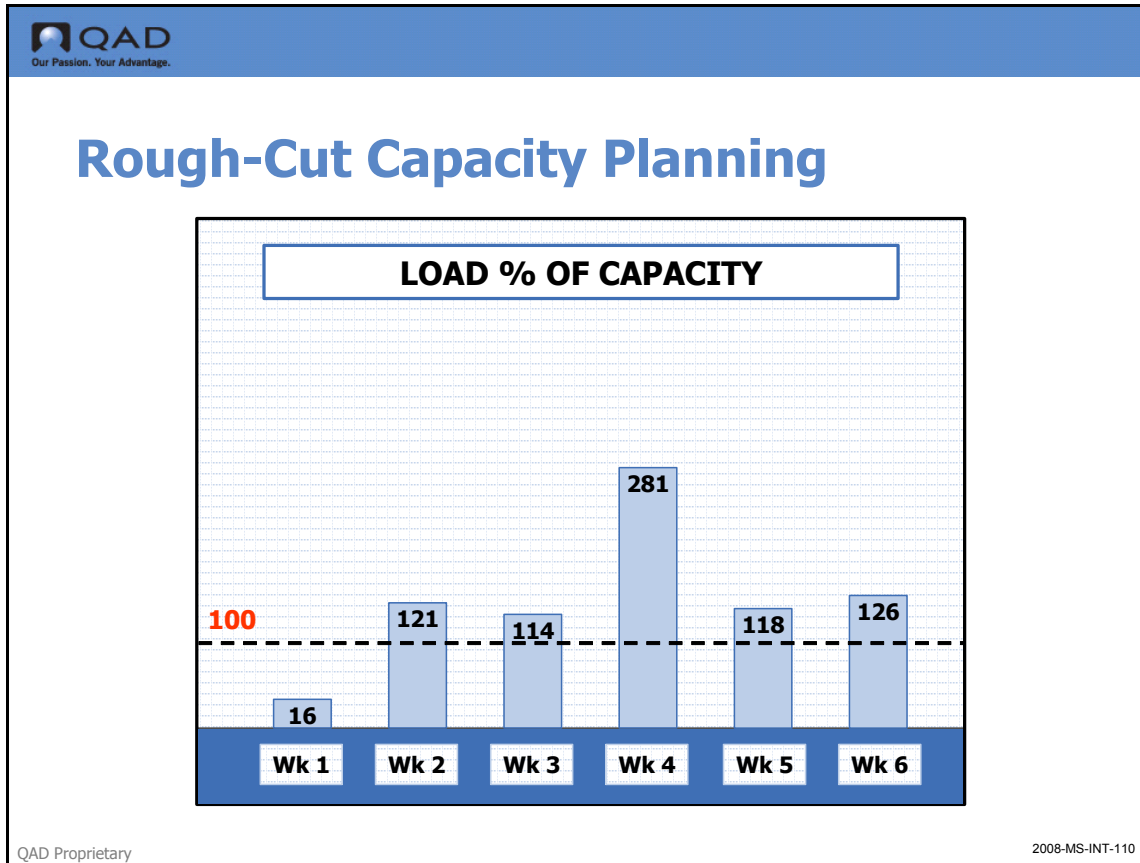
Planning Bill of Material. A planning bill of material is an artificial grouping of items or events in bill-of-material format. It is used to facilitate master scheduling and material planning.

Seasonal Build. An item's inventory buildup prior to expected demand, for example:

- Christmas
- Fall
- Winter
- Spring

Time Fence. A time fence is a policy or guideline established to note where various restrictions or changes in operating procedures take place.

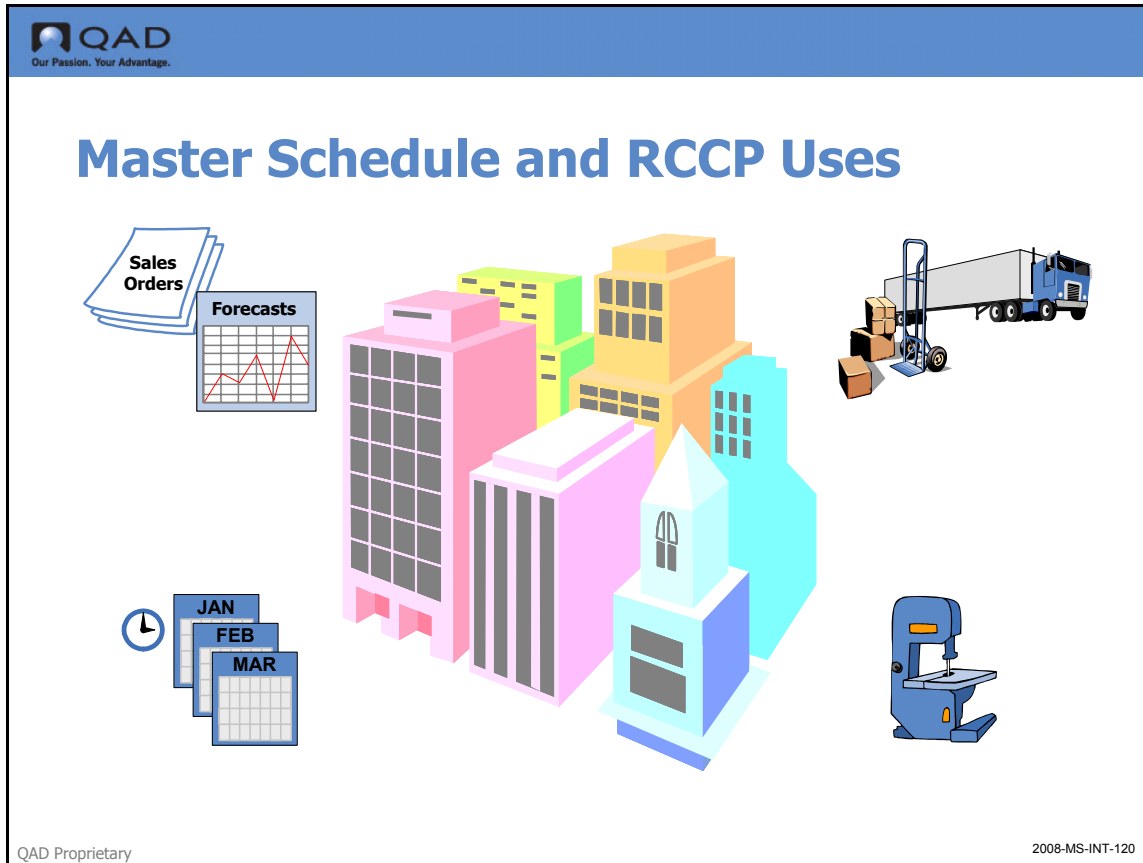
For example, changes to the master schedule can be accomplished easily beyond the cumulative lead time, while changes inside the cumulative lead time become increasingly more difficult (to a point where changes should be resisted). Time fences can be used to define these points.



Rough-Cut Capacity Planning (RCCP)

The rough-cut capacity plan provides a tool for:

- Careful evaluation of changes to the master schedule and their impact on material and capacity
- Rough evaluation of potential capacity problems
- Proper balancing of customer needs and manufacturing needs
- Effective stabilization of MRP



Master Schedule and RCCP Uses

Normal uses of a master schedule include driving RCCP and MRP and planning future production.

- The production plan broken down into buildable units with specific dates for completion
 - The production plan will be met if the master schedule is developed to support it

RCCP provides a high-level planning process for key resources which may constrain the execution of the manufacturing plan.

Master scheduling and RCCP should remove most of the capacity constraints before MRP is run.



Course Objectives

In this course you learn how to:

- ▲ Identify some key business considerations before setting up Master Scheduling and RCCP in QAD Enterprise Applications
- ▲ Set up Master Scheduling and RCCP in QAD Enterprise Applications
- ▲ Use Master Scheduling and RCCP in QAD Enterprise Applications

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Course Objectives



Course Overview

- ✓ Introduction to Master Scheduling and RCCP
- ▲ Business Considerations
- ▲ Set up Master Scheduling and RCCP
- ▲ Use Master Scheduling and RCCP

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Course Overview

CHAPTER 2

Business Considerations



Business Considerations

In this course you learn how to:

- ✓ Identify some key business considerations before setting up Master Scheduling and RCCP in MFG/PRO
- ▲ Set up Master Scheduling and RCCP in MFG/PRO
- ▲ Use Master Scheduling and RCCP in MFG/PRO



Business Considerations

- ▲ Planning
- ▲ Items to Master Schedule
- ▲ Multilevel Master Schedule
- ▲ Production Forecasts
- ▲ Resources That Need RCCP
- ▲ Seasonal Requirements
- ▲ Planning Horizon
- ▲ Time Fence
- ▲ Features and Options
- ▲ Production Constraints

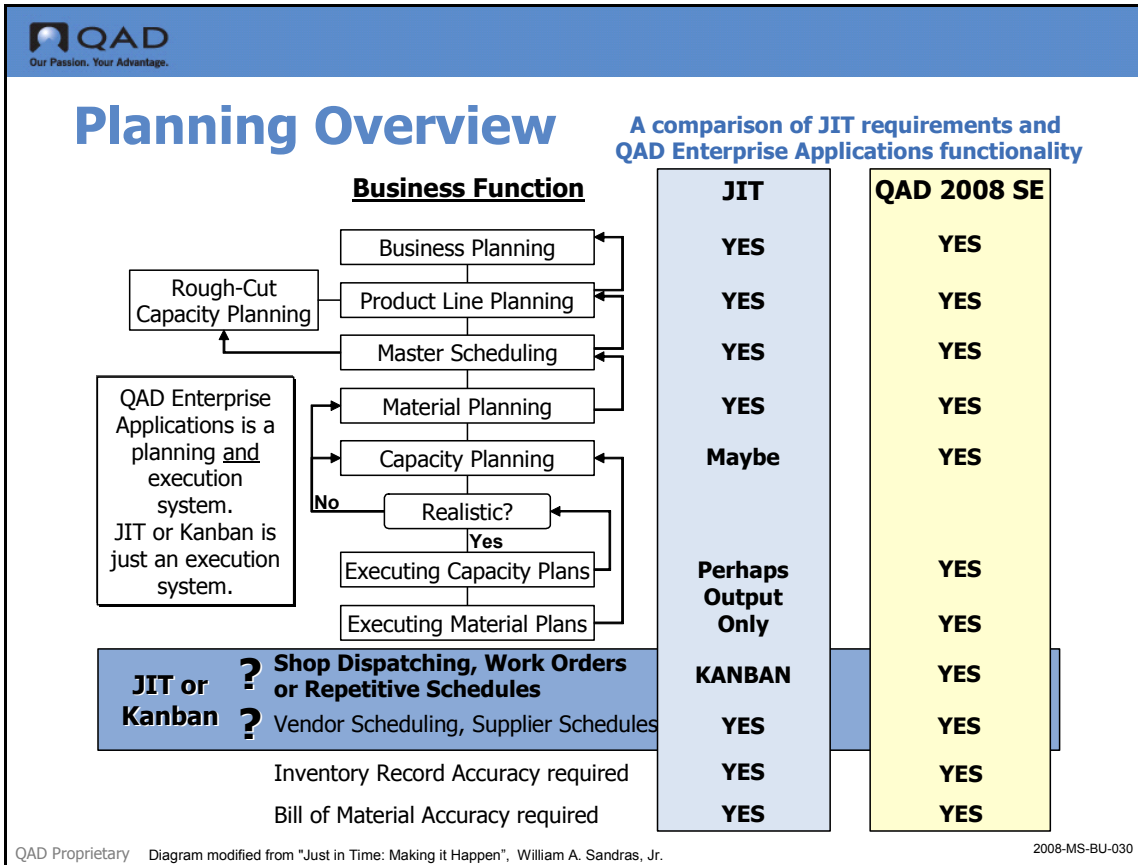
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Business Considerations

There are several business issues to take into consideration before setting up Master Scheduling and RCCP in QAD Enterprise Applications.

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



Planning Overview

Set planning parameters in:

- Item Planning Maintenance (1.4.7)
- 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; your planning parameters should have 98% plus accuracy.

Functionality in QAD Enterprise Applications

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

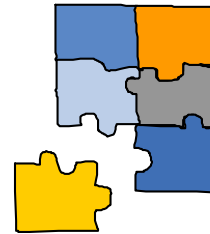
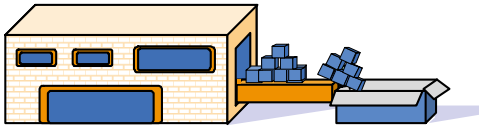
Setup Implications

- Inaccurate data can be catastrophic
- A good clean-up of the database is always worthwhile
- Once clean, database update procedures should be in place to maintain data integrity.



Items to Master Schedule

- ▲ End items
- ▲ Critical subassemblies
- ▲ Spare/service items
- ▲ Key items
- ▲ Key resources



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Items to Master Schedule

Definition

Determining which items to master schedule is a reflection of the industry, the products, and the manufacturing processes used in a particular company and requires the expertise of an experienced master scheduler.

Why Consider?

Sometimes, demand for an item is dependent on demand for another item. This is a common occurrence when the master schedules for several sets of items are related through planning bills or product structures.

Functionality in QAD Enterprise Applications

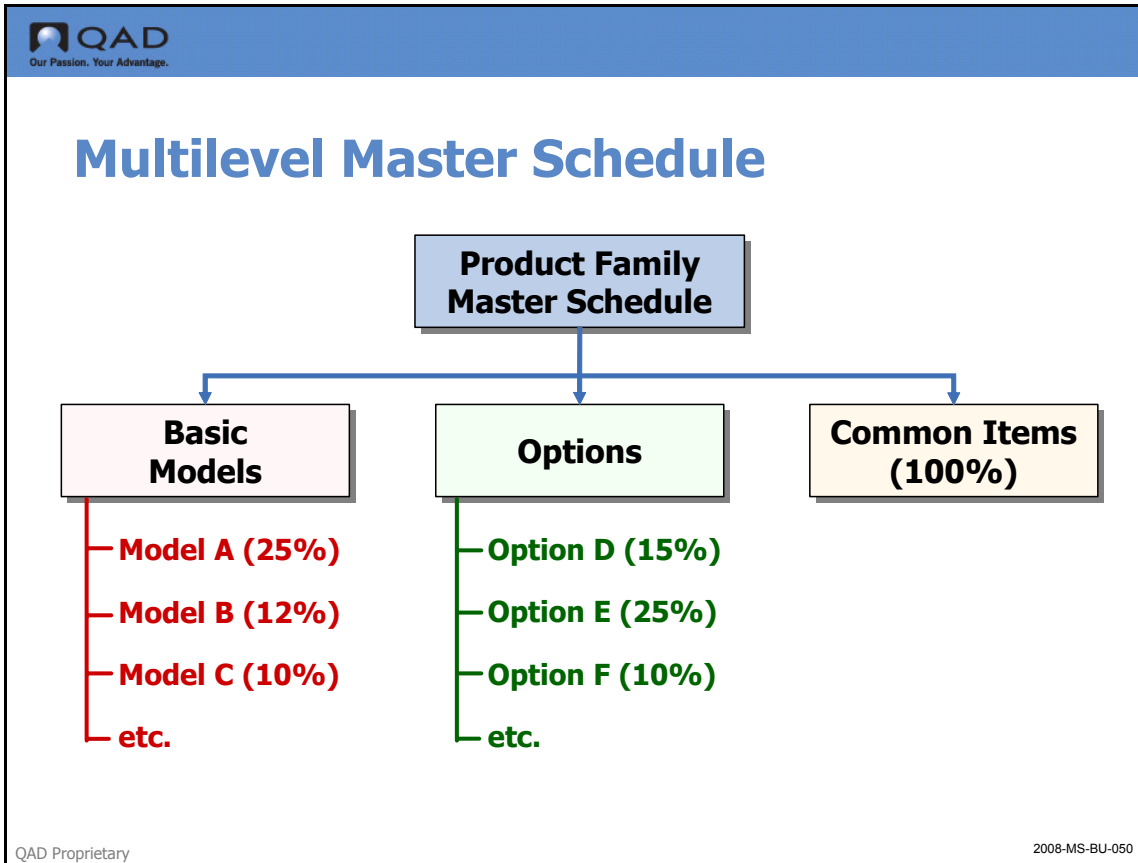
Set the master schedule flag = yes in Item Planning Maintenance (1.4.7) or Item-Site Planning Maintenance (1.4.17) for multisite.

- Output for the master schedule is a plan for all items using MRP and product structures
- Input for the master schedule can come from:
 - Forecast Maintenance (22.1) (automatic link)
 - A product line plan

Note In QAD Enterprise Applications, there is no link between the master schedule and the product line plan

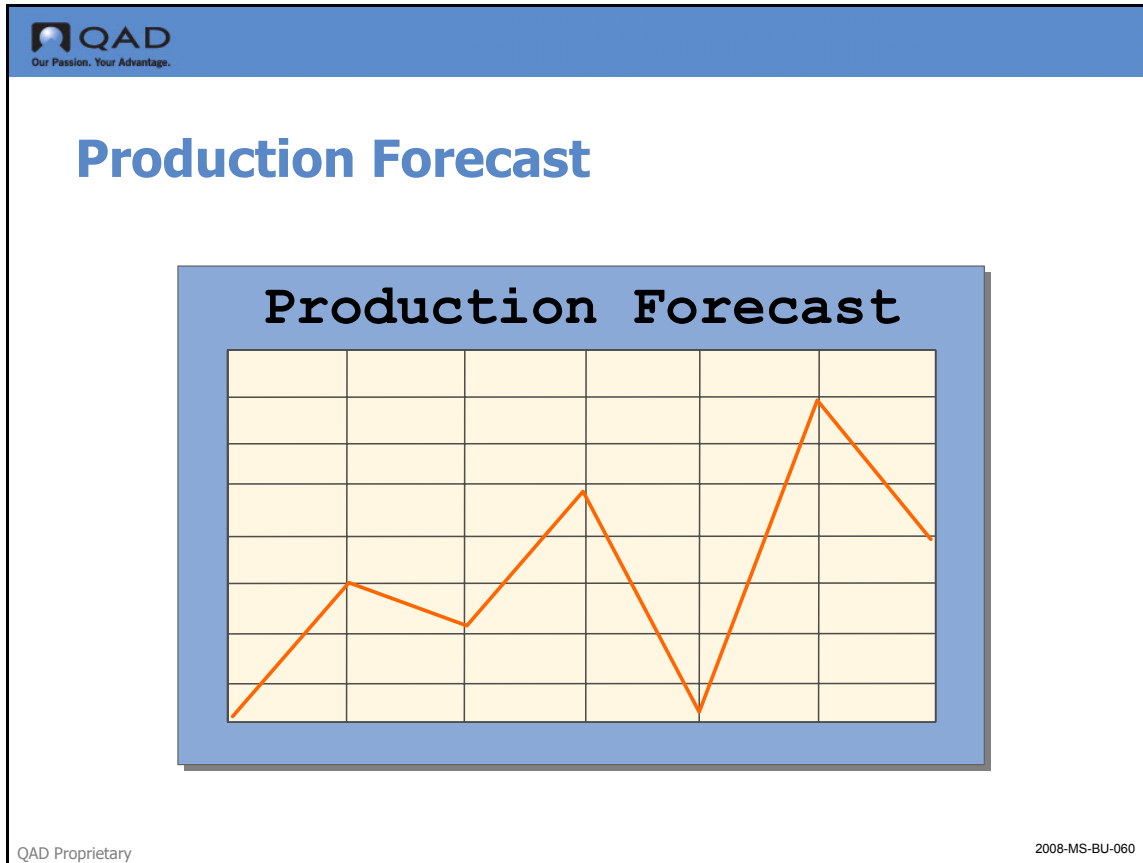
Setup Implications

An item can be master scheduled at one site and not another.



Multilevel Master Schedule

Multilevel master scheduling is an approach where a planning bill of material is used to master schedule an end product or family, along with selected options and accessories.



Production Forecast in QAD Enterprise Applications

Definition

A production forecast is a system-calculated forecast resulting from a planning bill of material and occurs when using multilevel master scheduling. It estimates the projected level of customer demand for a feature (options, accessories) of a make-to-order or an assemble-to-order product.

When you establish planning bills and forecast and master schedule at the family-item level, the system automatically calculates the derived demand for components of the family or upper-level item. These calculations are based on the available-to-promise quantities for the family-level item and the quantity per and forecast percentage for the components of that family item.

Why Consider?

As forecast for the family-level item is consumed, the available-to-promise quantity for that item changes, resulting in revised calculations for the production forecast the next time MRP is run.

Functionality in QAD Enterprise Applications

- The production forecast derives from:
 - The master schedule and forecast percentage specified in the planning bill
- Production forecast amounts:
 - Display in master schedule reports and inquiries
 - Contribute to the total demand that MRP regards as input
- Production forecasts are only created for components with structure codes:
 - (P)lanning
 - (O)ption

Setup Implications

- Production forecasts only consume at the higher level



Resources That Need RCCP

Key Resources	Product Groups			
	A	B	C	D
Labor (<i>Hours</i>)	8.0	6.0	4.1	2.0
Work Center (<i>Hours</i>)	4.3	7.0	4.8	5.0
Warehouse (<i>Cubic Volume</i>)	6.7	6.7	2.0	2.0
Electricity (<i>kW/hr</i>)	4.0	1.7	3.8	6.0

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Determine What Resources Need RCCP

- Develop a resource profile to identify critical resources





Seasonal Build Requirements

Definition

Seasonal demand items require a buildup of an item's inventory prior to its expected demand.

Why Consider?


Although you could enter master schedule orders to adjust to seasonal requirements, identifying a demand as seasonal build prevents MRP from issuing action messages to cancel or delay orders for those items whose demand is not yet apparent.

Functionality in QAD Enterprise Applications

In QAD Enterprise Applications, seasonal build inventory is entered into the system using Seasonal Build Maintenance (22.9).

Setup Implications

Setting inventory to zero enables the items to be promised.



MRP Horizon

The diagram consists of four overlapping rectangular grids, each representing a week. The grids are labeled 'Week 1', 'Week 2', 'Week 3', and 'Week 4' from top-left to bottom-right. Each grid is a 4x4 table. The 'Week 1' label is in a white box, 'Week 2' is in a light blue box, 'Week 3' is in a grey box, and 'Week 4' is in a dark grey box. The grids overlap such that each subsequent week's grid is shifted down and to the right, partially covering the previous one.

When Should MRP Be Run?

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MRP Horizon

Definition

- Amount of time the master schedule extends into the future

Why Consider?

MRP only processes material requirements within this horizon and ignores activity outside this horizon.

- Need to allow time for:
 - Ordering components
 - Capacity changes of primary work centers or key suppliers
 - Minimum cumulative lead time

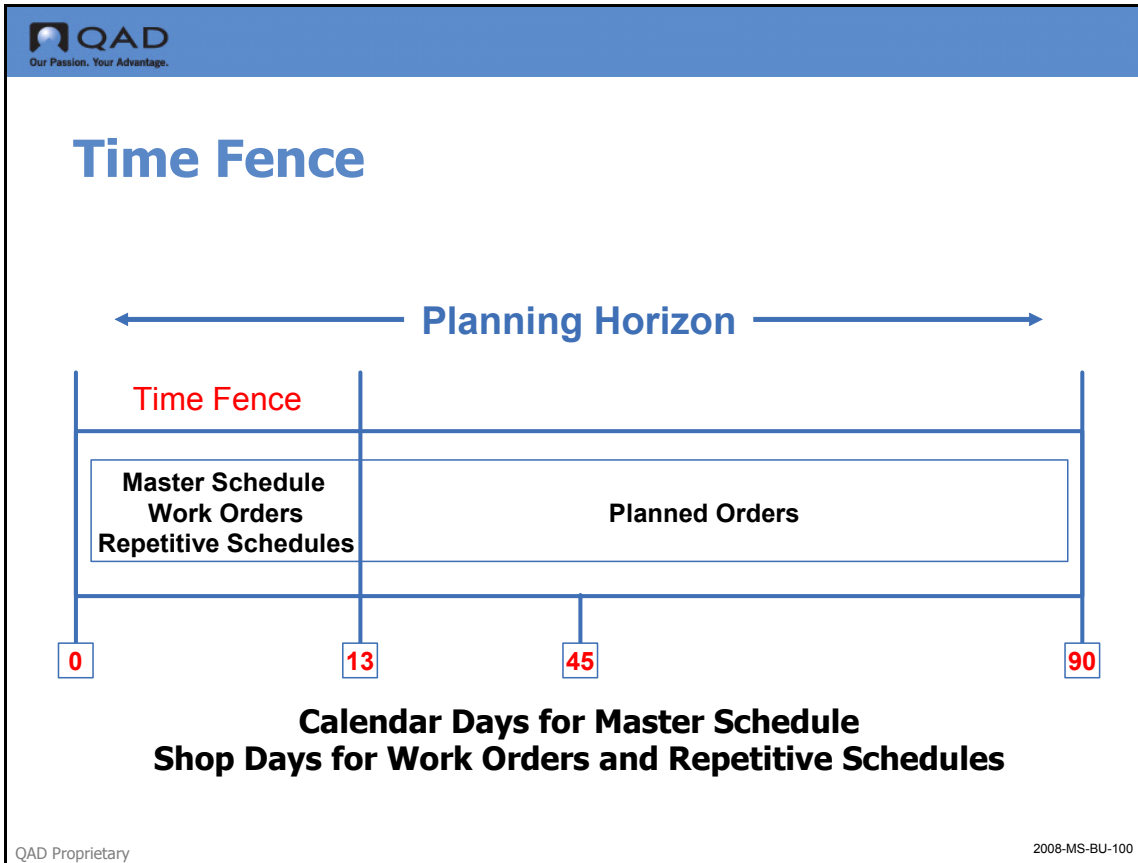
Functionality in QAD Enterprise Applications

- Set the planning horizon in the MRP Control program
- Ensure that all items are replanned by running the Regenerate Materials Plan (23.2)

Since MRP ignores activity outside of the planning horizon, make the horizon at least one day longer than the longest cumulative lead time (30 days is recommended as a minimum). Use the Cumulative Lead Time Report (13.12.16) or the Lead Time Picture Report (13.12.17) to find the longest cumulative lead time in your database.

Setup Implications

- If the horizon is changed, items are not automatically flagged for net change replanning
 - Run Regenerate Materials Plan (23.2)



Time Fence

Definition

The number of calendar days inside of which MRP should not automatically make changes. To manually control the schedule for a period of time set the time fence to *nn* days and MRP:

- Adds the number of days time fence to the system date
- Does not create any planned orders within this time period

Note Time fence is most often used with master scheduled items.

Why Consider?

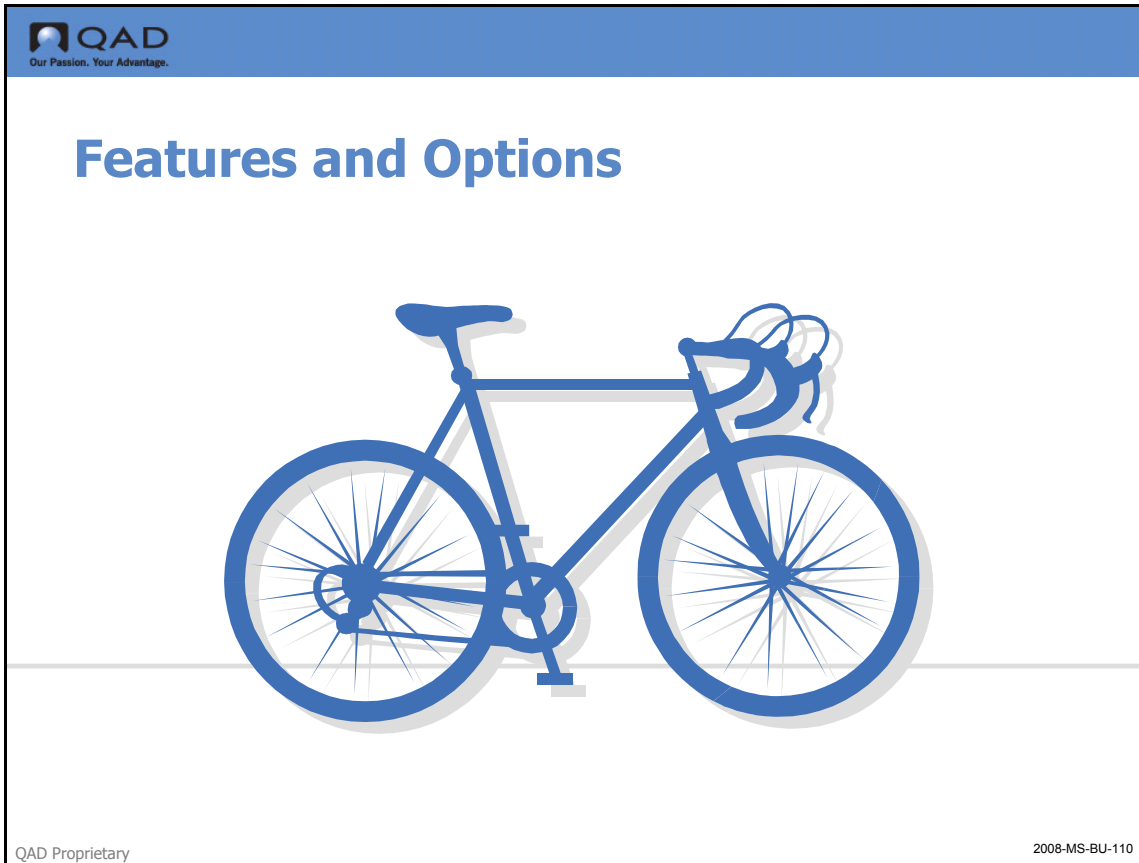
The time fence gives the master scheduler manual control within the time fence period. MRP is allowed to create planned orders automatically outside of the time fence.

Functionality in QAD Enterprise Applications

The value entered in Item Master Maintenance (1.4.1) is used as the default for all sites. It may be changed manually for any site as needed.

Setup Implications

The time fence designates a period of calendar days from the system date inside of which MRP will not create or change existing planned orders. Order action messages, however, will be generated if necessary. MRP will provide action messages over the near-term horizon.



Features and Options

Definition

Components of the family item in the planning bill can be either the actual manufactured items or configured products, or item groups representing common components or selected features and options.

Why Consider?

Directly forecast the family/models and forecast options by percent of family.

Functionality in QAD Enterprise Applications

The top-level item of a multilevel master schedule product structure represents the family of buildable products that can be configured from a set of available models and options.

Setup Implications

For master scheduling purposes, it is not possible to forecast accurately the detailed combinations of potential products that can be manufactured and sold. Forecasting at the family-item level or the option-item level is accurate and can drive the master scheduling process.



Production Constraints

- ▲ Machine capacity
- ▲ Work center capacity
- ▲ Labor capacity
- ▲ Material
- ▲ Policies and procedures

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Production Constraints

Definition

A production constraint is any element or factor that prevents a system from achieving a higher level of performance with respect to its goal.

A priority item plan will help resolve production issues. It sets the number of priority items (end items, level 1 items, service parts, etc.) that are going to be produced and plans the schedule to produce them. The check on this plan is the availability of critical resources.

If you want to make 150 items next week, but your machine only makes 125 in a week, you cannot meet the plan. A component plan determines which work centers and components will be used to

meet the plan. The check is to determine whether the work centers have the capacity to meet the schedule.

Why Consider?

A master scheduler must consider and remove potential production constraints when preparing the master schedule and rough-cut capacity plan. A constraint could be physical (machine capacity or lack of material) or managerial (policies and procedures).

Functionality in QAD Enterprise Applications

The master scheduler makes the best use item-level RCCP by considering constraints. RCCP is implemented in QAD Enterprise Applications using Item Resource Load Summary Inquiry.

Setup Implications

The master scheduler tests scheduled production quantities against available resources. This rough-cut capacity plan tests end-item production.



Review

- ▲ Processes and Procedures
- ▲ Reporting Requirements
- ▲ Customer Expectations
- ▲ Product Configuration

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Review



Course Overview

- ✓ Business Considerations
 - ▲ Set up Master Scheduling and RCCP
 - ▲ Use Master Scheduling and RCCP
- ✓ Introduction to Master Scheduling and RCCP

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Course Overview

CHAPTER 3

Set Up Master Scheduling and RCCP



Set up Master Scheduling and RCCP

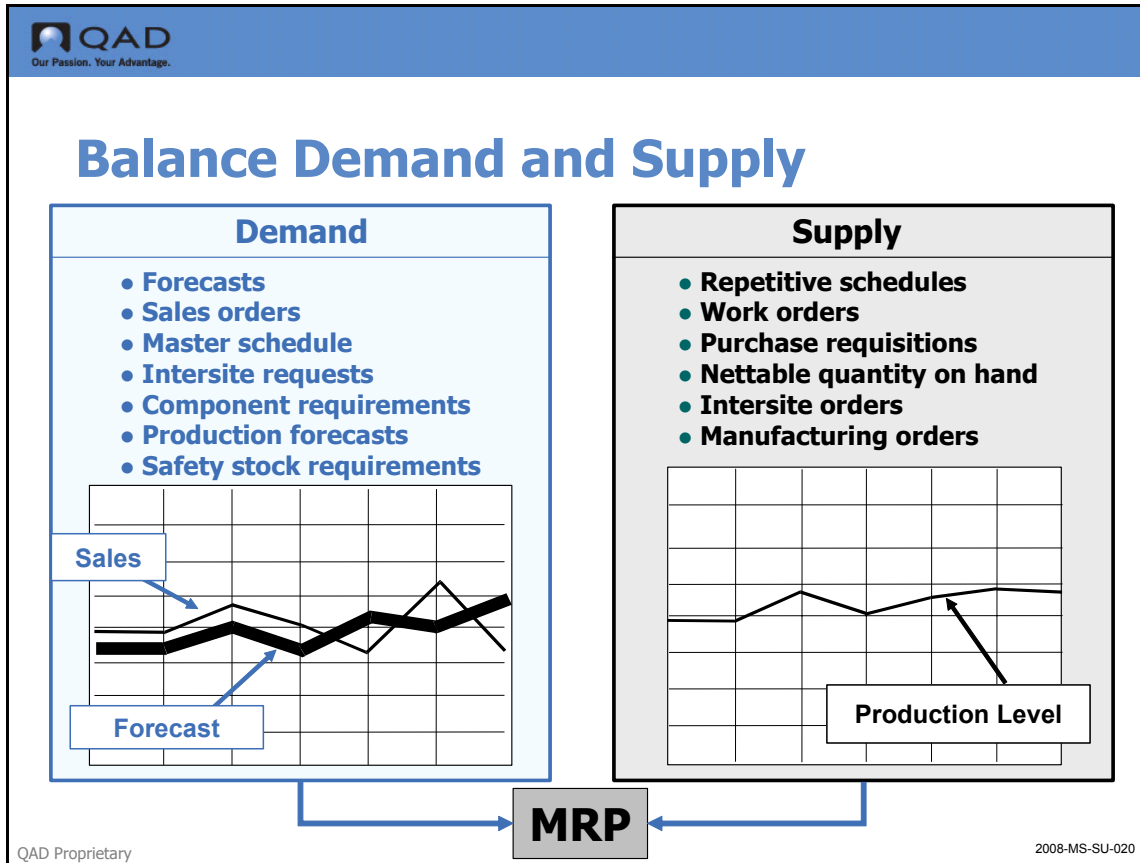
- ✓ Identify some key business considerations before setting up Master Scheduling and RCCP in QAD Enterprise Applications
- ✓ **Set up Master Scheduling and RCCP in QAD Enterprise Applications**
 - ▲ Use Master Scheduling and RCCP in QAD Enterprise Applications

Master Schedule and RCCP Setup



- ▲ Simulated Forecasting
- ▲ Item and Item-Site Planning Maintenance
- ▲ MRP Control
- ▲ Holiday/Calendar Maintenance
- ▲ Resource Maintenance
- ▲ Item Resource Bill Maintenance

Simulated Forecasting



Balance Demand and Supply

The master schedule represents supply which then creates component demand for MRP. Master scheduled items require human judgment to evaluate the schedule and its effects on capacity, material, cost, and customer service. The master scheduler creates required supply orders to meet demand after considering requirements for:

- Independent demand (forecasts and sales orders)
- Dependent demand (related to or derived from the BOM structure for other items or end products), especially when scheduling for important spare parts
- Abnormality
- Seasonality
- Consumption

Sales order demand is the quantity of an item sold, as recorded on confirmed sales orders or required ship schedules. The system recognizes item quantities ordered as demand when a sales order has been confirmed.

- Confirmed = Yes in Sales Order Maintenance (7.1.1), or
 - * A customer planning or shipping schedule has been changed to a required ship schedule using Required Ship Schedule Update (7.5.5), or
 - * Selective Required Ship Schedule Update (7.5.6)

Sales order demand:

- Consumes shipment forecasts based on the item number, site, quantity, and due date recorded on the sales order or customer schedule
- Is abnormal if the quantity or source of demand is not characteristic of quantities anticipated by the current forecast and should not be used to plan future forecasts



Master Schedule and RCCP Setup



- ▲ Simulated Forecasting
- ▲ Item and Item-Site Planning Maintenance
- ▲ MRP Control
- ▲ Holiday/Calendar Maintenance
- ▲ Resource Maintenance
- ▲ Item Resource Bill Maintenance

The screenshot displays the QAD software interface for 'Item-Site Planning Maintenance'. The main window title is 'Item-Site Planning Maintenance' and the description is 'CONTROL UNIT, HOME USE'. The 'Item Number' is '44-100' and the 'Unit of Measure' is 'EA'. The 'Mstr Sched' checkbox is checked. The 'Plan Orders' checkbox is also checked. The 'Time Fence' is set to 0. The 'Order Policy' is 'POQ'. The 'Batch Qty' is 0. The 'Order Period' is 7. The 'Safety Stock' is 0. The 'Safety Time' is 0. The 'Reorder Point' is 0. The 'Rev' is 'AC'. The 'Issue Policy' is checked. The 'Buyer/Planner' is blank. The 'Supplier' is '5003000'. The 'PD Site' is 'train'. The 'Purchase/Manufacture' is 'P'. The 'Configuration Type' is 'ATO'. The 'Inspect' checkbox is checked. The 'Ins LT' is 0. The 'Cum LT' is 0. The 'Mfg LT' is 0. The 'Pur LT' is 1. The 'ATP Enforcement' is 'NONE'. The 'Family ATP' is blank. The 'Run Seq 1' is blank. The '2' is blank. The 'Phantom' checkbox is checked. The 'Minimum Order' is 0. The 'Maximum Order' is 0. The 'Order Multiple' is 0. The 'Op Based Yield' checkbox is checked. The 'Yield Percent' is 100.00%. The 'Run Time' is 0.000. The 'Setup Time' is 0.000. The 'EMT Type' is 'NON-EMT'. The 'Auto EMT Processing' checkbox is checked. The 'Network Code' is blank. The 'Routing Code' is blank. The 'BOM/Formula' is blank.

QAD Proprietary Item-Site Planning Maintenance (1.4.17) 2008-MS-SU-040

Identify Master Scheduled Items

To define an item as master scheduled, set Master Schedule = Yes for that item in:

- # Item Master Maintenance (1.4.1)
- # Item Planning Maintenance (1.4.7) or
- # Item-Site Planning Maintenance (1.4.17) (for multisite environments)
 - Most items are set up with Plan Order = Yes
 - Sometimes master schedule items have this flag set to No

If criteria at each site are the same, use Item-Site Planning Maintenance (1.4.17) (the default for all sites). The system looks at item master data only when no site-specific data has been entered, or when dealing with the item at the default site established in Item Master Maintenance (1.4.1).

Note Master schedules can be created and maintained entirely by master schedulers entering firm planned orders using Master Schedule Order Maintenance or Work Order Maintenance.

Item Planning Maintenance (1.4.7)

Item Number: 44-100 Description: CONTROL UNIT, HOME USE
Unit of Measure: EA

Item Planning Data

Mstr Sched: <input checked="" type="checkbox"/>	Buyer/Planner: <input type="text"/>	Phantom: <input type="checkbox"/>
Plan Orders: <input checked="" type="checkbox"/>	Supplier: 5003000	Minimum Order: <input type="text" value="0"/>
Time Fence: <input type="text" value="0"/>	PD Site: T10000	Maximum Order: <input type="text" value="0"/>
MRP Required: <input checked="" type="checkbox"/>	Purchase/Manufacture: P	Order Multiple: <input type="text" value="0"/>
Order Policy: POQ	Configuration Type: ATO	Op Based Yield: <input type="checkbox"/>
Order Qty: <input type="text" value="0"/>	Inspect: <input type="checkbox"/>	Yield Percent: 100.00%
Batch Qty: <input type="text"/>	1.0 Ins LT: <input type="text" value="0"/> Cum LT: 0	Run Time: <input type="text" value="0.000"/>
Order Period: <input type="text" value="7"/>	Mfg LT: <input type="text" value="0"/> Pur LT: <input type="text" value="1"/>	Setup Time: <input type="text" value="0.000"/>
Safety Stock: <input type="text" value="0"/>	ATP Enforcement: NONE	EMT Type: NON-EMT
Safety Time: <input type="text" value="0"/>	Auto EMT Processing: <input type="checkbox"/>	Network Code: <input type="text"/>
Reorder Point: <input type="text" value="0"/>	Family ATP: <input type="checkbox"/>	Routing Code: <input type="text"/>
Rev: AC	Run Seq 1: <input type="text" value="2"/>	BOM/Formula: <input type="text"/>
Issue Policy: <input checked="" type="checkbox"/>		

Item Planning Maintenance

Master Sched

This flag = Yes for master scheduled items. These items may be planned separately using Selective Materials Plan (23.3). This allows development of the master schedule for:

- Independent demand items
- Planning for dependent demand items

Plan Orders

Most items are set up with Plan Order = Yes.

Sometimes master scheduled items have this flag set to No, allowing manual interaction with the system.

Indicates whether Material Requirements Planning (MRP) should create planned orders for this item. Planned orders are orders with a suggested order quantity and due date calculated by MRP to meet planned future demand.

The Plan Orders flag operates in combination with the Order Policy. If Order Policy is blank, MRP does not plan this item, regardless of the Plan Orders flag. No requirements or action messages are generated.

Time Fence

Time fence is most often used with master scheduled items. It is the number of calendar days inside of which MRP should not automatically make changes to the plan.

- MRP adds the number of days time fence to the system date and does not create any planned orders within this time period
- MRP will delete any planned order (either inside or outside of the time fence) if there is no demand generated for the item
- On firm orders, if change is needed, MRP creates an action message alerting you to what must be done
 - The message “Time Fence Conflict” reminds you why MRP didn't make the change
- To control the schedule manually for a period of time (the next two weeks, for example), set the time fence to 14 days

MRP Required

- A system maintained flag indicating whether an item needs to be replanned
- Net Change Materials Plan (23.1) determines which items to include using this flag
 - Does not replan all items; only items flagged MRP Required = Yes
- An item is automatically flagged for replanning whenever a change is made that affects order timing or quantity, such as:
 - Planning data
 - Inventory balance
 - Product structure
 - Purchase requisitions and orders
 - Sales orders
 - Work orders
 - Master schedule
 - Repetitive schedule

- Forecast
- If MRP Required = Yes, it reflects changes made after the item was planned by MRP

Order Policy

A code controlling the MRP process for this item/product. Values may be:

- Period Order Quantity (POQ)
 - A planned order is created to cover the requirements for a specified number of calendar days, as specified in Order Period.
- Fixed Order Quantity (FOQ)
 - Planned orders are created with the order quantity specified in the Order Qty field
 - If the value for Min Ord is greater than Order Qty, planned orders are created with the order quantity specified in the Min Ord field instead
 - Order Qty must be greater than zero (even if Min Ord is greater than zero) for creating planned orders
- Lot for Lot (LFL)
 - A separate MRP planned order is created to satisfy each net requirement
 - If there are many sources of demand, MRP creates many planned orders
- One Time Only (OTO)
 - A single order is created with an order quantity of one
 - Could be used to plan project activities and milestone events that happen only once
- Blank
 - Obsolete parts, reorder parts, Kanban
 - MRP will not calculate

Note Any other non-blank value is processed as LFL.

Whenever a net requirement exists, MRP creates a planned order to fill it. The quantity and due date of the order are determined by the order policy, lead time, and order modifiers.

- If the Order Policy is not blank and the Plan Orders flag = Yes, MRP plans the item
- If the Order Policy is not blank and the Plan Orders flag = No, then MRP plans the item but does not create planned orders
 - Only action messages are created, suggesting what orders should be entered manually
- If Order Policy is blank, MRP does not plan this item, regardless of the Plan Orders flag
 - No requirements or action messages are generated

The traditional technique for managing the master schedule is to enter and maintain master schedule orders manually, using action message reports.

This process becomes unwieldy if you have a large number of master scheduled items, but may work quite well in some situations. To do this, master scheduled items should be set up with the following:

- Master Schedule = Yes
- Plan Orders = No
- Order Policy = any value but blank

Order Qty

- The normal order quantity for this item or base process
- If this item has an Order Policy of FOQ, all MRP planned orders are created with this quantity
- For manufactured items, order quantity has another use
 - Identifying the normal or average order quantity of the item
- When manufacturing costs are calculated using Routing Cost Roll-Up
 - Setup costs are divided by this order quantity
- When manufacturing lead times are calculated, they are stated in terms of this order quantity
- If this quantity = zero, the system assumes an order quantity of 1 for cost calculations only
- Not used for co-product or by-product items when planned from a base process
- In a process environment, item Order Quantity should always be the same as the formula Batch Quantity
 - Must be done manually

Warning This value affects both cost and lead time calculations and can significantly impact scheduled due dates. Order due dates are determined using the standard manufacturing lead time (for the standard order quantity). If orders are entered for a much different quantity, due dates must be adjusted manually.

Batch Qty

- A system maintained field recording the normal batch quantity for an item
 - Used only with formula/process functions
- Ingredient quantity per and process operation run times are stated in terms of batch quantity
- This quantity is updated by the Batch Quantity Change function

Whenever you change the formula Batch Quantity, make sure that you also change the item Order Quantity. These should always be the same. This must be done manually.

Order Period

This field operates only if the Order Policy is set to POQ. Then MRP looks ahead this number of days when calculating net requirements. One planned order is created to cover the requirement for this period.

- Validated against predefined values, if any, entered in Generalized Codes Maintenance (36.2.13)
- Number of calendar days to cover by one MRP planned order (default is 7)

Safety Stk

Safety stock is the quantity of this item to be maintained in inventory as protection against fluctuation in demand and/or supply. Safety stocks may be particularly important for critical items, a shortage of which can shut down production.

- MRP processing considers safety stock a requirement and schedules planned orders to cover it
- As soon as quantity on hand falls below the safety stock quantity, MRP plans an order
- Safety stock and safety time can inflate inventory levels
 - Safety stock can trigger MRP planning an order even if there is no “real” demand
 - Safety time consistently plans to have inventory on hand before it is actually needed

Note Reorder Report (3.6.2) is the only report in the system that shows safety stock.

Safety Time

- MRP schedules planned orders to be received this many days early
- A hedge against late deliveries

Reorder Point

- The inventory level at which this item should be reordered

PO Site

The PO site entered on the requisition determines which purchasing department takes action on this requisition.

Pur/Mfg

- Purchase/manufacture code controls how the system:
 - Explodes forecasts
 - Plans and creates orders
 - Calculates costs for the item
- Code options include:

- Purchased (P), DRP (D), manufactured (M), routable (R), configured (C), line manufactured (L), flow scheduled (W), and family (F)

Configuration

Allows users to determine if a configured item is assemble-to-order (ATO) or a kit (KIT).

- ATO
 - A discrete end item in itself, produced from a combination of various components
 - The configuration defines components or ingredients of a finished product
- KIT
 - A set of items that are picked for shipment
 - No real assembly takes place
 - Not a physical entity in and of itself; it only exists as a logical superset of its components

Mfg LT

- The normal or average number of working days it takes to manufacture this item

Pur LT

- Normal number of calendar days it takes to complete a purchasing cycle for this item

Inspect

- Indicates whether this item is to be inspected after receipt

Ins LT

- The normal or average number of working days needed to inspect this item after it is received

Cum LT

- The longest possible length of time it would take to have this item/product available if you started today with no components in stock
- QAD Enterprise Applications looks at the manufacturing lead time of this item and its subassemblies, and the purchasing lead time of the raw materials to determine the critical path

Example You are making washing machines from all purchased components. Most components have a purchasing lead time of 4 days or less, except motors which have a purchasing lead time of 20 days. If it takes 2 days to assemble the machine, the cumulative lead time for a washing machine is 22 days, the longest possible time.

Network

- A code used to identify a set of sourcing relationships
 - Only works if Pur/Mfg Code = D (DRP)

Routing Code

- A code identifying the routing or process normally used in the manufacture of this item
- Operates only for manufactured items
- Accesses the routing operation steps to:
 - Calculate product cost
 - Plan for material and capacity

BOM/Formula

- A code identifying the product structure, formula, and/or co-product/by-product structure normally used to manufacture this item
 - For co-products/by-products, this is the base process code

Issue Policy

- A code indicating whether this item should be issued on work order picklists

Phantom

- Indicates if this item is normally stocked or is put together as part of a higher level assembly

Min Ord

- The minimum quantity of this item to be ordered on a single order
- MRP uses Min Ord to determine the quantity of planned orders, regardless of the Order Policy
 - If net requirement is below this amount, MRP creates an order for this minimum quantity
 - If an existing order is below this minimum, MRP creates an action message

Max Ord

Zero (default) means there is no maximum of this item to be ordered on a single order.

- If MRP calculates a requirement greater than this, it creates a planned order for the amount needed
- However, any time MRP sees an order for more than this quantity, it creates an action message

Ord Mult

- The multiple in which orders for this item are placed
- Used only when Order Policy = POQ or LFL
 - Then MRP uses it to determine the quantity of planned orders
 - The net requirement is rounded up to a multiple of this number

Example If the order multiple is 50 and the net requirement is 432, MRP creates a planned order for 450.

Yield %

- The percentage of any order expected to be in usable condition
- Applies to both purchased and manufactured items
- If the yield is less than 100%, then MRP plans orders for more than needed

Example If the net requirement is 100 and the item yield is 50% then the planned order quantity is set to 200.

Run Time

- Standard time in decimal hours (excluding setup time) required to make one unit of this item
 - The sum of all the operation run times
 - This field is for reference only and may appear on some selected reports and inquiries

Setup Time

- Standard time required in decimal hours to set up for one lot of this item
 - The sum of all the operation setup times divided by the item Order Quantity
 - This field is for reference only and may appear on some selected reports and inquiries

EMT Type

This field is used in the Enterprise Material Transfer (EMT) order processing environment.

Auto EMT Processing

This field is used in the multilevel Enterprise Material Transfer (EMT) order processing environment.

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Item-Site Planning Maintenance

Item-Site Planning Maintenance
Go To | Actions | Copy | Print | Preview | Attach

Attachments

Item Number: 44-100 Description: CONTROL UNIT, HOME USE
 Unit of Measure: EA
 Site: train

Item Planning Data

Mstr Sched: <input checked="" type="checkbox"/>	Buyer/Planner: <input type="text"/>	Phantom: <input type="checkbox"/>
Plan Orders: <input checked="" type="checkbox"/>	Supplier: 5003000 <input type="button" value="🔍"/>	Minimum Order: <input type="text" value="0"/>
Time Fence: <input type="text" value="0"/>	PO Site: train	Maximum Order: <input type="text" value="0"/>
MRP Required: <input checked="" type="checkbox"/>	Purchase/Manufacture: P	Order Multiple: <input type="text" value="0"/>
Order Policy: POQ	Configuration Type: ATO <input type="button" value="🔍"/>	Op Based Yield: <input type="text" value="100.00%"/>
Order Qty: <input type="text" value="0"/>	Inspect: <input type="checkbox"/>	Run Time: <input type="text" value="0.000"/>
Batch Qty: <input type="text" value="0"/>	1.0 Ins LT: <input type="text" value="0"/> <input type="button" value="🔍"/>	Cum LT: <input type="text" value="0"/>
Order Period: <input type="text" value="7"/> <input type="button" value="🔍"/>	Mfg LT: <input type="text" value="0"/> <input type="button" value="🔍"/>	Pur LT: <input type="text" value="1"/>
Safety Stock: <input type="text" value="0"/>	ATP Enforcement: NONE <input type="button" value="🔍"/>	Setup Time: <input type="text" value="0.000"/>
Safety Time: <input type="text" value="0"/>	Family ATP: <input type="checkbox"/>	EMT Type: NON-EMT <input type="button" value="🔍"/>
Reorder Point: <input type="text" value="0"/>	Run Seq 1: <input type="text" value=""/> <input type="button" value="🔍"/>	Auto EMT Processing: <input type="checkbox"/>
Rev: AC <input type="button" value="🔍"/>	Run Seq 2: <input type="text" value="2"/> <input type="button" value="🔍"/>	Network Code: <input type="text" value=""/> <input type="button" value="🔍"/>
Issue Policy: <input checked="" type="checkbox"/>		Routing Code: <input type="text" value=""/> <input type="button" value="🔍"/>
		BOM/Formula: <input type="text" value=""/> <input type="button" value="🔍"/>

Item-Site Planning Maintenance (1.4.17)

QAD Proprietary 2008-MS-SU-060

Item-Site Planning Maintenance

Multisite Environments

Warning Takes precedence over Item Planning Maintenance (1.4.7).

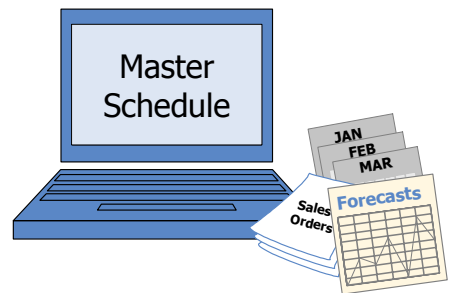
Item planning data controls QAD Enterprise Applications planning and manufacturing functions. If an item is used at multiple sites, planning data can be set up differently for each site.

If an item is used at multiple sites, planning data can be set up differently for each site.

- To define an item as master scheduled, set Master Schedule = Yes in Item-Site Planning Maintenance (1.4.17)
- An item can be master scheduled at one site and not at another

Operational Approaches

- Computer Assisted?
- Fully Automatic?
- Fully Manual?



Approaches to Master Scheduling

There are three approaches to master scheduling in QAD Enterprise Applications:

- 1 Computer assisted (recommended)
- 2 Fully automatic
- 3 Fully manual

Carefully consider these options when setting planning parameters for your items at each site. Each item can be set up in any of these approaches. The next few pages will discuss the options in some detail.

Item Planning Maintenance - Time Fence = 17 Cum LT = 17 (No activity)

Item Planning Maintenance (1.4.7)

QAD Proprietary 2008-MS-SU-080

Computer Assisted Approach (Recommended)

To use the computer-assisted approach for master scheduling, set the following values for each master scheduled item:

- Master Schedule = Yes
- Plan Orders = Yes
- Time Fence = cumulative lead time
- Order Policy = any option but blank

Time Fence

Defining time fences for master scheduled items allows MRP to control orders outside of a specified time period and allows the master scheduler to control orders within that time period.

Specify a planning horizon, in calendar days, for each master scheduled item. When MRP plans orders for these items, it will not schedule order due dates within this time fence.

MRP will plan orders to:

- Cover future requirements
- Provide action messages over the near-term horizon
 - In the near term, the master scheduler maintains the master schedule

Note The time fence is where manual control is exerted in computer-assisted planning. The longer the time fence the more manual involvement the master scheduler will have.

Selective Materials Plan

Selective Materials Plan (23.3) allows planning for master scheduled items separately from MRP items. If you use the computer-assisted approach to master scheduling, you may want to:

- Run Selective Materials Plan for master schedule items only
- Adjust the master schedule and rerun Selective Materials Plan as needed
- Run Selective Materials Plan for MRP-scheduled items only

Note Selective MRP plans requirements only for the items selected. At some point you will need to run Net Change MRP to plan lower level requirements.

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Item Planning Maintenance Fully Automatic Approach

Item Planning Maintenance x

Go To Actions Copy Print Preview Attach

Attachments

Item Number: 44-100 Description: CONTROL UNIT, HOME USE
Unit of Measure: EA

Item Planning Data

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

Buyer/Planner:
Supplier: 5003000
PO Site: T10000
Purchase/Manufacture: P
Configuration Type: ATO
Inspect:
1.0 Ins LT: 0 Cum LT: 0
Mfg LT: 0 Pur LT: 1
ATP Enforcement: NONE
Family ATP:
Run Seq 1: 2

Phantom:
Minimum Order: 0
Maximum Order: 0
Order Multiple: 0
Op Based Yield:
Yield Percent: 100.00%
Run Time: 0.000
Setup Time: 0.000
EMT Type: NON-EMT
Auto EMT Processing:
Network Code:
Routing Code:
BOM/Formula:

Fully Automatic

Item Planning Maintenance (1.4.7)

QAD Proprietary 2008-MS-SU-090

Fully Automatic Approach

The master schedule can be generated entirely by MRP. This means that the system has complete control over master scheduled items with no distinction between master scheduled and MRP items. When this approach is used, material plans may change dramatically each time MRP is run. A master schedule order may be expedited one day and canceled the next for example.

To use the fully automatic approach to master scheduled items, set the following values:

- Master Schedule = Yes
- Plan Orders = Yes
- Time Fence= 0
- Order Policy = any option but blank

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Item Planning Maintenance Fully Manual Approach

Item Planning Maintenance x

Go To Actions Copy Print Preview Attach

Attachments

Item Number: 02-0010 Description: ERASER REFILL PACK
Unit of Measure: EA

Item Planning Data

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

Buyer/Planner: PL Phantom:
Supplier: Minimum Order: 0
PO Site: train Maximum Order: 0
Purchase/Manufacture: P Order Multiple: 120
Configuration Type: ATO Op Based Yield:
Inspect: Yield Percent: 100.00%
1.0 Ins LT: 0 Cum LT: 2 Run Time: 0.000
Mfg LT: 0 Pur LT: 2 Setup Time: 0.000
ATP Enforcement: NONE EMT Type: NON-EMT
Auto EMT Processing:
Family ATP: Network Code:
Run Seq 1: Routing Code:
2: BOM/Formula:

Fully Manual

Item Planning Maintenance (1.4.7)

QAD Proprietary 2008-MS-SU-100

Fully Manual Approach

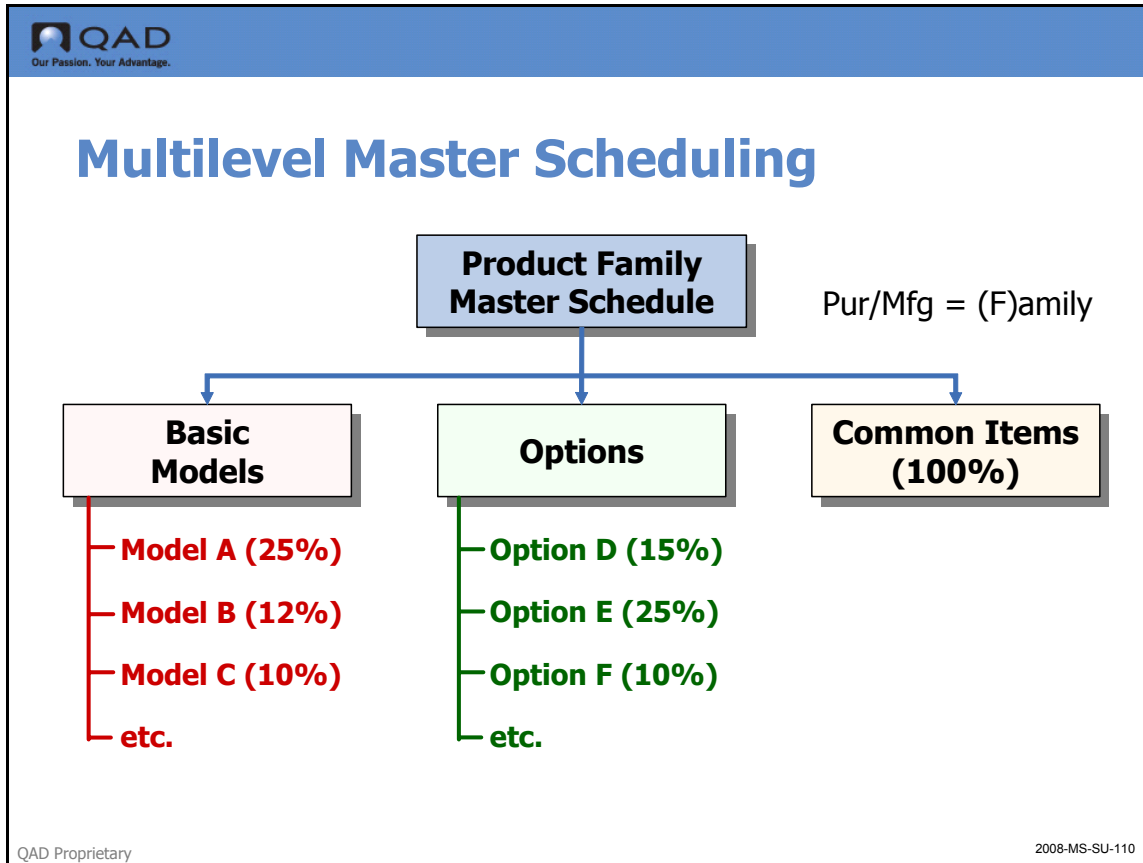
Fully Manual Scheduling

- Master Schedule = Yes
- Plan Orders = No
- Order Policy = Any option other than blank

Enter all master scheduled orders manually. MRP will not generate any planned orders, but will issue action messages suggesting that orders be created if none exist.

Note In a make to stock environment it seems unlikely that all master scheduled items would be planned manually. However in a make to order environment it is more likely and in a job shop situation very likely.

There are situations where the master scheduler wants to know the requirement for an item but does not want the system to plan an order that will never be released. One example of this is water used in some food processing. The planner may wish to know how much water this months schedule requires, but will never issue a purchase order to buy the water as it is cover by plant overhead as a utility. The action message will specify the amount of water needed. In contrast some processes used specially processed bottled water that is purchased with a purchase order.



Multilevel Master Scheduling

- Plan family-level items using either the fully automatic or computer-assisted technique
- Use MRP to plan orders to generate production forecasts for the components of family items

Sometimes, demand for an item is dependent on demand for another item. This is a common occurrence when the master schedules for several sets of items are related through planning bills or product structures.

- Typical in assemble-to-order environments (automotive, computer manufacturers, etc.)
- Unrealistic to stock all of the possible combinations of end items
- Impossible to accurately forecast all possible combinations of end items for master scheduling

For master scheduling purposes, it is not possible to accurately forecast the detailed combinations of potential products that can be manufactured and sold.

Forecasting at the family-item level or the option-item level is more accurate and can be used to drive the master schedule process.

Typically, the top-level item of a multilevel master scheduled product structure represents the family of buildable products that can be configured from a set of available models and options. It represents an item that is itself never manufactured or stocked.

In QAD Enterprise Applications, such an item is assigned the Pur/Mfg code of [F]amily.

The Structure Code settings of P or O dictate how QAD Enterprise Applications will handle the dependent demand forecast driven off of the parent item.

Production Forecasts

As a result of establishing a family planning structure and then forecasting and master scheduling at the family level, QAD Enterprise Applications will calculate the demand for the component items. This derived demand resulting from the family or upper-level independent demand is a Production Forecast.

- The production forecast derives from the:
 - Master production schedule, and
 - Forecast percentage specified in the planning bill
- Production forecast amounts:
 - Display in master schedule reports and inquiries
 - Contribute to the total demand that MRP regards as input

When planning bills, forecasts and master schedules are established at the family-item level, QAD Enterprise Applications automatically calculates the derived demand for components of the family or upper-level item.

These calculations are based on the available-to-promise quantities for the family-level item and the quantity per and forecast percentage for the components of that family item.

As forecast for the family-level item is consumed, the available net forecast for that item changes, resulting in revised calculations for the production forecast the next time MRP is run.

Top-Level Items

Usually, the top-level item of a multilevel master scheduled product structure or planning bill represents the entire family of products that can be configured from a set of available models and options.

- Define family items with a Pur/Mfg code of Family (F) in:
 - # Item Planning Maintenance (1.4.7) or Item-Site Planning Maintenance (1.4.17)
- Components of the family item in the planning bill can be either:
 - The actual manufactured items or configured products, or
 - Item groups representing common components or selected options

Family-Level Item Values

Set Master Schedule = Yes and Plan Orders = Yes for family-level items.

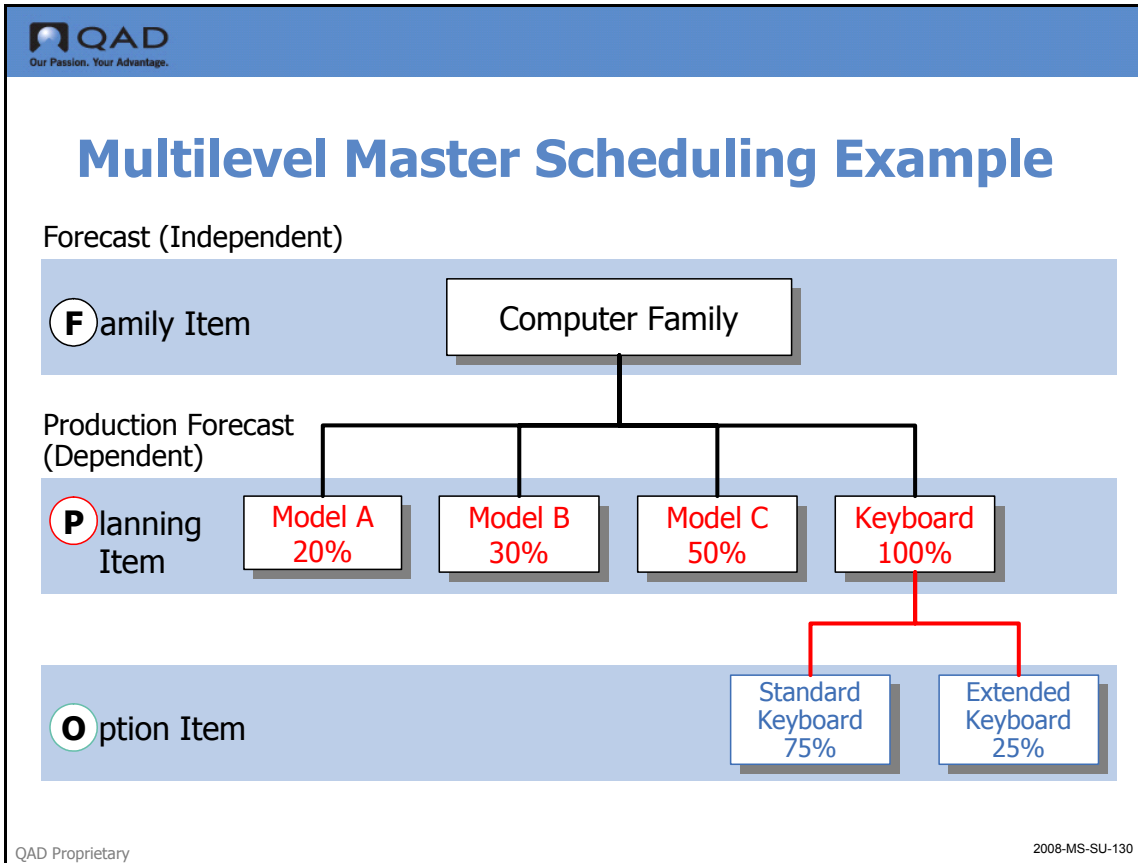
- MRP calculates net requirements and creates or adjusts planned orders accordingly
- Manually control the schedule for a period of time by setting the time fence appropriately

Time Fence (Optional)

- MRP adds the time fence to the system date
 - MRP does not create any planned orders within that time period
 - MRP will delete any planned order if there is no demand generated for the item
 - If change is needed on firm orders, MRP creates an action message

Order Policy

Any option other than blank



Example

The multilevel schedule consists of forecasts that are exploded by MRP.

Discussed in the following Training Guide: Product Structures and Formulas



Master Schedule and RCCP Setup



- ▲ Simulated Forecasting
- ▲ Item and Item-Site Planning Maintenance
- ▲ MRP Control
- ▲ Holiday/Calendar Maintenance
- ▲ Resource Maintenance
- ▲ Item Resource Bill Maintenance

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MRP Control

MRP Control – Planning Horizon

Item Planning Maintenance x
 Attachments
 Item Number: 03-0030 Description: DISPLAY RACK
 Unit of Measure: EA

Item Planning Data
 Matr Sched: Buyer/Planner: PH
 Plan Orders: Supplier: Phantom:
 Time Fence: 0 PO Site: train Minimum Order: 0
 MRP Required: Purchase/Manufacture: R Maximum Order: 0
 Order Policy: LFL Configuration Type: Order Multiple: 0
 Order Qty: 0 Inspect: Op Based Yield: Yield Percent: 100.00%
 Batch Qty: 1.0 Ins LT: 0 Cum LT: 20 Run Time: 0.500
 Order Period: 7 Mfg LT: 7 Pur LT: 0 Setup Time: 0.000
 Safety Stock: 0 ATP Enforcement: NONE Auto EMT Processing:
 Recorder Point: 0 Family ATP: Network Code:
 Rev: D Run Seq 1: Routing Code:
 Issue Policy: 2 BOM/Formula:

MRP Control x
 MRP Horizon: 21
 MRP/DRP Combined:
 Summary Default: Monday
 Order Release Horizon: 0
 Enable Op Based Yield:
 Use AppServer:
 AppServer Name:
 Default Number of Threads: 0

Time Fence
Longest Cumulative Lead Time
Planning Horizon
 Master Schedule
 Work Orders
 Repetitive Schedules
Planned Orders
Calendar Days
 0 7 20 21
 QAD Proprietary 2008-MS-SU-150

Time Fence

- Number of calendar days from the system date inside of which MRP will not create or change existing planned orders
 - Order action messages, however, will be generated if necessary
- The time fence is where manual control is exerted in computer-assisted master scheduling

MRP Horizon

The MRP horizon should be at least as long as the master scheduled item with the longest cumulative lead time for the item being scheduled or else key materials may not be planned to be available when required.

- MRP only processes material requirements within this planning horizon

Order Release Horizon

Order Release Horizon is the number of days MRP looks to the future to see when orders are due to be released. In the screen shot the value is seven days. MRP will start creating action messages “order due for release” seven days before the release date.

Warning If the horizon is changed, items are not automatically flagged for net change replanning. Run Regenerate Materials Plan (23.2).



Master Schedule and RCCP Setup



- ▲ Simulated Forecasting
- ▲ Item and Item-Site Planning Maintenance
- ▲ MRP Control
- ▲ **Holiday/Calendar Maintenance**
- ▲ Resource Maintenance
- ▲ Item Resource Bill Maintenance

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Holiday/Calendar Maintenance

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Calendar Maintenance

Calendar Maintenance (36.2.5)

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Calendar Maintenance

Calendar Maintenance (36.2.5) is only relevant for master scheduling when using the fully automatic or computer-assisted method.

- Calendars define:
 - The standard work week for a site and the work centers in it
 - Exceptions to the normal calendar, such as scheduled overtime or shutdown periods
- In a calendar, work days = Yes and nonwork days = No

Note If the Site, Work Center, and Machine are blank, the calendar acts as the default for the entire company (must be blank for RCCP.)

Manufacturing order due dates are scheduled only on work days. Each work day has a production capacity in hours, excluding breaks and non-productive time. Manufacturing operations can only be scheduled up to the production capacity of the day.

You can specify exceptions for overtime or machine downtime. This information is used only when operation schedules are prepared, not when calculating manufacturing order due dates. When a discrepancy occurs, you may have to adjust the due date.

To implement shop calendars correctly:

- Create a calendar with Site, Work Center, and Machine left blank
 - This is the system calendar
- Create a calendar for each site with the Work Center and Machine left blank
 - This is the calendar used by CRP to calculate capacity, including holidays
- Create Work Center calendars with site and work center filled in

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


- If none is found, it looks for a match on Site and Work Center with Machine = Blank
- If none is found, it looks for a match on Site with both Work Center and Machine = Blank
- If none is found, it looks for a default calendar with Site, Work Center, Machine = Blank

To schedule exceptions, enter the Reference and specify the number of hours per day (positive for overtime, negative for downtime or holidays).

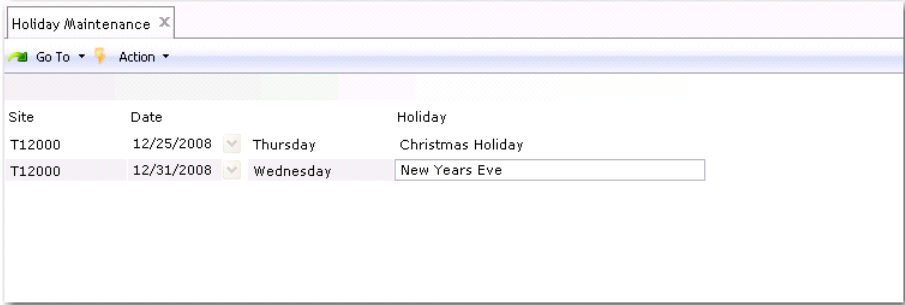
Example If you normally work 8 hours a day, enter -8 hours for a shutdown date.

Use Start and End dates to schedule multiple days of overtime or downtime.

Warning When scheduling overtime, you could schedule a non-work day. When scheduling downtime, each of the days from Start through End must have at least this number of hours normally scheduled, or you could end up with a negative production capacity on those days.


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Holiday Maintenance



Site	Date	Holiday
T12000	12/25/2008	Christmas Holiday
T12000	12/31/2008	New Years Eve

Holiday Maintenance (36.2.1)

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2008-MS-SU-180

Holiday Maintenance

Holidays are days that no one works; the plant is shut down and no production is scheduled. Holidays can be different at each site.

Manufacturing orders are never due and operations are never scheduled on a holiday (you can override this, if desired.)

If a holiday doesn't apply to all work centers, it isn't a holiday. It is an exception to the normal shop calendar. Exceptions are entered using Calendar Maintenance (36.2.5), recording the day off only for the work centers to which it applies.



Rough-Cut Capacity Planning

Examples of Resources

- ▲ Electricity
- ▲ Storage
- ▲ Labor
- ▲ Water

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Rough-Cut Capacity Planning

Rough-cut capacity planning:

- Shows consumption of critical resources
- Enables master schedulers to:
 - Test end-item production plans
 - Calculate capacity to meet the master schedule
 - Compare and modify required and planned capacity
 - Analyze load on key resources by time period
 - Isolate and resolve potential problems





Master Schedule and RCCP Setup



- ▲ Simulated Forecasting
- ▲ Item and Item-Site Planning Maintenance
- ▲ MRP Control
- ▲ Holiday/Calendar Maintenance
- ▲ Resource Maintenance
- ▲ Item Resource Bill Maintenance

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Resource Maintenance

Resource: 1000 Site: train
Description: ASSEMBLY/PACK MANPOWER
Unit of Measure: HR

Reference	Start	End Date	Cap/Day
Normal	10/22/2008		65.0
Downtime	12/24/2008	1/3/2009	-40.0
Seasonal	5/1/2008	8/1/2008	20.0

References allow exact accounting of specific resources over specific time periods

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Resource Maintenance

Resources must be defined before you can evaluate resource load.

Product line planning, master scheduling, and operations planning activities are feasible only if key resources are available. Rough-cut resource planning is usually done prior to committing production resources to a plan.

First, identify the resources in your company that are bottlenecks or can't be easily increased in the short term. These are your key resources. Examples of key resources include specialized labor, special machinery, and cash.

- Define key resources in Resource Maintenance (21.1), then set up resource bills for:
 - Individual product lines in PL Resource Bill Maintenance (21.5)

- Items in Item Resource Bill Maintenance (21.17)

Load Profiles

Resource bills (also called load profiles) help you compare the resource capacity needed for production against the available capacity. If you need more of any resource than you have available, you must change the plan or increase the resource capacity.

Resource capacity changes over time. For example, another machine or shift is added, or downtime and holidays are scheduled. These changes are recorded with a Reference code, Start Date and End Date.

Cap/Day can be positive or negative. If the normal capacity for a resource is 100 hours per day, and you are planning a shutdown on May 10 and 11, you would enter it as:

- Reference [Shutdown]
- Start Date [May 10]
- End Date [May 11] and
- Cap/Day [-100]

A resource's capacity on a specific date is the cumulative capacity from the references which are in effect on that date.

Description

- A short description of this resource
- Description prints on most reports and inquiries, as space permits

When you access Help from the Resource field, a pop-up window displays the resource codes and descriptions. You can search through this window in sequence by either field or description. This may influence how you set up your descriptions. For example, you may choose to make the first few characters or words significant for searching purposes.

Reference

This optional code identifies a level of resource capacity, such as:

- Normal
- Vacation
- Shutdown

If you use QAD Enterprise Applications Enterprise Ops Plan, you can access the capacity information for this time period on item resource bills that reference this code. Otherwise, the reference merely describes the resource capacity level for the specified time period.

The capacity of each resource is stated in terms of an average level per day over a certain time period. The capacity may change, perhaps for vacation plant shutdowns or adding a second shift. These capacity changes are identified by reference. The total capacity on any given day is the sum of the capacity components effective on that day.

Example A machine resource has the following capacity levels:

- NORMAL Jan 1 to Dec 31 7 hrs/day
- SHUTDOWN Aug 1 to Aug 31 -7 hrs/day
- 2nd SHIFT Oct 1 to Dec 31 7 hrs/day

The total capacity on August 15th is zero, while the total capacity on October 15th is 14 hours per day.

Key Resource

A single resource can consist of multiple positive or negative dated components.

RCCP tests resources that may limit production of an item's schedule:

- Skilled labor hours
- Production line quantities per hour
- Inspection or testing hours
- Scheduled losses of resource capacity
 - Overlapping vacations
 - Equipment replacement

Components of a Resource

- Each key resource is defined separately in QAD Enterprise Applications
 - Available in different quantities at different times of the year
- Normal resource quantities are entered as primary resource references or components
- Additional references include the amount by which they add to or subtract from capacity

Example In a firm where five specialized fabricators (such as aluminum welders) are employed, the resource is defined in welder hours. The first component could be defined as the hours that the five employees provide in capacity per day (5 welders x 7 hours = 35 hours/day).

Adding Time-Phased Changes

Additional references can be added for employee's vacations that reduce capacity

- BobV –7.0 hours, July 1 to July 10

Periods of scheduled overtime will increase capacity

- OT 20 hours, September 15 to October 15

When the resource is tested against scheduled production, QAD Enterprise Applications calculates the available resource quantity using these dates and the shop floor calendar.



Master Schedule and RCCP Setup



- ▲ Simulated Forecasting
- ▲ Item and Item-Site Planning Maintenance
- ▲ MRP Control
- ▲ Holiday/Calendar Maintenance
- ▲ Resource Maintenance
- ▲ Item Resource Bill Maintenance

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Item Resource Bill Maintenance

Item Resource Bill Maintenance X

Go To Actions Copy Print Preview

Item Number: 44-110

Site: T20000

Resource: 4000

Start Date:

End Date:

Resource Qty Per:

Lead Time (Days):

Offset (Days):

Item Resource Bill Maintenance(21.17)

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Item Resource Bill Maintenance

Item resource bills are used only to evaluate the manufacturing schedule. Item Resource Bill Maintenance (21.17) records information on resource requirements for individual items.

Manufacturing schedules are feasible only if key resources are available. Rough-cut capacity planning verifies resource availability prior to committing production resources. An item resource bill (or load profile) specifies the amount of a resource required to make one unit of the item. The resource amount is expressed in the resource unit of measure (tons, hours, etc.).

Example To produce a case of ice cream, a blending machine processes 36 kilos of vanilla cream. In the resource record for the blending machine, capacity is expressed in metric tonnes. Therefore, the resource quantity per for the ice cream item resource bill is 0.036 tonnes.

The resource bill also determines when and for how long the resource is required.

Lead Time (Days)

- Identifies the number of production days the resource is required

Offset (Days)

- Identifies how many days in advance of production the resource is required

For the ice cream, the blending machine is used for one work day, but the order for the ice cream must be released two days in advance of the requirement.

Note Lead time must always be at least 1 (if zero, no load will be calculated).

Review the Item Resource Load Summary Report (21.22) and Item Resource Load Detail Report (21.24) before committing resources to the production plan.

If you need more of any resource than you have available, you must either change the plan or increase the capacity of the resource.

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Create the End-Item Load

Master Schedule Order Maint X

Go To Action

Work Order: 10270030 ID: 406087

Item Number: 44-110 CONTROL UNIT, AUTOMOTIVE

Type:

Site: T12000

Quantity Ordered: 1,150.0

Quantity Completed: 0.0

Qty Rejected: 0.0

Work Order Status: F

Sales/Job:

Supplier:

Yield Percent: 100.00%

Remarks:

Comments:

Item Resource Bill Maintenance X

Go To Action

Item Number: 44-110 CONTROL UNIT, AUTOMOTIVE

Site: T12000

Resource:

Start Date: 10/27/2008

End Date:

Resource Qty Per: 0.40000000

Lead Time (Days): 1

Offset (Days): 0

$1,150 \times 0.4 = 460$ labor hours required for production

QAD Enterprise Applications multiplies the end item production quantity by the Quantity Per conversion factor to obtain the quantity of resources required.

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Creating the End-Item Load

QAD Enterprise Applications multiplies the end item production quantity by the Quantity Per conversion factor to obtain the quantity of resources required.

Menu Master Schedule Order Maintenance (22.13)

Menu Item Resource Bill Maintenance (21.17)

Production Conversion Factor

To see exactly how much of a certain resource is required by a scheduled production quantity, the production must be measured in resource units—typically hours or items per day. To do this in

QAD Enterprise Applications, determine a conversion factor and enter it in the Resource Qty Per field in Item Resource Bill Maintenance (21.17).

Example To convert production schedules into resource units for RCCP, determine how many hours (or other units) it takes to create a single scheduled end item. If it takes 1.3 hours to complete one end item, the conversion is 1.3. To make 100 end items for the scheduled item, it would take $100 \times 1.3 = 130$ hours.

Lead Times

In order for QAD Enterprise Applications to calculate capacity, at least 1 must be entered in the Lead Time field in Item Resource Bill Maintenance (21.17).

- Lead time is the number of days over which a resource must be available
- A testing process might be required three days after work order release and need two days
 - Offset = -3, Lead Time = 2
- Schedule the first date the resource is required
 - Use work order release dates and number of days the resource is needed
- The Offset is the number of days from work order release that a resource must be available
 - Positive for days before work order release
 - Negative for days following
 - Zero for the same day

Note This method of calculating the offset is the opposite of that used for product structures.

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Create the End-Item Load

Item Planning Maintenance x

Go To Action

Item Number: 44-110 Description: CONTROL UNIT, AUTOMOTIVE
Unit of Measure: EA

Item Planning Data

Item Resource Bill Maintenance x

Go To Action

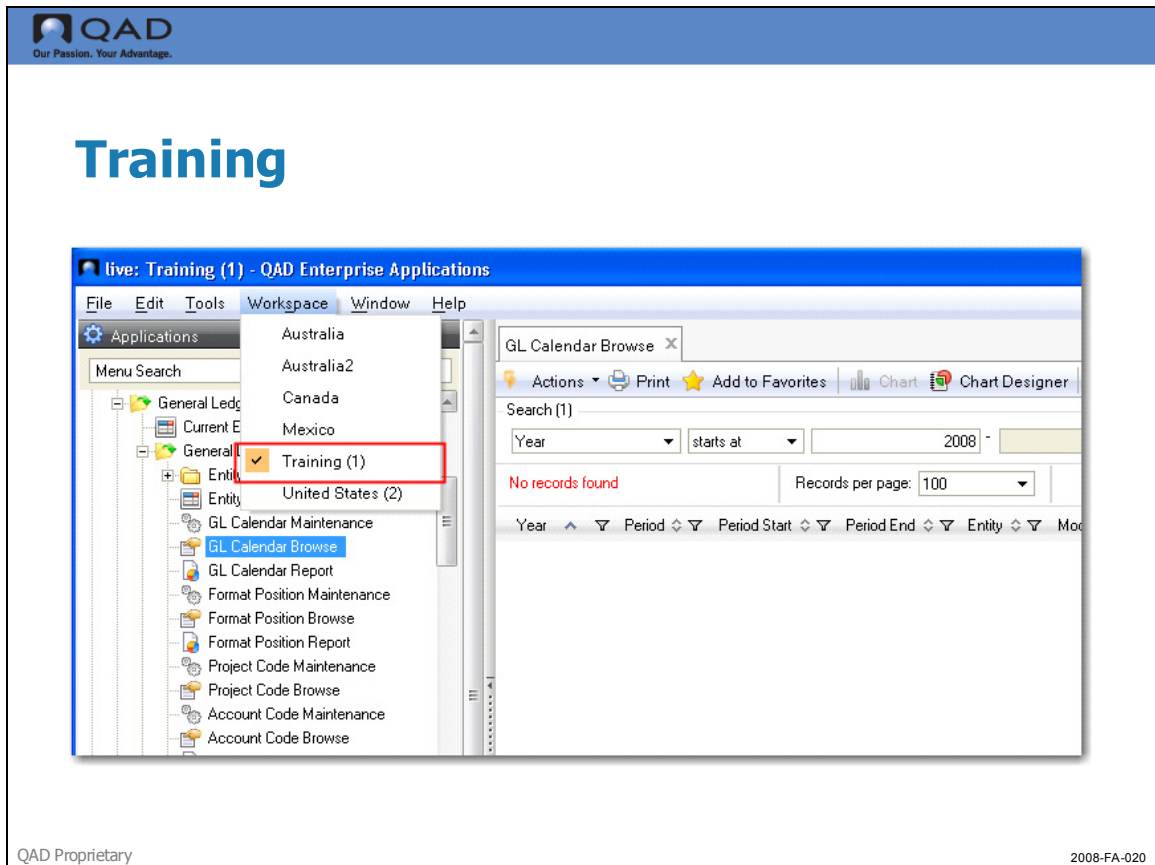
Item Number: 44-110 CONTROL UNIT, AUTOMOTIVE
Site: T12000
Resource:
Start Date: 10/27/2008
End Date:
Resource Qty Per: 0.400000000
Lead Time (Days): 1
Offset (Days): 0

Phantom:
Minimum Order: 0
Maximum Order: 0
Order Multiple: 0
Op Based Yield:
Yield Percent: 100.00
Run Time: 0.400000000
Setup Time: 0.000000000
EMT Type: NON-EMT
to EMT Processing:
Code:
Formula:

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Menu Item Planning Maintenance (1.4.7)

Menu Item Resource Bill Maintenance (21.17)



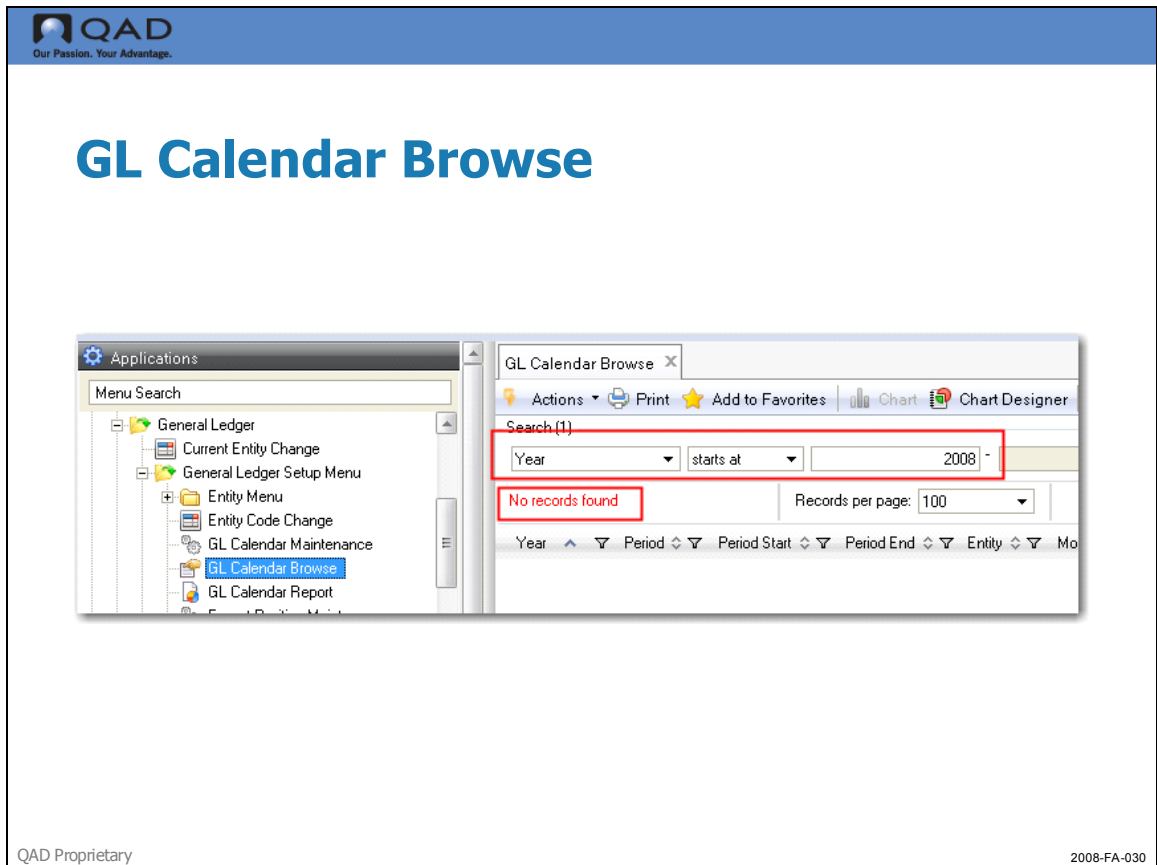
QAD Proprietary

2008-FA-020

First Activity: Preliminary Setup

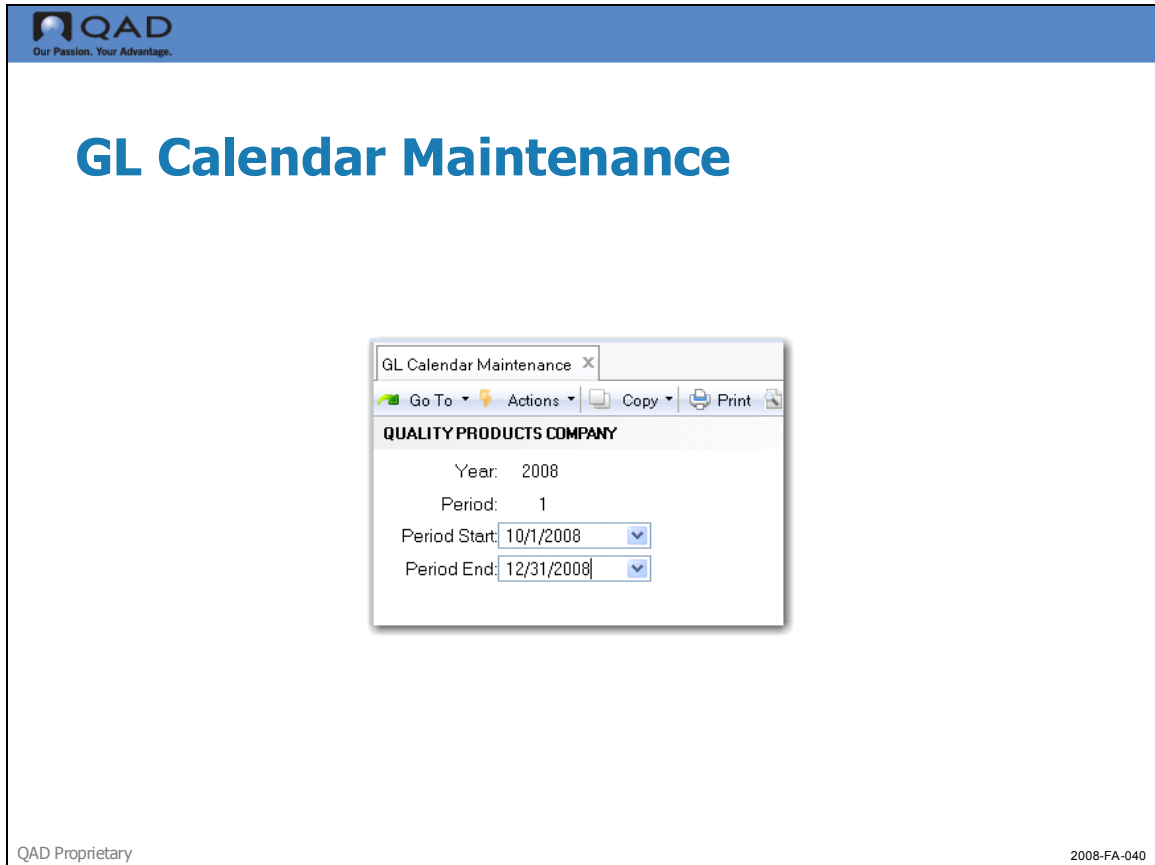
First Activity for all 2008 SE Courseware

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



2 Verify GL Calendar Period

- a Use GL Calendar Browse (25.3.5) or (33.1.1)
- b Start search at current year
- c You should see a list of months for the current year
- d If you find “No Records” continue to step three.



3 Use GL Calendar Maintenance (25.3.4)

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

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

Setup Exercises

Enter and Review Item Data

Instructions: The objective of this activity is to review critical fields of some items used in this course and ensure that they are set correctly. Incorrect item settings could cause problems with subsequent activities. Please check the following settings carefully using Item Master Maintenance (1.4.1).

Items 1000-00 and 1100-00

Product Line: 1000
 Lot/Serial Control: <blank>
 Master Schedule: Yes
 Plan Order: Yes
 Order Policy: POQ
 Buyer/Planner: [your initials]
 Purchase/Manufactured: M

Items 1000-10, 1000-20, 1000-30, 1000-40, 1000-50:

Product Line: 1000
 Lot/Serial Control: <blank>
 Master Schedule: No
 Plan Order: Yes
 Order Policy: POQ
 Buyer/Planner: [your initials]
 Purchase/Manufactured: P

Enter and Review a Forecast

Instructions: This activity covers how to enter and review a forecast, and how to set up and observe forecast consumption. Before we do this, however, we will review the items that will be used for the forecasting and master scheduling activities.

- 1 Using Product Structure Inquiry (13.6), review the parent/component relationship for parent item 1000-00, and its component items 1000-10, 1000-20, 1000-30, 1000-40, 1000-50
Be sure that the quantity per is 1 per For the -10 & -20 and 2 per, for the -30, -40, & -50. and that the End Effective date is blank. All other fields can remain as they are.
- 2 Using Product Structure Inquiry (13.6), review the parent/component relationship for parent item 1100-00, and its component item 1200-00
- 3 In the Sales Order Control (7.1.24) program, set Ln Format S/M to Single and set Consume Fwd to 1, Consume Back to 2.

Note If you have completed the Forecast simulation activities you will have a forecast for all of next year for item 1100-00 at site PROTO. You may simply override the current forecast with the numbers from the next activity if the weeks overlap.

- 4 Use Forecast Maintenance (22.1) to enter the following weekly forecast for item 1100-00 at site PROTO, beginning with the Monday of the next week and covering the following nine weeks

Forecast Shipments of 1100-00

<u>Weeks</u>	<u>Quantity</u>
1	100.0
2	120.0
3	130.0
4	140.0
5	150.0
6	140.0
7	130.0
8	120.0
9	110.0
10	<u>100.0</u>

- 5 Run the Forecast Report (22.4) on both summary and detail for 1100-00 only at site PROTO.
- 6 Using Master Schedule Summary Inquiry (22.18), run the master schedule summary inquiry for 1100-00 at site PROTO. You should see all ten periods of forecast, plus the forecast simulation distribution.
- 7 Using Sales Order Maintenance (7.1.1), enter a new Sales Order for customer CU100.
 - a Make certain that the due date is two weeks from next Monday, the site is set to PROTO, and Confirmed = Yes.
 - b On line 1, enter item 1100-00 and a quantity of 250. Save the order.
- 8 Run the Forecast Inquiry (22.3) for 1100-00 at site PROTO and review how the forecast has been consumed in the Net Forecast column.
- 9 Run the Master Schedule Summary Inquiry (22.18) and Master Schedule Detail Inquiry (22.21) for 1100-00, site PROTO, and review the forecast.

Create a Labor Resource

Instructions: In this activity, create a labor resource and a conversion factor and then compare the labor resource capacities to the load.

- 1 Using Calendar Maintenance (36.2.5), verify there is a shop calendar for site PROTO (with work center and machine blank). Make sure that Monday through Friday are the established work days and that each day shows eight hours.
- 2 Use Resource Maintenance (21.1) to add Labor in the Resource field for site PROTO. Use a description of Labor hours. The unit of measure (UM) is HR for hours.
- 3 Add the following two references , named as shown:
 - a Use dates for this year (xx = current year).

<u>Reference</u>	<u>Field</u>	<u>Data</u>
Normal	Start:	01/01/xx
	End:	[leave end date blank]
	Cap/Day:	32.0 (4 assemblers x 8 hours/day)
Downtime	Start:	four weeks from next Monday
	End:	five weeks from next Monday
	Cap/Day:	-32.0 (4 assemblers x 8 hours/day)

Use Resource Browse 21.2 to verify your data are correct. Set the browse to begin at labor.

Add a Family Item

Instructions: In this activity, we will add a family item in order to forecast and schedule multiple items within the same family.

- 1 Use Item Master Inquiry (1.4.2) to review item 1500, Chain Lube Planning Item. Note the following fields.

Product Line:	1500
Site:	PROTO
Master Sched:	yes
Plan Orders:	yes
Order Policy:	POQ
Buyer/Planner:	your initials
Purchase/Manufacture:	F

- 2 Using Product Structure Maintenance (13.5):
 - a Add parent item 1500
 - b Make one of its components, 1500-10 with a Qty 1, Structure Type of P and a Forecast% of 20.
 - c Make one of its components item 1500-20 with a Qty 1, Structure Type of P and a Forecast% of 30.
 - d Make one of its components item 1500-50 with a Qty 1, Structure Type of P and a Forecast% of 50.
- 3 Use Forecast Maintenance (22.1) to enter a forecast for family planning item 1500, at site PROTO; 1000 for each of six weeks, starting with next week.
- 4 Use Master Schedule Summary Inquiry (22.18) to view items and 1100-00 and 1500 at site PROTO, note the forecast for the planning item 1500, and that there are no requirements for the 1500-10.
- 5 Run Selective MRP (23.3) for items in the range from 1500 to 1500-50 at site PROTO.
- 6 Review the Master Schedule Summary for 1500, 1500-10, 1500-20 and 1500-50. Note the production forecast for 200 per period of the 1500-10, 300 per period of the 1500-20 and 500 per period of the 1500-50. The forecast for the planning item is shown for pegging purposes only. Because its purchase/manufacture code is F MRP will not plan orders for the planning item.

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- 7 Using Sales Order Maintenance (7.1.1), create a sales order in which you sell item 1500-10, at site PROTO, qty 100, due one week from Monday to customer number CU100.
- 8 Run Selective MRP for items in the range from 1500 to 1500-50 at site PROTO.
- 9 Review the Master Schedule Summary for 1500 and 1500-10.

Create an Item Resource Bill

Instructions: In this activity, you create an item resource bill that will be used to determine if the master schedule is achievable.

- 1 Items a1500-10, 1500-20 and 1500-50 require labor resources. Use Item Resource Bill Maintenance (21.17) to create an Item Resource Bill with the following data:

Item	1000-00	1500-10	1500-20	1500-50
Site:	PROTO	PROTO	PROTO	PROTO
Resource:	Labor	Labor	Labor	Labor
Start Date:	blank	blank	blank	blank
End Date:	blank	blank	blank	blank
Qty. Per:	4	0.05	0.1	0.2
Lead Time:	2	1	1	1

- 2 Review the Item Resource Load Summary Inquiry (21.21) and Item Resource Load Detail Inquiry (21.23).
 - Has the schedule exceeded capacity in any period?
 - Based on this information, do you think that the plan can be made?



Course Overview

- ✓ Introduction to Master Scheduling and RCCP
- ✓ Business Considerations
- ✓ Set up Master Scheduling and RCCP
- ▲ Use Master Scheduling and RCCP

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Course Overview

CHAPTER 4

Using Master Scheduling and RCCP



Use Master Scheduling and RCCP

- ✓ Identify key business considerations before setting up Master Scheduling and RCCP in QAD Enterprise Applications
- ✓ Set up Master Scheduling and RCCP in QAD Enterprise Applications
- ✓ **Use Master Scheduling and RCCP in QAD Enterprise Applications**



Using Master Scheduling and RCCP



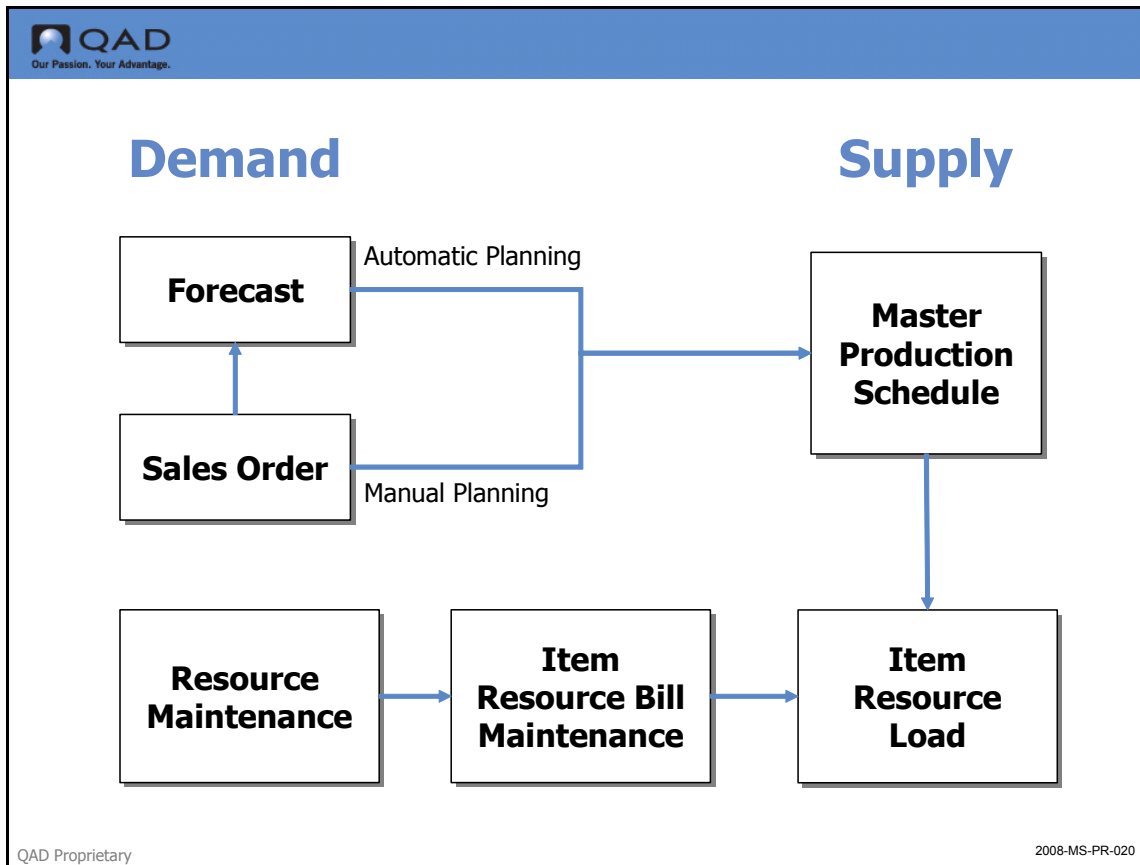
- ▲ Master Schedule Order Maintenance
- ▲ Master Schedule Order Browse/Report
- ▲ Sales Order Maintenance (Abnormal Demand)
- ▲ Seasonal Build Maintenance (optional)
- ▲ Seasonal Build Browse/Report (optional)
- ▲ Master Schedule Summary Inquiry/Report
- ▲ Master Schedule Detail Inquiry/Report
- ▲ Selective Materials Plan (optional)
- ▲ Item Resource Load Summary Inquiry/Report
- ▲ Item Resource Load Detail Inquiry/Report

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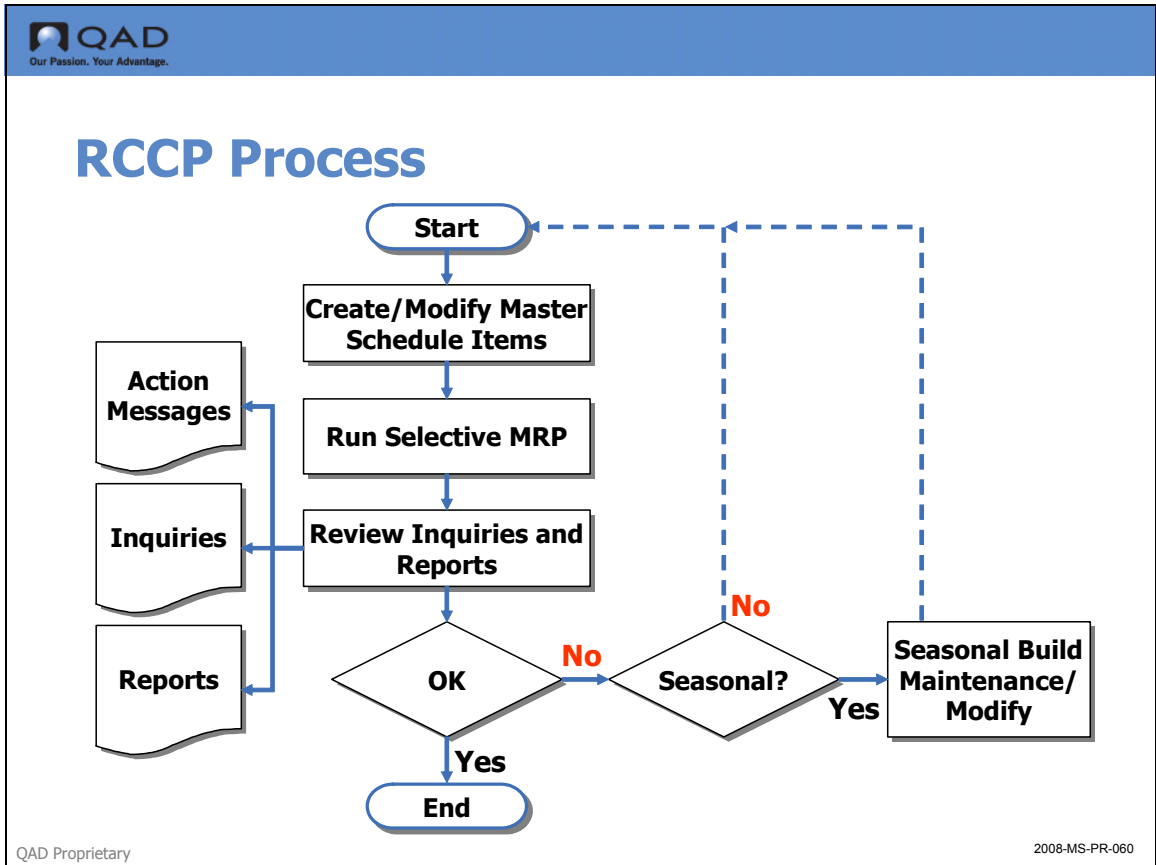
Using Master Scheduling and RCCP

In this section you learn how to use Master Scheduling and RCCP in QAD Enterprise Applications.



Processing Demand and Supply in QAD Enterprise Applications

The master scheduler reviews the requirements of the forecast, sales orders, net forecast, seasonal requirements and other demands and creates a master schedule of work orders and or repetitive schedules to satisfy those demands. Rough Cut Capacity Planning is used to insure the planned master schedule can be done. If it cannot be done adjustments must be made to the master schedule either in the quantities or due dates or both. The master scheduler can use MRP to plan work orders to cover the net forecast or they can create master scheduled work orders manually. Some businesses will use a combination of these techniques for different product lines or in different facilities.



Master scheduling is an iterative process as this diagram shows.



Using Master Scheduling and RCCP



- ▲ Master Schedule Order Maintenance
- ▲ Master Schedule Order Browse/Report
- ▲ Sales Order Maintenance (Abnormal Demand)
- ▲ Seasonal Build Maintenance (optional)
- ▲ Seasonal Build Browse/Report (optional)
- ▲ Master Schedule Summary Inquiry/Report
- ▲ Master Schedule Detail Inquiry/Report
- ▲ Selective Materials Plan (optional)
- ▲ Item Resource Load Summary Inquiry/Report
- ▲ Item Resource Load Detail Inquiry/Report

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Master Schedule Order Maintenance

Master Schedule Order Maint
Go To ▾ Actions ▾ Copy ▾ Print Preview

Work Order: 06190042	ID: 43
Item Number: 44-110	CONTROL UNIT, AUTOMOTIVE
Type:	
Site: T40000	

Quantity Ordered: <input type="text" value="700.0"/>	Order Date: <input type="text" value="10/22/2008"/>
Quantity Completed: <input type="text" value="0.0"/>	Release Date: <input type="text" value="11/7/2008"/>
Qty Rejected: <input type="text" value="0.0"/>	Due Date: <input type="text" value="11/7/2008"/>

Work Order Status: <input type="text" value="P"/>	Site: <input type="text" value="T40000"/>
Sales/Job: <input type="text"/>	Routing Code: <input type="text"/>
Supplier: <input type="text"/>	BOM/Formula Code: <input type="text"/>
Yield Percent: <input type="text" value="100.00%"/>	

Remarks:

Comments: Post variances at SFC:

Master Schedule Order Maintenance (22.13)

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Note This screen is the same as Work Order Maintenance (16.1) within the system there is no difference between master schedule work orders and work orders created in the work order module.

Master Schedule Order Maint

Go To Actions Copy Print Preview

Work Order: 06190042 ID: 43
 Item Number: 44-110 CONTROL UNIT, AUTOMOTIVE
 Type:
 Site: T40000

Quantity Ordered: 700.0 Order Date: 10/22/2008
 Quantity Completed: 0.0 Release Date: 11/7/2008
 Qty Rejected: 0.0 Due Date: 11/7/2008

Work Order Status: P Site: T40000
 Sales/Job: Routing Code:
 Supplier: BOM/Formula Code:
 Yield Percent: 100.00%

Remarks:
 Comments: Post variances at SFC:

Master Schedule Order Maintenance (22.13)

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Master Schedule Order Maintenance

Note This screen is the same as Work Order Maintenance (16.1) within the system there is no difference between master schedule work orders and work orders created in the work order module.

To manage the master schedule manually use master schedule order maintenance to create work orders for your master schedule items.

- Enter master schedule orders as firm planned orders
- Master schedule orders are managed and released like normal work orders

To have MRP review master scheduled items and produce action messages, set the following values in Item Planning Maintenance (1.4.7):

Master Schedule

Yes

Plan Orders

No

Order Policy

Any option other than blank

Note These settings insure the system will not create planned orders, but will create action messages about the orders you create.

The firmed supply order creates the master schedule and becomes the primary input to MRP.

The master schedule is controlled by establishing:

- Firmed planned work orders
 - Master Schedule Order Maintenance (22.13)
- Repetitive schedules
 - Schedule Maintenance (18.2.1)
 - Can be used to master schedule items, even if work orders track actual production (this means you have to take the exploded type S work orders from the repetitive schedule and change them to R)
- Purchase requisitions
 - Purchase Requisition Maintenance (5.1.4)

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Forecast Maintenance

Forecast Maintenance X

Go To Action

Item Number: 44-1000 Site: T12000 Year: 2008

Week	Forecast	Week	Forecast	Week	Forecast	Week	Forecast
12/31/2007	100	3/31/2008	170	6/30/2008	160	9/29/2008	110
1/7/2008	110	4/7/2008	160	7/7/2008	170	10/6/2008	100
1/14/2008	120	4/14/2008	150	7/14/2008	180	10/13/2008	110
1/21/2008	130	4/21/2008	140	7/21/2008	190	10/20/2008	120
1/28/2008	140	4/28/2008	130	7/28/2008	200	10/27/2008	130
2/4/2008	150	5/5/2008	120	8/4/2008	190	11/3/2008	140
2/11/2008	160	5/12/2008	110	8/11/2008	180	11/10/2008	150
2/18/2008	170	5/19/2008	100	8/18/2008	170	11/17/2008	160
2/25/2008	180	5/26/2008	110	8/25/2008	160	11/24/2008	170
3/3/2008	190	6/2/2008	120	9/1/2008	150	12/1/2008	180
3/10/2008	200	6/9/2008	130	9/8/2008	140	12/8/2008	190
3/17/2008	190	6/16/2008	140	9/15/2008	130	12/15/2008	200
3/24/2008	180	6/23/2008	150	9/22/2008	120	12/22/2008	190
Total	2,020	Total	1,730	Total	2,140	Total	1,950

Forecast Maintenance (22.1)

QAD Proprietary 2008-MS-PR-055

MPS using Forecast Maintenance

MPS may also be loaded using Forecast Maintenance (22.1). This function allows you to enter up to 52 weekly buckets of forecast demand for an item at a site. This demand is seen by MRP and planned orders are created for the net forecast. The master scheduler can then review the plan using the summary and detail inquires.

To use this functionality set Item Planning Maintenance (1.4.7) Master Schedule Yes, Planned Orders Yes and a valid Order Policy.



Master Schedule Summary Inquiry

Master-Schedule Summary Inquiry									
Item Number	Site	Start Date	End Date	Bucket	Per/Bkt	Neg ATP	Output page		
44-100	T12000	10/20/08	12/31/08	W	1				
Item Number: 44-100 CONTROL UNIT, HOME USE MRP Req: Yes Site: T12000 Mfg LT: 3 Plan Orders: Yes Pur/Mfg: M QOH: 0.0 EA Pur LT: 1 Order Qty: 10 Min Ord: 0 Order Policy: LFL Safety Stock: 0 Yield%: 100.00% Max Order: 0 Order Period: 0 Safety Time: 0 Time Fence: 0 Ord Mult: 0									
Past 10/20/08 10/27/08 11/03/08 11/10/08 11/17/08 11/24/08 10/19/08 10/26/08 11/02/08 11/09/08 11/16/08 11/23/08 11/30/08									
Prod Fcst	0	0	0	0	0	0	0		
Forecast	0	100	120	20	0	150	140		
Sales Orders	0	0	0	0	250	0	0		
Gross Reqs	0	0	0	0	0	0	0		
Mstr Sched	0	0	0	0	0	0	0		
Projected QOH	0	-100	-220	-240	-490	-640	-780		
Avail Promise	0	-250	0	0	0	0	0		
Cumulative ATP	0	-250	-250	-250	-250	-250	-250		
Past 12/01/08 12/08/08 12/15/08 12/22/08 12/29/08 01/05/09 11/30/08 12/07/08 12/14/08 12/21/08 12/28/08 01/04/09 01/11/09									
Prod Fcst	0	0	0	0	0	0	0		
Forecast	530	130	120	110	100	0	0		
Sales Orders	250	0	0	0	0	0	0		
Gross Reqs	0	0	0	0	0	0	0		
Mstr Sched	0	0	0	0	0	0	0		
Projected QOH	-780	-910	-1030	-1140	-1240	-1240	-1240		
Avail Promise	-250	0	0	0	0	0	0		
Cumulative ATP	-250	-250	-250	-250	-250	-250	-250		

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2008-MS-PR-056

Master Schedule Summary Inquiry

Master Schedule Summary and Detail Inquiries/Reports

The Master Schedule Summary Inquiry (22.18) and Report (22.19), are one of the most useful inquires for the master scheduler to review the overall situation for an item. The inquiry and report both display the following information:

Header Information

The header show the item, site, start (and or end date) date of the inquiry and whether the buckets are D days, W weeks, M months, or P general ledger period. It also shows how many periods you choose to display in each column. You can display two weeks in each column for example.



The header also shows the quantity on hand the MRP Required flag and all of the item planning data for the site specified.

Production Forecast

System-calculated forecast used in multilevel master scheduling

Forecast

Forecast quantity for an item, either loaded into forecast summary files using Simulation to Summarized Forecast or entered manually using Forecast Maintenance (22.1) or Forecast Worksheet Maintenance (22.2).

Sales Orders

Demand derived from confirmed sales orders and required ship schedules

Gross Requirements

The sum of an item's requirements from forecasts, higher-level products, confirmed sales orders, required ship schedules, service items, and intersite orders generated by DRP. Gross requirements do not take into account inventory on hand or scheduled receipts.

Master Scheduled Receipts

Total scheduled receipts for an item from work orders, repetitive schedules, purchase orders, and distribution orders.

Projected QOH

Projected item quantity on hand, calculated by the system. This is a projection by period of an item's on-hand balance plus scheduled receipts minus gross requirements.

Available-to-Promise

The uncommitted portion of inventory or planned production, calculated by deducting real demand from real supply.

Seasonal Build

For products with seasonal demand cycles, you may need to build up inventory in advance of periods of peak demand.

You can do this using work orders or repetitive schedules, or you can use seasonal build requirements to build up inventory to a predetermined level prior to its expected demand.

Seasonal build requirements let master schedulers specify a target inventory level for seasonal demand items that is not included when calculating ATP quantities, but can still be allocated and shipped on sales orders and customer schedules.

Seasonal build quantities appear separately on master schedule reports that display ATP quantities.

Note The seasonal build heading and quantities only display when there are seasonal build requirements.

The Master Schedule Detail Inquiry (22.21) and Report (22.22) functions display the same information as the Master Schedule Summary Inquiry (22.18) and Report (22.19), sequenced by due date.

They also include source-to-demand pegging details, allowing you to identify the actual work order or sales order generating a particular item requirement.

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Master Schedule Detail Inquiry

QAD Master Schedule Detail Inquiry 10/28/08

Item Number: 44-100 Site: T12000 Start Date: 10/20/08
 CONTROL UNIT, HOME USE Output: page

Item Number: 44-100 Qty on Hand: 0.0 Site: T12000
 CONTROL UNIT, HOME USE UM: EA Pur/Mfg: M

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

Due Date	Gross Reqs	Mstr Sched	Proj QOH	Plan Ords	Details
			0		Beginning Available
10/27/08	120		-120		Forecast
11/03/08	130		-250		Forecast
11/10/08	140		-390		Forecast
11/17/08	150		-540		Forecast
11/24/08	140		-680		Forecast
12/01/08	130		-810		Forecast
12/08/08	120		-930		Forecast
12/15/08	110		-1,040		Forecast
12/22/08	100		-1,140		Forecast
List complete					

22.21 Master Schedule Detail Inquiry msmsiq01.p

QAD Proprietary 2008-MS-PR-057

Master Schedule Detail Inquiry

The Master Schedule Detail Inquiry (22.21) provides a very different view of the MPS item. This view shows in a vertical list format each transaction, by date, that effects the item at this site. The display also shows detail information about both the source of the demand and the supply.

In this example we see the demand is from a production forecast for a higher level planning item. We also see the system has planned an MRP W/O to satisfy that demand, and its release date. Once the work orders are firm (approved) or released the quantity will move into the Master Schedule column.

As with the summary inquiry the header shows the item planning data.



Using Master Scheduling and RCCP



- ▲ Master Schedule Order Maintenance
- ▲ Master Schedule Order Browse/Report
- ▲ Sales Order Maintenance (Abnormal Demand)
- ▲ Seasonal Build Maintenance (optional)
- ▲ Seasonal Build Browse/Report (optional)
- ▲ Master Schedule Summary Inquiry/Report
- ▲ Master Schedule Detail Inquiry/Report
- ▲ Selective Materials Plan (optional)
- ▲ Item Resource Load Summary Inquiry/Report
- ▲ Item Resource Load Detail Inquiry/Report

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Master Schedule Order Browse

Master Schedule Order Browse

Excel Print Add to Favorites Chart Chart Designer New Edit

Search
Item Number starts at Search Clear All

Viewing 1 - 2 of 2 Records per page: 100

Item Number	Site	Release Date	Work Order	ID	Quantity Open	Due Date	Sales/Job	Work Order Status
01-0001	train	03/07/2008	03070002	406051	26.00	03/07/2008	P	
02-0005	train	05/08/2008	1003	406058	1.00	05/09/2008	R	

Master Schedule Order Browse (22.14)

QAD Proprietary 2008-MS-PR-080

Master Schedule Order Browse

Status

- F = Firm
- P = Planned



Master Schedule Order Report

Master Schedule Order Report										10/28/08 18:53:21
Training										Page:1
Work Order	ID	Item Number	Qty Ordered	Open Qty	UM	Order Date	Rel Date	Due Date	SO/Job	ST
10280002	406059	44-100	120.0	120.0	EA	10/28/08	10/25/08	10/28/08		P
		CONTROL UNIT, HOME USE								
10280003	406060	44-100	130.0	130.0	EA	10/28/08	10/31/08	11/03/08		P
		CONTROL UNIT, HOME USE								
10280004	406061	44-100	140.0	140.0	EA	10/28/08	11/07/08	11/10/08		P
		CONTROL UNIT, HOME USE								
10280005	406062	44-100	150.0	150.0	EA	10/28/08	11/14/08	11/17/08		P
		CONTROL UNIT, HOME USE								
10280006	406063	44-100	140.0	140.0	EA	10/28/08	11/21/08	11/24/08		P
		CONTROL UNIT, HOME USE								
10280007	406064	44-100	130.0	130.0	EA	10/28/08	11/28/08	12/01/08		P
		CONTROL UNIT, HOME USE								
10280008	406065	44-100	120.0	120.0	EA	10/28/08	12/05/08	12/08/08		P
		CONTROL UNIT, HOME USE								
10280009	406066	44-100	110.0	110.0	EA	10/28/08	12/12/08	12/15/08		P
		CONTROL UNIT, HOME USE								
10280010	406067	44-100	100.0	100.0	EA	10/28/08	12/19/08	12/22/08		P
		CONTROL UNIT, HOME USE								
10280011	406068	44-0000	1,000.0	1,000.0	EA	10/28/08	11/03/08	11/03/08		P
		Control Unit Family								
10280012	406069	44-0000	1,000.0	1,000.0	EA	10/28/08	11/10/08	11/10/08		P
		Control Unit Family								
10280013	406070	44-0000	1,000.0	1,000.0	EA	10/28/08	11/17/08	11/17/08		P
		Control Unit Family								
10280014	406071	44-0000	1,000.0	1,000.0	EA	10/28/08	11/24/08	11/24/08		P
		Control Unit Family								
10280015	406072	44-0000	1,000.0	1,000.0	EA	10/28/08	12/01/08	12/01/08		P
		Control Unit Family								
10280016	406073	44-0000	1,000.0	1,000.0	EA	10/28/08	12/08/08	12/08/08		P
		Control Unit Family								

End of Report

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2008-MS-PR-090

Master Schedule Order Report





Using Master Scheduling and RCCP



- ▲ Master Schedule Order Maintenance
- ▲ Master Schedule Order Browse/Report
- ▲ Sales Order Maintenance (Abnormal Demand)
- ▲ Seasonal Build Maintenance (optional)
- ▲ Seasonal Build Browse/Report (optional)
- ▲ Master Schedule Summary Inquiry/Report
- ▲ Master Schedule Detail Inquiry/Report
- ▲ Selective Materials Plan (optional)
- ▲ Item Resource Load Summary Inquiry/Report
- ▲ Item Resource Load Detail Inquiry/Report

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2008-MS-PR-100

Abnormal Demand

Abnormal demand is usually a large, unexpected sale.

Sales Order Maintenance – Abnormal Demand

Sales Order Maintenance X

Go To Actions Copy Print Preview Attach

Attachments

Header Lines Trailer

Lines Line Details Freight Data Tax Info Comments

Header

Order: S010022 Sold-To: 1001000 Ln Format S/M: Single

Sales Order Line

Ln	Item Number	Qty Ordered	UM	List Price	Discount	Net Price
1	44-110	1,000.0	EA	500.00	0.0	500.00

Line Details

Desc: CONTROL UNIT, AUTOMOTIVE Sales Acct: 3000 0150

Loc: 12000 Site: T12000 Disc Acct: 3900 0150

USD Cost: 46.66688 Confirmed: Credit Terms Int: 0.00

Lot/Serial: Required: 11/19/2008 Ship Type:

Qty Allocated: 0.0 Promised: 11/18/2008 U.M. Conversion: 1.0000

Qty Picked: 0.0 Due Date: 10/23/2008 Consume Fcst:

Qty Shipped: 0.0 Perform Date: Detail Alloc:

Qty to Invoice: 0.0 Pricing Date: 10/22/2008 Taxable:

Salesperson 1: 00000005 Multiple: Freight List: A02-NTAX

Commission 1: 10.00% Category: Fixed Price: Comments:

QAD Proprietary Sales Order Maintenance (7.1.1) 2008-MS-PR-110

Sales Order Maintenance - Abnormal Demand

There are circumstances where the master scheduler may not want forecast consumption to occur. This would be the case when an unexpected sales order is received, which was not part of the forecast and should not be considered for the next year's forecast.

- To indicate a sales order as Abnormal Demand in QAD Enterprise Applications, set:
 - Consume Forecast = No in Sales Order Maintenance (7.1.1)

MRP will now plan this independent demand requirement without consuming forecasts for the period.

Some Causes of Abnormal Demand

- Unplanned orders received due to:
 - Hurricanes
 - Earthquakes
 - Floods
 - New customers
 - New markets
- These types of orders generally do not apply to forecasts

In the case of new customers and new markets a decision needs to be made whether these reflect ongoing business in which case you will want to adjust the forecast to take them into account.

Forecast Worksheet Maintenance (22.2)

Week	Forecast	Sales	Abnormal	Prod Fcst	Net Forecast	
40	10/01/2007	0	0	0	0	
41	10/08/2007	0	0	0	0	
42	10/15/2007	0	0	0	0	
43	10/22/2007	0	0	0	0	
44	10/29/2007	0	0	0	0	
45	11/05/2007	100	0	0	100	
46	11/12/2007	120	0	600	120	
47	11/19/2007	130	0	600	20	
48	11/26/2007	140	250	600	0	
49	12/03/2007	130	0	600	130	
50	12/10/2007	120	0	1,000	600	120
51	12/17/2007	110	0	600	110	
52	12/24/2007	120	0	0	120	
Totals	970	250	1,000	3,600	720	

Forecast Worksheet Maintenance (22.2)

Forecast Worksheet Maintenance

Forecast Worksheet Maintenance (22.2) shows 13 weeks per frame and cycles through however much data you have entered. It is a very useful screen in that it displays the current forecast, actual sales by period, abnormal sales, the production forecast and the net forecast. In addition it is a maintenance screen so you can modify the forecast as required.

In the screen above note that the sale in period 48 has consumed the forecast in the current period and gone back a period to consume the balance of the sale as specified in the consume forward and back logic in Sales Order Control (7.1.24).

The abnormal sale in period 50 has not consumed the forecast. The sale order flag “consume forecast” was unchecked on this sale order.

The production forecast comes from the forecast for the family item we setup earlier and is showing how many of this item are required based on the percent distribution of the family.

It is very helpful for the master scheduler to understand the sources of demand for the various items. The master scheduler might also detect on this screen a very large sales order that was consuming forecast when it should not because someone failed to mark it a “consume forecast No.”



Using Master Scheduling and RCCP



- ▲ Master Schedule Order Maintenance
- ▲ Master Schedule Order Browse/Report
- ▲ Sales Order Maintenance (Abnormal Demand)
- ▲ Seasonal Build Maintenance (optional)
- ▲ Seasonal Build Browse/Report (optional)
- ▲ Master Schedule Summary Inquiry/Report
- ▲ Master Schedule Detail Inquiry/Report
- ▲ Selective Materials Plan (optional)
- ▲ Item Resource Load Summary Inquiry/Report
- ▲ Item Resource Load Detail Inquiry/Report

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Seasonal Build Maintenance

This program allows incremental buildup and release of inventory. At times, the master scheduler may need incremental inventory build up to a predetermined level. This situation most often occurs for seasonal demand items.

- Need to build up an item's inventory prior to its expected demand
 - Input into the master schedule is required

Although master scheduled orders could be entered to adjust for seasonality, identifying a demand as seasonal build prevents MRP from issuing action messages to cancel or delay orders for those items whose demand is not yet apparent.

The screenshot displays the 'Seasonal Build Maintenance' window for item 44-1000 (SENSOR UNIT) at site T12000. The interface shows a sequence of four build weeks, each with a date and a seasonal inventory value. The inventory values are 200.0, 400.0, 600.0, and 0.0, representing the cumulative build over four weeks. The dates are 11/3/2008, 11/10/2008, 11/17/2008, and 11/24/2008. The reference is set to 'INTRO' and the unit of measure is 'EA'.

Week	Date	Seasonal Inventory
1	11/3/2008	200.0
2	11/10/2008	400.0
3	11/17/2008	600.0
4	11/24/2008	0.0

QAD Proprietary Seasonal Build Maintenance (22.9) 2008-MS-PR-130

Seasonal Build Maintenance

In this example 600 units are needed over and above forecast to support a product launch. It is desired to build them at the rate of 200 units per week for the next three weeks. The seasonal build is setup as shown in the following screens.

In QAD Enterprise Applications, seasonal build inventory is entered into the system using Seasonal Build Maintenance (22.9). At the end of the first build week there will be 200 units in inventory.

At the end of the second build week there will be 400 units in inventory.

At the end of the third build week there will be 600 units in inventory.

At the end of the fourth week we set the seasonal inventory to zero. This releases the 600 units to be available.



Using Master Scheduling and RCCP



- ▲ Master Schedule Order Maintenance
- ▲ Master Schedule Order Browse/Report
- ▲ Sales Order Maintenance (Abnormal Demand)
- ▲ Seasonal Build Maintenance (optional)
- ▲ Seasonal Build Browse/Report (optional)
- ▲ Master Schedule Summary Inquiry/Report
- ▲ Master Schedule Detail Inquiry/Report
- ▲ Selective Materials Plan (optional)
- ▲ Item Resource Load Summary Inquiry/Report
- ▲ Item Resource Load Detail Inquiry/Report

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2008-MS-PR-140

Seasonal Build Browse/Report

The screenshot shows a web browser window titled "Seasonal Build Browse". The interface includes a search bar with "Item Number" selected and "starts at" as the filter. Below the search bar, it indicates "Viewing 1 - 1 of 1" records. A table with the following columns is displayed: Item Number, Site, Date, Reference, Seasonal Inventory, Unit of Measure, and Description. One record is shown with the following values: Item Number: 44-1000, Site: T12000, Date: 10/22/2008, Reference: Intro, Seasonal Inventory: 500.0 EA, and Description: SENSOR UNIT.

Item Number	Site	Date	Reference	Seasonal Inventory	Unit of Measure	Description
44-1000	T12000	10/22/2008	Intro	500.0 EA	SENSOR UNIT	

Seasonal Build Inquiry (22.10)

Seasonal Build Browse

The Seasonal Build Browse (22.10) shown above illustrates a completed seasonal build.

The screenshot displays two pages of a QAD report titled "Seasonal Build Report - Optional".

Page 1: Shows the QAD logo, title "Seasonal Build Report", date "10/28/08 20:16:27", and subtitle "Training". It includes a table with the following data:

Item Number	Description	Site	Reference	Date	Seasonal Inv	UM
44-1000	SENSOR UNIT	T12000	INTRO	11/03/08	200.0	EA
		T12000	INTRO	11/10/08	400.0	EA
		T12000	INTRO	11/17/08	600.0	EA
		T12000	INTRO	11/24/08	0.0	EA

The page ends with "End of Report".

Page 2: Shows the QAD logo, title "Seasonal Build Report", date "10/28/08 20:16:27", and subtitle "Training". It includes report criteria and submission information:

Report Criteria:
 Item Number: 44-1000
 Site: T12000
 Reference:
 Date:

Report Submitted By: mfg
 To:
 To:
 To:
 To:

Output: page
 Batch ID:

At the bottom of the report window, it shows "22.11", "Seasonal Build Report", and "fcfcrp.p".

Seasonal Build Report

The Seasonal Build Report (22.11) shown above displays the same information in a slightly different format.



Using Master Scheduling and RCCP



- ▲ Master Schedule Order Maintenance
- ▲ Master Schedule Order Browse/Report
- ▲ Sales Order Maintenance (Abnormal Demand)
- ▲ Seasonal Build Maintenance (optional)
- ▲ Seasonal Build Browse/Report (optional)
- ▲ Master Schedule Summary Inquiry/Report
- ▲ Master Schedule Detail Inquiry/Report
- ▲ Selective Materials Plan (optional)
- ▲ Item Resource Load Summary Inquiry/Report
- ▲ Item Resource Load Detail Inquiry/Report

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2008-MS-PR-170

Master Schedule Summary Inquiry/Report

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Master Schedule Summary Inquiry

Master Schedule Summary Inquiry 10/28/08

QAD

Item Number	Site	Start Date	End Date	Bucket	Per/Bkt	Neg ATP	Output page
44-1000	T12000	10/27/08		W		1 no	

Item Number: 44-1000	SENSOR UNIT	MRP Req: Yes
Site: T12000	Mfg LT: 1	Pur/Mfg: M
QOH: 0.0	EA Pur LT: 0	Order Qty: 10
Order Policy: LFL	Safety Stock: 0	Yield%: 100.00%
Order Period: 0	Safety Time: 0	Time Fence: 0
		Max Order: 0
		Ord Mult: 0

	Past	10/27/08	11/03/08	11/10/08	11/17/08	11/24/08	12/01/08
	10/26/08	11/02/08	11/09/08	11/16/08	11/23/08	11/30/08	12/07/08
Prod Fcst	0	0	0	0	0	0	0
Forecast	0	0	0	0	0	0	0
Sales Orders	0	0	0	0	0	0	0
Gross Reqs	240	260	280	300	280	260	240
Mstr Sched	0	0	0	0	0	0	0
Projected QOH	-240	-500	-780	-1080	-1360	-1620	-1860
Avail Promise	0	-2280	0	0	0	0	0
Cumulative ATP	0	-2280	-2280	-2280	-2280	-2280	-2280
Seasonal Build	0	0	200	400	600	0	0

	Past	12/08/08	12/15/08	12/22/08	12/29/08	01/05/09	01/12/09
	12/07/08	12/14/08	12/21/08	12/28/08	01/04/09	01/11/09	01/18/09
Prod Fcst	0	0	0	0	0	0	0
Forecast	0	0	0	0	0	0	0
Sales Orders	0	0	0	0	0	0	0
Gross Reqs	1860	220	200	0	0	0	0
Mstr Sched	0	0	0	0	0	0	0
Projected QOH	-1860	-2080	-2280	-2280	-2280	-2280	-2280
Avail Promise	-2280	0	0	0	0	0	0
Cumulative ATP	-2280	-2280	-2280	-2280	-2280	-2280	-2280
Seasonal Build	0	0	0	0	0	0	0

22.18 Master Schedule Summary Inquiry mmsisq.p

QAD Proprietary 2008-MS-PR-180

Master Schedule Summary Inquiry

The master schedule summary is the single most crucial screen for planners to understand. It highlights:

Production forecast

- System calculated forecast used in multilevel master scheduling

Forecast

- Manually loaded or via Simulation to Summarized Forecast
 - Independent demand entered in Forecast Maintenance

Sales orders

- Demand derived from sales orders, required ship schedules
 - Independent demand entered in Sales Order Maintenance

Gross requirements

The sum of an item's requirements from:

- Forecasts
- Higher level products
- Confirmed sales orders
- Required ship schedules
- Service items
- Intersite orders generated by DRP

Gross requirements do not take into account inventory on hand or scheduled receipts.

- Manufacturing requirements from a parent work order
 - Can be both master scheduled and a component on a multilevel bill
 - May be intersite demand in DRP environment

Master Scheduled Receipts

Total scheduled receipts for an item from:

- Work orders
- Repetitive schedules
- Master schedule orders
- Purchase orders
- Distribution orders

Projected quantity on hand (QOH)

- System calculated
- A period-by-period projection of an item's on-hand balance plus scheduled receipts minus gross requirements

Available-to-Promise

The uncommitted portion of inventory or planned production calculated by deducting real demand from real supply.

Seasonal Build

Quantity in inventory for that period NOT INCLUDED in available-to-promise quantity.

Available-to-Promise Calculation (QAD Enterprise Applications methodology)

- Beginning QOH
 - + Master schedule receipts
 - - Gross requirements
 - - Sales (until next master schedule)
 - - Increased seasonal build
 - + Decreased seasonal build

Master Schedule Summary Inquiry

Master Schedule Summary Inq... x

Run Export to Excel View as PDF

Item Number: 1100-00 Site: PROTO Display Negative ATP: Start Date: 12/8/2008 End Date: Column Type: Week Per Column: 1 Columns: 12

Item Number: 1100-00 Alloy Chain Crank, 160mm MRP Required: No
 Site: PROTO Mfg LT: 1 Plan Orders: Yes Pur/Mfg: M
 Qty on Hand: 0.0 EA Purchase LT: 0 Order Quantity: 10 Minimum Order: 10
 Order Policy: POQ Safety Stock: 0 Yield Percent: 100.00% Maximum Order: 0
 Order Period: 7 Safety Time: 0 Time Fence: 0 Order Multiple: 0

Category	Past	12/8/2008	12/15/2008	12/22/2008	12/29/2008	1/5/2009	1/12/2009
Production Forecast	0	0	0	0	0	0	0
Forecasts	0	0	15	0	0	0	23
Sales Orders	0	0	0	0	250	0	0
Gross Requirements	0	0	0	0	0	0	0
Master Schedule	0	0	15	0	280	30	0
Projected QOH	0	0	0	0	30	60	37
Available to Promise	0	0	15	0	0	0	60
Cumulative ATP	0	0	15	15	15	15	75

QAD Proprietary 2008-MS-PR-190

Order Promising

The completed master schedule provides a basis for order promising. Order promising simply verifies whether a sales order can be filled within a specific time frame given other demands and the currently scheduled supply orders.

Available-to-Promise (ATP)

- Shows true day-to-day supply available to fulfill incoming sales orders
- Order promising verifies whether a sales order can be filled within a specific time frame
 - * Check Avail Promise row of the Master Schedule Summary Inquiry (22.18)
- Tracks real supply against real demand

- Does not factor in Forecast or Prod Forecast quantities
- Does factor in Seasonal Build
 - Increase in Seasonal Build decreases ATP
 - Decrease in Seasonal Build increases ATP

The calculation occurs on any date when a Master Sched receipt is due or a Seasonal Build quantity is made available and a net increase in supply is caused.

- Includes all sales orders and gross requirements up to the next increase in available supply

Calculation

Master Sched – Sales Orders – Gross Requirements – Seasonal Build net increases + Seasonal Build net decreases = Available-to-Promise

Warning Sales orders can use ATP from the past, which can be confusing when interpreting the calculation.

This is true except in the first instance of available-to-promise on a summary screen.

To start the ATP out, the beginning quantity on hand is added.

In the Past columns of the daily Master Schedule Summary (as well as in the weekly and monthly displays), ATP is Time Period sensitive (Net Amount):

- All uncommitted supply that can be promised to new sales orders is shown
- The ATP is decremented during sales order entry and is revised immediately

Cumulative Available-to-Promise (ATP)

Classic ATP only calculates a value in the first period if there is on hand balance or in any period with a master schedule order due. Using this rule the second period above does not have an ATP value. In Cumulative ATP an unconsumed portion of a periods ATP may be carried forward until it is consumed. Using this rule the second period has ATP carried forward from the first period.

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Master Schedule Summary Report

Master Schedule Summary Re... x

Go To Actions Copy Print Preview

Item Number: 1100-00 To: 1100-00

Site: PROTO To: PROTO

Buyer/Planner: To:

Product Line: To:

Group: To:

Item Type: To:

Supplier: To:

Purchase/Manufacture:

Include Zero Requirements:

Cost Totals:

Include Negative ATP Only:

Sort By: SITE

Start Date: 12/8/2008

Day/Week/Month: W

Use Cost Plans:

Display Negative ATP:

Page Break:

End Date:

Per Column: 1

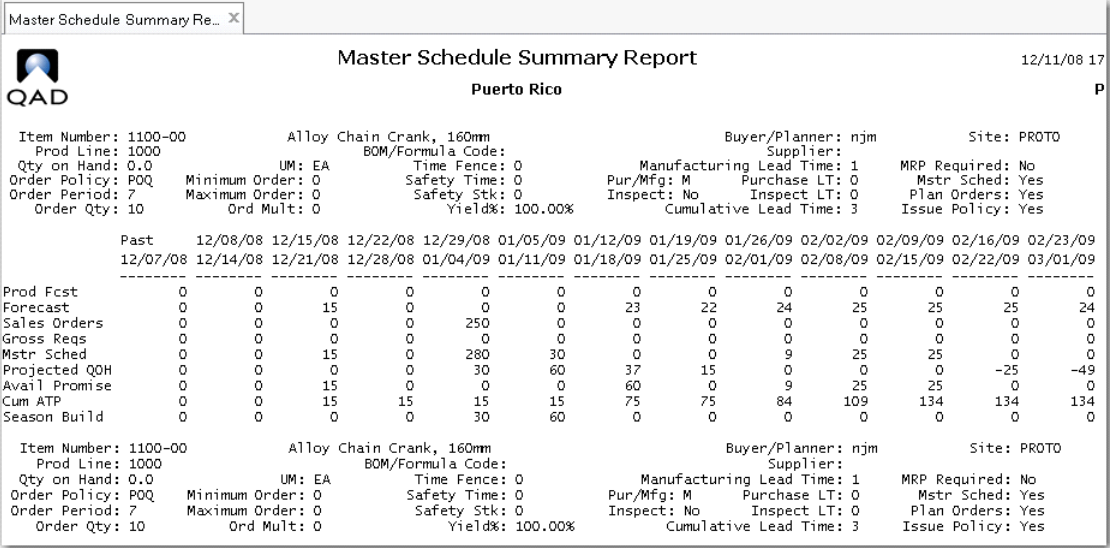
Output:

Batch ID:

QAD Proprietary 2008-MS-PR-205

Master Schedule Summary Report

The report allows a broad range of selection criteria. Whether printed to paper or viewed on the terminal this report gives the master scheduler a powerful tool for reviewing the schedule.



Master Schedule Summary Report

Item Number: 1100-00 Alloy Chain Crank, 160mm Buyer/Planner: njm Site: PR-200
 Prod Line: 1000 BOM/Formula Code: Supplier:
 Qty on Hand: 0.0 UM: EA Time Fence: 0 Manufacturing Lead Time: 1 MRP Required: No
 Order Policy: POQ Minimum Order: 0 Safety Time: 0 Pur/Mfg: M Purchase LT: 0 Mstr Sched: Yes
 Order Period: 7 Maximum Order: 0 Safety Stk: 0 Inspect: No Inspect LT: 0 Plan Orders: Yes
 Order Qty: 10 Ord Mult: 0 Yield%: 100.00% Cumulative Lead Time: 3 Issue Policy: Yes

Past	12/08/08	12/15/08	12/22/08	12/29/08	01/05/09	01/12/09	01/19/09	01/26/09	02/02/09	02/09/09	02/16/09	02/23/09
Prod Fcst	0	0	0	0	0	0	0	0	0	0	0	0
Forecast	0	0	15	0	0	23	22	24	25	25	25	24
Sales Orders	0	0	0	0	250	0	0	0	0	0	0	0
Gross Reqs	0	0	0	0	0	0	0	0	0	0	0	0
Mstr Sched	0	0	15	0	280	30	0	9	25	25	0	0
Projected QOH	0	0	0	0	30	60	37	15	0	0	-25	-49
Avail Promise	0	0	15	0	0	60	0	9	25	25	0	0
Cum ATP	0	0	15	15	15	75	75	84	109	134	134	134
Season Build	0	0	0	0	30	60	0	0	0	0	0	0

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Master Schedule Summary Report

The inquiry is always for a single item at a single site. You can specify a start and end date and the bucket type and number of bucket periods per column.

The report provides a printed copy of the Master Schedule Summary Inquiry

While the data displayed on the MPS summary report (shown above) is the same as the MPS summary inquiry (previous page) the selection screen offers considerably more flexibility than the inquiry.



Using Master Scheduling and RCCP



- ▲ Master Schedule Order Maintenance
- ▲ Master Schedule Order Browse/Report
- ▲ Sales Order Maintenance (Abnormal Demand)
- ▲ Seasonal Build Maintenance (optional)
- ▲ Seasonal Build Browse/Report (optional)
- ▲ Master Schedule Summary Inquiry/Report
- ▲ **Master Schedule Detail Inquiry/Report**
- ▲ Selective Materials Plan (optional)
- ▲ Item Resource Load Summary Inquiry/Report
- ▲ Item Resource Load Detail Inquiry/Report

QAD Proprietary

2008-MS-PR-210

Master Schedule Detail Inquiry/Report

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Master Schedule Detail Inquiry

Master Schedule Detail Inquiry... X

Master Schedule Detail Inquiry 12/11/08

QAD

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

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

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

Yield Percent: 100.00% Cum LT: 3

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

QAD Proprietary 2008-MS-PR-220


Master Schedule Detail Inquiry

The Master Schedule Detail Inquiry displays:

- A date-sequenced description of each demand and supply record
- Item/site planning data followed by a time-phased replenishment display in due date sequence


The screen shows the same information as the Master Schedule Summary Inquiry, including the pegging of demands to their source. For example, the actual work order or sales order that generated the requirement is identified.

Note One-level pegging is available in QAD Enterprise Applications



Master Schedule Detail Inquiry

Master Schedule Detail Report. X



Master Schedule Detail Report

Puerto Rico

12/11/08

Item Number: 1100-00 Alloy Chain Crank, 160mm Buyer/Planner: njm Site: PROTO
 Qty on Hand: 0.0 UM: EA Time Fence: 0 Manufacturing Lead Time: 1 MRP Required: No
 Order Policy: POQ Minimum Order: 0 Safety Stk: 0 Pur/Mfg: M Purchase LT: 0 Mstr Sched: Yes
 Order Period: 7 Maximum Order: 0 Inspect: No Inspect LT: 0 Plan Orders: Yes
 Order Qty: 10 Ord Mult: 0 Yield%: 100.00% Cumulative Lead Time: 3 Issue Policy: Yes

Date	Gross Reqmt	Master Schedule	Projected Qty OH	Planned Order(Due)	Details
12/15/08	15.0		-15.0		Forecast
12/15/08			0.0	15.0	W/O: 12110002 ID: 2280419 Release Date 12/12/08
12/29/08			0.0		Seasonal Build 30
12/29/08	250.0		-250.0		S0: CU100 Line: 1
12/29/08			30.0	280.0	W/O: 12110003 ID: 2280420 Release Date 12/26/08
01/05/09			30.0		Seasonal Build 60
01/05/09			60.0	30.0	W/O: 12110004 ID: 2280421 Release Date 01/02/09
01/12/09	23.0		37.0		Forecast
01/12/09			37.0		Seasonal Build 0
01/19/09	22.0		15.0		Forecast
01/26/09	24.0		-9.0		Forecast
01/26/09			0.0	9.0	W/O: 12110005 ID: 2280422 Release Date 01/23/09
02/02/09	25.0		-25.0		Forecast
02/02/09			0.0	25.0	W/O: 12110006 ID: 2280423 Release Date 01/30/09
02/09/09	25.0		-25.0		Forecast
02/09/09			0.0	25.0	W/O: 12110007 ID: 2280424 Release Date 02/06/09
02/16/09	25.0		-25.0		Forecast

QAD Proprietary 2008-MS-PR-225

Master Schedule Detail Report

Provides a printed copy of the information displayed in Master Schedule Detail Report (22.22). While the data displayed are the same the selection criteria offered by the report is significantly enhanced over the inquiry.



Using Master Scheduling and RCCP

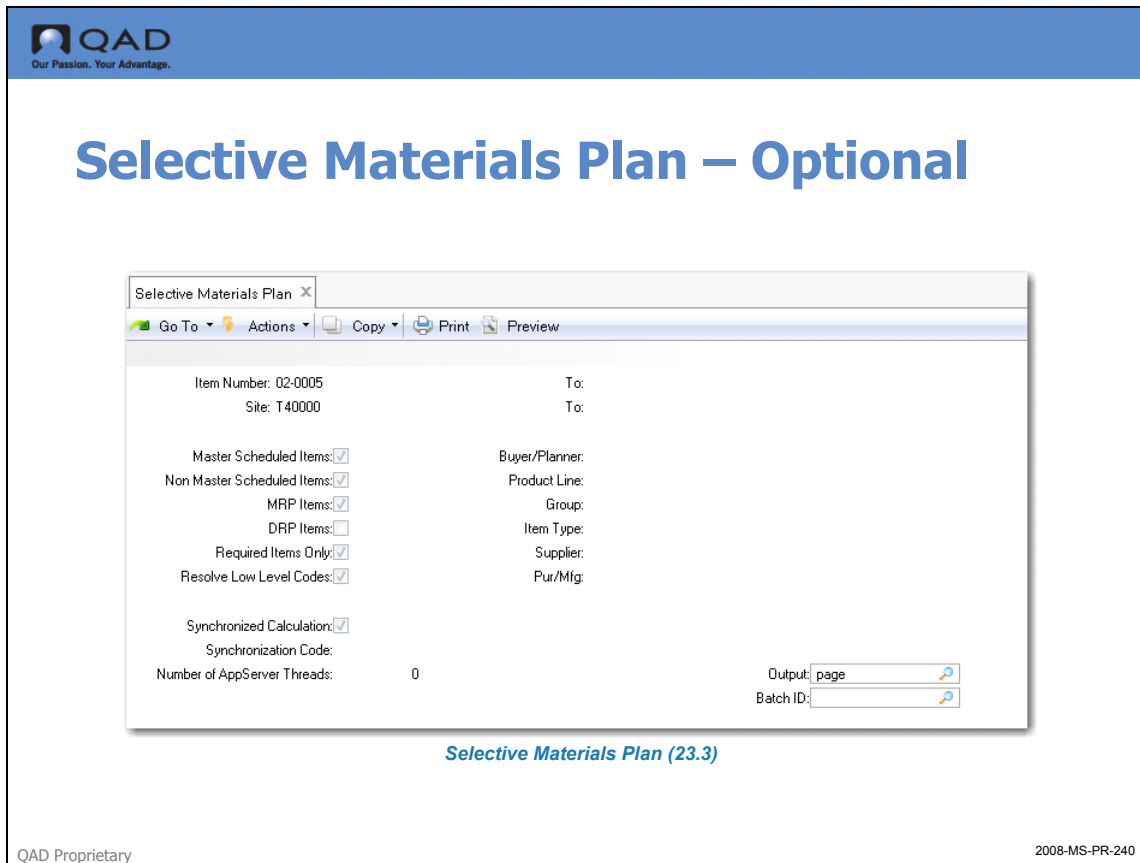


- ▲ Master Schedule Order Maintenance
- ▲ Master Schedule Order Browse/Report
- ▲ Sales Order Maintenance (Abnormal Demand)
- ▲ Seasonal Build Maintenance (optional)
- ▲ Seasonal Build Browse/Report (optional)
- ▲ Master Schedule Summary Inquiry/Report
- ▲ Master Schedule Detail Inquiry/Report
- ▲ Selective Materials Plan (optional)
- ▲ Item Resource Load Summary Inquiry/Report
- ▲ Item Resource Load Detail Inquiry/Report

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2008-MS-PR-230

Selective Materials Plan



Selective Materials Plan

Selective Materials Plan (23.3) lets you plan master scheduled items separately from MRP items. If you use the computer-assisted approach to master scheduling, you may want to run Selective Materials Plan as follows:

- Run Selective Materials Plan for master scheduled items only
- Adjust the master schedule and rerun Selective Materials Plan as needed
- Run Selective Materials Plan for MRP-scheduled items only
- MRP provides time-phased balancing of:
 - Supply and demand for purchased and manufactured items
- MRP uses the master schedule and all other sources of demand and supply to:

- Calculate gross requirements and projected on-hand inventory
- Schedule and plan orders
- Produce action messages for managing the materials plan
- Selective MRP runs as Net Change (MRP Required = Yes) or as Regenerative (MRP Required = No)
 - Plans only the items selected, passing down gross requirements to the next unselected level, but not replanning orders
 - Net Change Materials Plan (23.1) and Regenerate Materials Plan (23.2) items are based on low-level code, generating requirements at the top level first, then down through the structure one level at a time
- Selection can be based on:
 - Item Number
 - Site
 - Buyer/Planner
 - Prod Line
 - Group
 - Item Type
 - Supplier
 - Pur/Mfg
- One or both of the Master Scheduled Items or Non Master Scheduled Items flags must = Yes
 - The same is true of the MRP Items and DRP Items flags

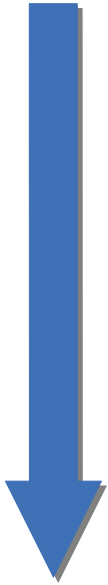
Replanning Master Scheduled Items

When master scheduled items are selected, orders are planned for parent items and gross requirements are passed down to the next-level components and will not be replanned.

- No orders are planned for the components



Using Master Scheduling and RCCP



- ▲ Master Schedule Order Maintenance
- ▲ Master Schedule Order Browse/Report
- ▲ Sales Order Maintenance (Abnormal Demand)
- ▲ Seasonal Build Maintenance (optional)
- ▲ Seasonal Build Browse/Report (optional)
- ▲ Master Schedule Summary Inquiry/Report
- ▲ Master Schedule Detail Inquiry/Report
- ▲ Selective Materials Plan (optional)
- ▲ **Item Resource Load Summary Inquiry/Report**
- ▲ Item Resource Load Detail Inquiry/Report

QAD Proprietary

2008-MS-PR-250

Item Resource Load Summary Inquiry/Report

The screenshot shows the 'Item Resource Load Summary Inquiry' window. At the top, there is a QAD logo with the tagline 'Our Passion. Your Advantage.' Below the title, there are navigation buttons: 'Run', 'Export to Excel', and 'View as PDF'. The main form contains several input fields: 'Site' (proto), 'Resource' (Labor), 'Start Date' (12/12/2008), 'End Date' (empty), 'Column Type' (Week), 'Per Column' (1), and 'Columns' (12). Below the form, there is a summary line: 'Site: PROTO Resource: Labor Labor hours Unit of Measure: HR'. The main data table has the following structure:

Category	Past	12/12/2008	12/19/2008	12/26/2008	1/2/2009	1/9/2009
Work Days	0	5	5	5	5	5
Capacity	0	375	375	375	247	215
Load	0	140	140	140	540	140
Capacity Less Load	0	235	235	235	-293	75
Cumulative	0	235	470	705	412	487

At the bottom left of the window, it says 'QAD Proprietary' and at the bottom right, '2008-MS-PR-260'.

Item Resource Load Summary Inquiry

Calculating Load

Item Resource Load Inquiries (21.21) and Reports (21.22) can be run after the:

- Resource has been entered
- Conversion factor and lead times have been set up

QAD Enterprise Applications calculates the load automatically using the scheduled end-item quantities and the Resource Qty Per entered in Item Resource Bill Maintenance (21.17).


The Item Resource Load Summary displays the:

- Resource capacity

- Required resource capacity (production load) to meet scheduled production
 - In daily, weekly, or monthly buckets
- The load is subtracted from capacity
 - Over-capacity appears as a negative number in the Over/Under row
 - Under-capacity appears as a positive number

Cumulative Over/Under Load

The cumulative column displays the Over/Under quantity added to any over- or under-capacity from past planning periods.


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Item Resource Load Summary Report

Item Resource Load Summary... x

Go To Action

Site: <input type="text" value="T12000"/>	To: <input type="text" value="T12000"/>
Resource: <input type="text" value="Labor"/>	To: <input type="text" value="Labor"/>
Start Date: <input type="text" value="10/28/2008"/>	
D/W/M/P: <input type="text" value="W"/>	
Per Column: <input type="text" value="1"/>	
Under Cap %: <input type="text" value="0.00"/>	
Over Cap %: <input type="text" value="0.00"/>	

Output:
Batch ID:

Item Resource Load Summary Report (21.22)

QAD Proprietary
2008-MS-PR-280

Item Resource Load Summary Report

While the Item Resource Load Summary Report (21.22) shows the same information as Item Resource Load Summary Inquiry (21.21) it does allow selection based on a range of over/under percentage. This can be useful to filter out very small over/under loads to focus on the serious capacity issues.

For each resource, you can define resource bills (load profiles) that specify the amount of the resource required to manufacture a product line or item.

- Resource planning:
 - Evaluates the feasibility of production plans and master schedules
 - Identifies where adjustments are required

If the production plan needs more machine capacity, decrease production or increase machines. Catching the imbalance at this level allows adjustment of the plan before work is scheduled or customer promises are made.

Item Resource Load Summary Reprt												
Puerto Rico												
Resource: Labor Labor hours UM: HR Site: PR0T0												
Past	12/12/08	12/19/08	12/26/08	01/02/09	01/09/09	01/16/09	01/23/09	01/30/09	02/06/09	02/13/09	02/20/09	
	12/11/08	12/18/08	12/25/08	01/01/09	01/08/09	01/15/09	01/22/09	01/29/09	02/05/09	02/12/09	02/19/09	02/26/09
Workdays	0	5	5	5	5	5	5	5	5	5	5	5
Capacity	0	375	375	375	247	215	215	215	215	215	215	215
Total Load	0	140	140	140	540	140	140	64	108	0	0	0
Over/Under	0	235	235	235	-293	75	75	151	107	215	215	215
Cumulative	0	235	470	705	412	487	562	713	820	1,035	1,250	1,465

End of Report



Using Master Scheduling and RCCP



- ▲ Master Schedule Order Maintenance
- ▲ Master Schedule Order Browse/Report
- ▲ Sales Order Maintenance (Abnormal Demand)
- ▲ Seasonal Build Maintenance (optional)
- ▲ Seasonal Build Browse/Report (optional)
- ▲ Master Schedule Summary Inquiry/Report
- ▲ Master Schedule Detail Inquiry/Report
- ▲ Selective Materials Plan (optional)
- ▲ Item Resource Load Summary Inquiry/Report
- ▲ Item Resource Load Detail Inquiry/Report

QAD Proprietary

2008-MS-PR-290

Item Resource Load Detail Inquiry/Report

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Item Resource Load Detail Inquiry

Item Resource Load Detail Inq X

Run Export to Excel View as PDF

Site: PROTO Resource: Labor Start Date: 12/12/2008 End Date: Column Type: Week Per Column: 1 Columns: 12

Site: PROTO Resource: Labor Labor hours Unit of Measure: HR

Category	Past	12/12/2008	12/19/2008	12/26/2008	1/2/2009	1/9/2009
Work Days	0	5	5	5	5	5
Capacity	0	375	375	375	247	215
Load	0	140	140	140	540	140

Order	ID/Line	Item Number	Date	Past	12/12/2008	12/19/2008	12/26/2008	1/2/2009	1/9/2009
12090008 (1)	2280398	1500-10	12/15/2008	0	10	0	0	0	0
12090009 (1)	2280399	1500-10	12/22/2008	0	0	10	0	0	0
12090010 (1)	2280400	1500-10	12/29/2008	0	0	0	10	0	0
12090011 (1)	2280401	1500-10	1/5/2009	0	0	0	0	10	0
12090012 (1)	2280402	1500-10	1/12/2009	0	0	0	0	0	10
12090013 (1)	2280403	1500-10	1/19/2009	0	0	0	0	0	0
400003 (1)	2280416	1000-00	1/2/2009	0	0	0	0	200	0
400003 (2)	2280416	1000-00	1/5/2009	0	0	0	0	200	0
12100002 (1)	2280417	1000-00	1/23/2009	0	0	0	0	0	0

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Item Resource Load Detail Inquiry

The item resource load detail inquiry and report show the detail of the orders that are creating the load. In this example we see the work orders and items that are the specific labor load for this site. Once the summary has shown an overload condition exists, the master scheduler makes decisions about whether to schedule overtime, add extra shifts or reschedule the work orders. The detail reports will show the actual orders that may need to be rescheduled.

Item Resource Load Detail Report

Item Resource Load Detail Re... x

Item Resource Load Detail Report

Puerto Rico

Resource: Labor Labor hours UM: HR Site: PROTO

	Past	12/12/08	12/19/08	12/26/08	01/02/09	01/09/09	01/16/09	01/23/09	01/30/09	02/06/09	02/13/09	02/20/09
	12/11/08	12/18/08	12/25/08	01/01/09	01/08/09	01/15/09	01/22/09	01/29/09	02/05/09	02/12/09	02/19/09	02/26/09
Workdays	0	5	5	5	5	5	5	5	5	5	5	5
Capacity	0	375	375	375	247	215	215	215	215	215	215	215
Item Number: 1000-00 Roller Bearing Hub Assy.												
W/O: 12100002	0	0	0	0	0	0	0	64	0	0	0	0
W/O: 12100003	0	0	0	0	0	0	0	0	108	0	0	0
W/O: 400003	0	0	0	0	400	0	0	0	0	0	0	0
Item Number: 1500-10 Chain Lube, 100ml												
W/O: 12090008	0	10	0	0	0	0	0	0	0	0	0	0
W/O: 12090009	0	0	10	0	0	0	0	0	0	0	0	0
W/O: 12090010	0	0	0	10	0	0	0	0	0	0	0	0
W/O: 12090011	0	0	0	0	10	0	0	0	0	0	0	0
W/O: 12090012	0	0	0	0	0	10	0	0	0	0	0	0
W/O: 12090013	0	0	0	0	0	0	10	0	0	0	0	0
Item Number: 1500-20 Chain Lube, 200ml												
W/O: 12090014	0	30	0	0	0	0	0	0	0	0	0	0
W/O: 12090015	0	0	30	0	0	0	0	0	0	0	0	0
W/O: 12090016	0	0	0	30	0	0	0	0	0	0	0	0
W/O: 12090017	0	0	0	0	30	0	0	0	0	0	0	0
W/O: 12090018	0	0	0	0	0	30	0	0	0	0	0	0
W/O: 12090019	0	0	0	0	0	0	30	0	0	0	0	0
Item Number: 1500-50 Chain Lube, 500ml												
W/O: 12090020	0	100	0	0	0	0	0	0	0	0	0	0
W/O: 12090021	0	0	100	0	0	0	0	0	0	0	0	0
W/O: 12090022	0	0	0	100	0	0	0	0	0	0	0	0
W/O: 12090023	0	0	0	0	100	0	0	0	0	0	0	0
W/O: 12090024	0	0	0	0	0	100	0	0	0	0	0	0
W/O: 12090025	0	0	0	0	0	0	100	0	0	0	0	0
Total Load	0	140	140	140	540	140	140	64	108	0	0	0
Over/Under	0	235	235	235	-293	75	75	151	107	215	215	215
Cumulative	0	235	470	705	412	487	562	713	820	1,035	1,250	1,465

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Item Resource Load Detail Report

While the data displayed are the same for the inquiry and report, some schedulers will prefer the format of the report, which can be viewed on the monitor or printed.

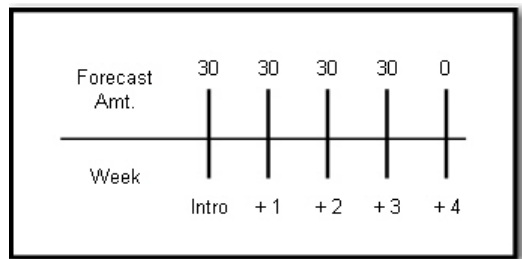
Processing Exercises

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

Review a Seasonal Build Forecast

Instructions: This activity covers entering and reviewing a forecast and a seasonal build plan.

- Item 1100-00 at site PROTO is being introduced into a new marketplace 4 weeks from next Monday.



- As a hedge against sales being greater than anticipated, you would like to have an additional 60 units in stock available on the date of the introduction. These will be produced in the two weeks prior to the introduction.

Use Seasonal Build Maintenance (22.9) to enter a seasonal build schedule using Monday dates.

	First Entry	Second Entry	Third Entry
Site:	PROTO	PROTO	PROTO
Item Number:	1100-00	1100-00	1100-00
Date:	2 wks prior	1 wk prior	Intro date
Reference:	Intro	Intro	Intro
Seasonal Inventory:	30.0	60.0	0.0

- Run a Seasonal Build Inquiry for item 1100-00 to ensure that the data has been entered correctly.
- Review the Master Schedule Summary Inquiry (22.18) and Master Schedule Detail Inquiry (22.21) to review the impact of the seasonal build.

Rough-Cut Capacity Planning

Instructions: In this activity, you will level a load using the rough-cut capacity planning (RCCP) process. The activity includes creating master scheduled orders, running selective MRP, reviewing inquiries and reports, and increasing capacity to balance the load. Use item 1000-00, site PROTO throughout the activity.

1 Use Master Schedule Order Maintenance (22.13)

Work Order: <blank>
 ID: <blank>
 Item Number: 1000-00
 Type: <blank>
 Site: PROTO
 Qty Ordered: 100
 Order Date: Today's Date
 Release Date: Two weeks from today
 Due Date: Three weeks from today

2 Run Selective Materials Plan (23.3). Items 1000-00 to 1000-00, site PROTO to PROTO.

3 Using Item Resource Load Summary Inquiry (21.21), review the resource load for site PROTO, resource Labor. Is there enough capacity to do the plan?

4 Using Resource Maintenance (21.1), increase labor capacity for site PROTO. How much do you need to increase the daily labor supply?

Resource: Labor
 Site: PROTO
 Reference: Normal
 Cap/Day: 75

5 Use Item Resource Load Summary Inquiry (21.21) and Item Resource Load Detail Inquiry (21.23) to review the effects of your changes.



Course Overview

- ✓ Introduction to Master Scheduling and RCCP
- ✓ Business Considerations
- ✓ Set up Master Scheduling and RCCP
- ✓ Use Master Scheduling and RCCP

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Course Overview

APPENDIX A

Workshops and Study Questions

- 6 A Plan Orders flag setting of No constitutes the fully manual approach to master scheduling.
- True False
- 7 A time fence is the longest period of time it takes to either purchase or manufacture an item, assuming nothing is on hand.
- True False
- 8 Available-to-promise (ATP) is a manually entered value in QAD Enterprise Applications.
- True False
- 9 Dependent demand items can be shipped on a sales order.
- True False
- 10 In any time period, the ATP quantity can never be less than the projected on-hand quantity.
- True False

RCCP

- 1 List four of the key resources for scheduled end items in your company's plants.
- a
- b
- c
- d

2 If the Item Resource Summary shows 150% load in each of the next four weeks, what do you need to do?

3 The item resource plan does not take into account component production demands.

True False

4 A resource plan that appears slightly over or under capacity is typically ignored.

True False

5 Item resource loads are calculated from _____.

6 Overtime is scheduled by entering a Reference and a positive number of hours in Item Resource Bill Maintenance.

True False

7 Rough-cut capacity planning only looks at firm planned work orders and repetitive schedules.

True False

8 A negative lead time offset in the Item Resource Bill Maintenance indicates that the resource is needed before/after production begins.

Before After

Answers to Master Schedule Setup Study Questions

- 1 Set Consume Forecast = Yes on the sales order and enter a positive value in Consume Fwd and/or Consume Back in Sales Order Control.
- 2 A quantity smaller than the previous seasonal build entry must be entered. To release the entire seasonal build quantity, enter a zero.
- 3 In fact, an item is a master schedule item if the planner says it is. The planner determines whether it should be selected during a selective MRP based on Master Schedule = Yes or No. The planner also decides whether the system should create planned orders.
Set the following fields: Master Sched = Yes, Plan Orders = No. The key is the Plan Orders setting, which tells MRP whether to plan the item or not. You can set Plan Orders = Yes, and then use a Time Fence value to control the creation of orders within the near term horizon.
- 4 False. Forecasts and sales orders are independent demand requirements.
- 5 False. Seasonal build is the accepted method of building to inventory.
- 6 True.
- 7 False. A time fence is a period of calendar days from the system date for which MRP will not create planned orders.
- 8 False. ATP is calculated by the system and appears on the Master Schedule Summary Inquiry screen.
- 9 True.
- 10 False. If ATP is negative, it is over-promised for the remaining planning horizon.

Answers to RCCP Study Questions

- 2 Reduce production by 50% or increase capacity by 50%.
- 3 True. The Capacity Requirements Plan performs this task.
- 4 True. Slight deviations can usually be worked out on the shop floor.
- 5
 - a The production forecast from the Product Line Plan.
 - b The master schedule for the items.
- 6 False. Use Resource Maintenance.
- 7 False. It includes released, firm planned, exploded, and allocated orders.
- 8 After.

APPENDIX B

Reports, Inquiries, Browsers

Master Scheduling and RCCP Reports, Inquiries, Browsers

Report, Inquiry, Browse	Function/Purpose
Forecast Inquiry	Displays forecasts for any item or product subject to independent demand. Forecasts may also be displayed for spares requirement, planning items and configured products.
Forecast Report	Provides a means of printing the information displayed in Forecast Inquiry.
Seasonal Build Inquiry	Displays seasonal build forecasts which are usually derived from a product line plan, then used to develop the operations plan and the master production schedule. They are then periodically adjusted based on actual results or changes in the business plan.
Seasonal Build Report	Provides a means of printing the information displayed in Seasonal Build Inquiry.
Master Schedule Order Inquiry	Displays information about master schedule orders which determine how items will be made (routing), and what components will be used (BOM).
Master Schedule Order Report	Provides a means of printing the information displayed in Master Schedule Order Inquiry.
Master Schedule Summary Inquiry	Displays vital information derived from the production forecast, sales orders, gross requirements, master scheduled receipts, projected quantities on hand. Projection by period of the on-hand balance plus incoming orders minus the requirements
Master Schedule Summary Report	Provides a means of printing the information displayed in Master Schedule Summary Inquiry.
Master Schedule Detail Inquiry	The Master Schedule Detail Inquiry and Report functions 22.21 and 22.22 display the same information as the Master Schedule Summary Inquiry and Report, sequenced by due date. They also include source-to-demand pegging details, allowing you to identify the actual work order or sales order generating a particular item requirement.
Master Schedule Detail Report	Provides a means of printing the information displayed in Master Schedule Detail Inquiry.
Item Resource Bill Inquiry	Displays information on resource requirements for individual items.
Item Resource Bill Report	Provides a means of printing the information displayed in Item Resource Bill Inquiry
Item Resource Load Summary Inquiry	Displays the required resource capacity (production load) to meet scheduled production in daily, weekly, or monthly buckets. The load is subtracted from capacity: over-capacity appears as a negative number in the Over/Under row, under-capacity appears as a positive number.

Master Scheduling and RCCP Reports, Inquiries, Browsers

Report, Inquiry, Browse	Function/Purpose
Item Resource Load Summary Report	Provides a means of printing the information displayed in Item Resource Load Summary Inquiry.
Item Resource Load Detail Inquiry	Displays detailed information about the required resource capacity.
Item Resource Load Detail Report	Provides a means of printing the information displayed in Item Resource Load Detail Inquiry.

