



QAD Enterprise Applications
Enterprise Edition

Training Guide Planning and Scheduling Workbenches

Overview: Changes in Paradigms
Getting Familiar with MSW
Create a Master Schedule
Getting Familiar with PSW
Create a Production Schedule
Release Orders to Production
Monitor Production

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QAD Inc.

100 Innovation Place
Santa Barbara, California 93108
Phone (805) 566-6000
<http://www.qad.com>

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Change Summary

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

Date/Version	Description	Reference
September 2012/2012.1 EE	Rebranded for QAD 2012.1 EE	---
March 212/2012 EE	Rebranded for QAD 2012 EE	---
September 2011/2011.1 EE	Rebranded for QAD 2011.1 EE	---

About This Course

Course Description

The following table summarizes the content of this training guide.

Chapter	Title	Content Summary
N/A	Preface	Presents a summary of the training guide, describes the training environment, and any prerequisites required to take the training.
1	Overview: Changes in Paradigm	Discusses new terms and introduces new concepts, including managing repetitive order details, schedule discrete orders, schedule discrete, repetitive, and kanban orders on a shared resource, and track performance to schedules.
2	Getting Familiar with MSW	Introduces the framework, discusses concepts and tasks associated with retrieving scheduling data, including selection criteria, basic rules and system setup. Discusses reviewing scheduling data, including reviewing and drilling into supporting data, targeting data, and filtering and sorting data. Also discusses managing the UI, including monitor size, housekeeping, adding/removing fields, creating views, using auto-hide, and more.
3	Create a Master Schedule	Describes the business objective and process maps. Discusses scheduling horizon concepts. Describes how to identify production items with supply shortages, including reading the supply/demand panel and modifying demand sources. Discusses scheduling production orders, including modifying, creating, and auto-firming orders. Discusses production order type concepts, then tells you how to manage resource capacity, including how to read the capacity panel, use calendar exceptions, view capacity trends, and set up capacity.
4	Getting Familiar with PSW	Introduces the framework. Discusses retrieving scheduling data, including using and modifying selection criteria and basic rules. Discusses reviewing scheduling data, including introducing the Sequence Grid, Production Order Browse, and supporting data. Introduces capacity, and discusses targeting data with the navigator and grouping and filtering data.
5	Create a Production Schedule	Provides an overview of the production scheduling flow. Describes concepts, including scheduling by release versus due date, defining the sequence horizon, scheduling by release date, shift, and multi-resources. Discusses splitting a production order and anchoring a production order due date.
6	Release Orders to Production	Provides an overview of the process flow and describes general considerations. For discrete production orders, tells you how to authorize and release orders, and how to dispatch orders. For repetitive production orders, tells you how to authorize and dispatch orders.
7	Monitor Production	Provides an overview of the process flow. Discusses monitoring production activity, including visualizing completes to schedule. Also, discusses reviewing production activity detail, including discussions for both discrete and repetitive production orders. Tells you how to manage orders by closing orders, deleting schedule history, and reviewing the financial impacts.

Prerequisites

You should be familiar with the following topics before you take the training in this guide:

- QAD Enterprise Applications: Basic ERP system components
 - Demand sources: sales orders, safety stock, forecasts, DRP, safety stock, work orders
 - Bills of materials and routings
 - Master scheduling
 - Production scheduling

- MRP: How MRP logic works and how item planning parameters, shop calendars, drive the planning system.
- Work orders: releasing and production reporting
- Discrete manufacturing
- Advanced repetitive module
 - Production lines
 - Routing setup, specific to repetitive
 - Production reporting
 - Capacity configuration (shift maintenance)
- QAD EE browses and QAD .NET UI browse collections

Using this Guide with Training Videos on Learning Portal

This training guide is designed to work in conjunction with the Planning and Scheduling Workbenches training demonstration available through the QAD Learning Portal. The demonstration consists of several separate audio/video files that correspond to each chapter of this guide.

The ideal learning environment would be for you to enroll in the courses, listed in the table on page 4, start the training video that corresponds to the chapter, and follow along with the training guide text.

The training guide informs you of which demonstration file you need to start that corresponds to the section of the book you are studying. The videos tell you when to stop and do the hands-on lessons in this training guide.

Note The slides in this training guide do not follow each slide within the training video slide for slide. This is because the training video shows animation and results of data manipulation.

Accessing the Training Videos

To access the training videos that correspond to this training guide, navigate to the QAD Learning Portal:

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

Search on Planning and Scheduling Workbenches.

If you are a QAD employee, you typically have a Learning Portal set up for you. Once you search for Planning and Scheduling Workbenches, the courses shown in the table above display.

You must enroll in the courses by clicking the **Enroll** button.

Loading Data for Training Sessions

You can find information to help you load data for the training sessions in a document that explains VMED (virtual manufacturing environment dataset). You can find the document by searching for Planning and Scheduling Workbenches Training Demo Data Setup instructions in:

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

List of Courses

Each chapter of this training guide tells you which course you should enroll in QAD Learning Central. The following table lists courses that correspond to the each chapter.

Training Guide Chapter	Learning Central Code	Learning Central Course that Corresponds to Chapter	Credited Hours
Chapter 1 Overview: Changes in Paradigm	PLM11-1200	Planning and Scheduling Workbenches: 2. Changes in Paradigm - Functional Detail - 2011 Launch	0.5
Chapter 2: Getting Started with MSW	PLM11-1210	Planning and Scheduling Workbenches: 3. Creation of a Master Schedule - Functional Detail - 2011 Launch Note: This training course includes videos for both Chapter 2 and Chapter 3.	
Chapter 3: Create a Master Schedule	PLM11-1210	Planning and Scheduling Workbenches: 3. Creation of a Master Schedule - Functional Detail - 2011 Launch	1.5
Chapter 4: Getting Started with PSW	PLM11-1220	Planning and Scheduling Workbenches: 4. Creation of a Production Schedule - Functional Detail - 2011 Launch Note: This training course includes videos for both Chapter 4 and Chapter 5.	
Chapter 5: Create a Production Schedule	PLM11-1220	Planning and Scheduling Workbenches: 4. Creation of a Production Schedule - Functional Detail - 2011 Launch	1.5
Chapter 6: Release Orders to Production	PLM11-1230	Planning and Scheduling Workbenches: 5. Releasing to the Shop Floor - Functional Detail - 2011 Launch	1
Chapter 7: Monitor Production	PLM11-1240	Planning and Scheduling Workbenches: 6. Performance Monitoring - Functional Detail - 2011 Launch	1

Audience

Participants in the Planning and Scheduling Workbench training are typically master schedulers, production schedulers, and planners, as well as material expeditors, material planners, and other materials personnel who monitor, oversee, order and expedite goods to ensure that schedules are met.

Additional Resources

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

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

QAD Learning Center

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

QAD Document Library

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

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

QAD Support

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

Before You Run the Workbenches

The following topics discuss QAD EE settings you should set before you run the Workbenches:

- Setting Repetitive Control Fields
- Enabling the Workbenches
- Synchronizing Resource Tables

Setting Repetitive Control Fields

Once you load data, you must set two fields in Repetitive Control (18.22.24) before you begin training lessons in the QMI environment:

- End Effective Default Method: blank
- Zero Balance Work in Process: No

Enabling the Workbenches

You must set a field within QAD EE Site Maintenance (1.1.13) so that your site is enabled to run the workbenches.

Use Plan/Sched Workbenches . Set this field to enable the Planning and Scheduling Workbenches for this site.

No: You cannot run the MSW or PSW workbenches for this site. Use Repetitive Menu (18) programs as usual.

Yes: Setting this field to Yes lets you use the MSW or PSW for this site. When a site is enabled to run the MSW and PSW workbenches, Capacity Requirements Planning (CRP) runs as part of MRP for orders that have a P(lanned) status. When CRP runs as part of MRP, the system:

- Explodes planned orders as they are created.
- Lets you access the orders via the work center schedule resource in MSW.

So, once a site is enabled to run MSW or PSW, and you run MRP for the site to create planned orders; then within MSW, you can retrieve the orders for the item/site.

Setting this field to Yes also disables the following programs:

- Schedule Maintenance (18.2.1 and 18.22.2.1)
- Schedule Explosion (18.2.4)
- Cumulative Completed Maintenance (18.6)
- Line Schedule Workbench (18.22.1.10)
- Schedule Explosion (18.22.2.4)
- Cumulative Completed Maintenance (18.22.2.6)
- Planned Repetitive Schedule Approval (23.8)

Synchronizing Resource Tables

Use Synchronize Resource Tables (16.25.14) to build or rebuild resource master (prs_mstr) and item/resource detail (prsd_det) tables. These tables hold production line, work center, and item information that the QAD Planning and Scheduling Workbenches use to determine which production lines, work centers, and items to retrieve as a result of a workbenches search.

You must run Synchronize Resource Tables:

- Before you run the planning/scheduling workbenches.
- For your domain if your company has multiple domains and use the planning and scheduling workbenches for each domain.

Refer to your user documentation for the Planning and Scheduling Workbenches for more information.

Things You Should Know About This Guide

Before you use this training guide, note the following:

- This training guide is meant to be used with a training demonstration on the QAD Learning Portal; see “Using this Guide with Training Videos on Learning Portal” on page 3.
- This training guide is accompanied by a set of slides for the instructor if used in a classroom setting, or accompanied by training videos in a self-paced environment. The videos and this training guide include the slides.

In the slides, text is shown within the slides. That text is typically listed below the slide in this training guide. Also, there is additional text that describes aspects of the Planning and Scheduling Workbenches added to this training guide that is not within the slides.

- Text highlighted in green within some of the slides draws your attention to specific areas or data shown with the fields.

- Even though kanban is mentioned in the slides and the training guide, the initial release of the training guide does not discuss actual scheduling of kanban orders; however, additional releases cover more complex topics, including scheduling kanban orders.
- You cannot cut and paste within the Workbenches.
- Normal QAD EA security applies to the workbenches.
- In the exercises and text, the Scheduler ID code is for logical grouping of resources that you want to display simultaneously in the workbenches. This is not same as the Planner ID in QAD EA programs. So, for example, a Scheduler ID can be Group1 that represents resources for a group of products, or a product family.
- When this training guide discusses a shortage, it is a schedule shortage where supply does not meet demand. This term should not be confused with a production shortage.

Colors in the Workbenches

Colors shown within the workbenches are indicators of shortage and other issues. The following table lists the indicators and what they mean.

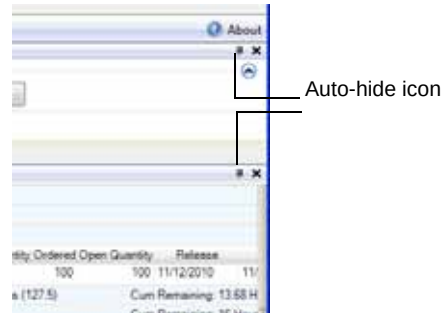
Area	Indicator	Meaning
Resource List		The resource includes one or more items with a potential scheduling problem.
Required Capacity	Yellow	The capacity required.
Period Available Capacity	Red	• Period available capacity is less than or equal to 0 for every day prior to this date. AND • Required capacity is greater than capacity.
	Yellow	• Excess capacity for the day is consumed by a future shortage. • The system consumes excess capacity from a prior day.
Schedule Grid	Red	Projected on-hand is less than 0.
	Yellow	Projected on-hand is less than safety stock value plus seasonal demand.
Projected On-Hand	Red	Projected on-hand is negative within firm schedule period. Alternate production lines without orders are not colored for POH.
	Yellow	Projected on-hand is less than safety stock plus seasonal demand.
Various	Gray text	More than one order exists for the item.

Navigating through Data in the Workbenches

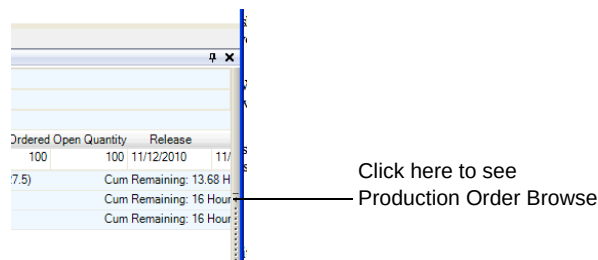
To help you navigate through the workbenches, you should keep the following points in mind:

- You can expand and collapse all of the panels—Navigator Panel, Schedule Grid, Capacity Panel, Supply/Demand Panel—in the workbenches. You can also expand the supporting programs in the tabs at the bottom of the workbenches, that is, Production Order Maintenance, Demand Details, and so on.
 - You can auto-hide panels by clicking the thumbtack icon. When use auto-hide, the tabs display in white; see the following figure:

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- It is sometimes difficult to see certain panels when you first open the workbenches. For example, you typically cannot see Production Order Browse while in the PSW Sequence Grid until you move your cursor to the very far right of the grid, and click the tiny arrow; see the following figure:



- If you double click the Production Order Maintenance tab, the system moves the Production Order Maintenance program to the top of the workbenches. Double-clicking it again returns it to the bottom portion of the workbenches.
- You can toggle on the data in a column. Click the column first to reverse the order of data, then click the column again to return to the original data.

Questions in the Training Guide

Throughout the training guide, **questions**, prefaced in boldface type, are presented to you. Answers are not provided in this training guide, they are provided through the training videos, though. Occasionally, questions are presented in the training guide to provoke thought or reflection of data results.

Overview: Changes in Paradigms

In Learning Central, the following training course corresponds to this chapter:

Planning and Scheduling Workbenches: 2. Changes in Paradigm - Functional Detail - 2011
Launch, code PLM11-1200.

Play the video within the course with this chapter. The video informs you when to stop the video and take the hands-on lesson.

Changes in Paradigm

Changes In Paradigms

▲ Introduction

- Provide new functionality and remove legacy system constraints

▲ Objectives

- Learn about workbench fundamental changes and capabilities

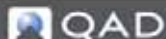
▲ Audience

- Familiar with core QAD EE and SE product capabilities (prior to EE 2010.1), including:

- MRP
- CRP
- Master, production, discrete scheduling
- Work order creation, maintenance, release
- Basic APICS

• Scope

- Solution does not address operational scheduling
- Advanced Repetitive and Discrete Scheduling
- QAD 2010.1 EE and QAD 2011 EE releases



Topics

Topics

- New terms
- Schedule a repetitive item multiple times per day
- Access to repetitive order detail
- Schedule discrete orders on production lines
- Schedule discrete and repetitive on a shared resource
- Track schedule performance



This training guide covers the topics described above.

In addition, the following should be considered before you use the workbenches.

Business Considerations

For the two Planning and Scheduling workbenches —MSW and PSW—you need to consider these primary considerations:

- Do I schedule at the production order level, the production order operation level, or both?
- Do I want to schedule on the production line, work center, or both resources?
- Am I scheduling a repetitive or discrete order?
- What item type am I scheduling?
- How do I want to manage materials for a production order? Do I transfer the materials to the resource or issue materials to the production order?
- How do I want to track/report costs for the item I produced? Do I track by item number or by specific item/order?
- Is WIP traceability important to me?

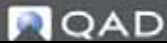
New Terms



New Terms

Terms

- Production order
- Production order type
- Resource



The following topics discuss terms you should understand before learning MSW and PSW concepts.

Production Order

New Terms – Production Order

Production Order: An order/scheduling that authorizes the manufacture of parts or products in specified quantities
Both a discrete work order or repetitive scheduled order

Schedule		Item Number	Description	09/10	09/11	09/12	09/10 -
		F-bws103	OEM HighV Customer C	25	20	55	100
		F-bws108	Make To Order B	3			3
		S2-bws101x	PL-Mold (Kanban)				0
		F-bws105	Make To Stock A	5	31		36
		F-bws106	Make To Stock B				0
		F-bws101	OEM HighV Customer A	9	10	10	29
		F-bws102	OEM HighV Customer B	14	15	15	44
		F-bws104	Service Item - Discrete				0
		F-bws107	Make To Order A	5			5
		S1-bws101	PL-Paint	10	10	10	30

Production Order

A production order is:

- An order/scheduling that authorizes the manufacture of parts or products in specified quantities.
- Both a discrete work order or repetitive scheduled order.

Production Order Type

New Terms- Production Order Type

The screenshot displays the QAD Master Scheduling interface. At the top, there's a 'Master Scheduling' window with a 'Capacity' tab. Below it is a 'Schedule' table with columns for Resource, Item Number, Nettable QO, and Past Due. The table shows two rows: '100-01' with item '100-1' and '100-02' with item '100-1158'. Below the schedule is a 'Supply/Demand' section. The main part of the interface is the 'Details' section, which has tabs for 'Details', 'Comments', 'Date/Time', 'Operations', 'Components', 'Production Activity', 'Production CUM Activity', 'Compliance', and 'Accounting Data'. The 'Details' tab is active, showing various fields for production parameters. A dashed blue arrow points from the '100-02' item in the Schedule table to the 'Order Type' dropdown in the Details section.

Resource	Item Number	Nettable QO	Past Due
100-01	100-1	100	
100-02	100-1158	100	

Details

Production Rate: 55.00 Primary Line: 100-1 Site: 100-1 Order Type: [Dropdown]

Run Crew Size: 1 Scheduled Line: 100-1 Sales/Job: [Field]

Run Crew Productivity: 100.00 Number of Lines: 1.0 Supplier: [Field]

Line Productivity: 100.00 Duration Buffer (Hrs): 0.0 Routing Code: [Field] Cum ID: [Field]

Run Time (Hrs): 1.82 Duration Hours: 2.32 BOM Formula Code: [Field] Order Sheet Printed: [Checkbox]

Setup Time (Hrs): 0.5 Projected Duration Days: 0.29 Release Print: [Checkbox]

Required Capacity (Hrs): 2.32

Production Order Type

When discussing production order types, you should compare and contrast a repetitive order with a discrete order. A repetitive order:

- Is backflushed using (Repetitive Backflush (18.22.13))
- Tracks costs against a cumulative production order (a production order that may remain open for a day, month, or year with costs tracked).
- A repetitive order is a scheduled order, you can see this with an S as the indicator of the order type.

A discrete order:

- Is backflushed using Work Order Receipts (16.13)
- Tracks costs against a discrete production order
- Blank represents discrete order

Resource

New Terms - Resource

The screenshot displays the QAD software interface. On the left, the 'Resource Navigator' shows a tree structure with 'bws1' expanded. Under 'Production Line', 'pl-asm' is highlighted. Under 'Work Center', 'WC-Mold' is highlighted. On the right, the 'Master Scheduling' table is visible. It has columns for 'Resource ID', 'Item Number', 'Nettable QOH', and dates '09/10', '09/11', and '09/12'. The table contains several rows of data, with some rows highlighted in pink and yellow. Arrows point from the 'pl-asm' and 'WC-Mold' resources in the navigator to their respective rows in the scheduling table.

Resource ID	Item Number	Nettable QOH	09/10	09/11	09/12
pl-asm	F-bws103	11	25	20	55
pl-asm	F-bws108		3		
PL-Mold	S2-bws101x	290			
WC-c2S1	C2-S1-bws101x	5		177	10
WC-Mold	S2-bws101x	290			
pl-asm	F-bws105	205	5	31	
pl-asm	F-bws106	610			
pl-asm	F-bws101	61	9	10	10
pl-asm	F-bws102	81	14	15	15
pl-asm	F-bws104	1			
pl-asm	F-bws107	6	4	5	

Resource

A resource is anything that adds value to a good or service in its creation, production, or delivery (APICS definition). For the workbench solution, this refers to scheduling on a production line, machine, or work center.

It also refers to number of production lines, work centers, machines, people, tools required to produce a production order (resources per).

Schedule a Repetitive Item Multiple Times per Day Section

**Schedule a Repetitive Item
Multiple Times per Day**



Schedule a Repetitive Item Multiple Times per Day

Schedule a Repetitive Item Multiple Times per Day



The screenshot shows a terminal window titled "col45:qad.com - PuTTYtel" with the command "terpmt.p 99" and the screen title "18.22.2.1 Schedule Maintenance" dated "03/17/09". The screen displays the following information:

Item Number: A-F514 Finished Product
 Site: us-a1 Production Line: AS10 Start: 03/17/09

	Due Date	Scheduled	Routing	BOM Code
Monday:	03/16/09	3.0	A-F510	A-F510
Tuesday:	03/17/09	3.0	A-F510	A-F510
Wednesday:	03/18/09	3.0	A-F510	A-F510
Thursday:	03/19/09	0.0	A-F510	A-F510
Friday:	03/20/09	0.0	A-F510	A-F510
Saturday:	03/21/09	20.0	A-F510	A-F510
Sunday:	03/22/09	0.0	A-F510	A-F510
Total:		29.0		

The QAD logo is visible in the bottom left corner of the terminal window.

Prior to the introduction of MSW, there was no way to schedule a repetitive item multiple times per day. You can schedule standard repetitive items in the MSW, multiple times, within the same day.

Additionally, standard repetitive backflush and reporting information displays in the MSW.

Solution Approach

Schedule a Repetitive Item Multiple Times per Day

The screenshot displays the 'Production Scheduling' window in QAD MSW. The interface shows a hierarchical view of production orders for 'PL-Paint'. The date '09/10' is highlighted with a red box. Below it, a table lists production instances. One instance at '01:05:00' is highlighted with a red box. Below this, a table shows details for two production runs, both for item 'S1-bws102', which is also highlighted with a red box.

ID	Shift	Seq	Run Seq 1	Run Seq 2	Run Crew	Item Number	Setup Time (Hrs)	Sta	Component	Status
90024	1	1	Red	Medium		S1-bws102		1	E	Scheduled Receipt
90025	1	2	Red	Medium		S1-bws102		1	E	Scheduled Receipt

Solution Approach

MSW provides you with the ability to production schedule an item within a release date, a shift, with multiple instances.

Manage Repetitive Order Details Section



Manage Repetitive Order Details

Manage Repetitive Order Details

Production Order Maintenance

New Delete Validate

Click a column header to sort by that column

ID	Status	Quantity Ordered	Release	Due
90013	R	3	09/10/2010	09/10/2010
90014	F	5	09/14/2010	09/14/2010
22318	F	7	09/15/2010	09/15/2010
22395	P	2	09/25/2010	09/25/2010

Details

Quantity Ordered: 5.00 Production Rate: 10.00 Primary Line: 1000

Quantity Open: 5 Run-Crew Size: 1 Scheduled Line: 1000

Yield: 100 Run-Crew Productivity: 100.00 Number of Lines: 1.0

Line Productivity: 100.00 Duration Buffer (Hrs): 48.0

Run Time (Hrs): 0.09 Duration Hours: 48.09

Setup Time (Hrs): 0.0 Projected Duration Days: 6.07

Required Capacity (Hrs): 0.09

Remarks:

Order Type: Sales Order

Supplier: BOM Formula

Routing Code: Order Sheet Printed

Release Point: ☐

QAD

Prior Limitations and Challenges

Before MSW, the system provided no ability to access/modify the production order details.

Business Needs

Do you:

- Add special instructions to a production order?
- Link the customer order ref ID to the scheduled order?

What else might be important?

- Changing the BOM/routing
- Modifying the order run rates and setup time

Schedule Discrete Orders on Production Lines Section

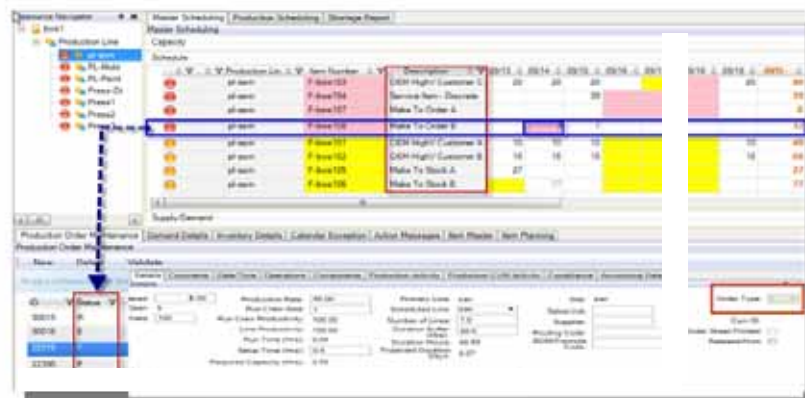
Schedule Discrete Orders on Production Lines



Schedule Discrete Orders on Production Lines

Schedule Discrete, Kanban, and Repetitive Orders on One Resource

- Solution Approach:
 - Ability to schedule all item & order types across a shared resource



For customers who schedule discrete orders, Work Order Maintenance (16.1) was essentially the only tool/UI for master scheduling orders.

You could see your capacity consumption at the work center level, but this information was only marginally helpful, as it provided a very limited view of the full demand/supply picture.

Schedule Discrete Order on Production Line: Solution Approach

Schedule Discrete, Kanban, and Repetitive Orders on One Resource

- **Solution Approach:**
 - Ability to schedule all item & order types across a shared resource

The screenshot displays the QAD Master Scheduling software interface. The top section shows a 'Schedule' tab with a 'Production Line' list. Below this, a 'Supply Demand' section is visible, showing a grid of data for various items and orders. A blue arrow points from the 'Solution Approach' text to the 'Production Line' list. The interface includes various tabs and filters for scheduling discrete, kanban, and repetitive orders on a single resource.

Solution Approach

MSW provides the ability to master schedule discrete production orders at the production order level.

Value

Value added includes:

- Simplifies scheduling compared to WC/OP level
- Schedule at shift level
- No completed routing setup needed – finance can have the routing

At the operation level, you could not see the relationship of your customer demand to your scheduled supply.

Many customers would admit their routing setup is less than optimal and may not be adequate to use for scheduling purposes.

Schedule Discrete, Kanban, and Repetitive on a Shared Resource Section

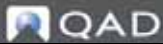
**Schedule Discrete, Repetitive,
and Kanban Orders on a
Shared Resource**



Schedule Discrete, Kanban, and Repetitive on a Shared Resource

Schedule Discrete, Kanban, and Repetitive Orders on One Resource

- Prior limitations and challenges:
 - No support for mix-mode environment (both discrete and repetitive managed orders across a shared resource)
 - What about managing kanban replenishment and other items with traditional production orders on a shared resource?
 - What about items that are typically repetitive, but require scheduling as discrete items?



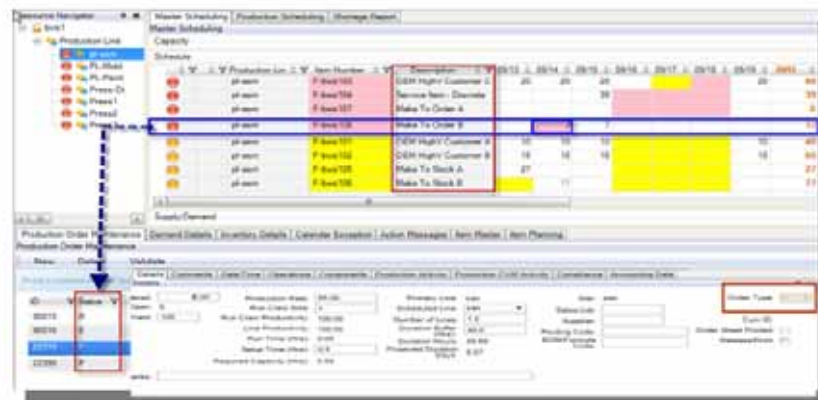
You can view/schedule Kanban production items in the MSW.

You can view kanban production items when you view the item on a work center/machine resource and when the kanban item has a routing defined.

Solution Approach

Schedule Discrete, Kanban, and Repetitive Orders on One Resource

- Solution Approach:
 - Ability to schedule all item & order types across a shared resource



Most companies required the ability to do true mix-mode scheduling of discrete, kanban, or repetitive orders on a single resource (work center/production line).

Within QAD EE, you can change the production order type of a production order that is scheduled on a production line. The purpose of this is so that a company can choose which method of production and cost tracking they wish to apply to a production order. For example, when the order type is repetitive, production is tracked against a CUM production order, and when the order type is discrete, production is tracked against the production order itself.

Track Performance To Schedule Section

Track Performance to Schedule



Track Performance To Schedule

Track Performance To Schedule

- Prior limitations and challenges:
 - Difficulty monitoring performance to schedule
 - Did production complete to schedule?
 - What is past due?
 - Difficulty monitoring WIP
 - What is at subcontracting operation?
 - What was scrapped or rejected?



Schedulers require visibility to those resources that have items scheduled that are past due. As a scheduler, when you arrive at work, production may be running behind on prior shifts. The system calculates the net past due quantity remaining for an item. The system displays visual indicators that show one or more items on the resource are past due.

Also, the system retrieves all open past due supply and demand records within the MSW.

Track Performance to Schedule: Solution Approach

Track Performance to Schedule

- Solution Approach:**
 - View production activity and progress against a specific production order ID
 - For discrete and repetitive production reporting
 - View production activity for items against a cumulative order ID
 - For repetitive production reporting

The top screenshot shows the 'Production Order Maintenance' window for a specific order ID (21102). The 'Production Activity' tab is selected, displaying a table with columns: Level, Cst ID, Description, Cum Quantity, Completed, Planned, Rejected, In Stock, and Out Stock. The table shows production activity for order 21102, with a total quantity of 1000 and a completed quantity of 1000.

The bottom screenshot shows the 'Production Order Maintenance' window for a cumulative order ID (21102). The 'Production Activity' tab is selected, displaying a table with columns: Level, Cst ID, Description, Cum Quantity, Completed, Planned, Rejected, In Stock, and Out Stock. The table shows production activity for order 21102, with a total quantity of 1000 and a completed quantity of 1000.

To determine progress against the schedule, as a scheduler, you may want to view the current production activity of the item. How much has been produced against the schedule or how much remains to be produced?

You can view projected calculations, such as projected on hand, available to promise, on hand, and more.

As a scheduler, you may also need to be directed to where inventory falls below safety stock thresholds or where negative projected on hand exists within their planning window. The MSW displays this using color indicators.

To prioritize orders and determine if an order should be firmed or released to the shop floor, in many cases, you may need to refer to the specific customer to review the demand for the item. In another case, the user may wish to see which order ID is driving the demand so that they can trace up to the root source of demand. In the MSW, schedulers can see demand details. Also, there is clear visibility for seasonal demand, safety stock demand, and forecast demand.

Can drill down and the system locates the cum order for you, as shown in the slide above.

Getting Familiar with MSW

In Learning Central, the following training course corresponds to this chapter:

Planning and Scheduling Workbenches: 3. Creation of a Master Schedule - Functional Detail - 2011 Launch, code PLM11-1210.

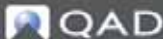
Note This training course includes videos for both Chapter 2 and Chapter 3.

Play the video within the course with this chapter. The video informs you when to stop the video and take the hands-on lesson.

Overview

Getting Familiar with MSW UI

- ▲ **Introduction**
 - MSW UI for 2010.1 and 2011 QAD EE release
 - New features plus consolidation of 50 + legacy applications, reports, and scheduling steps into a single application
 - Flexible UI, but navigational design and amount of data available can be overwhelming at first
 - Primary workbench value is visibility to scheduling data
- ▲ **Objectives**
 - Most important aspect is to understand how to leverage the workbenches
 - Gain general understanding of each of the workbench components
 - Learn basic data retrieval approach and logic
 - Learn workbench navigation and techniques and UI customizing
- ▲ **Audience**
 - Experienced users of QAD .Net UI applications and browsers
 - First time workbench users



In this chapter, you learn the fundamental operations of the Planning and Scheduling Workbenches, including how to:

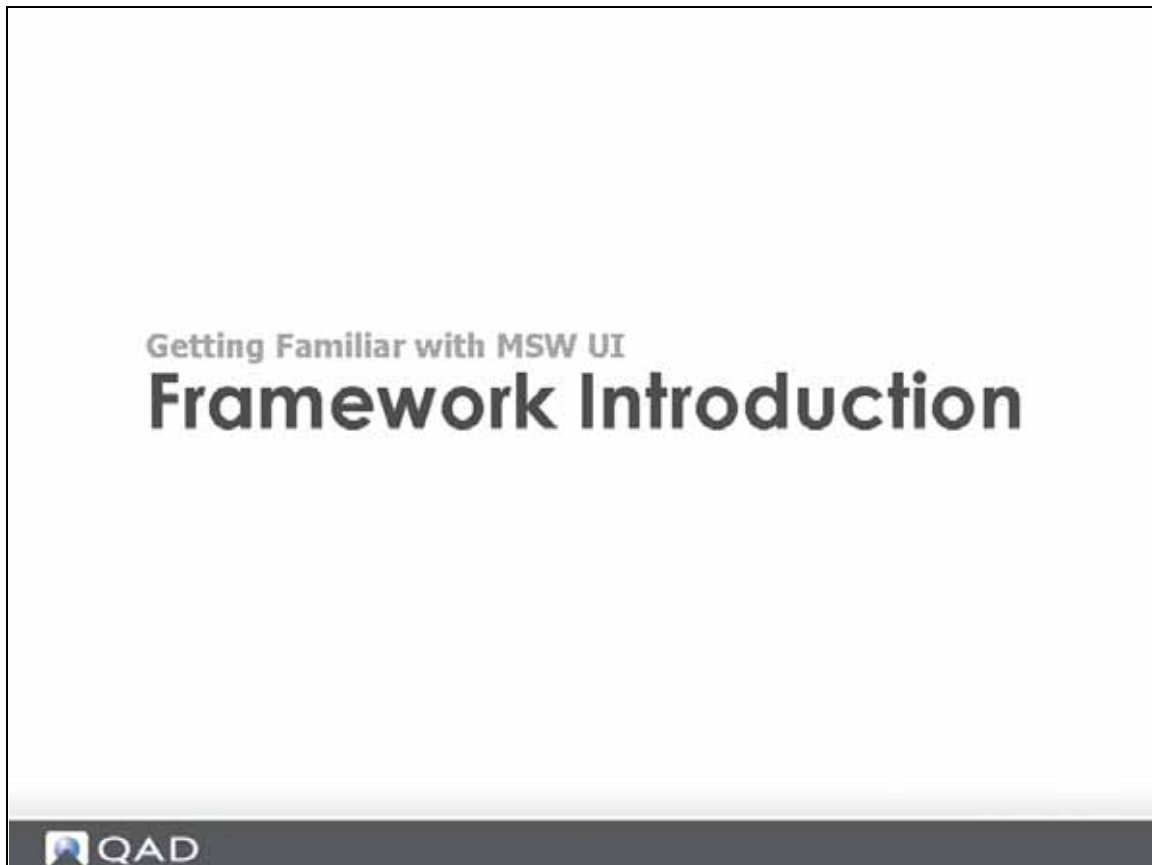
- Recognize panels and maneuver within and among them
- Retrieve data
- View data
- Modifying the layout to performing a basic scheduling lesson

Topics Covered

Topics Covered		
Category	Topics	Hands On
Workbench Framework Introduction		
Retrieve Scheduling Data	• Use selection criteria • Modify selection criteria • Basic rules • System setup	Lesson 1
Review Scheduling Data	• Review supporting data • Drill into supporting data • Target data with the navigator • Filter and sort data	Lesson 2 Lesson 3
How to Manage the UI	• Monitor Size • General housekeeping • Add/remove fields • Create views • Use auto-hide • Other topics	Lesson 4



MSW Framework Introduction Section



MSW Framework Introduction

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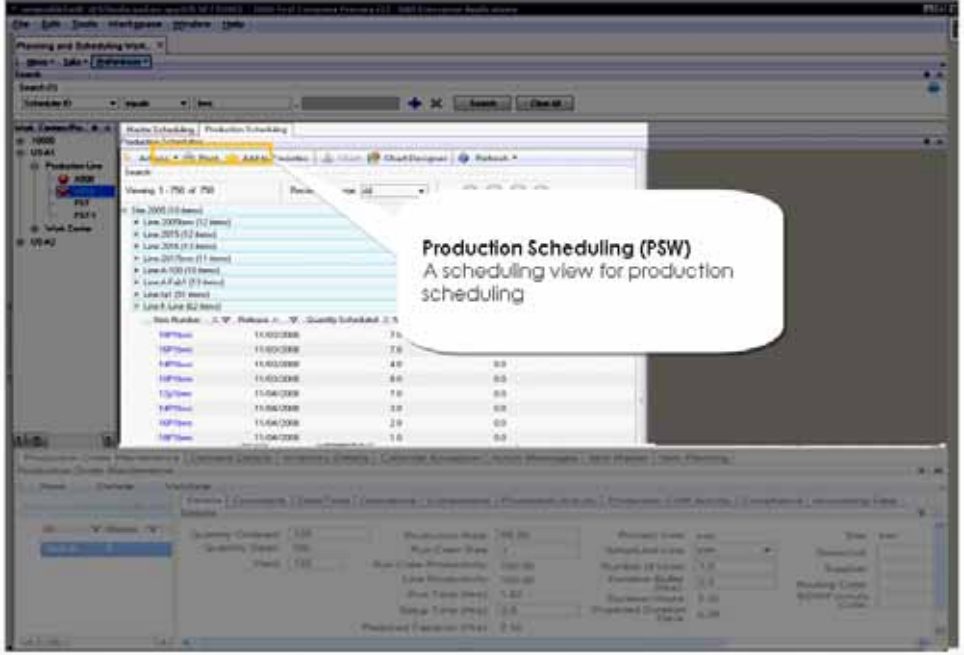
MSW displays all work orders for an item in a single view and:

- Over 50 legacy programs and reports are consolidated into a single toolset.
- Over 100 business rules are working behind the scenes to ensure the work orders are displayed in the most effective and informative manner to eliminate the need for the scheduler to do traditional research and inquiries.

PSW Workbench Framework

Workbench Framework Introduction

PSW

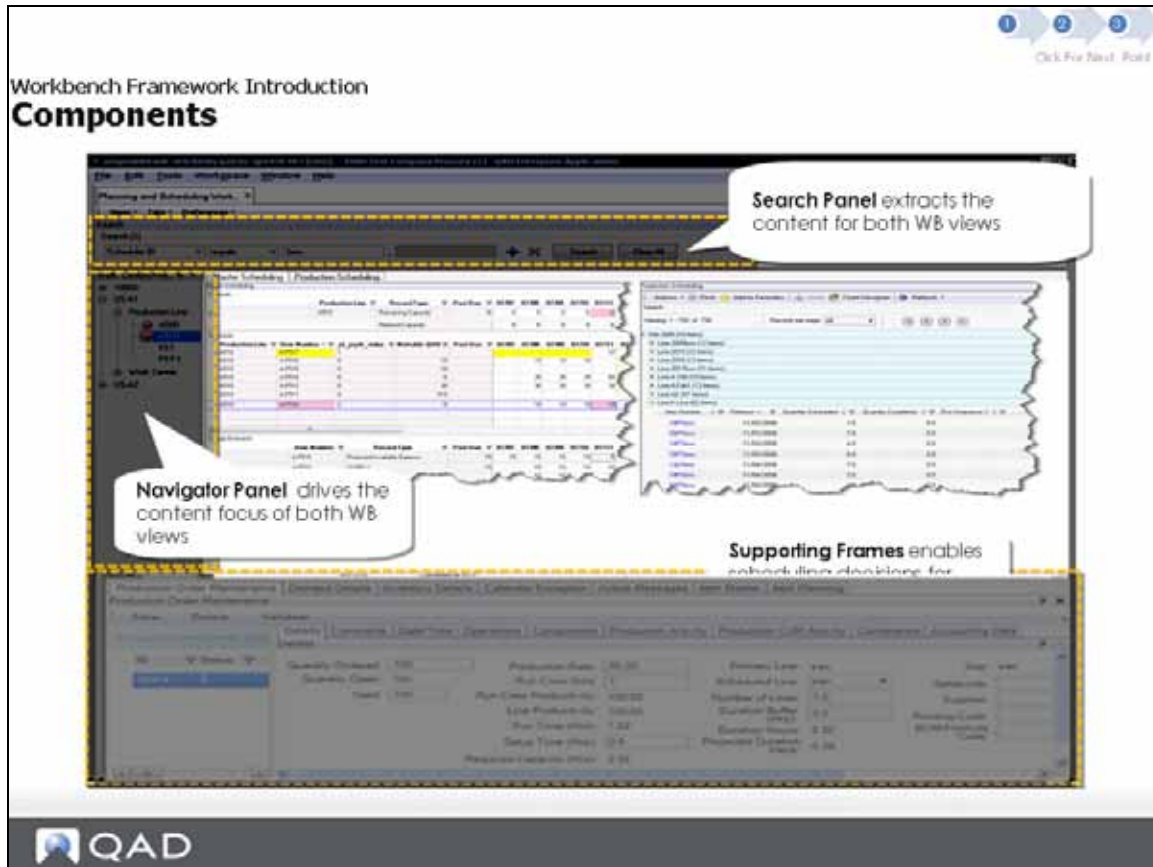


Production Scheduling (PSW)
A scheduling view for production scheduling

Item	Quantity	Unit	Start Date	End Date	Start Time	End Time
1000	100	100	11/01/2008	11/01/2008	00:00	00:00
1000	100	100	11/01/2008	11/01/2008	00:00	00:00
1000	100	100	11/01/2008	11/01/2008	00:00	00:00
1000	100	100	11/01/2008	11/01/2008	00:00	00:00
1000	100	100	11/01/2008	11/01/2008	00:00	00:00
1000	100	100	11/01/2008	11/01/2008	00:00	00:00
1000	100	100	11/01/2008	11/01/2008	00:00	00:00
1000	100	100	11/01/2008	11/01/2008	00:00	00:00
1000	100	100	11/01/2008	11/01/2008	00:00	00:00
1000	100	100	11/01/2008	11/01/2008	00:00	00:00

QAD

Workbench Framework Introduction: Components



The following table provides more information on the panels.

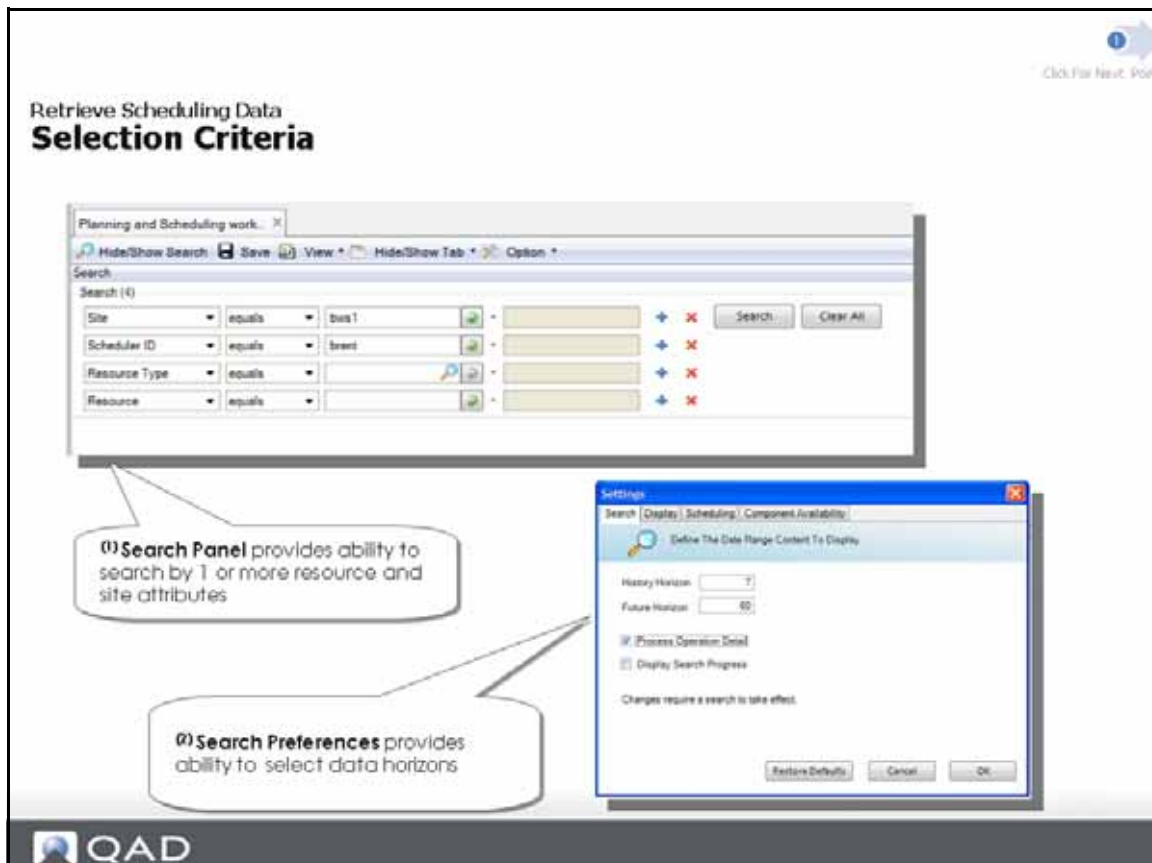
Table 2.1
Additional Panel Information

Panel	Description
Search Panel	Lets you select resources and items to schedule. Results are limited to sites and domains that you can access.
Resource Panel	Displays the sites and resources and defaults to the first record. Resources are grouped by site and resource type. Resource types are production lines and work centers. Highlights each resource with a POH shortage icon when one or more items associated with the resource have a POH shortage within the resources's defined scheduling horizon. Clicking on a work center/machine or production line resource in this panel, displays only those items associated with the selected resource in the Schedule Grid
Supporting Panel	Production Order Maintenance, Demand Details, Inventory Details, Calendar Maintenance, Action Messages, Item Master, Item Planning

Retrieve Scheduling Data Section



Selection Criteria



The selection results are limited to sites that you can access, based on security records defined in Site Security Maintenance (36.3.15). Additionally, if you are in a multiple-domain environment, the system only displays sites in domains that you can access based on settings in User Maintenance (36.3.1).

Enter the scheduler ID to retrieve all product lines/work centers.

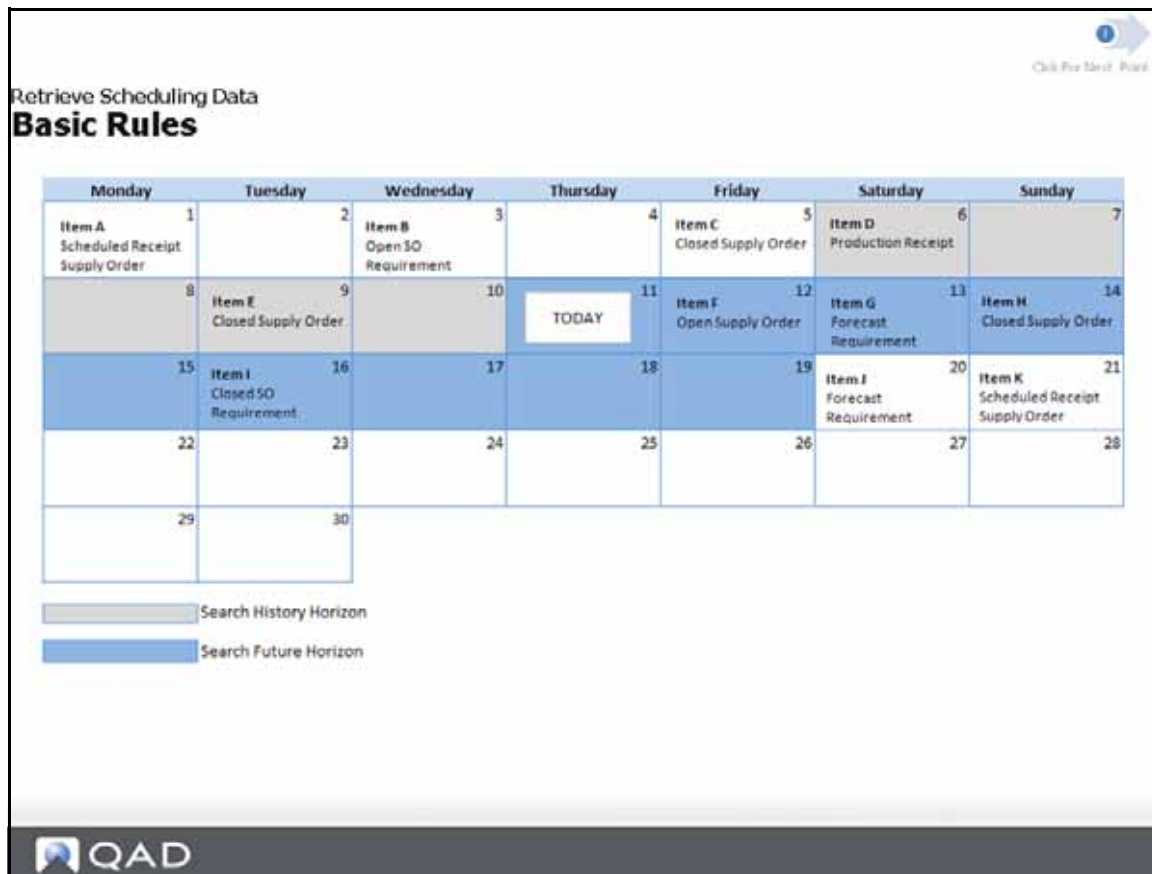
Note In the exercises and text, the Scheduler ID code is for logical grouping of resources that you want to display simultaneously in the workbenches. So, for example, a Scheduler ID can be Group1 that represents resources for a group of products, or a product family.

Examples

Search for all resources you manage by your scheduler ID code. Scheduler ID code is defined on production line and work center maintenance.

Search for a specific item across multiple sites. This is not a primary use case, but it can be done, you typically search by a specific item.

Basic Rules



Workbench search retrieves items and transaction records based on this criteria:

- Active supply/demand records
- Within the future horizon, prior to today
- Item activity within the history/future horizon- item receipts
- Item associated with resource

Question: Which items would not appear on workbench?

In the slide:

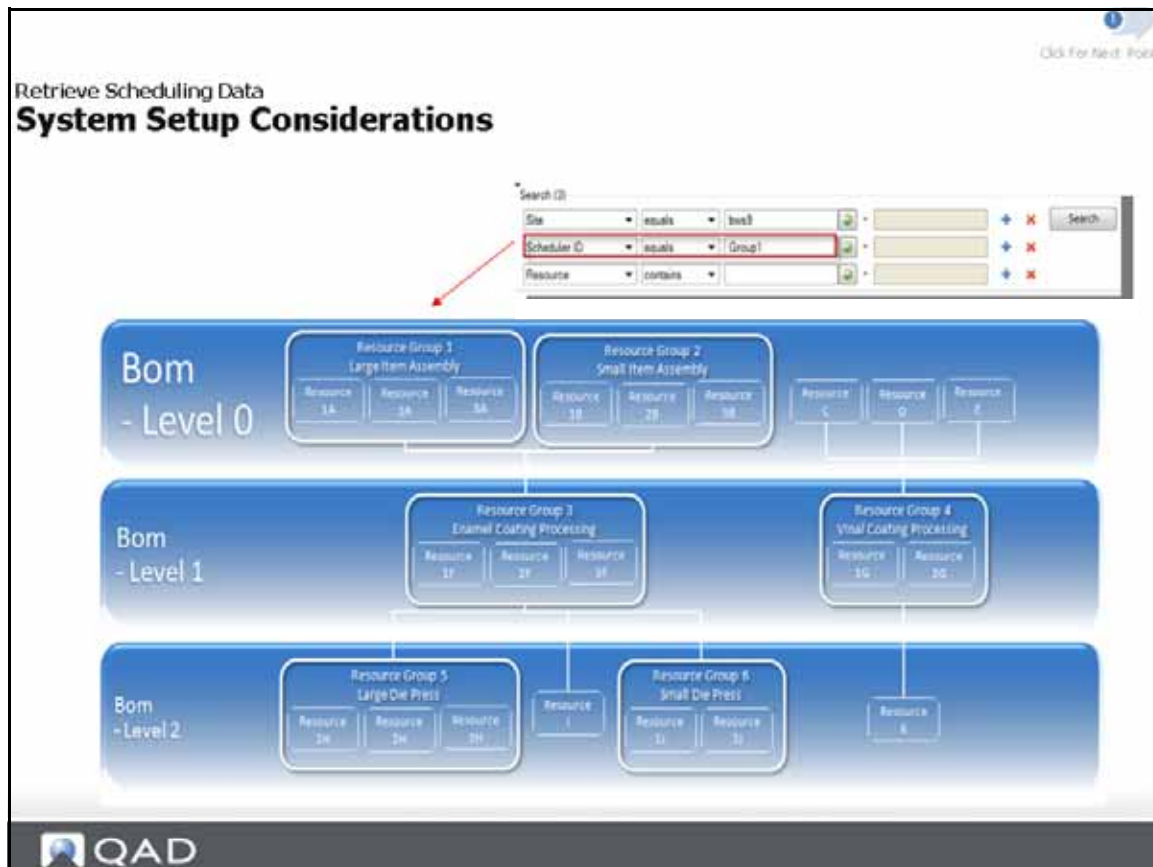
- The display shows all activity with the horizon, including cycle counted data once you cycle count the items.
- Items display because they are open and closed when they fall in the history horizon.
- In the future horizon, only the active orders and open scheduled receipts display.
- Prior to today's date, you see all past due data. In the slide, the dark blue area shows past due receipts and open demand.
- The display only shows manufactured items, for example, blank, M, L, Configured, DRP.

[illegible]

- No blank site field
- Specify a Scheduler ID or Resource ID
- Consider actual needed history and future data; that is, specify a certain set of date to be seen by setting dates with a manageable history and future horizon.

To view retrieval progress, set the Display Search Progress field to Yes in the MSW Search User Preferences window in the Options drop-down menu to have the system display its progress when retrieving records.

System Setup Considerations



For optimum search performance with proper selection criteria, resource naming conventions are important.

Scheduler ID is Group1 throughout these exercises.

Questions you should consider include:

- Can resources be grouped? For example, you can group resources by assembly or do a vertical retrieval, by BOM level.
- For multi-level scheduling, when you schedule – for a production line, do you wish to view and schedule all levels of the product structure at the same time?
- Can your resources be grouped by capability?
 - Resource Group 1 makes heavy assembly items.
 - Resource Group 2 makes light assembly items.
- Can your resources be grouped by item attributes?
 - Run large items on group 1 and small on group 2.

System Setup Considerations: Grouping Resources

Retrieve Scheduling Data
System Setup Considerations

Production Line Maintenance

Production Line: 1001
Size: 10000

Description: Production Line 1001

Units/Hour: 100.00

Enable Run Size: ☐

Number of Lines: 1.0

Duration Buffer (H:M:S): 00:00:00

Setup Time (H:M:S): 00:00:00

Auto Form: ☐

Scheduler ID:

Time Period: Horizon End: DAY, Period Number: 1, Calculate Date: 3/8/2011

Work Center Maintenance

Work Center: 200-02, Machine: 2000

Description: Inspection

Department: 200, Testing Dept

Auto Form: ☐

Scheduler ID:

Queue Time: 0.00

Wait Time: 1.00

Backlog: 0

Setup Crew: 2.00, Setup Rate: 15.00

Run Class: 3.000, Labor Rate: 10.00

Machines: 1.000, Labor Burden Rate: 9.00

Work Est Rate: 2.00, Labor Est %: 2.00%

Time Period: Horizon End: DAY, Period Number: 1, Calculate Date: 3/8/2011

QAD

To group resources, enter a unique Scheduler ID for each group in Production Line Maintenance (18.1.1). You can also do this by work center or production line.

Review Scheduling Data Section



Primary Grid Set

Review Scheduling Data

Primary Grid Set

Planning and Scheduling work...

Hide/Show Search

Save

View

Hide/Show Tab

Option

About

Search

Search (3)

Site equals [Site1]

Schedule ID equals [Schedule1]

Resource contains [plasm]

Search

Clear All

Resource Navigator

Master Scheduling

Production Scheduling

Storage Report

Master Scheduling

Capacity

Resource ID

Horizon End

Record Type

Past Due

Friday

Saturday

Sunday

09/17 - 09

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

Schedule

Resource ID

Item Number

Variable QOH

Past Due

09/17

09/18

09/19

09/20

09/21

09/22

09/23

09/24

09/25

Supply/Demand

Projected Demand

Projected Available Balance

Supply

Demand

Cumulative ATP

Seasonal Safety Stock

Receipts

QAD

Hands-On Lesson Section



Exercise 1: Enter Search Criteria and Review Data Results

Exercise 1 - Enter Search Criteria and Review Data Results

- Open MSW
- Use Search Panel to retrieve data
- Review schedule and capacity data
- Review supply/demand data
- Questions



The purpose of the exercise is to learn to navigate within the workbenches.

Open MSW

- 1 Ensure that MSW/PSW are enabled by setting the Use Plan/Sched Workbenches field to Yes in QAD EE Site Maintenance (1.1.13).

When a site is enabled to run the MSW and PSW workbenches, Capacity Requirements Planning (CRP) runs as part of MRP for orders that have a P status. When CRP runs as part of MRP, the system:

- Explodes planned orders as they are created.
- Lets you access the orders using the work center schedule resource in MSW.

Setting this field to Yes also disables additional programs. Refer to User Guide: Planning and Scheduling Workbenches for a list of the programs.

- 2 Start the .NET UI.
- 3 Enter QMI as the user.
- 4 In the .NET UI Menu Navigator, enter Master Scheduling Workbench or Production Scheduling Workbench. You can also find the application by:
 - a Using the updated EE process maps (not available in SE process maps)

- b Looking under the Manufacturing / Repetitive/ Advanced Repetitive/ Schedule Menu, then selecting Production Scheduling Workbench.
 - c Looking under the Forecast / Master Plan / Master Scheduling Workbench Menu.
- 5 Add the program to your MENU FAVORITES for quick future reference.
- 6 Open the workbench.

Use the Search Panel to Retrieve Data

- 1 Enter selection criteria: Site equals 10-202
- 2 Enter Resource equals ASSY-01.
- 3 Click Search.
The system retrieves item/resource records.

Review Schedule and Capacity Data

- 1 In the Schedule Grid, review the parts and information:
Questions: Why are some items red and some items yellow? Which items have past due requirements?
- 2 Review the capacity information for the resource.
 - Open/expand the Capacity Panel.
 - Resize the panel to view all the information.
 - **Question:** What capacity information do you see?

Note The preface of this training guide provides a table that lists the various colors and symbols that the workbenches use and describes the meaning of each.

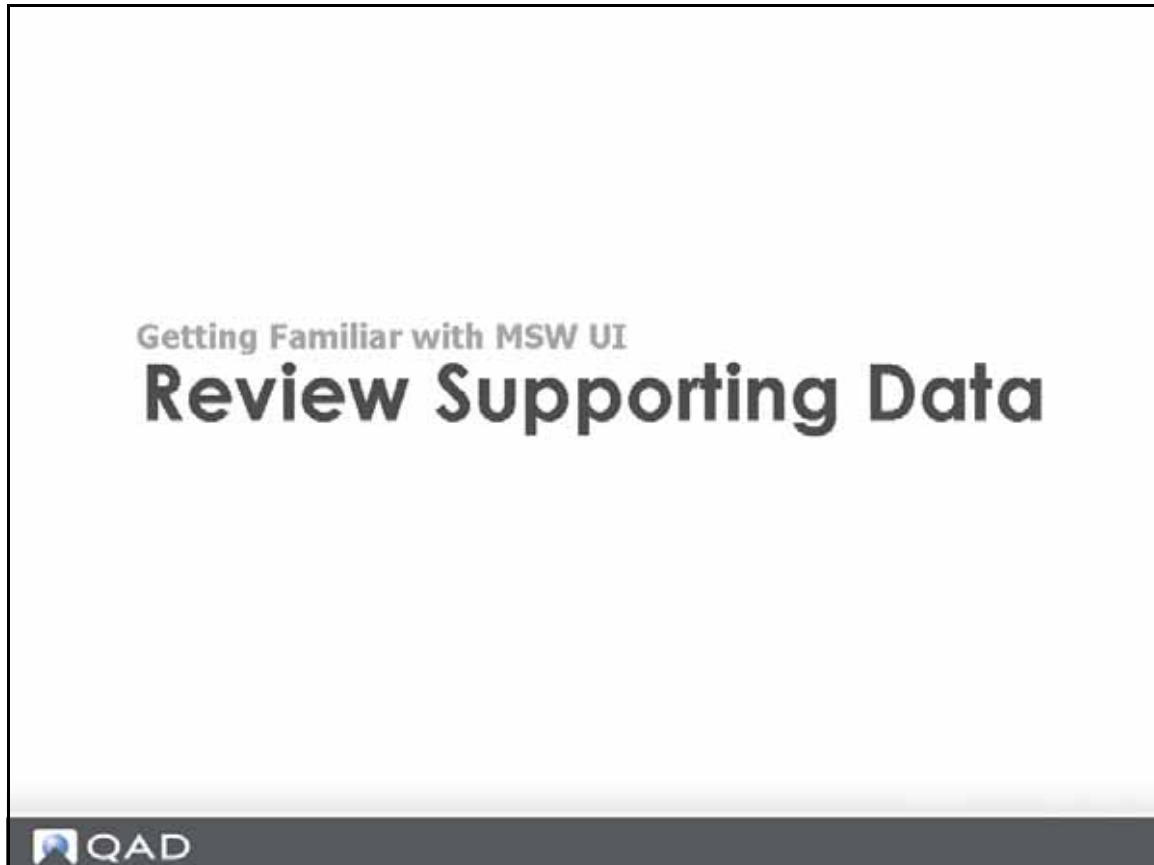
Questions

- 1 Name at least three major areas of the MSW.
- 2 True or False. There are no limitations when you enter a site as search criteria.
- 3 Which of the following is NOT a criteria for records and transactions for which the workbench searches:
 - Active supply/demand records
 - Within the future horizon, prior to today
 - Item non-activity within the history horizon
 - Item associated with resource
- 4 What are the two primary item types that the workbench can handle?
- 5 How do you know when the workbench has fully loaded data?

Answers

- 1 Search Panel, Navigation Panel, Schedule Grid, Supporting panels, such as Production Order Maintenance, Calendar Exception, and so on.
- 2 False. The selection results are limited to sites that you can access, based on security records defined in Site Security Maintenance. In a multiple-domain environment, the system only displays sites in domains that you can access based on settings in User Maintenance.
- 3 Item non-activity. MSW retrieves item activity, within the history or future horizon.
- 4 Repetitive and discrete items.
- 5 When data displays in the Schedule Grid.

Review Supporting Data Section



Demand Details

Review Supporting Data

Demand Details

Planning and Scheduling work...

Hide/Show Search

Save

View

Hide/Show Tab

Options

About

Resource Navigator

Master Scheduling

Production Scheduling

Storage Report

Resource

Capacity

Schedule

Resource ID	Item Number	Reliable QOH	Past Due	09/17	09/18	09/19	09/20	09/21	09/22	09/23	09/24	09/25
pl-asm	F-Bus102	81	10	27	15	8	30	15	15	15	15	15
pl-asm	F-Bus103	11	24	250	10		240	20	20	20	20	20
pl-asm	F-Bus101	61		67	15		94	10	10	30	30	30
pl-asm	F-Bus106	610					6	11				
pl-asm	F-Bus104	1	16	59		25	139					
pl-asm	F-Bus105	209		62			62					
pl-asm	F-Bus107	6	41				6					
pl-asm	F-Bus108			650			550	5	7			

Supply Demand

Production Order Maintenance

Demand Details

Inventory Details

Calendar Exception

Action Messages

Item Master

Item Planning

Site

Item Number

Quantity

Due Date

Source

Reference

pl-asm	F-Bus101	11	9/10/2019	Order Customer ABC Company	Order SOBus101 Line 55
Bus1	F-Bus106	120	9/14/2019	Order Customer ABC Company	Order SOBus104 Line 56
Bus1	F-Bus106	20	9/25/2019	Order Customer ABC Company	Order SOBus104 Line 56

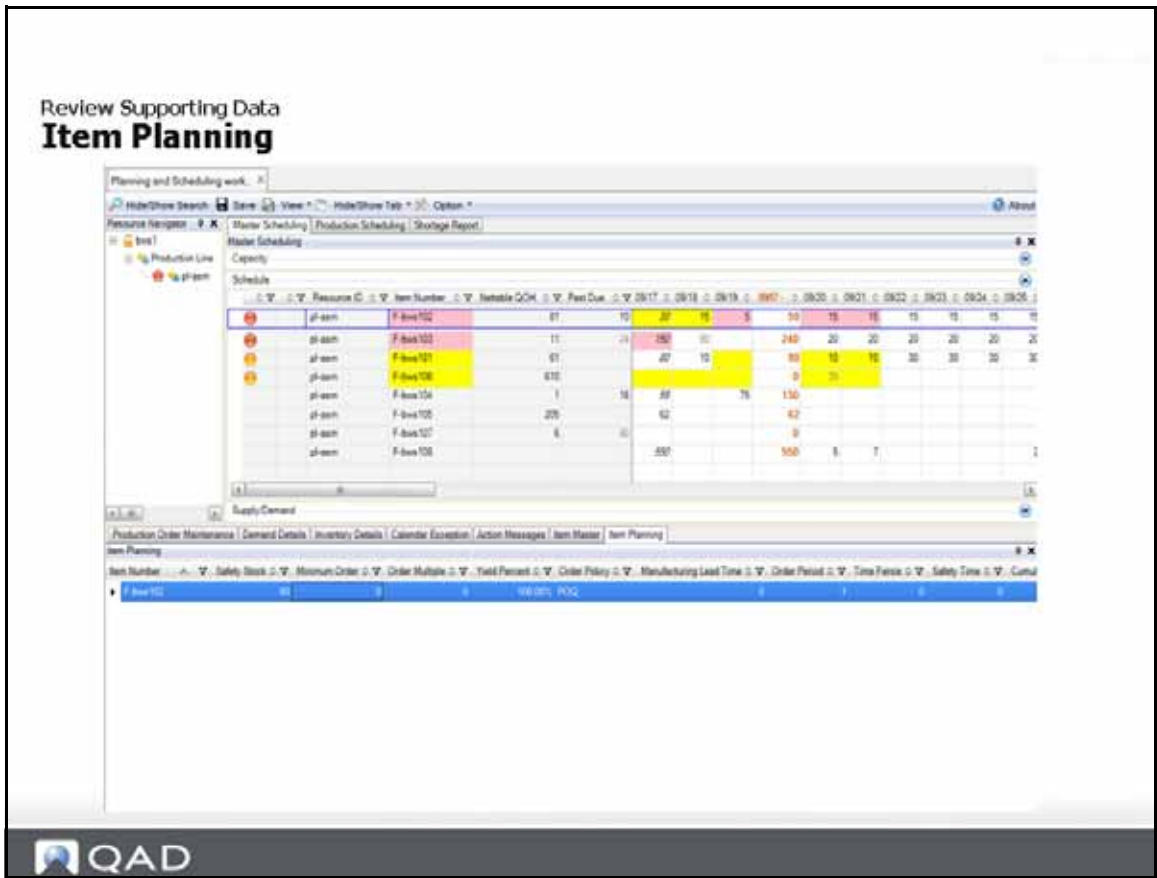
QAD

Inventory Details

The screenshot displays the 'Inventory Details' panel within the QAD software. The panel title is 'Review Supporting Data Inventory Details'. Below the title, there are tabs for 'Planning and Scheduling work', 'Master Scheduling', 'Production Scheduling', and 'Storage Report'. The 'Production Scheduling' tab is active. The main area shows a table with columns for 'Resource ID', 'Item Number', 'Retake GCH', 'Part Due', and a series of dates from 08/17 to 08/25. The table contains data for various items, including 'F-Item 102', 'F-Item 103', 'F-Item 104', 'F-Item 105', 'F-Item 106', 'F-Item 107', and 'F-Item 108'. The bottom of the panel features a 'Supply/Demand' section with a 'Production Order Maintenance' tab and a 'Demand Details' tab. The 'Demand Details' tab is active, showing a table with columns for 'Item Number', 'Site', 'Qty On Hand', 'Inv Unit', 'Qty On Hand', 'Inv Detail', 'Location', 'Lot/Serial', 'Reference', 'Status', 'Expire Date', and 'Date Created'.

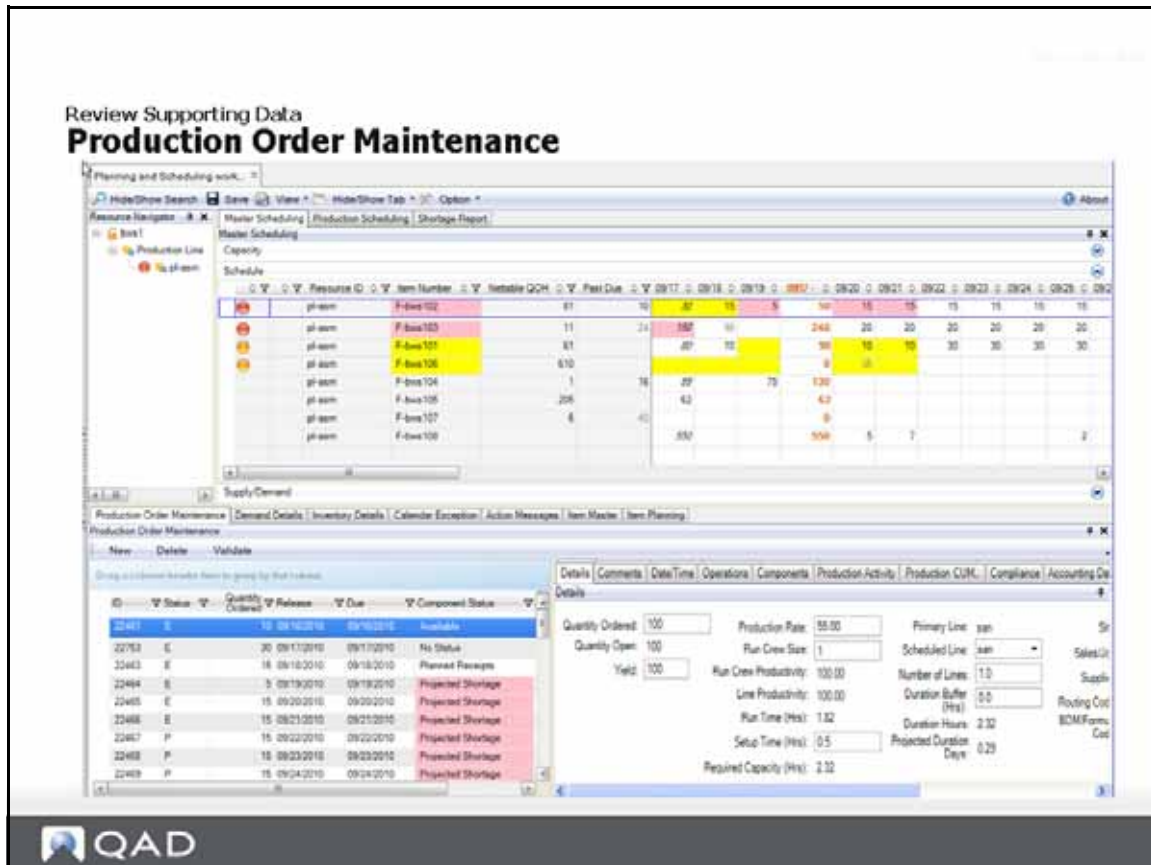
The Inventory Details panel displays the item number, site, quantity on hand, inventory master data, location, lot/serial, status, expiration date, and the date created. For all areas, you can choose to display details for all, custom, blanks, or so on.

Item Planning



The Item Planning panel displays item master/planning details for a selected item. At any point during the scheduling process, you can refer to the Item Planning panel to find information to identify lead time, order quantity, and so on. If an item-site record exists, planning data from item-site record display for the selected item-site record. You can modify item details to include information from any field in the Item Master Maintenance.

Production Order Maintenance



Production Order Maintenance lets you view individual item production order supply records for items that display in the MSW Schedule Grid. You can view, monitor, and interact with all operations of a production order independent of the Schedule Grid.

The left-side displays production order summaries with the order ID, status, quantity ordered, and release date columns. For each of these fields, you can select to see all, custom, blanks, or non-blanks. If you select custom, the system displays an additional panel to enter additional filter criteria for the field. For example, if you customize data to display for the Qty Ordered field, you can specify operands so that only those orders that equal a quantity ordered of 500 display. You can also add or delete conditions.

Use Production Order Maintenance within the workbench to:

- View orders, including planned orders, and delete, copy, or split orders
- Modify the quantity, dates, or status of the order
- Modify order operations, setup, or runtime
- Align order dates
- Create a new production order
- Identify and correct capacity issues

Drill Into Supporting Data Section



Demonstration

Drill Into Supporting Data
Demonstration

Planning and Scheduling workbench

Hide/Show Search | Save | View | Hide/Show Tab | Option

Resource Navigator | Master Scheduling | Production Scheduling | Storage Report

Item 1

Production Line

pl-asm

Capacity

Schedule

Resource ID	Item Number	Nettable QOH	Past Due	08/17	08/18	08/19	08/20	08/21	08/22	08/23	08/24	08/25
pl-asm	F-bus 102	81	10	30	18	5	50	18	18	18	18	18
pl-asm	F-bus 103	71	24	180	10		240	20	20	20	20	20
pl-asm	F-bus 101	61		20	10		30	10	10	20	30	30
pl-asm	F-bus 106	610					5	10				
pl-asm	F-bus 104	1	18	30		75	130					
pl-asm	F-bus 105	208		42			62					
pl-asm	F-bus 107	8	42				9					
pl-asm	F-bus 108			550			150	5	2			2

Supply-Demand

Production Order Maintenance | Demand Details | Inventory Details | Calendar Exception | Action Messages | Item Master | Item Planning

Item Planning

Item Number | Safety Stock | Minimum Order | Order Multiple | Yield Percent | Order Policy | Manufacturing Lead Time | Order Period | Time Fence | Safety Time | Cumul

F-bus 102

Item Master

Item Planning Data

Item Master Maintenance

Item Inventory Data Maintenance

Item Planning Maintenance

Item Cost Maintenance

Item Data Maintenance

QAD

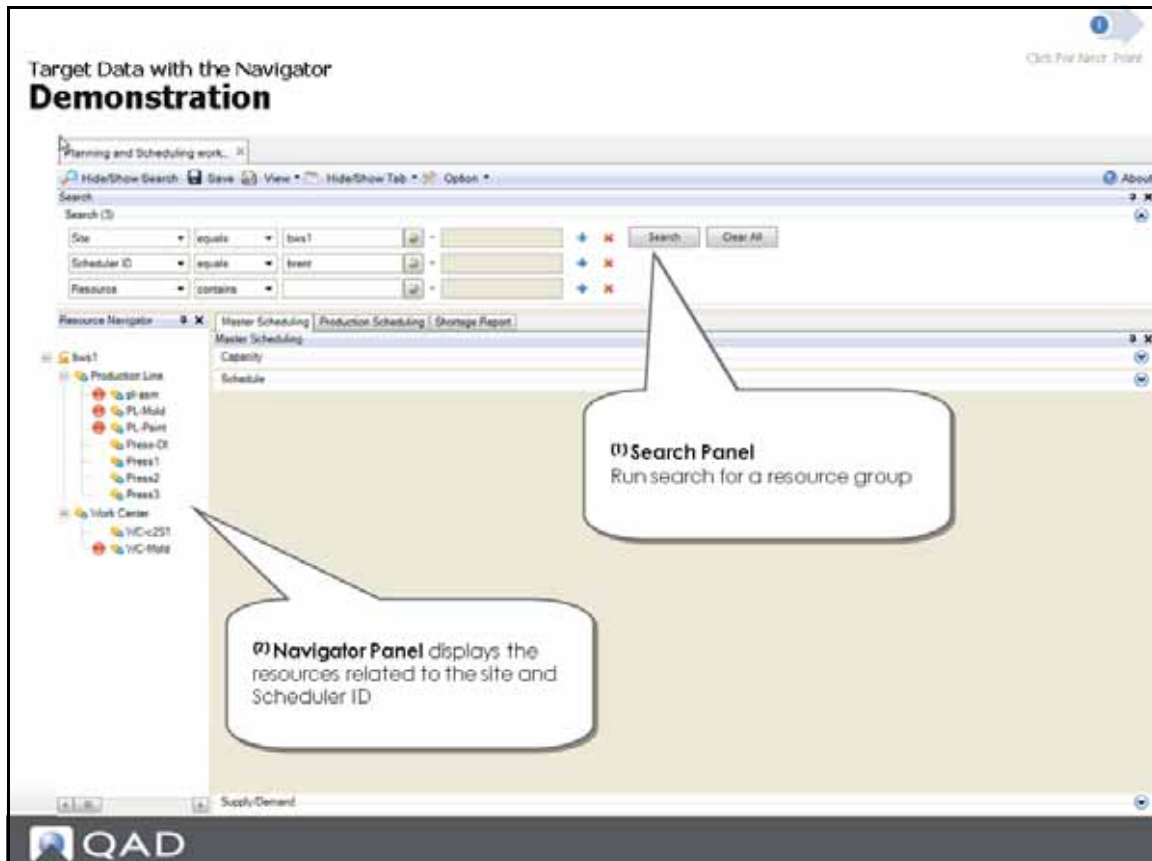
The system provides visual indicators of items with issues. You can select the items with issues, then drill down to the supporting panels to find data to resolve the issue.

For example, you can drill down to the Demand Details panel to view demand records by ascending due dates. You can then scroll up or down to see additional demand records within the history horizon or future demand. This helps you focus on a specific demand record to correct the issue. Or, you can drill down to data in the Demand/Supply Grid to view the supply of: P(lanned), F(irm), or R(eleased) production orders.

Target Data with the Navigator Section



Demonstration1



Use the Search Panel to enter search criteria. For example, set criteria to run a specific Scheduler ID, site, and resource group. The Navigator panel displays the resources related to the site and scheduler ID.

Note Selection results are limited to sites that you can access, based on security records defined in Site Security Maintenance (36.3.15). Additionally, if you are in a multiple-domain environment, the system only displays sites in domains that you can access based on settings in User Maintenance (36.3.1).

Then, use the Resource Navigator to view all resources for the site; the Schedule Grid displays all items for the resources.

Then, select a single resource in the Resource Navigator; the Schedule Grid displays all items for the resource.

Demonstration (Continued)

Target Data with the Navigator
Demonstration

Planning and Scheduling work...

Hide/Show Search Save View Hide/Show Tab Opt

Search (2)

Site: results bus1

Scheduler ID: results front

Resource: contains

0) Navigator Frame
Select to view all resources in view for the site

Resource Navigator

- Production Line
 - pl-asm
 - PL-Mold
 - PL-Point
 - Press-Ct
 - Press-1
 - Press-2
 - Press-3
- Work Center
 - WC-c251
 - WC-Mold

Master Scheduling Production Scheduling Shortage Report

Capacity

Schedule

Resource	Item Number	Nettable QOH	Past Due	08/17	08/18	08/19	08/20	08/21	08/22	08/23	08/24
pl-asm	F-bus101	81		5	10		15	30	30	30	
pl-asm	F-bus102	31	10		15	5	20	15	15	15	
pl-asm	F-bus103	11	24		10		30	20	20	20	
pl-asm	F-bus104	1	15	13		75	85				
pl-asm	F-bus105						0	5	7		
PL-Mold	S2-bus101a	290					0			73	72
PL-Point	S1-bus104	39	15				0				
PL-Point	S1-bus107	40	2				0			10	
WC-Mold	S2-bus101a	290		105	222	50	388	262	57	73	72
pl-asm	F-bus106	510					0	25			
pl-asm	F-bus105	205		52			52				
pl-asm	F-bus107	6	40				0				
PL-Point	S1-bus101	39								10	30
PL-Point	S1-bus102									15	15
PL-Point	S1-bus103									20	20
PL-Point	S1-bus105	35									
PL-Point	S1-bus106	40									
PL-Point	S1-bus108	40									

0) Schedule Grid displays all items across all my resources

Supply/Demand

QAD

Demonstration (Continued)

Target Data with the Navigator
Demonstration

Planning and Scheduling workbench

Search (3)
Site: results: bwa1
Scheduler ID: results: Brent
Resource: contains:

01 Navigator Frame
Select to view a single resource

Resource Navigator: bwa1
Production Line
PL-Mold
PL-Paint
Press-01
Press-02
Press-03
Work Center
WC-1251
WC-Mold

Master Scheduling
Capacity
Schedule

Production Lin	Item Number	Itemable QOH	Past Due	08/17	08/18	08/19	08/20	08/21	08/22	08/23	08/24
pl-asm	P-Item 101	61		8	10		15	10	10	30	30
pl-asm	P-Item 102	81	10		19	3	20	18	18	18	18
pl-asm	P-Item 103	11	24		30		90	20	20	20	20
pl-asm	P-Item 104	1	16	13		75	88				
pl-asm	P-Item 105						6	5	7		
pl-asm	P-Item 106	610					6	30			
pl-asm	P-Item 108	205		62			62				
pl-asm	P-Item 107	5	40				6				

02 Schedule Grid displays all active items for the selected resource

Subsidiary Demand

QAD

Filter and Sort Data Section



Sort on the Schedule Grid

Filter and Sort Data
Sort on the Schedule Grid

Click For Help: [Print](#)

Planning and Scheduling workbench

Hide/Show Search | Save | View | Hide/Show Tab | Option

Resource Navigator | Master Scheduling | Production Scheduling | Shortage Report

Production Line

- PL-Mold
- PL-Plant
- Press-Ct
- Press1
- Press2
- Press3

Work Center

- WC-251
- WC-Mold

Capacity

Schedule

Resource | Item Number | Nettable QOH | Past Due

09/17 | 09/18 | 09/19 | 09/20 | 09/21 | 09/22 | 09/23 | 09/24

Press-Ct | C1-S1-bws103 | 20 | 0 | 15 | 20 | 20 | 55 | 20 | 20 | 20 | 20 | 20

PL-Plant | S1-bws102 | 39 | 0 | 20 | 15 | 15 | 50 | 15 | 15 | 15 | 15 | 15

Press-Ct | C1-S1-bws106 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0

Press-Ct | C1-S1-bws102 | 20 | 0 | 25 | 15 | 15 | 55 | 15 | 15 | 15 | 15 | 15

pl-asm | F-bws107 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0

Press-Ct | C1-S1-bws105 | 20 | 20 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100

PL-Plant | S1-bws103 | 79 | 20 | 5 | 110 | 20 | 130 | 20 | 20 | 20 | 20 | 20

pl-asm | F-bws103 | 11 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30

pl-asm | F-bws104 | 1 | 15 | 13 | 75 | 83 | 83 | 83 | 83 | 83 | 83

PL-Plant | S1-bws104 | 39 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0

Press-Ct | C1-S1-bws104 | 20 | 15 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20

pl-asm | F-bws102 | 81 | 10 | 15 | 5 | 20 | 15 | 15 | 15 | 15 | 15

PL-Plant | S1-bws101 | 38 | 10 | 11 | 20 | 20 | 51 | 10 | 10 | 30 | 30 | 30

Press-Ct | C1-S1-bws101 | 20 | 10 | 30 | 10 | 25 | 65 | 13 | 30 | 30 | 30 | 30

Press-Ct | C1-S1-bws106 | 20 | 10 | 25 | 90 | 115 | 115 | 115 | 115 | 115 | 115

PL-Plant | S1-bws107 | 40 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0

Press-Ct | C1-S1-bws107 | 20 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0

pl-asm | F-bws101 | 61 | 5 | 10 | 15 | 15 | 15 | 30 | 30 | 30 | 30

pl-asm | F-bws106 | 108 | 108 | 108 | 108 | 108 | 108 | 108 | 108 | 108 | 108

PL-Mold | S2-bws107a | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290

WC-Mold | S2-bws107a | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290

pl-asm | F-bws106 | 610 | 610 | 610 | 610 | 610 | 610 | 610 | 610 | 610 | 610

pl-asm | F-bws105 | 205 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62

PL-Plant | S1-bws105 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30

PL-Plant | S1-bws106 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35

Supply/Demand

QAD

1) Past Due column
Click on column to sort ascending/descending

2) Schedule Grid displays all past due orders across all resources

Because the system calculates the net past due quantity remaining for an item, you can view items that are scheduled and are past due as your day begins. This lets you check results of prior shifts.

Production orders that are past due, have conflicts, cannot complete on time, need production scheduling, have availability shortages, or are released.

You can click on a column to start ascending/descending order; the Schedule Grid displays all past due orders across all resources.

You can then click on a date for all orders that are due today; the Schedule Grid displays all past due orders across all resources.

Sort on the Schedule Grid (Continued)

Filter and Sort Data

Sort on the Schedule Grid

Planning and Scheduling work...

Hide/Show Search

Save

View

Hide/Show Tab

Option

Resource Navigator

Master Scheduling

Production Scheduling

Storage Report

Production Line

pl-asm

PL-Mold

PL-Plant

Press-Ck

Press1

Press2

Press3

Work Center

1-C-25T

1-C-Mold

Capacity

Schedule

Resource	Item Number	Nettable QOH	Past Due	09/16	09/17	09/18	09/19	09/20	09/21	09/22	09/23	09/24
1-C-25T	C2-S1-box107a	5	208	26	155	299	26	26	60	26		
1-C-Mold	S2-box107a	290	108	222	80	388	262	57	73	72		
Press-Ck	C1-S1-box105	20	30	100		100						
pl-asm	F-box105	205	43			43						
Press-Ck	C1-S1-box103	20	11	20	20	35	20	20	20	20		
PL-Plant	S1-box105	25	30			30						
Press-Ck	C1-S1-box101	20	10	30	15	25	65		15	30	30	
PL-Plant	S1-box106	40	25			25	120					
Press-Ck	C1-S1-box102	20	21	15	15	55	15	15	15	15		
Press-Ck	C1-S1-box106	25	10	25	90	115						
PL-Plant	S1-box102	28	20	15	15	50	15	15	15	15		
Press-Ck	C1-S1-box104	20	15	20		20						
pl-asm	F-box104	1	18	13	75	88						
PL-Plant	S1-box101	38	10	11	20	51	10	10	30	30		
pl-asm	F-box101	61	5	10	15	15	10	30	30			
PL-Plant	S1-box103	75	25	5	110	135	20	20	20	20		
pl-asm	F-box102	91	10			20	15	15	15	15		
pl-asm	F-box103	11	24									
pl-asm	F-box106											
PL-Mold	S2-box107a	290										
PL-Plant	S1-box104	28	15									
PL-Plant	S1-box107	40	2									
pl-asm	F-box106	610										
pl-asm	F-box107	6	40									
S1-Mold	S1-box106	25										

0) Schedule columns

Click on a date for all orders due "today" 09/17

0) Schedule Grid displays all past due orders across all my resources

Supply Demand

QAD



Sort on Item Attributes

Filter and Sort Data
Sort on Item Attributes

Planning and Scheduling work...

Hide/Show Search | Save | View | Hide/Show Tab | Option

Resource Navigator | Master Scheduling | Production Scheduling | Shortage Report

Tree 1

- Production Line
 - pl-asm
 - PL-Mold
 - Press-Dt
 - Press1
 - Press2
 - Press3
- Work Center
 - WC-C231
 - WC-Mold

Capacity

Schedule

Resource	Item Number	Nettable QOH	Past Due	08/17	08/18	08/19	08/20	08/21	08/22	08/23	08/24
pl-asm	F-box106	610									
PL-Mold	S2-box101x	290									
WC-Mold	S2-box101x	290									
pl-asm	F-box105	225									
pl-asm	F-box102	81	10								
PL-Plant	S1-box103	79	25								
pl-asm	F-box101	61									
PL-Plant	S1-box107	40	2								
PL-Plant	S1-box106	40									
PL-Plant	S1-box109	40									
PL-Plant	S1-box104	39	15								
PL-Plant	S1-box102	39	60								
PL-Plant	S1-box101	38	10								
PL-Plant	S1-box105	35									
Press-Dt	C1-S1-box101	20	10								
Press-Dt	C1-S1-box102	20	10								
Press-Dt	C1-S1-box103	20	10								
Press-Dt	C1-S1-box104	20	10								
Press-Dt	C1-S1-box105	20	10								
Press-Dt	C1-S1-box106	20	10								
Press-Dt	C1-S1-box107	20	10								
Press-Dt	C1-S1-box108	20	10								
Press1	C1-S1-box101	20	10								
Press1	C1-S1-box102	20	10								
Press1	C1-S1-box103	20	10								

Supply Demand

(b) Nettable QOH column
Click on column to sort

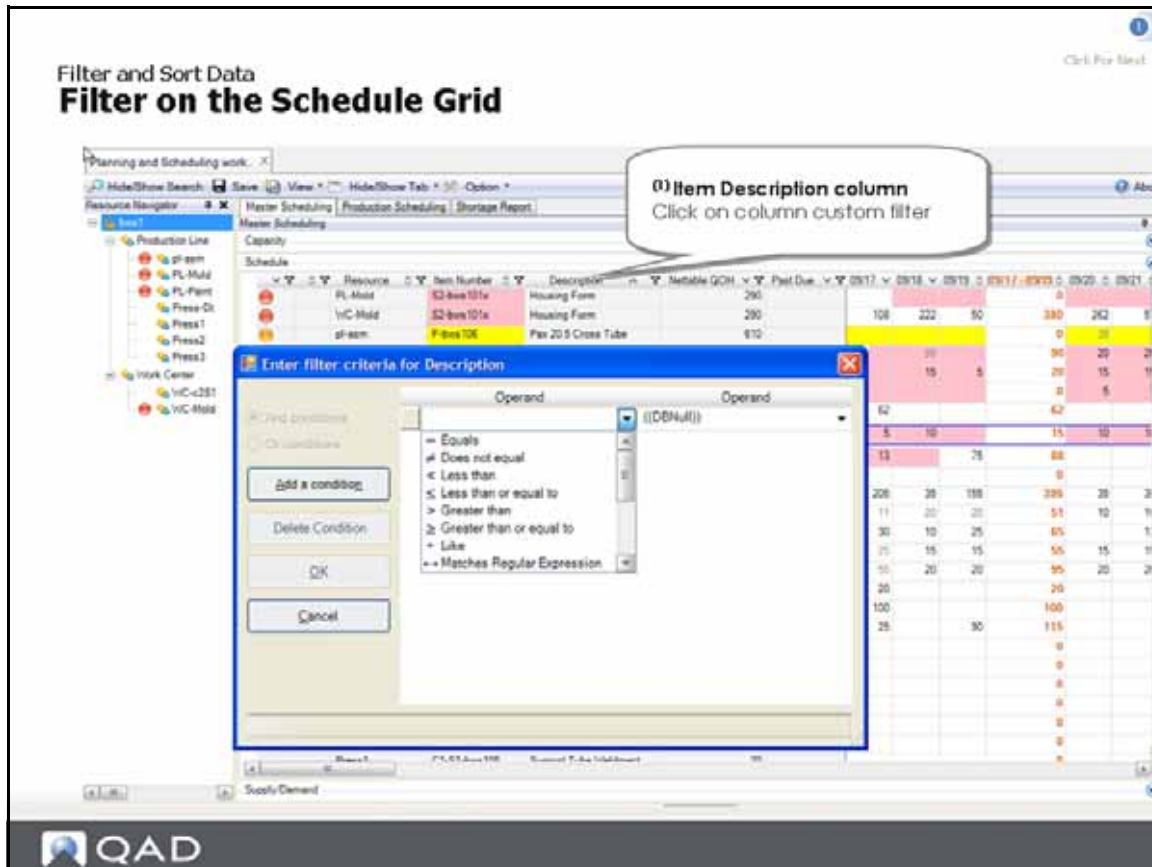
(a) Identify items with exceptionally high or low inventory balances - then take immediate corrective action.

QAD

You can click on the Nettable QOH column to sort data, then view inventory balances.

You can then identify items with exceptionally high or low inventory balances.

Filter on the Schedule Grid



You can right click on the Description column, then select Custom Filter. A window displays that lets you enter filter criteria for the item description column.

You can specify an operand, like you can when you set up selection criteria to pull records. You can also add or delete conditions.

Once you set up the filter criteria, select OK.

Hands-On Lesson Section



Exercise 2: Use the Navigator Panel to Drive Content**Exercise 2 - Use the Navigator Panel to Drive Content and Answer Global Scheduling Questions**

- Review demand details
- Review inventory details
- Drill into production order details
- View the MRP planning parameters
- Retrieve the scheduling data using the Search Panel
- Run a search that pulls data from multiple production lines/work centers
- Answer global questions, such as show:
 - All items with scheduling issues
 - Items where production is past due
 - Items with the highest inventory
 - Every part that is due to be completed today
- Questions

**Review Demand Details**

When determining if the master schedule should be changed, viewing the demand details is important to determine the actual customer (source) requesting the item.

- 1 Select item number 02308.
- 2 Click on the Demand Details panel.
The Demand Details panel displays all demand records for the item.
- 3 For the same selected item, click on the Schedule Grid on the Date Column date of tomorrow.
The Demand Details panel displays only demand records with due dates equal to selected column date.

Review Inventory Details

Inventory On-hand balance for item may be less or more than expected. Viewing inventory details could be helpful to determine if there is inventory that is non-nettable or to determine the last cycle count.

- 1 Select item number 02308.
- 2 Click on the Inventory Detail panel.

The system displays a few inventory records for the item.

- **Question:** What is the value of visibility of inventory of cross sites?

- 3 Right-click on the item number in Inventory Details.

The system displays a list of program options.

- 4 Select Transactions by Item.

The system displays all inventory transactions for this item.

Hint: Click on Transaction by Item at the very bottom of the workbenches and pull the panel up by dragging the fame upward.

- 5 Filter on specific transactions, for example, determine when the last inventory cycle count took place.

Drill into Production Order Details

The schedule grid displays a quantity in grey text, you cannot modify the value. You can drill down into the production order details for the item.

- 1 Select item number 02303.

- 2 Click on the Schedule Grid cell that displays the scheduled value in grey text.

Text is greyed because there is more than one order viewable on the workbenches.

- 3 Click on Production Order Maintenance tab.

The system displays all the production orders for this item.

Click on the quantity on the date, the specific cell of the date.

- **Questions:** Did you notice that the system selected the production order record where the due date was equal to the record/date selected in the Schedule Grid?
- Did you notice there are two production order records for the same due date?

Note This is why you cannot edit the schedule quantity value in the Schedule Grid.

- 4 Click on some of the tabs within the Production Order Maintenance.

The system displays all information relevant to the production order.

View the MRP Planning Parameters

If you do not believe MRP is planning your item correctly, you need to view the MRP planning parameters for the item.

- 1 Select item number 02303.

- 2 Click the Item Planning tab.

The system displays the item planning information. If there is an item-site record for the item, the planning details per the item-site record displays.

Retrieve Scheduling Data using the Search Panel

- 1 Enter selection criteria: Site equals 10-202.
- 2 Enter Scheduler ID equals Group1.
Scenario: You ran a search that pulls data from multiple production lines and work centers. Use the Navigator Panel to target the resources you wish to view and manage.
- 3 In the Resource Navigator Panel, expand site, production line, and work center lists.
The system displays several production lines and work centers.
The resources with the red bulb indicator shows resources with scheduling issues to address.
- 4 In the Navigator Panel, click on site.
The Schedule Grid displays all items scheduled across all resources in view.
- 5 In the Navigator Panel, click on production line.
The Schedule Grid displays all items scheduled across all production lines.
- 6 In the Navigator Panel, click ASSY-01.
The Schedule Grid displays all items scheduled on the selected resource.

Answer Global Question: Show All Items with Scheduling Issues

- 1 In the Navigator Panel, click site(10-202).
The Schedule Grid displays all items with supply shortages. All items with shortages are highlighted in red.
Prior to this tool - a scheduler might spend hours trying to determine if they have any items with scheduling shortages, just for production today and tomorrow.

Answer Global Question: Show All Items with Past Due Production

- 1 In the Schedule Grid, click the Past Due column.
The Schedule Grid displays all items first which are past due.
You have instant visibility to production performance to schedule.
Ensure the Navigator Panel is still at the site level selection.

Answer Global Question: Show All Items with Highest Inventory

- 1 In the Schedule Grid, click twice in the nettable QOH column.
The Schedule Grid displays all items first that are past due.
You have constant visibility to on-hand inventory is critical for many schedulers.
Ensure the Navigator Panel is still at the site level selection.

Answer Global Question: Show Every Part Due to be Completed Today

- 1 In the Navigator Panel, click twice on the Date column with today's date.
The Schedule Grid displays all items with due date of today.

Ensure the Navigator Panel is still at the site level selection.

Questions

- 1 True or False. The summarized quantity values within the Schedule Grid are production order quantities.
- 2 List at least two navigational functions that you can do in Production Order Maintenance within the workbench.
- 3 True or False. Does Inventory Details display item master data?
- 4 Which kinds of data does the Item Planning panel display?
 - Item master/planning details for a selected item.
 - Planning data from item-site record display for the selected item-site record.
 - Neither type of data.
 - Both types of data.
- 5 True or False. You can modify item details in the Item Planning panel. It is read-only. To change data, you use the EE Item Master Maintenance program.

Answers

- 1 True.
- 2 In Production Order Maintenance, you do the following navigational functions:
 - Sort data
 - Display a list of production orders
 - List details of production orders
 - Display calendar exceptions
- 3 True. Inventory details displays inventory master data.
- 4 Both types of data. The Item Planning panel displays item master/planning details for a selected item. At any point during the scheduling process, you can refer to the item planning panel to find information to identify lead time, order quantity, and so on. If an item-site record exists, planning data from item-site record display for the selected item-site record.
- 5 True. You can modify item planning data in the Item Planning panel.

Exercise 3: Use Basic and Advanced Filters to Find Data

Exercise 3 – Use Basic and Advanced Filters to Find Data

- Look for all alternate resources for an item
- Look for all items that contain a certain ID attribute/prefix/suffix
- Questions



Look for All Alternate Resources for an Item

- 1 In the Navigator Panel, click on Site (10-202).
The Schedule Grid displays all items scheduled across all resources in view.
 - 2 In the Schedule Grid, click on the Item Number column Filter Icon, then select 53103.
The Schedule Grid displays four resources: Stamp-01, Stamp-02, Stamp-03, Stamp-G.
- Note** In PSW training, you will learn details on master and production scheduling across multiple resources for the same item. This is a preview into one method to view alternate resources for an item.

Look for All Items that Contain a Certain ID Attribute/Prefix/Suffix

- 1 In the Schedule Grid, click the Item Number column Filter Icon, then select custom.
- 2 In the Operand field, select contains.
- 3 Enter an Operand value of: 53, then click OK.
The system displays a list of item numbers that match this selection.
- 4 Try additional columns to filter. Think of scenarios applicable in your environment.

- 5 Remove filters when complete with the above steps by selecting (All) when you click on the icon in the item number.

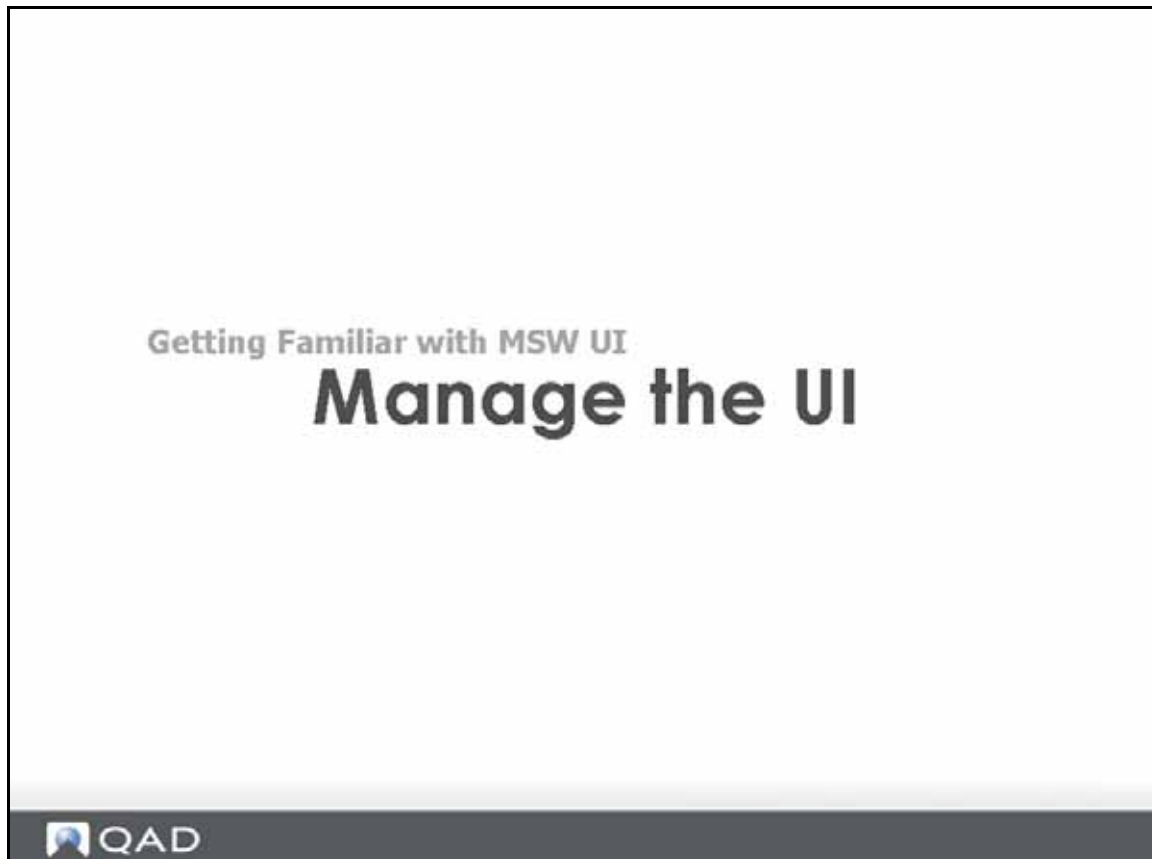
Questions

- 1 True or False. You must always check the Resource Panel to ensure whether you are working on a work center or production line.
- 2 True or False. The Schedule Grid can display all items with issues across all resources.

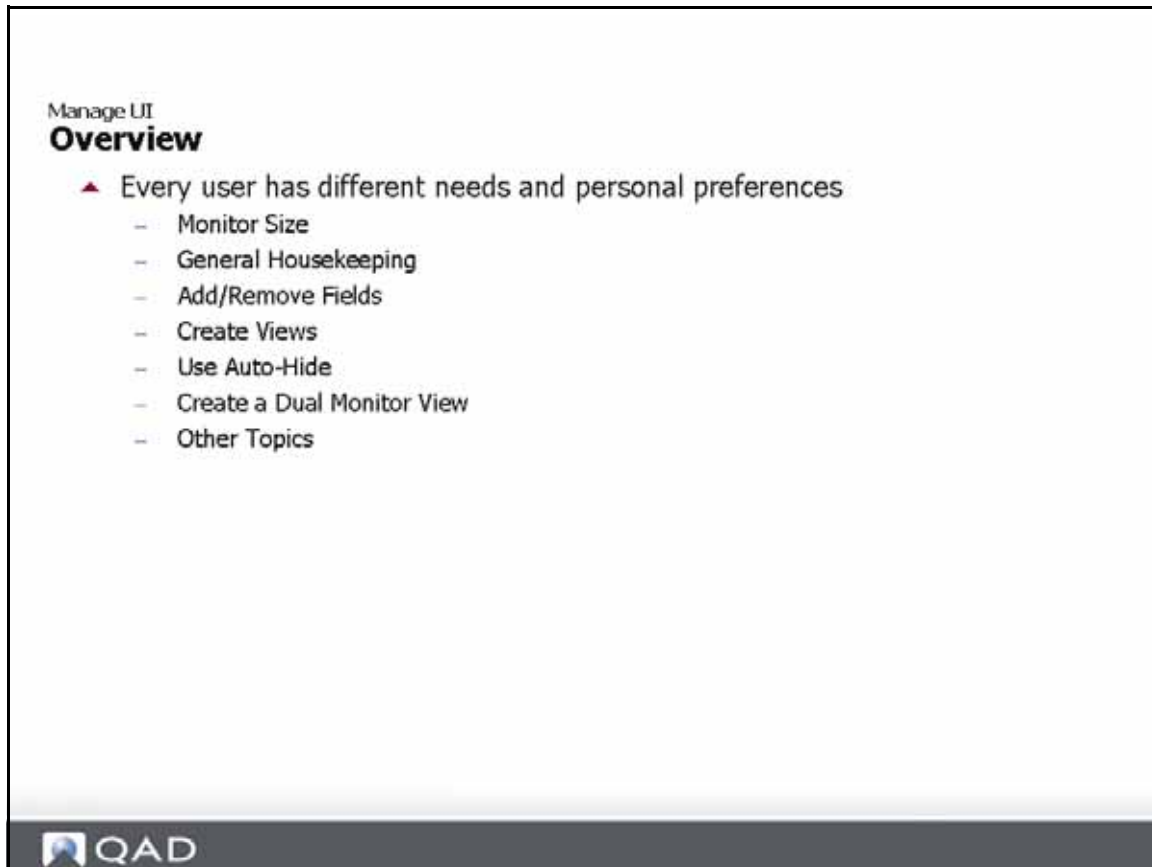
Answers

- 1 False. The label changes from resource to production line, if that is what you are focusing on in the Navigator Panel.
- 2 True.

Manage the UI Section



Manage the UI



The screenshot shows a presentation slide titled "Manage UI Overview". The slide content includes a main heading "Manage UI", a sub-heading "Overview", and a bulleted list of topics. The QAD logo is visible in the bottom left corner of the slide.

Manage UI

Overview

- ▲ Every user has different needs and personal preferences
 - Monitor Size
 - General Housekeeping
 - Add/Remove Fields
 - Create Views
 - Use Auto-Hide
 - Create a Dual Monitor View
 - Other Topics

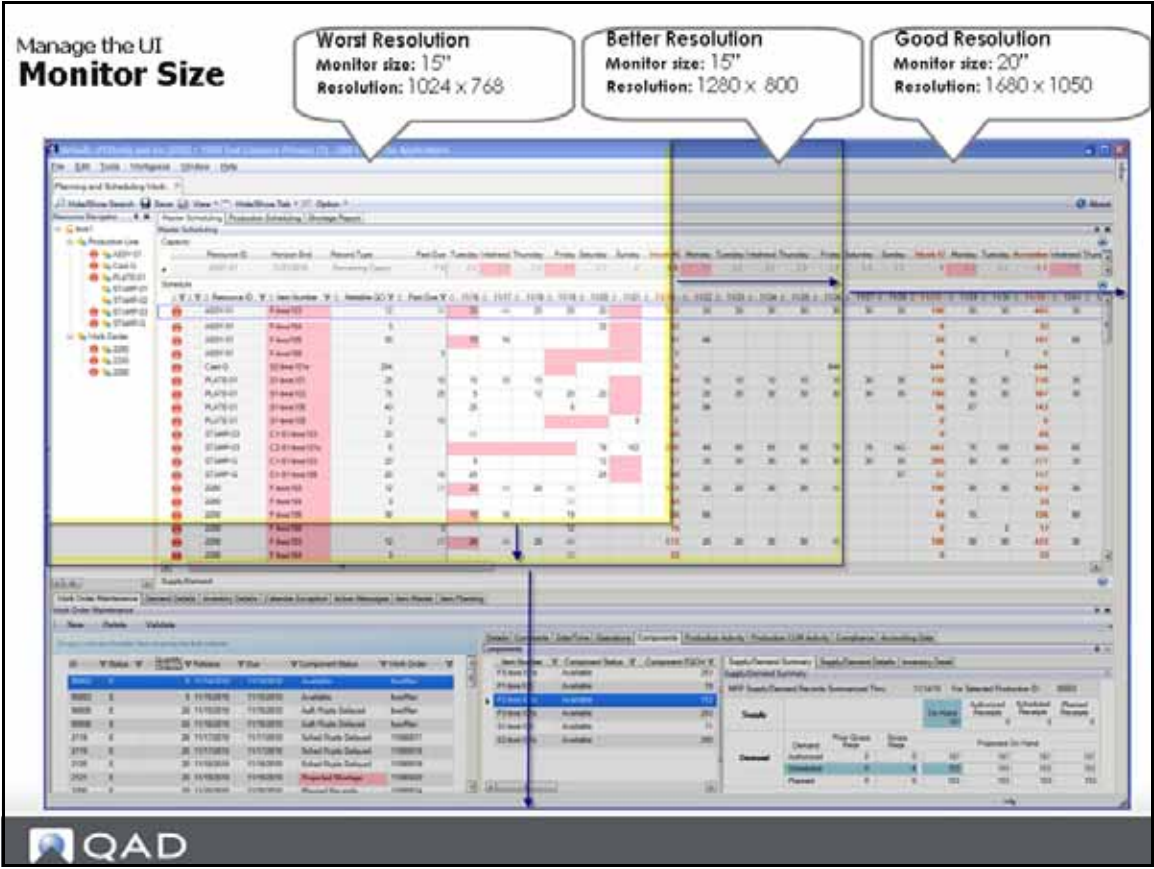
QAD

The following topics discuss various aspects of the UI that can improve the way you view the workbench.

Monitor Size Section



Monitor Size



Small monitor size/resolution reduces usability.

Usability improves or worsens with monitor and resolution attributes as follows:

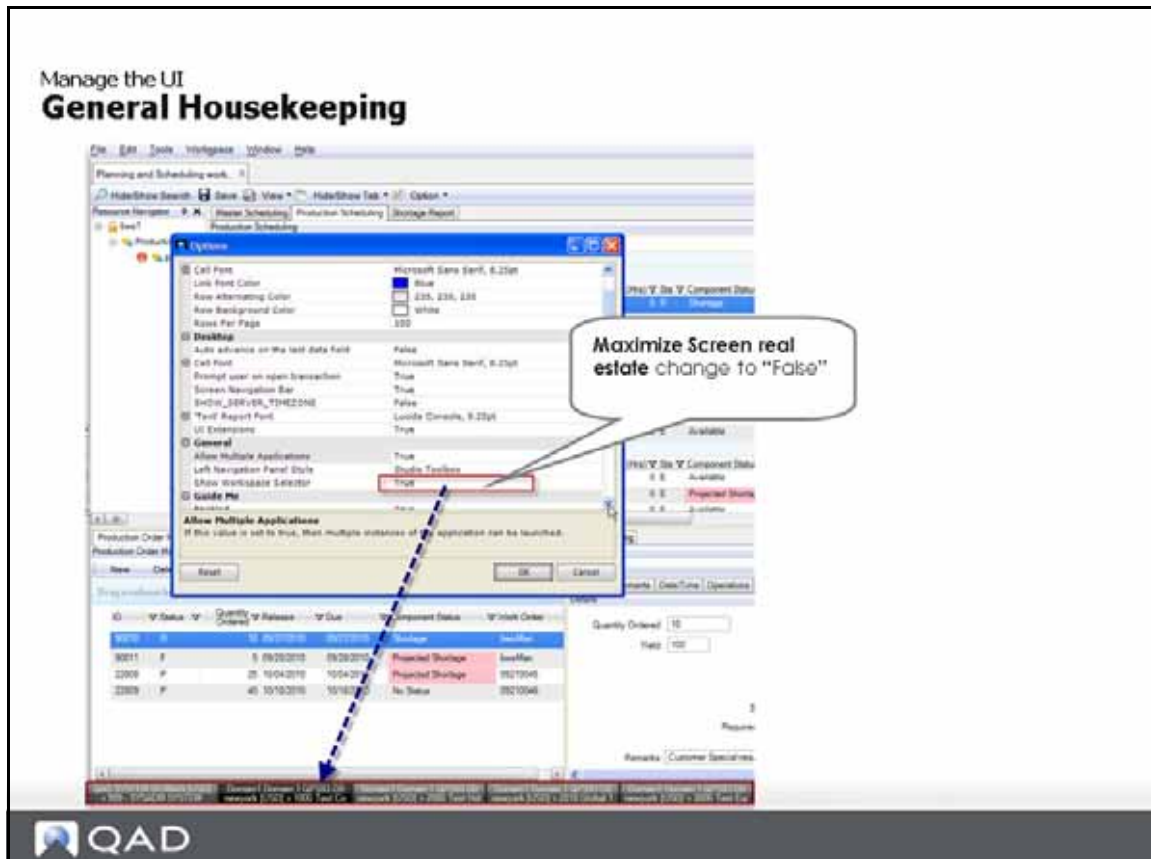
Table 2.2
Attributes and Usability

Attribute	Results
Small monitor	Reduces usability
Low resolution	Reduces usability
Higher resolution	Improves usability
Larger monitor	Improves usability

General Housekeeping Section



General Housekeeping



You can gain more display room by configuring .NET UI options. To do this, use the following procedure:

- 1 In .NET UI, select Tools from the top menu bar.
- 2 Select Options.
- 3 In the General category, change True to False for Show Workspace Selector.

Add/Remove Fields Section



Add/Remove Fields

Manage the UI
Add/Remove Fields

Planning and Scheduling work...

Hide/Show Search Save View Hide/Show Tab Option

Resource Navigator Master Scheduling Production Scheduling Shortage Report

Master Scheduling

Capacity

Resource ID: pl-asm Horizon End: 10/05/2010 Record Type: Remaining Capacity: -13.8 Monday: -0.4 Tuesday: -5.5

Schedule

Resource ID	Item Number	Item Site	QOH	Past Due	Description	09/27	09/28
pl-asm	F-bwa 103	DEM High/V Customer C					25
pl-asm	F-bwa 104	Service Item - Discrete					
pl-asm	F-bwa 107	Make To Order A			10	5	
pl-asm	F-bwa 108	Make To Order B			3		
pl-asm	F-bwa 109	DEM High/V Customer A			9		
pl-asm	F-bwa 110	DEM High/V Customer B			14		
pl-asm	F-bwa 111	Make To Stock A			5		
pl-asm	F-bwa 112	Make To Stock B					

Column Headers

- Site
- Resource Type
- Resource ID
- Machine ID
- Item Number
- Past Due
- Type Desc
- Product Line
- Description
- Replenishment Method
- Run Seq 1
- Run Seq 2
- Resource Status

(1) User definable Schedule Grid columns
Allows user filter/sort/group on any item attribute

(2) Users add/remove fields from schedule grid

(3) IT dept customize list, add/remove fields via Browse Maintenance.

Supply/Demand

QAD

You select the fields to display in columns by right clicking on the column, then selecting from the Column pull-down menu. If you want more or different fields to display in the pull-down your IT department can customize the list through the QAD EE Browse Maintenance in .NET UI.

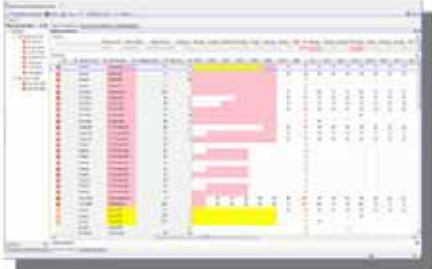
Create View Section



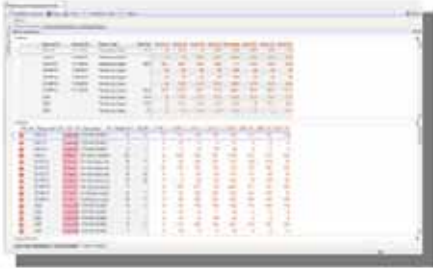
Create Views

Manage the UI
Views

Item Max View



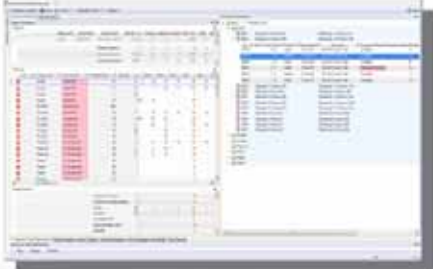
Optimized View



Full View

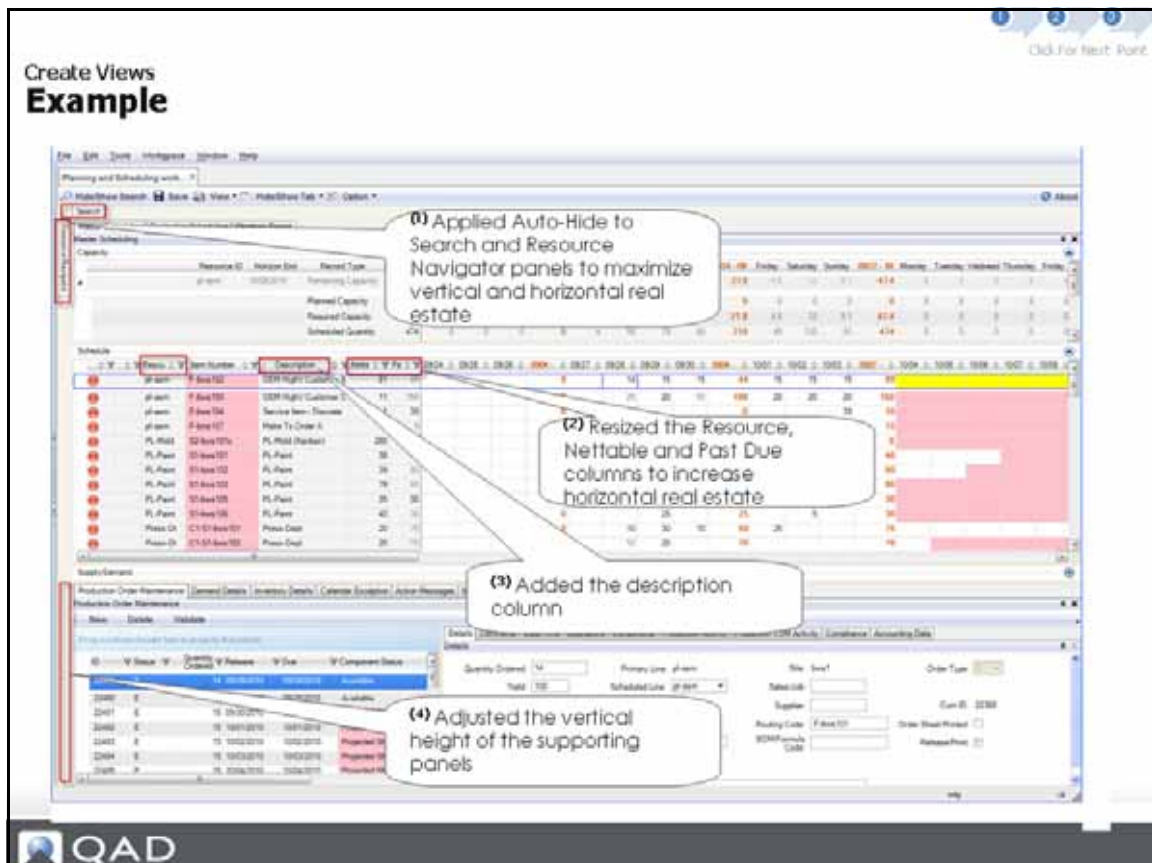


Side-by-Side View



 QAD

Create Views Example



Note If you are following topics, your slides may be different from those shown in the user guide as the demonstration takes you down several functional paths within the View category.

Views

There are a number of components of the workbenches that can be customized and saved as part of a view:

- Grid column settings (examples)
 - Sorting
 - Filter
 - Hide or unhide
 - Position
- MSW grids:
 - Capacity Grid
 - Schedule Grid
 - Supply/Demand Grid
- PSW grids:
 - Sequence Grid
 - Browse Grid

You can move a tab on a workbench to a new location or hide a tab that you typically do not use. Repositioning/hiding the following workbench tabs can be saved as part of a view:

- Supporting panels
- PSW, MSW, or Shortage Report tabs

If you are working in any of the supporting programs that display at the bottom of the workbenches, and the program has multiple tabs, you can right-click on the tab, then select the Auto Hide option to display only the data in that tab.

For example, when working in Production Order Maintenance, you want to focus only on the dates and times of operations for a particular order. You select the order on the left side, then select the Date/Time tab on the right side. You right click to select Auto Hide so that only the date and time data for that order displays on the right side.

Auto-Hide to Maximize Screen Real Estate

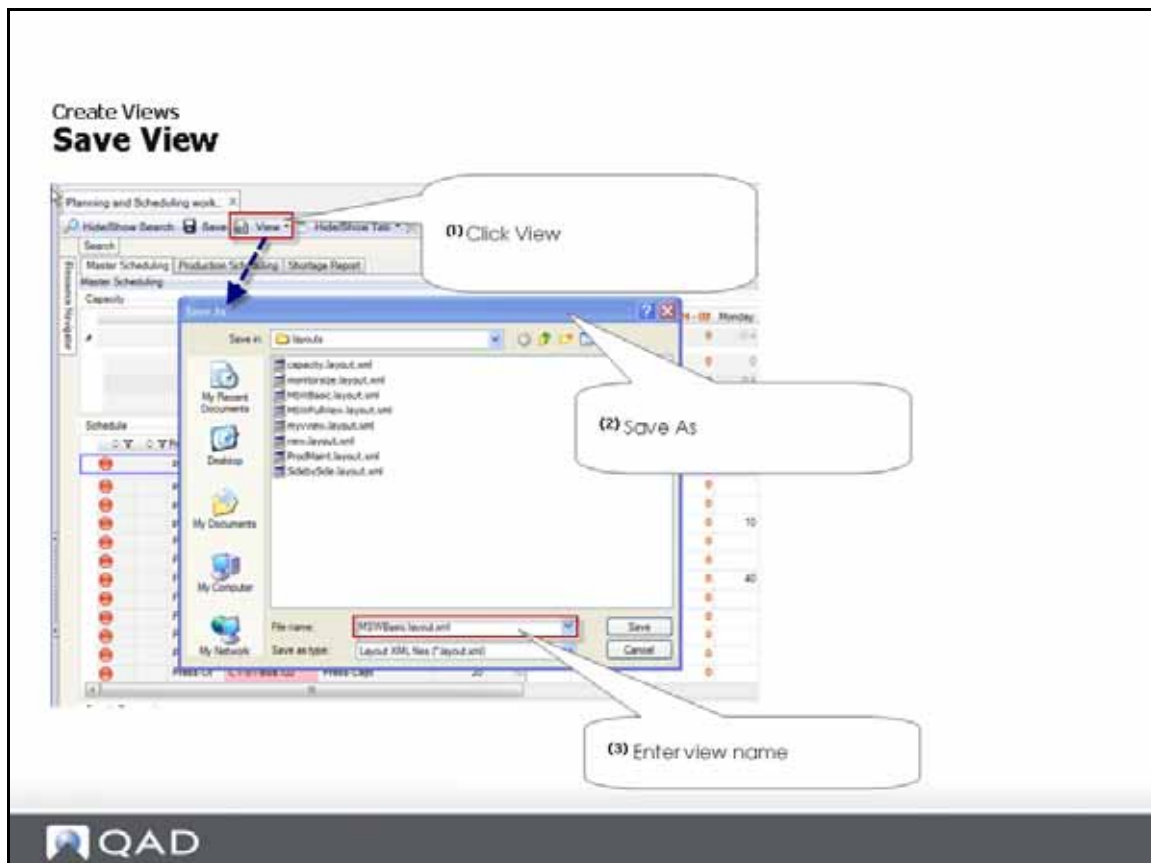


To focus on a particular set of data, you can auto-hide panels so that your screen displays only the data you upon which you want to concentrate.

You can right click on a column, then select the auto-hide option to hide the panel from view.

Note See User Guide: Planning and Scheduling Workbenches for a complete list of icons that represent features and functions and descriptions of those functions.

Save Views



From the Views pull-down menu, select Save or Save As to save the view. If you select Save As, name your view, then save the view.

There are limitations when you save your view. You cannot have the following in your view name:

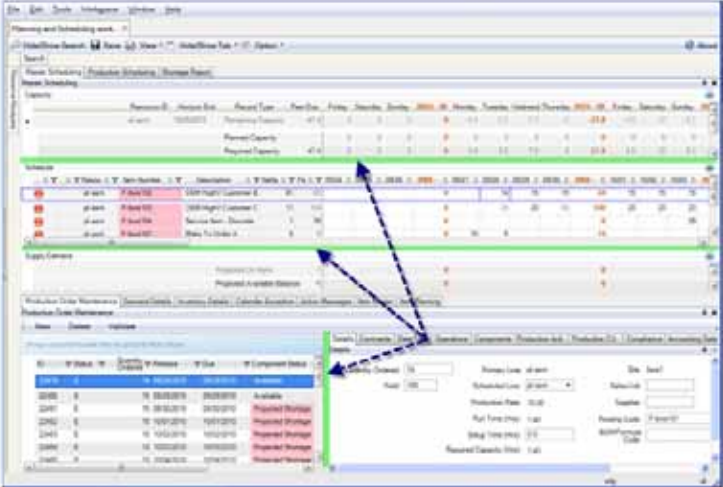
- Spaces
- Special characters (*&^%)
- Numbers

Note The view is only saved locally on your PC, not on the system.

Current Limitations

Create Views

Current Limitations



Note: Limitations are planned to be addressed in future product releases

QAD

Sizing of the following panels are not saved as part of the view:

- Capacity panel
- Supply/Demand panel
- The panel divider on the Production Order Maintenance tab

Hands-On Lesson Section



Exercise 4: Personalize Your UI

Exercise 4 –Personalize Your UI

- Run a search (continued from previous exercise)
- Add additional fields to the Schedule Grid
- Optimize column widths
- Create a View
- Questions



Run a Search

Pull up the following data:.

- 1 Ensure selection criteria: site equals 10-202.
- 2 Enter Scheduler ID equals Group1.
- 3 In the Navigator Panel, click on Production Line ASSY-01.

Note Ensure that you removed all filters from the previous exercise.

Add Additional Fields to the Schedule Grid

The system default fields on the Schedule Grid are not sufficient for the data filtering and sorting required in your environment. You need to add additional fields.

- 1 In the Schedule Grid, right-click and select Columns and Description (the first description field in the list).
The Description 1 field is added to the Schedule Grid
- 2 Left-click on the Description column and while selected, drag the Description column to the right of the Item Number column.

Optimize Column Widths

By adding the new column, you have noticed it has consumed some precious real estate, reducing the number of Schedule Grid date columns you can see on the right, so, now, you optimize the column widths.

- 1 Resize the Production Line, Item Number, Nettable QOH, and Past Due columns to reduce the column widths to a minimum.

Note Once you are familiar with the column headings, it is not necessary to view the entire column name such as Nettable QOH or Past Due. You can make these columns smaller to view just the minimum data necessary in the column. This lets you view more Scheduling Grid date columns to the right of the screen.

Create a View

After making your basic screen changes, save your changes by creating a View.

- 1 On Toolbar, click View.
- 2 Click Save As.
- 3 Enter a view name, for example, enter MSW.
Note Currently, you cannot name a view starting with a number.
- 4 Close the Planning and Scheduling Workbenches.

Questions

- 1 What is the best situation for your monitor and resolution to improve usability?
 - Larger monitor
 - Smaller monitor but higher resolution
 - Larger monitor with higher resolution
 - Two monitors
- 2 Which selection in .NET UI options increases display room?
- 3 True or False. Every user can add fields as well as customize the drop-down list of fields that displays when you right click on a field.
- 4 Which of the following areas can you customize in the UI:
 - Grid column settings: sorting, filter, hide/unhide, and position
 - MSW grids: Capacity Grid, Schedule Grid, and Supply/Demand Grid
 - PSW grids: Sequence Grid and Browse Grid
 - The tabs within the Production Order Maintenance
- 5 What is the Column Auto-Hide and where can you use it?
Note The question is about the column Auto-Hide feature, not the panel Auto-Hide.

Answers

- 1 Two monitors is best, but if you use a single monitor, then a larger monitor and higher resolution improves usability.
- 2 By changing Show Workspace Selector from True to False, you can increase display room. Show Workspace Selector is in the .NET UI, select Tools, then Options, then General category.
- 3 True. Only if you have access to Browse Maintenance can you add/remove field to the drop-down list of fields.
- 4 All except for the tabs in Production Order Maintenance.
- 5 If you are working in any of the supporting programs that display at the bottom of the workbenches, and the program has multiple tabs, you can right-click on the tab, then select the Auto Hide option to display only the data in that tab.

Exercise 5: Select and Apply Additional View Personalizations

Exercise 5 – Select and Apply Additional View Personalizations

- Select your saved view
- Hide tabs
- Use auto-hid
- Questions



Select Your Saved View

You closed down the Planning and Scheduling Workbenches and when you open them again, you wish to select your saved view.

- 1 Open the Planning and Scheduling workbenches.

Note The Master Scheduling or Production Scheduling Workbench program should be available in your favorites list.

- 2 Enter selection criteria Site equals 10-202.
- 3 Enter Scheduler ID equals Group1.
- 4 On the Toolbar, click View and select the view MSW.

The Description field and column sizing on the Schedule Grid should return in view.

Important You cannot select your view until after you run your first search. Also, you cannot default a specific view.

Hide Tabs

Applying additional personalization to your view, you wish to hide some tabs you may not use.

- 1 On the Toolbar, click **Hide/Show Tab**.
- 2 Select **Action Messages**.
The system hides the Action Message tab.

Use Auto-Hide

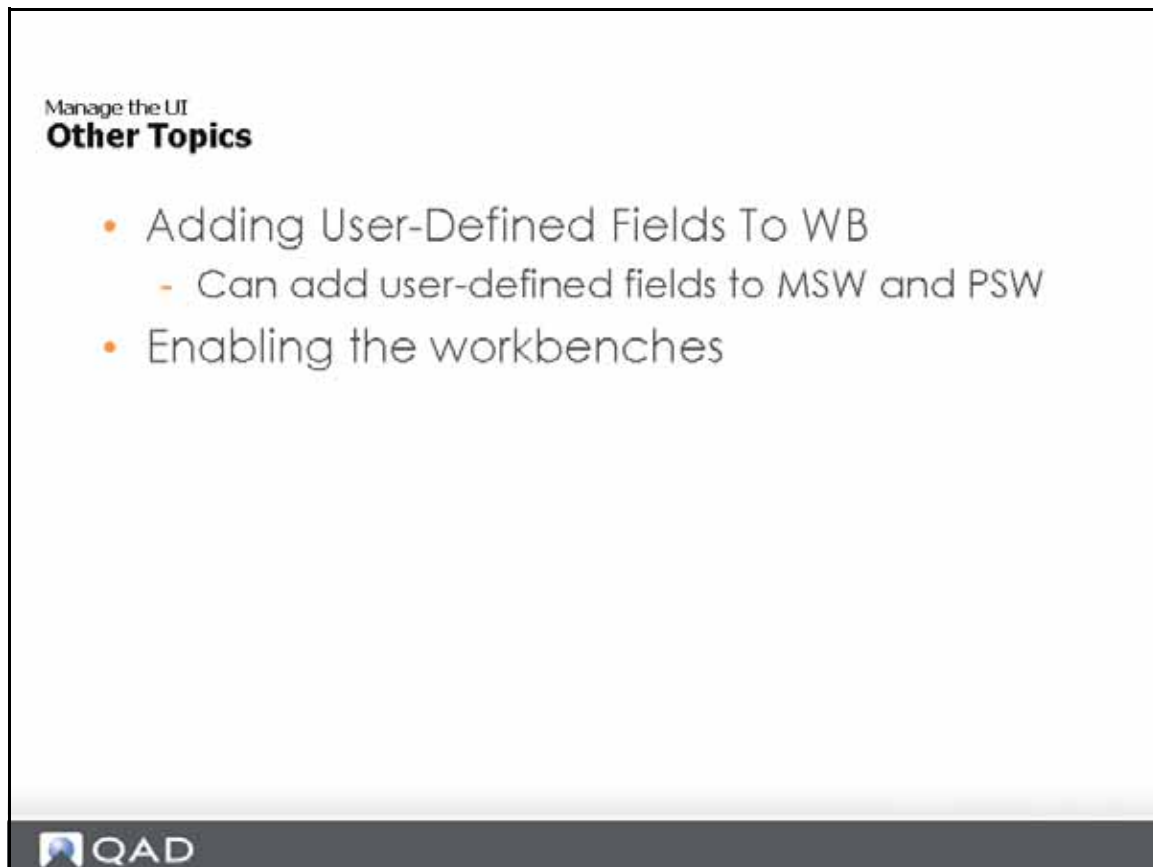
The Search Panel consumes valuable real estate, the Auto-Hide feature lets you automatically hide panels that you do not view constantly.

- 1 On the Search Panel, right-click the Thumbtack icon.
- 2 Select **Auto-Hide**.
- 3 Click somewhere on the Schedule Grid.
The Search Panel disappears.
- 4 Hover over the Search Panel tab on the top left of screen.
The Search Panel redisplay.
- 5 Consider applying Auto-Hide for the Navigator panel.
- 6 **Important:** Save your additional UI changes by clicking on **View**, then selecting **Save**.
Currently, your view should be MSW and by clicking on save, the additional changes applied above will be saved as part of this view.
- 7 Click inside the panel, then drag it upward into the workbench.
Notice that the data displays and covers most of the Schedule Grid, depending on how far up you drag.
- 8 Click on the auto-hide thumbtack to re-display your data.
- 9 **Important:** Save as part of your view.

Other Topic Section



Other Topics



Adding User-Defined Fields

User-Defined Fields (UDFs) are predefined fields in the database tables and can be customized to store additional information specific to your business requirements.

Use the User-Defined Field activities (36.4.12.) to create, modify, view, and delete UDFs.

Refer to the *Administration Guide: QAD Administration*.

Create a Master Schedule

In Learning Central, the following training course corresponds to this chapter:

Planning and Scheduling Workbenches: 3. Creation of a Master Schedule - Functional Detail - 2011 Launch, code PLM11-1210.

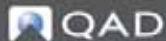
Note This training course includes videos for both Chapter 2 and Chapter 3.

Play the video within the course with this chapter. The video informs you when to stop the video and take the hands-on lesson.

Overview

Create a Master Schedule

- Introduction
 - Workbenches let you create a master production schedule at the production line/order, not work center/operational level
 - After a production plan is adopted, Create a Master Schedule is the first step in the planning and scheduling process
- Objectives
 - Learn basic/core features and concepts
 - Learn how to create and modify a master schedule
 - Learn primary features that assist in creating a master schedule
- Audience
 - Users who completed Getting Familiar with the MSW UI training



Topics Covered

Topics Covered		
Category	Topics	Hands On
Process overview	• Business objectives • Process maps	
Concepts	• Firm scheduling horizon	
Identify production items with supply shortages	• Read the supply/demand panel • Modify demand sources • Other related topics	Lesson 1
Schedule production orders	• Modify a production order • Create a production order • Auto-firm process • Other related topics	Lesson 2
Concepts	• Production order types	
Manage resource capacity	• Read the capacity panel • Calendar exceptions • View capacity trends • Capacity setup • Other related topics	Lesson 3 Lesson 4
Round Trip	• Recap basic concepts	Lesson 5



Process Overview: Business Objectives



Master Scheduling Workbench (MSW)

The MSW increases master scheduling efficiency by letting you simulate and commit scheduling changes, factoring demand, supply, inventory, production orders, and MRP data from several QAD EE programs in a single workbench.

You can use the MSW to interact with production line and work center schedules and make changes where necessary. Within MSW, you can update the production order status, as well as release, create, or close production orders, while considering all supply, demand, and capacity sources from the single workbench. You can also identify items with demand issues, and check component availability for each production order to be released

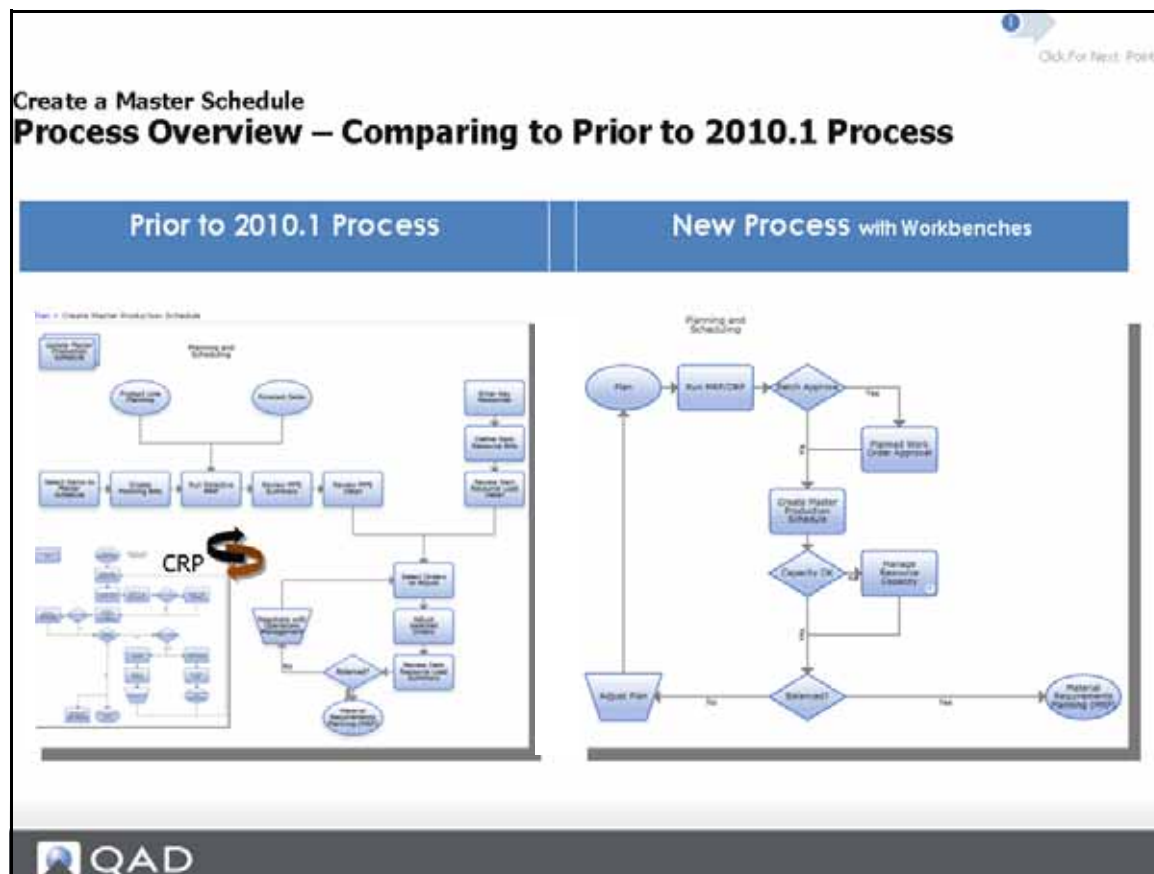
Business Objective	Business Need/Approach
Deliver to customer demand with shortest lead-times possible	Balance demand, supply, and capacity to drive a leveled and feasible plan
Maximize use of resources	
Reduce costly expedites	Create leveled master schedule to drive MRP for mid-term planning to support better execution
Others?	

Functions within the workbench let you concurrently manage work center and production lines within a single workbench. You can authorize work or schedule due dates for repetitive schedules on the production line. From a single workbench screen, master schedulers can:

- Split jobs (production orders)
- Reschedule or change the status of jobs
- Maintain job details
- Manage job operation lists
- Schedule alternate jobs
- Release jobs
- Export schedules

Note MSW does not support co-/by-products.

Comparing Current Process to QAD EA 2010.1 Process



Before, the process of planning and scheduling was an iterative one. That is, planners and schedulers typically ran MRP; determined changes to the master schedule, then made updates; ran CRP to verify a balanced capacity; adjusted the master schedule for capacity issues; re-ran MRP to calculate materials; then, repeated this process for BOM lower levels. These steps were time consuming, and therefore, not feasible for today's fast-paced and dynamic manufacturing environments.

Now, a new planning and scheduling toolset is available that integrates the master and production scheduling processes into a single application, synchronizing the scheduling analysis and actions into a unified, fluid motion. The toolset includes all relevant data so that you can make intelligent decisions. This is an entirely new solution that lets you effectively and efficiently create a master and/or production schedule from a single view, whether you are in a discrete, repetitive, or mixed-mode environment.

In the process prior to QAD EA 2010.1, CRP was a separate module. In the workbenches, capacity information is embedded within the workbenches.

Steps on the left slide took approximately 12 steps to complete, but on the right hand side, the 12 steps were consolidated into a single step. There was no solution for master scheduling of repetitive items on the left-hand side. The workbenches can do both repetitive e and discrete scheduling.

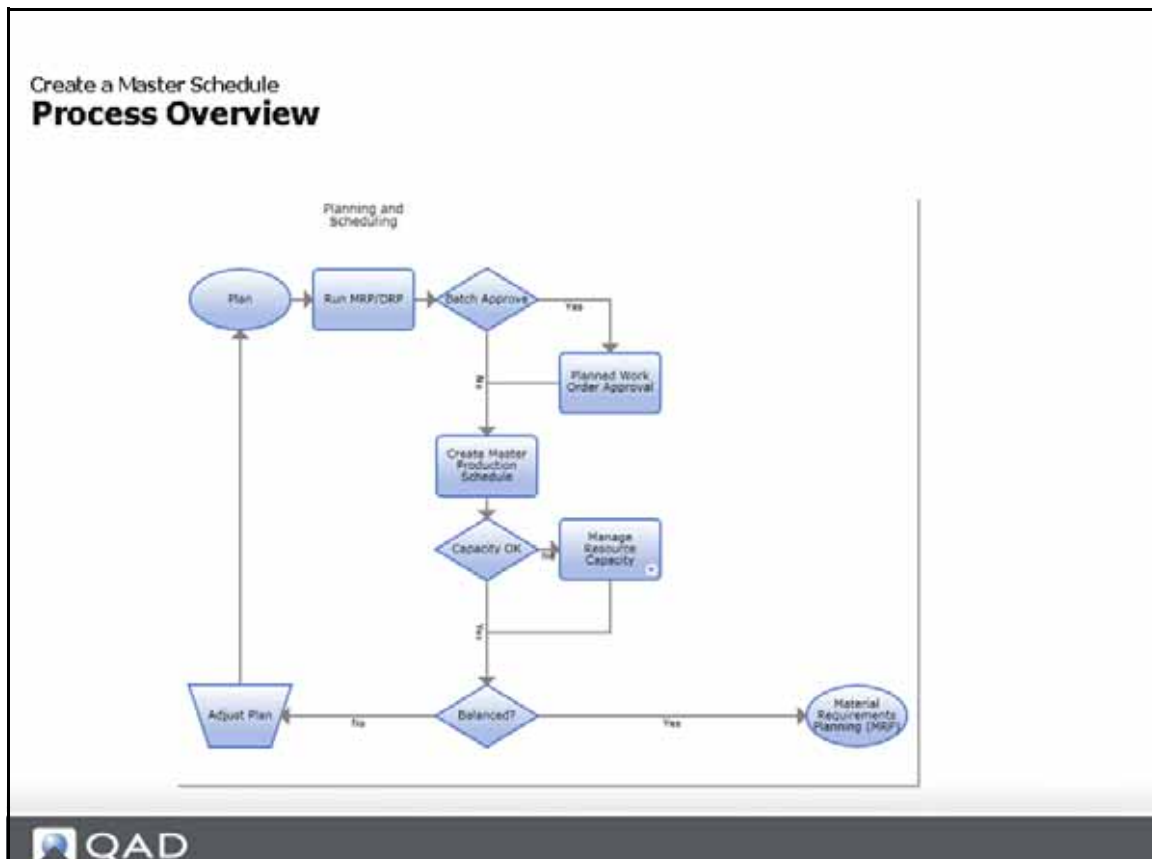
Comparing Current to 2010.1 Process (Continued)

Create a Master Schedule Process Overview – Comparing to 2010.1 Process	
Prior to 2010.1 Process	New Process with Workbenches
No solution for repetitive order types	Unified master scheduling solution for repetitive and discrete orders
Capacity planning performed in a separate process map/flow/solution	Capacity planning and master scheduling are integrated in a single solution
Over 12 core steps/programs to create a master schedule for <i>Discrete</i> scheduling Similar amount of steps for <i>Repetitive</i> scheduling	Two core steps (1 primary) to create a master schedule for <i>both</i> repetitive and discrete orders

MSW and PSW features let you build plans and schedules in less time, meeting customer demands while at the same time optimizing the shop floor. Creating a schedule is only one part of the equation, though, as material availability determines if the schedule can execute.

Note Several integrated material shortage-monitoring features are also available to help you make realistic and intelligent planning and scheduling decisions.

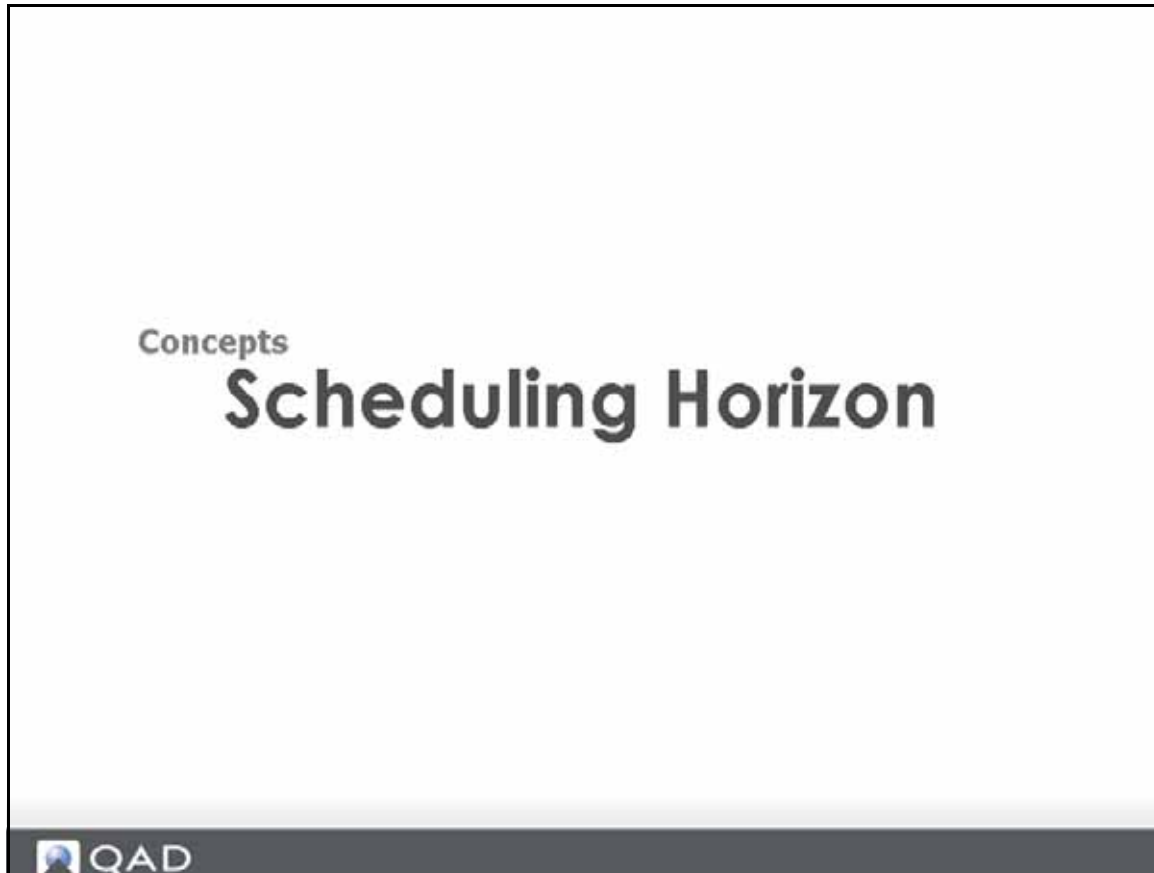
Process Map



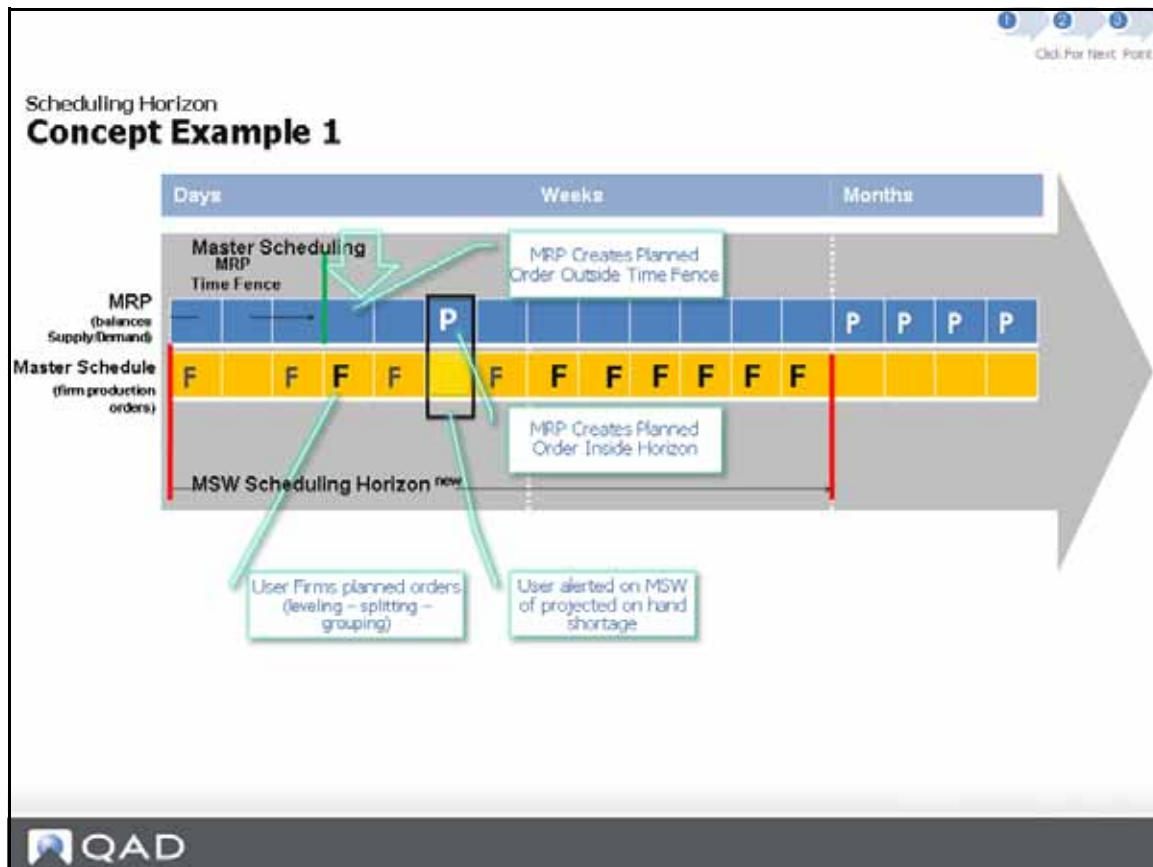
MSW Process

There are many different ways to access resource and scheduling data within MSW, and many different functions that you can perform using the data for a master schedule. The graphic above depicts a typical process for most schedulers.

Scheduling Horizon Section



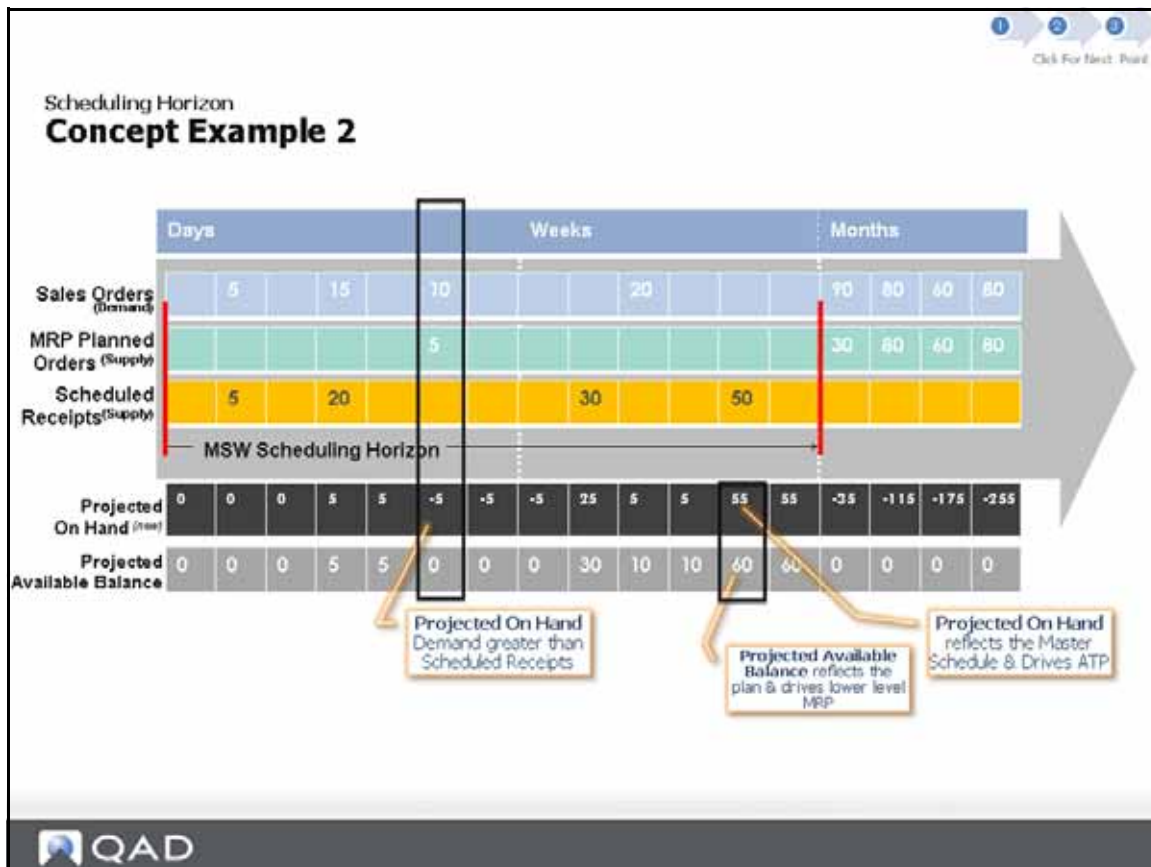
Concept Example 1



MSW gives you user-configurable control over where the MPS schedule horizon ends and where the future window begins. MSW calculates data differently in the scheduling horizon display than in the future window. Within the scheduling horizon, the system shows the period in which MSW applies the item visual indicators. In the horizon, days are calendar days, not working days.

MRP shows the planned orders within the scheduling horizon; it is up to you as the scheduler to firm those orders.

Concept Example 2



In the MSW, you can identify resources and items that require scheduling intervention. You can locate resources that have items with negative POH for every item with supply/demand within the scheduling horizon. The system reveals a visual indicator showing that one or more items on the resource have POH issues.

Also, you can make updates to existing quantities in the MSW, the system performs POH, required capacity, and other calculations and displays changes.

Important MSW displays balance based on what you the scheduler have scheduled, while MRP shows what is planned and scheduled for the balance.

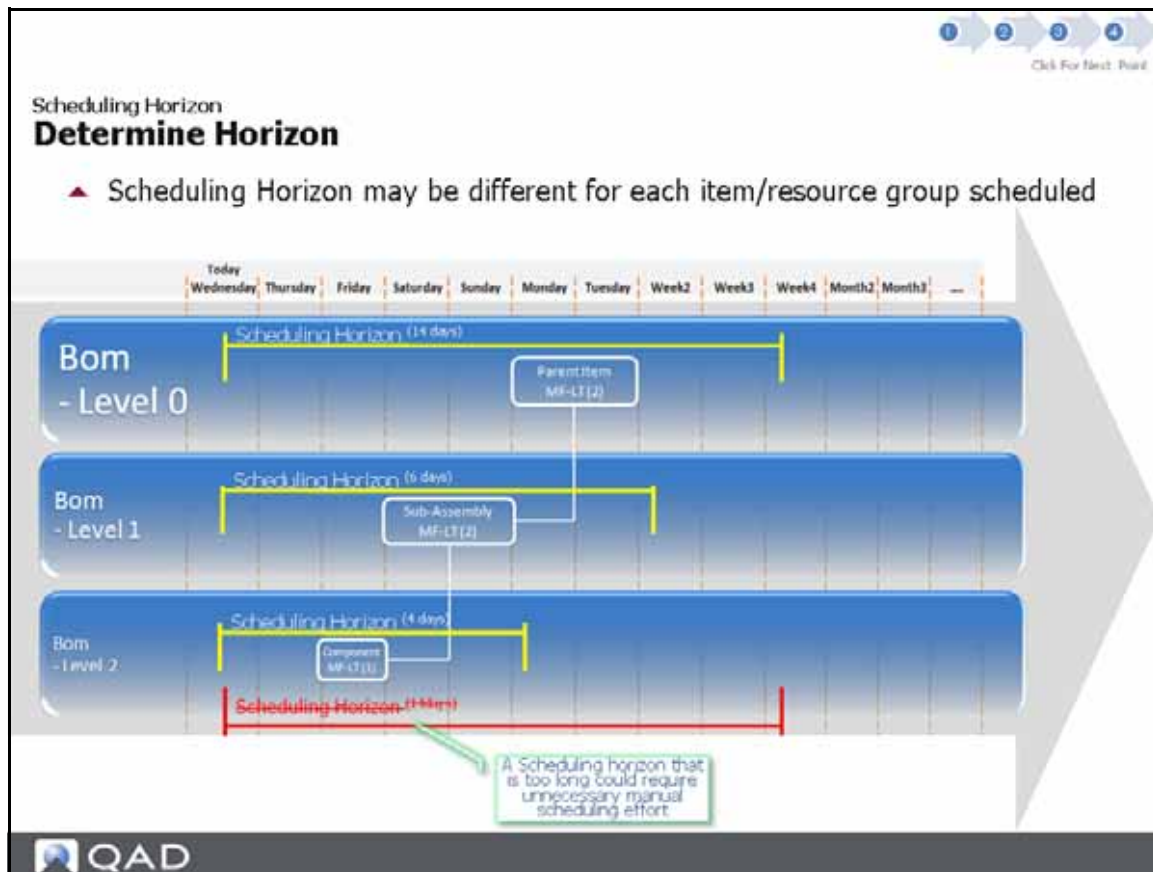
ATP data is based on only firm scheduled orders.

Concept: Key Terms

Scheduling Horizon	
Concept – Key Terms	
Projected on hand	Projected available balance, excluding planned supply orders (APICS)
Projected available balance	An inventory balance projected into the future. The running sum of on-hand inventory minus requirements plus scheduled receipts and planned orders. Syn: Projected Available Inventory (APICS) Syn: Projected Quantity On-Hand PQOH (QAD Legacy Term)
Supply	All supply records for the selected item

Note the difference of Projected on hand not including planned orders, but projected available balance does include planned orders.

Determine Horizon



You can change the schedule horizon dynamically through the Preferences pull-down menu. You select Options, then Preferences, then Search to set the future and history horizon.

A long scheduling horizon can cause unnecessary scheduling effort, so keep your scheduling horizon short enough for you to easily manage the schedule.

Setup

The screenshot displays the 'Scheduling Horizon Setup' window in QAD. It features two main tabs: 'Production Line Maintenance' and 'Work Center Maintenance'.

Production Line Maintenance (18.1.1):

- Production Line: 1001
- Size: 12000
- Description: Production Line 1001
- Units/Hour: 100.00
- Enable Run Size: ☒
- Number of Lines: 10
- Duration Buffer (D H M S): 0 00:00:00
- Setup Time (D H M S): 0 00:00:00
- Scheduler ID: [Field]
- Time Period: DAY, Period Number: 5, Calculate Date: 3/5/2011

Work Center Maintenance (14.5):

- Work Center: 200-02, Machine: 2000
- Description: Inspection
- Department: 200, Testing Dept
- Auto Form: ☐
- Last Auto Form: [Field]
- Scheduler ID: [Field]
- Queue Time: 2.0
- Wait Time: 1.0
- Backlog: 1
- Setup Crew: 2.00, Setup Rate: 15.00
- Run Crew: 3.00, Labor Rate: 12.00
- Machines: 1.000, Labor Burden Rate: 6.00
- Machine Rate: 2.00, Labor Burden %: 3.00%
- Time Period: DAY, Period Number: 5, Calculate Date: 3/5/2011

Fields in Work Center Maintenance (14.5) and duplicated in Production Line Maintenance (18.1.1) control the schedule horizon end and the number of periods within the schedule horizon.

Specifically, you set the Horizon End field to either Day, Week, or Month, then set the number of periods for the increment in those programs. The system displays a read-only calculate date. The system calculates the date from period and period number, so if you set Horizon End to Day and Period to 5, the Calculate Date is five days starting with today. If you set Horizon End to Week and Period to 4, then the Calculate Date is four weeks from now including today.

Note The Preferences settings control how far out in time you can view dates on the Schedule Grid.

Future Horizon Versus Scheduling Horizon

Identify Items Requiring Scheduling Intervention
Modify Demand Sources

Master Scheduling | Production Scheduling | Shortage Report

Master Scheduling

Capacity

Schedule

Resource ID: pl-asm Item Number: F-bus105 Nettable QOH: 15 Past Due: 09/14

Supply/Demand

Projected On Hand	1	43	43	17	17	17	17
Projected Available Balance	1	43	43	17	17	17	17
Supply	31	27	6	52	30	30	30
Demand	30	30	30	30	30	30	30
Customer Inter-site	30	30	30	30	30	30	30
Dependent							
Forecast	27						
Production Forecast							
Planned Scrap							
Cumulative ATP	1	17	17	17	17	17	17
Seasonal/Safety Stock		180	180	180	180	180	180
Receipts		180	180	180	180	180	180

Settings

Search | Display | Scheduling | Component Availability

Change How Content Is Displayed

Production Scheduling User Interface

Sequencing Days: 2 Display Shift

Master Scheduling User Interface

Columns Visible

☒ Daily ☐ Consume Prior Days Remaining Capacity

☐ Weekly ☒ Include Forecast Demand

☒ Monthly

Changes require a search to take effect.

Restore Defaults Cancel OK

The following topic describes the field.

Future Horizon. Enter the number of days that constitute your future horizon. For example, if you enter 30, the Search mechanism retrieves records for 30 days into the future.

The schedule horizon is not the future horizon!

MSW displays a scheduling horizon within the Schedule Grid; this is not a future horizon. The scheduling horizon that displays includes both a future horizon and a history horizon, which you define through the Preferences window in the workbench. When the system retrieves records based on your search criteria, it retrieves all transactional, demand and supply records for item with dates that also match the History and Future Horizon values that you set in Preferences.

Identify Production Items with Supply Shortages Section



Identify Production Items with Supply Shortages

Identify Production Items with Supply Shortages

Topics

- ▲ UI Visual Indicators
- ▲ Read the Supply/Demand Panel
 - Overview
 - Modify Demand Sources
- ▲ Other related topics
- ▲ Lesson



UI Visual Indicators

Identify Production item with Supply Shortages
UI Visual Indicators

Click For First Page

(1) Resource Navigator
provides visual alerts of production supply shortages at resource level

(2) Supply Shortages (negative POH)
Identify items with supply shortages within Scheduling Horizon

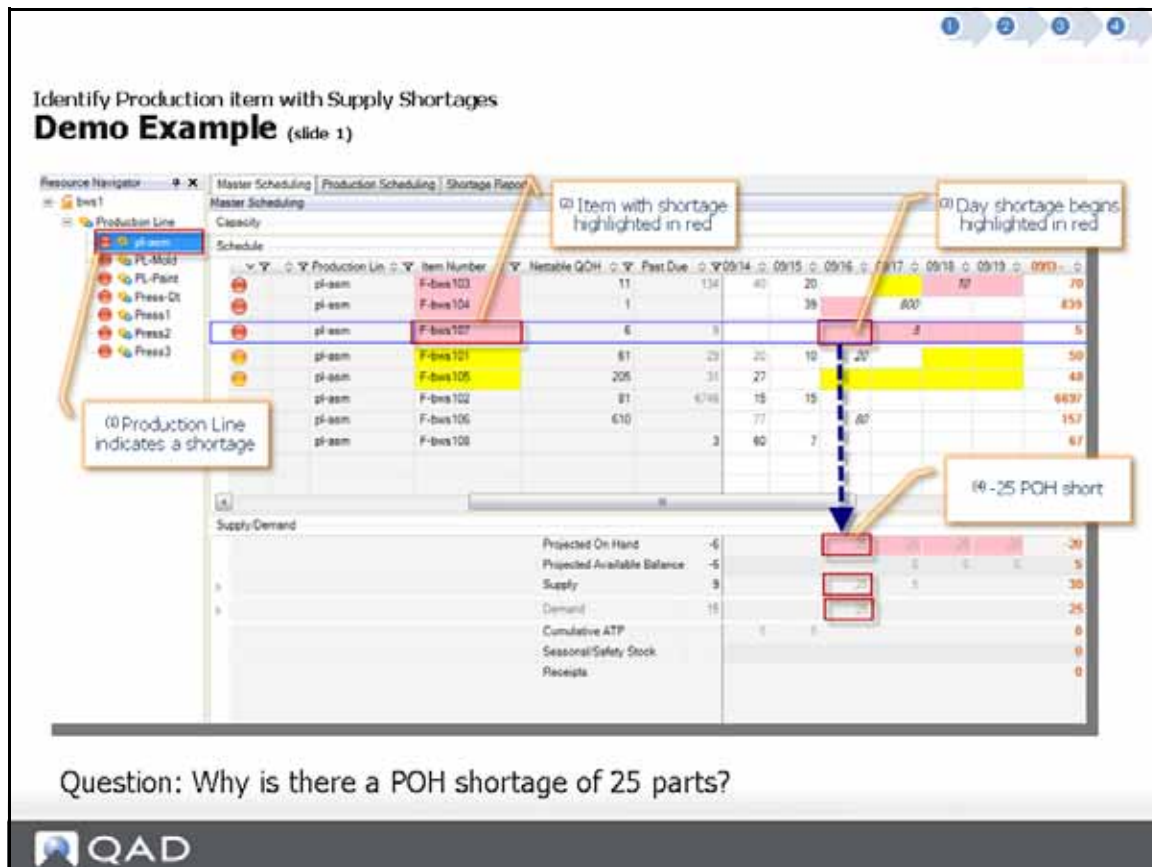
(3) Schedule Grid highlights dates where problem (negative POH) begins and ends

QAD

MSW displays visual status indicators to direct your attention to potential capacity and item shortage issues.

The Resource Navigator Panel highlights each resource with a POH shortage icon when one or more items associated with the resource have a POH shortage within the resources's defined scheduling horizon.

Demo Example 1



Shortage warning status applies to required capacity (the *load*), available capacity, part number, scheduled quantity, and projected on-hand (POH) quantity.

Shortage warning status indicators can display as low warning status (yellow shading), which typically applies to non-critical potential shortages; for example, when the quantity on hand does not meet safety stock requirements.

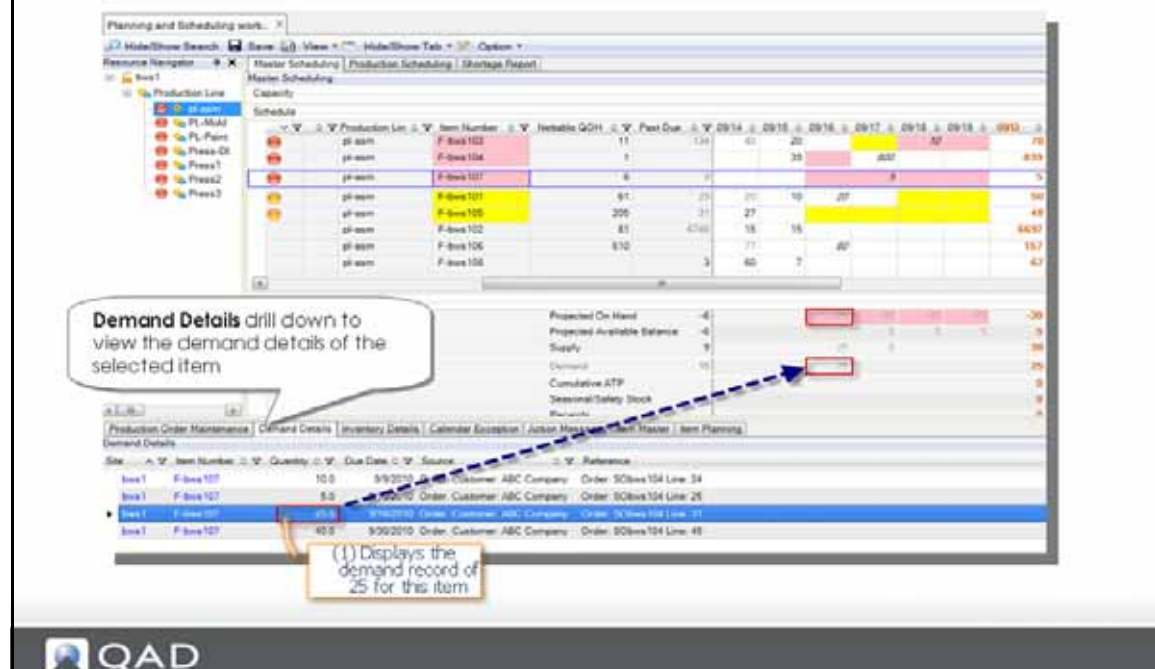
High warning status (red shading) indicates a potentially critical capacity or item shortage problem; for example, when the projected on hand quantity is less than zero. The following table summarizes visual indicators.

Question: Why is there a POH shortage of 25 parts?

Demo Example 2

Identify Production item with Supply Shortages

Demo Example (slide 2)



Supply/Demand Panel Section



Supply/Demand Panel

Identify Items requiring Scheduling Intervention
Supply/Demand Panel

Master Scheduling | Production Scheduling | Shortage Report

Master Scheduling

Capacity

Schedule

Resource ID: pl-aum Item Number: F-bus105 Nettable QOH: 205 Past Due: 31 09/14 09/15 09/16 09/17 09/18 09/19 09/20 09/21

Supply/Demand

		09/14	09/15	09/16	09/17	09/18	09/19	09/20	09/21
Projected On Hand	-26	205	205	175	175	175	175	175	176
Projected Available Balance	-26	205	205	180	180	180	180	180	180
Supply	31	27		4					52
Demand	57			30					57
Cumulative ATP		205	205	205	205	205	205	205	206
Seasonal/Safety Stock		180	180	180	180	180	180	180	180
Receipts									0

Question: What are some other business scenarios that require this panel?

QAD

Use the information in the Supply/Demand Grid to view the item's total demand and total supply data over a period of time. Total demand is from sales, DRP, forecast, seasonal demand, or dependent demand. Total supply is from planned, firm, or released production orders.

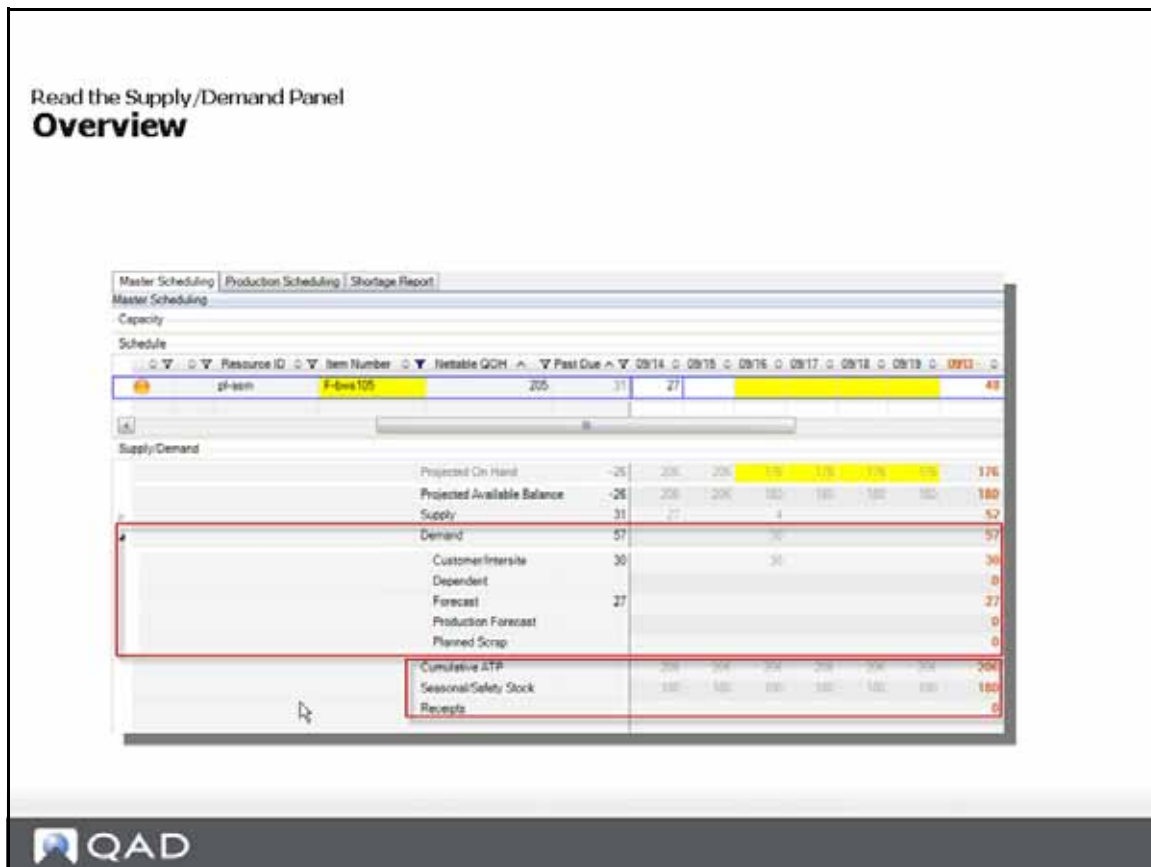
You can select the items with issues, then drill down to the Demand Details panel; for example, to view demand records by ascending due dates. You can then scroll up or down to see additional demand records within the history horizon or future demand. This helps you focus on a specific demand record to correct the issue.

Question: What are other business scenarios that require this panel?

[illegible]

When the Schedule Grid displays the scheduled quantity for an item, the Supply/Demand Grid displays the remaining open quantity due for the item. When the resource selected is a production line or work center, the Supply/Demand Grid displays the quantity and due date per production order.

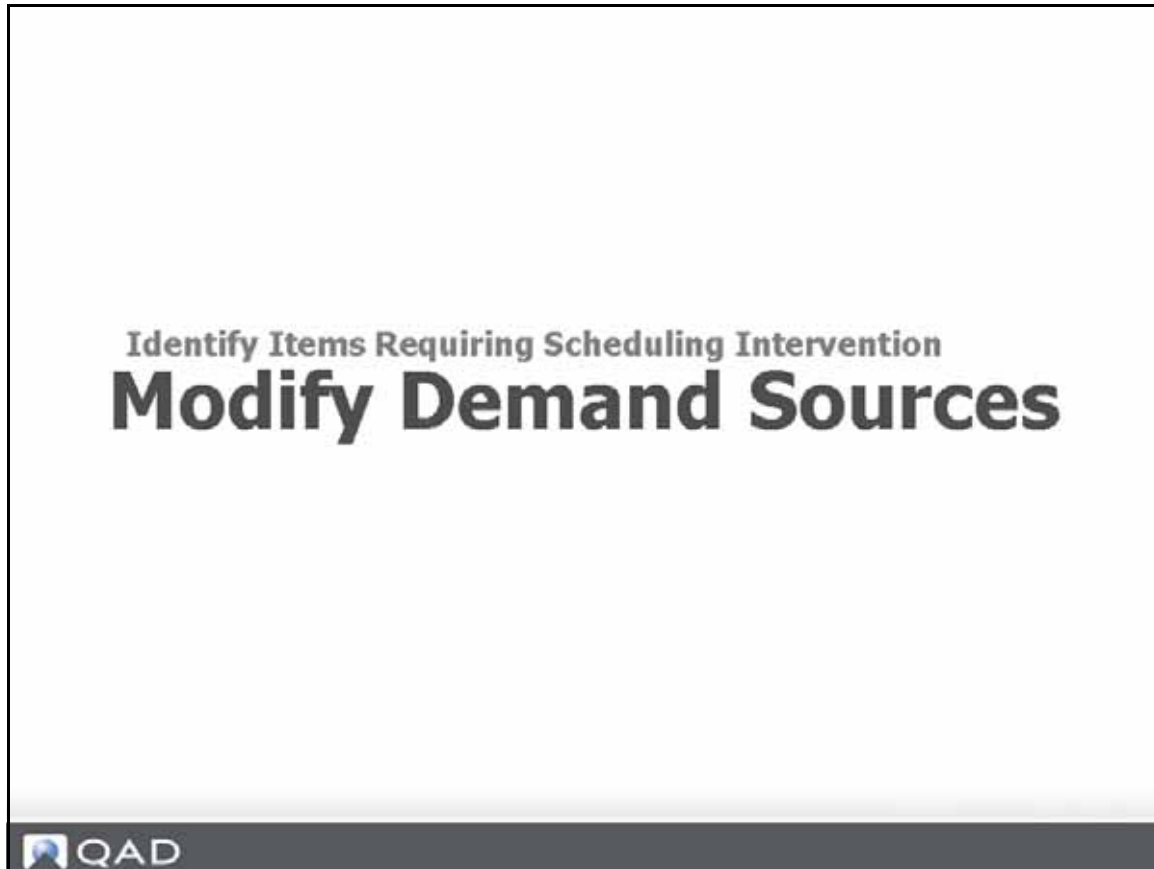
Overview (Continued)



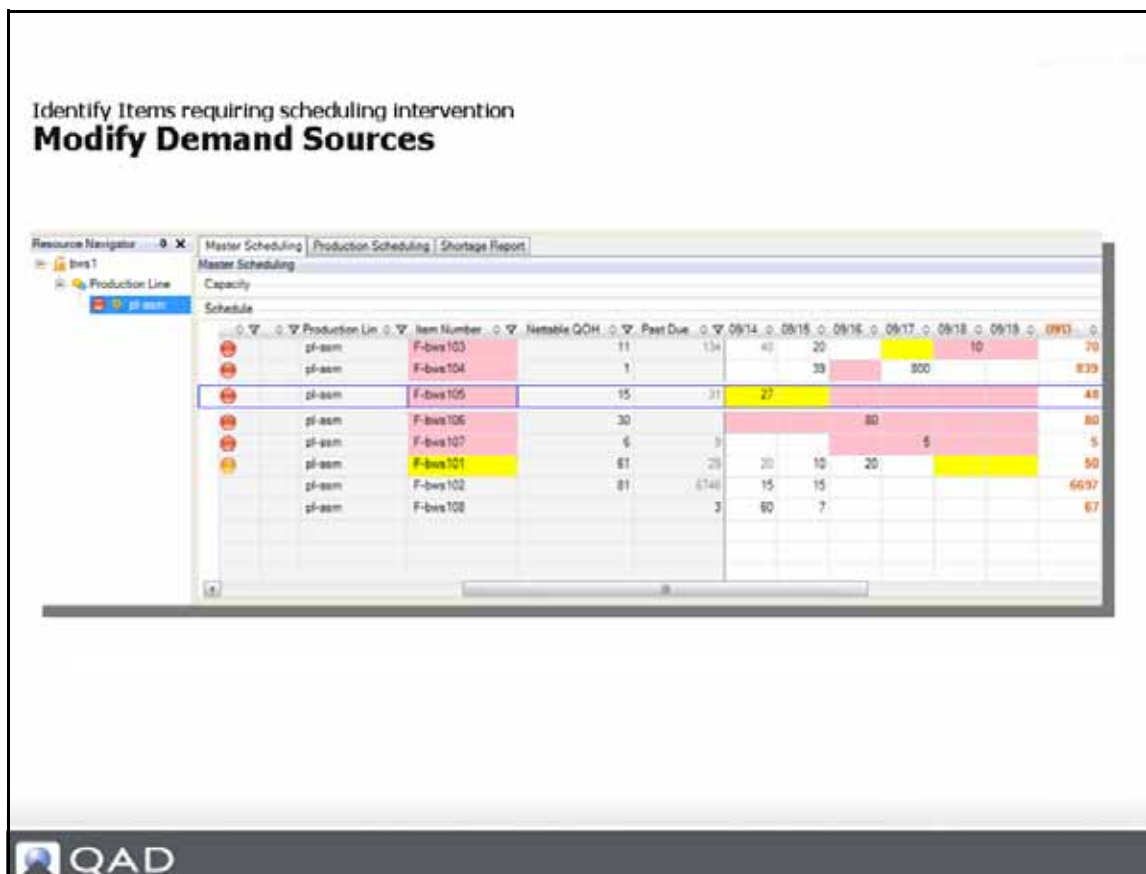
The Supply/Demand Panel provides context to the item you are scheduling:

- Demand: All demand records for the selected item.
- Cumulative ATP: The quantity remaining for sales to promise to customers.
- Seasonal/Safety Stock: Defines the desired targeted inventory balance.
- Receipts: All inventory receipt transactions for the selected item.

Modify Demand Sources Section



Modify Demand Sources



Business Scenario: Several items display visual indicators, but there are limits in the short term to change the master schedule - Which items should you address first?

First, you can drill down to supply/demand panel to find the demand. In the example, you can see that the demand is coming from the customer.

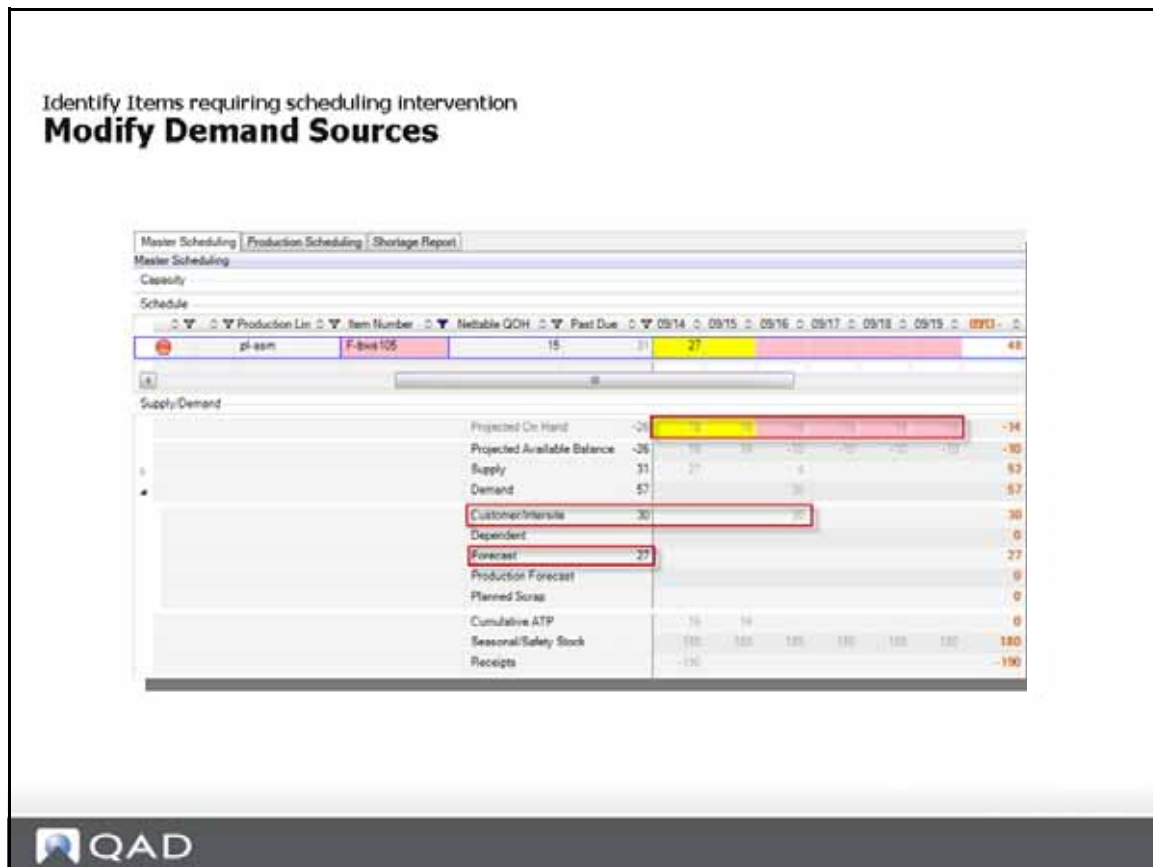
Within MSW, you can update status, as well as release, create, or close orders, while considering all demand sources, from the single workbench.

For demand sources:

- Forecast and sales demand records are applied as demand input.
- Forecast demand is considered planned demand input.
- Sales demand is considered firm demand. Sales demand is an input to firm PQOH and planned PQOH.

Note You can set options in the Preferences tab to exclude forecast demand; see “Modify Demand Sources: Excluding Forecast” on page 124.

Modify Demand Sources



Business Scenario: Several items display visual indicators, but there are limits in the short term to change the master schedule - Which items do I address drill down into item details to determine the shortage is partly caused by forecast demand.

You can find item details in the Item Master or Item Planning panels. You can modify item details to include information from any field in the Item Master Maintenance.

Question: What if you calculate item demand, excluding forecast demand?

Modify Demand Sources: Excluding Forecast

Identify Items Requiring Scheduling Intervention
Modify Demand Sources

Master Scheduling | Production Scheduling | Shortage Report

Capacity

Schedule

Resource ID | Item Number | Nettable QOH | Past Due | 09/14

pl-asm | F-bus105 | 15 | -31 | 2

Supply/Demand

Projected On Hand	1	43	43	17	17	17	17
Projected Available Balance	1	43	43	17	17	17	17
Supply	31	27	8				52
Demand	30						30
Customer Interorder	30						30
Dependent							
Forecast	27						
Production Forecast							
Planned Scrap							
Cumulative ATP	1	17	17	17	17	17	17
Seasonal/Safety Stock		180	180	180	180	180	180
Receipts		180					-180

Settings

Search | Display | Scheduling | Component Availability

Change How Content Is Displayed

Production Scheduling User Interface

Sequencing Days: 2 | Display Shift

Master Scheduling User Interface

Columns Visible

☒ Daily | ☒ Consume Prior Days Remaining Capacity

☒ Weekly | ☒ Include Forecast Demand

☒ Monthly

Changes require a search to take effect.

Restore Defaults | Cancel | OK

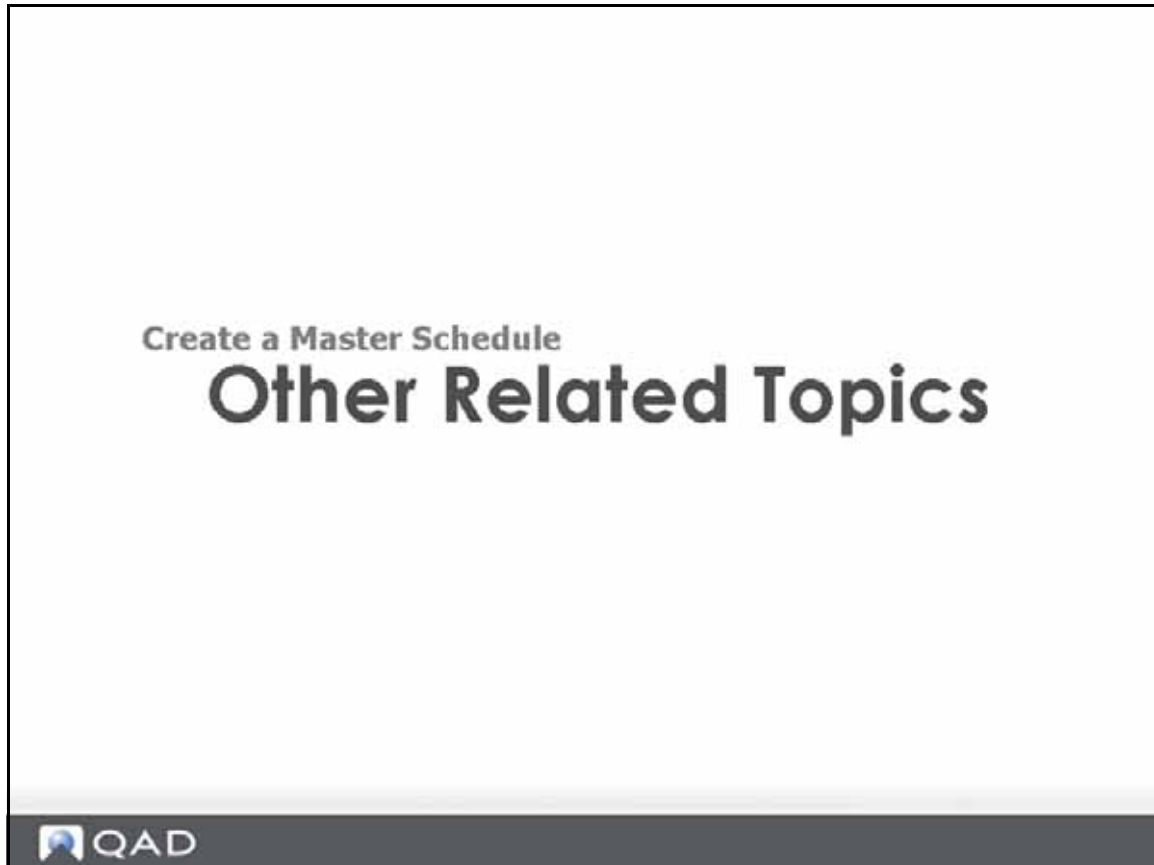
QAD

Solution Approach: Ability to exclude forecast demand as a demand source to suppress shortage alerts when:

- Plan to forecast - make to order
- Prioritize per demand source

For MSW to include forecast demand, you must set the Include Forecast Demand option to Yes in the MSW Display Preferences window. When you do, the system displays the net balance of current forecast demand from QAD EE for the selected item. Master production scheduling and MRP use the net forecast and abnormal sales order demand to calculate total demand.

Other Related Topics Section



Other Related Topics

Identify Items Requiring Scheduling Intervention

Other Related Topics

- ▲ **Order cancellations**
 - No visual indicators in workbenches
 - See Action Messages tab in workbenches
- ▲ **Material shortages**
 - Topic covered in the Component Availability Training (CAC)
- ▲ **Other**
 - Suggestions & comments welcome



Hands-On Lesson Section



Exercise 1: Identify Items with Shortages**Exercise 1 – Identify Items with Shortages**

- Retrieve your scheduling data
- Determine the reason for the shortage
- Determine the items and shortage reasons
- Modify user preferences to exclude forecast demand from the POH calculation
- Questions

**Retrieve your Scheduling Data**

- 1 Enter selection criteria site equals 10-202.
- 2 Enter Resource equals ASSY-01.
- 3 In the Navigator Panel, click on the production line ASSY-01.

Notice the red bulb next to the Resource ID on the Navigator Panel, indicating there is a Projected On Hand (POH) shortage for this resource.

Determine the Reason for the Shortage

The resource ASSY-01 indicates a POH shortage. Now, you will attempt to determine the reason for the POH shortage.

- 1 In the Schedule Grid, click on the item 02303.
The Schedule Grid Date Column for tomorrow should be highlighted in red.
 - **Question:** What is the shortage amount?
- 2 Open the Supply/Demand panel to view the information to determine the shortage amount.
The system displays -18 POH.
 - **Question:** Looking at the demand and supply records, can you see why POH is -18?

- **Question:** What would be the most appropriate action to take?

Note You will correct the shortage in later steps.

Determine the Items and Shortage Reasons

The resource ASSY-01 indicates a POH shortage. Now, you will determine the items and reasons for their shortages.

- 1 In the Schedule Grid, click on the item 02308.
The system displays POH issue in the future.
 - **Question:** What is the shortage amount?
- 2 Open the Supply/Demand panel view the information to determine the shortage amount.
- 3 The system displays -12 POH.
 - **Questions:** Looking at the demand and supply records, can you see why POH is -12?
 - **Answer:** The -12 displays because it is from planned orders.
- 4 In the Supply/Demand panel, expand the supply row to view the details.
 - Notice that there is a planned order quantity for 12 pieces.
 - **Question:** Why does the planned order not display as supply in the POH row?
 - **Hint:** Do you remember the concept/rules concerning the Scheduling Horizon and how this relates to planned work orders?

Continue to Determine the Items and Shortage Reasons

The resource ASSY-01 indicates a POH shortage. Now, you will determine the items and reasons for their shortages.

- 1 In the Schedule Grid, click on item number 02305.
The system displays POH issue in the future.
 - **Question:** What is the shortage amount?
- 2 Open the Supply/Demand panel to view the information to determine the shortage amount.
The system displays -26 POH.
 - **Question:** Looking at the demand and supply records, can you see why POH is -26?
- 3 In the Supply/Demand panel, expand the demand row to view the demand details.
 - **Question:** Where is demand coming from?
 - **Hint:** Notice the past due column of the forecast row and the customer/intersite row.
 - **Answer:** The demand is coming from a customer order.
- 4 In the Demand Details tab, view the demand details for this item.
 - **Question:** Can you see that demand is coming from both forecasts, customer orders and intersite requests?
 - It seems that scheduled shortage is based on a forecasted demand quantity.

- **Question:** What if you desired to only view items with shortages excluding forecast demand?

Modify User Preferences to Exclude Forecast Demand from the POH Calculation

In the prior scenario, the item 02305 displayed a POH shortage based on forecast demand. Modify your user preferences to exclude forecast demand from the POH calculation, thus ensuring you are only alerted of scheduling issues based on actual, not forecasted, customer demand.

- 1 In the Toolbar, click Option, then Preferences, then Display.
- 2 Uncheck the Include Forecast Demand field; then click OK.
- 3 Do a Search.
- 4 Open the Supply/Demand panel to view the information to determine the shortage amount.
 - The system displays -24 POH.
 - **Question:** Looking at the demand and supply records, can you see why POH is -24?
- 5 In the Supply/Demand panel, expand the demand row to view the demand details.
 - Notice that the Forecast demand record of 24 in the past due column is still shown, but the quantity is not included in the demand summary row.
- 6 In the Demand Details tab, view the demand details for this item.
 - **Questions:** Can you see that the forecast demand record is still there, but it is no longer included in the demand calculation for the item? How does the forecast demand record continue to impact MRP and lower level components and purchased parts?
- 7 In the Toolbar, click Option, then Preferences, then Display.
- 8 Recheck the Include Forecast Demand field; then click OK to re-include forecast demand.

Questions

- 1 What is the red ball indicating?
- 2 Which section of the MSW shows you the item's total demand and total supply data over a period of time?
- 3 When the Schedule Grid displays the scheduled quantity for an item, what does the Supply/Demand Grid display?
- 4 Which of the following does the Supply/Demand Panel provide context for when drilling into item data?
 - Demand: All demand records for the selected item.
 - Cumulative ATP: The quantity remaining for sales to promise to customers.
 - Seasonal/Safety Stock: Defines the desired targeted inventory balance.
 - Receipts: All inventory receipt transactions for the selected item.

Answers

- 1 The red ball indicates a shortage when demand exceeds capacity.
- 2 Shortage warning status indicators can display as low warning status (yellow shading), which typically applies to non-critical potential shortages; for example, when the quantity on hand does not meet safety stock requirements. High warning status (red shading) indicates a potentially critical capacity or item shortage problem; for example, when the projected on hand quantity is less than zero.
- 3 Use the Supply/Demand Grid to view the item's total demand and total supply data over a period of time.
- 4 When the Schedule Grid displays the scheduled quantity for an item, the Supply/Demand Grid displays the remaining open quantity due for the item.
- 5 All of them.

Schedule Production Orders Section



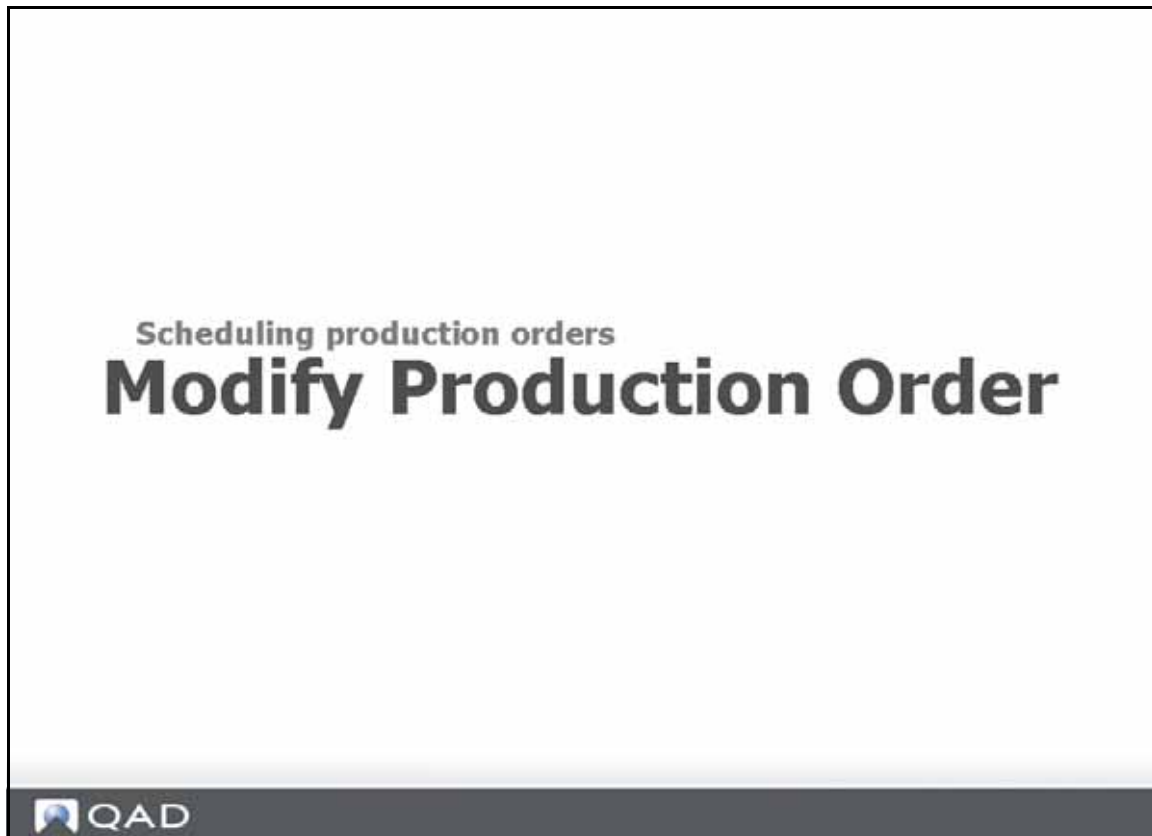
Schedule Production Orders

Schedule Production Orders

Topics

- Modify a production order
 - Firm a production order
 - Modify production order quantity
- Create a production order
 - Create a production order quantity
- Auto-firm process
- Other related topics

Modify Production Order Section



The screenshot displays the QAD Master Scheduling interface. The 'Production Scheduling' tab is active, showing a detailed schedule for various production lines (pl-asm, PL-Mold, PL-Plant, Press-01, Press-02, Press-03). The schedule includes columns for Item Number, Nettable QOH, and various dates (08/14, 09/15, 09/16, 09/17, 09/18, 09/19, 09/20). A vertical blue dashed line indicates a specific date. Callouts highlight key features: (1) Production Line indicates a shortage (pointing to the 'pl-asm' line), (2) Item with shortage highlighted in red (pointing to 'F-bus107'), (3) Day shortage begins highlighted in red (pointing to the date 09/16), and (4) -25 POH short (pointing to the 'Projected On Hand' value of -25 on 09/16). The 'Supply/Demand' section at the bottom shows the 'Projected On Hand' balance of -25, 'Projected Available Balance' of -5, 'Supply' of 30, and 'Demand' of 25.

Modify a Production Order
Firm a Production Order

Resource Navigator
 bws1
 Production Line
 pl-asm
 PL-Mold
 PL-Plant
 Press-01
 Press-02
 Press-03

Master Scheduling
 Master Scheduling
 Capacity
 Schedule

Production Line
 Item Number
 Nettable QOH
 08/14
 09/15
 09/16
 09/17
 09/18
 09/19
 09/20

pl-asm
 F-bus103
 11
 134
 40
 20
 30
 70

pl-asm
 F-bus104
 1
 39
 607
 823

pl-asm
 F-bus107
 5
 5
 5
 5

pl-asm
 F-bus101
 61
 29
 30
 10
 20
 60

pl-asm
 F-bus105
 205
 31
 27
 43

pl-asm
 F-bus102
 81
 6746
 15
 15
 6687

pl-asm
 F-bus106
 610
 77
 77
 157

pl-asm
 F-bus108
 3
 60
 7
 67

Supply/Demand
 Projected On Hand
 Projected Available Balance
 Supply
 Demand
 Cumulative ATP
 Seasonal/Safety Stock
 Receipts

-4
 -5
 30
 25
 0
 0

08/14
 09/15
 09/16
 09/17
 09/18
 09/19
 09/20

-25
 -5
 30
 25
 0
 0

Question: Why is there a POH shortage of 25 parts?

Question: Why is there a POH shortage of 25 parts?

Use the information in the Supply/Demand Grid to view the item's total demand and total supply data over a period of time. Total demand is from sales, DRP, forecast, seasonal demand, or dependent demand. Total supply is from planned, firm, or released production orders.

Firm a Production Order (Continued)

Modify a Production Order
Firm a Production Order – Continued

The screenshot displays the 'Firm a Production Order' process in the QAD Planning and Scheduling Workbench. The interface includes a 'Production Line' tree on the left, a 'Schedule' table in the center, and a 'Supply/Demand' table at the bottom. Annotations highlight key changes:

- (A) Item no longer highlighted in red
- (B) I entered the shortage qty of 25 parts
- (C) Projected On Hand is now (0) = balanced
- (D) Supply record of 25 is now a firm scheduled order

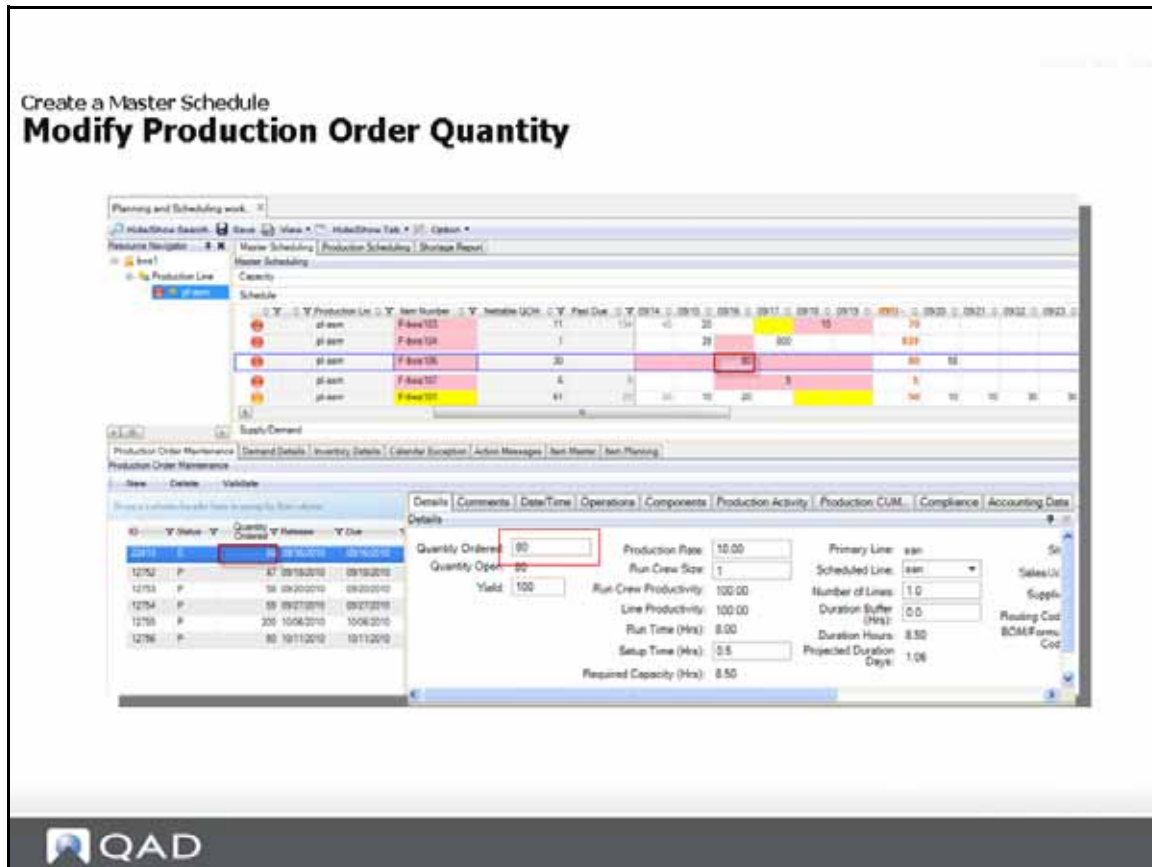
Question: Did the system create a new production order, or firm an existing planned order?

QAD

A firm planned order has a production order bill and a routing with scheduled operations.

Question: Did the system create a new order or firm an existing order?

Modify Production Order Quantity



Solution: Update a production order quantity using one of the three UI/methods:

- Directly on the Schedule Grid
- Production Order Maintenance
- Production Order Maintenance Details

Even though MRP generates planned orders, balancing supply and demand, in some cases, you may need to manually adjust the production order quantity. You can use MSW to do this. You can modify quantities directly in the Schedule Grid in any horizon period.

When you make a quantity change against a production order, the quantity change applies to the entire order, not just a specific operation. For example, if you change the quantity on work center A for operation 10, MSW applies the quantity change to the order and, subsequently, all operations.

You cannot modify the value in Schedule Grid:

- If the Schedule Grid cell value represents more than a single production order.
- If the order is closed.

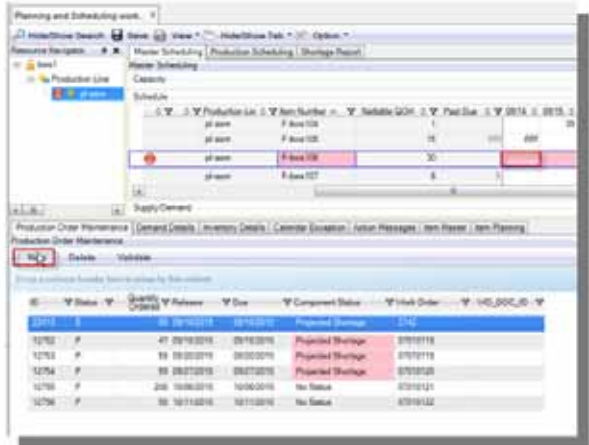
If you change the order quantity to a quantity less than the quantity completed, the changes display in the Supply/Demand Grid. The open quantity is zero when the order quantity is equal to or less than the quantity completed.

Create Production Order Quantity Section



Create a Production Order Quantity

Create a Master Schedule
Create Production Order Quantity



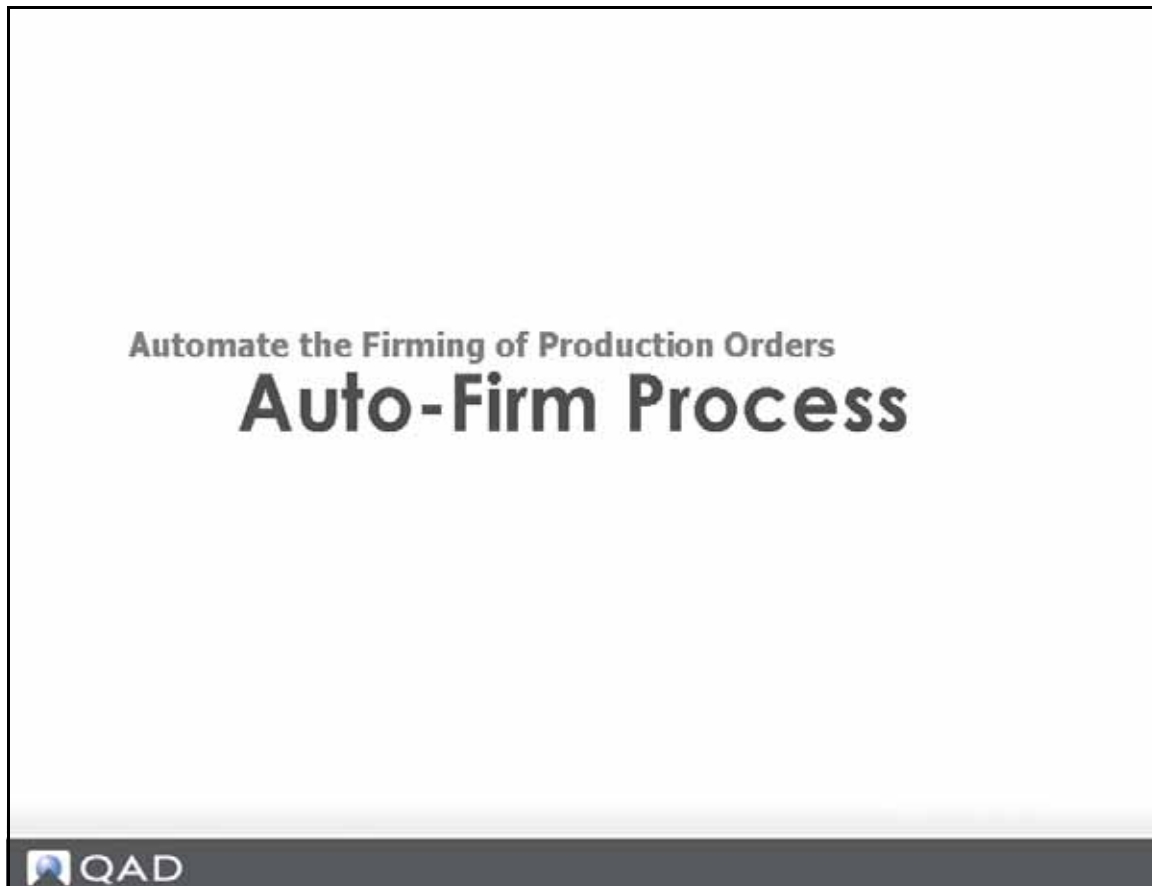
The screenshot shows the QAD software interface for creating a production order quantity. The window is titled 'Create a Master Schedule' and 'Create Production Order Quantity'. It features a 'Production Order Maintenance' tab with a table of production orders. The 'New' button is highlighted in the top left corner of the window.

ID	Status	Quantity	Release	Due	Component Status	Work Order	145,000,00
12701	P	47	09/18/2019	09/18/2019	Proposed Shipment	07/01/19	
12702	P	19	09/20/2019	09/20/2019	Proposed Shipment	07/01/19	
12703	P	99	09/20/2019	09/20/2019	Proposed Shipment	07/01/19	
12704	P	200	10/06/2019	10/06/2019	No Status	07/01/19	
12705	P	99	10/11/2019	10/11/2019	No Status	07/01/19	

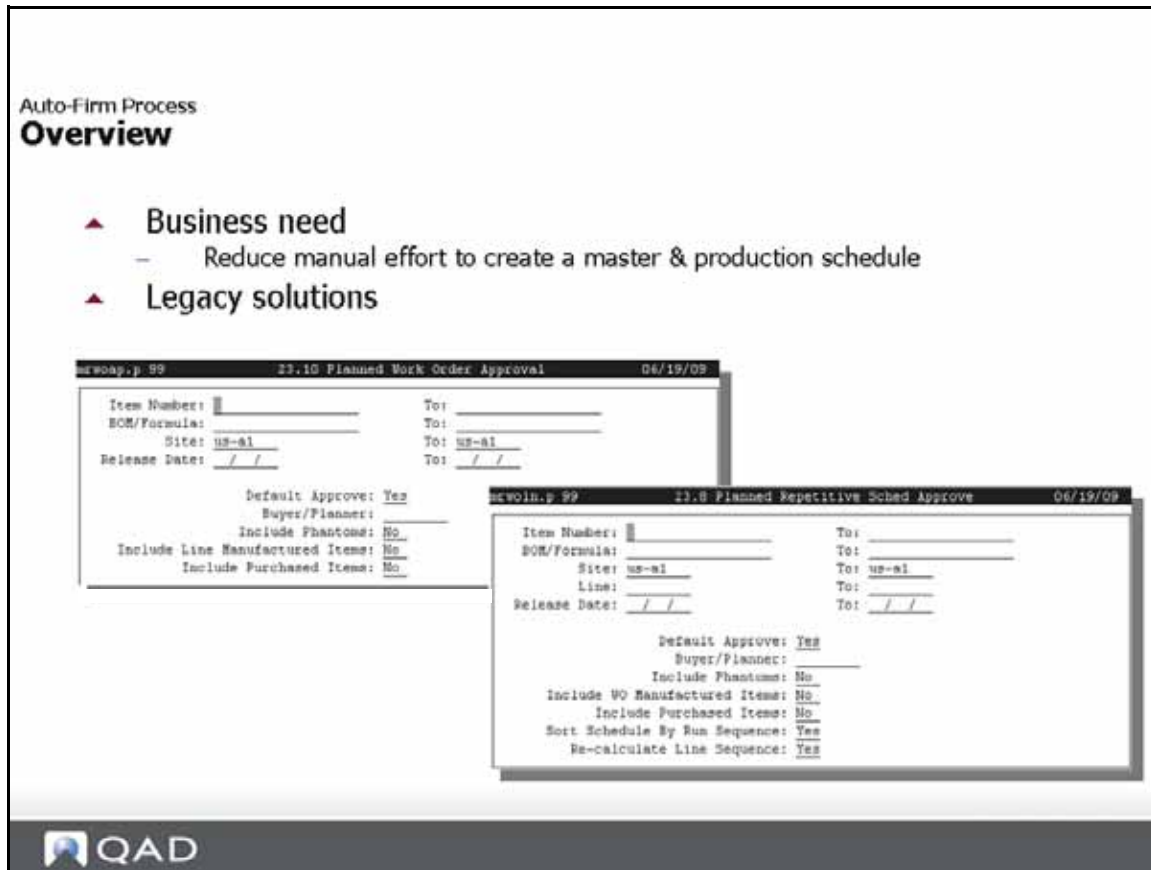
Solution Approach: Create a production order quantity using one of the two UI/methods highlighted below

- Directly on the Schedule Grid
- Click on New in Production Order Maintenance

Auto-Firm Process Section



Overview



Business need: Reduce manual effort to create a master and production schedule.

In many businesses, MRP output is the starting point for master production scheduling. You can use the auto-firm function to quickly adjust orders and expedite your scheduling tasks. For discrete and repetitive orders, you no longer need to approve planned production orders to change the status to F. Auto-firming is based on the order due date.

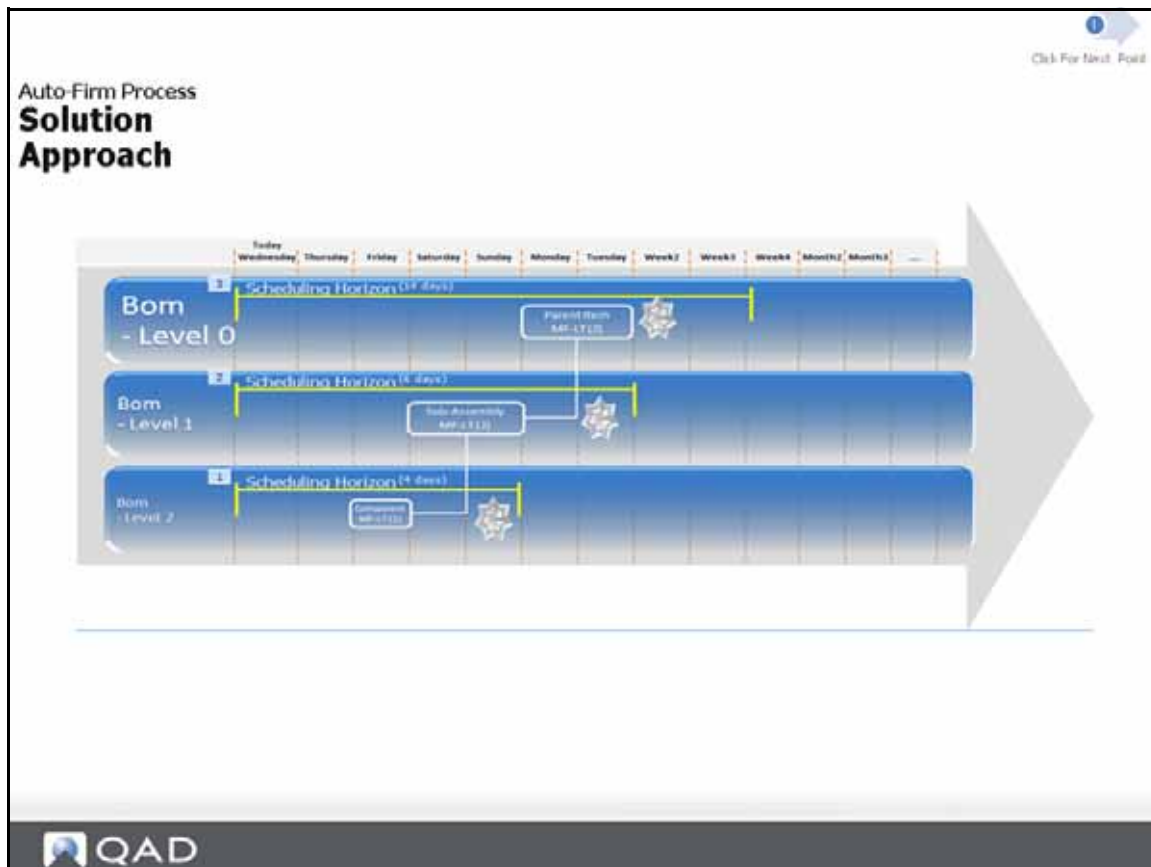
You cannot auto-firm these item types:

- Purchased (items with a P code in Item Master Maintenance (1.4.1))
- Configured
- Routable
- Phantom

You can run the auto-firm process daily in batch mode to avoid missing orders that require this status change.

You can auto-firm orders using programs that are external to the workbenches. The programs firm planned orders for your work centers and production lines for a specific horizon or a range of dates. The program can run in batch mode nightly.

Solution Approach



What is Auto-firm?

- An approach to having the system firm MRP planned production orders.
- The business value is that it enables master scheduling by exception.

When is it applicable to use?

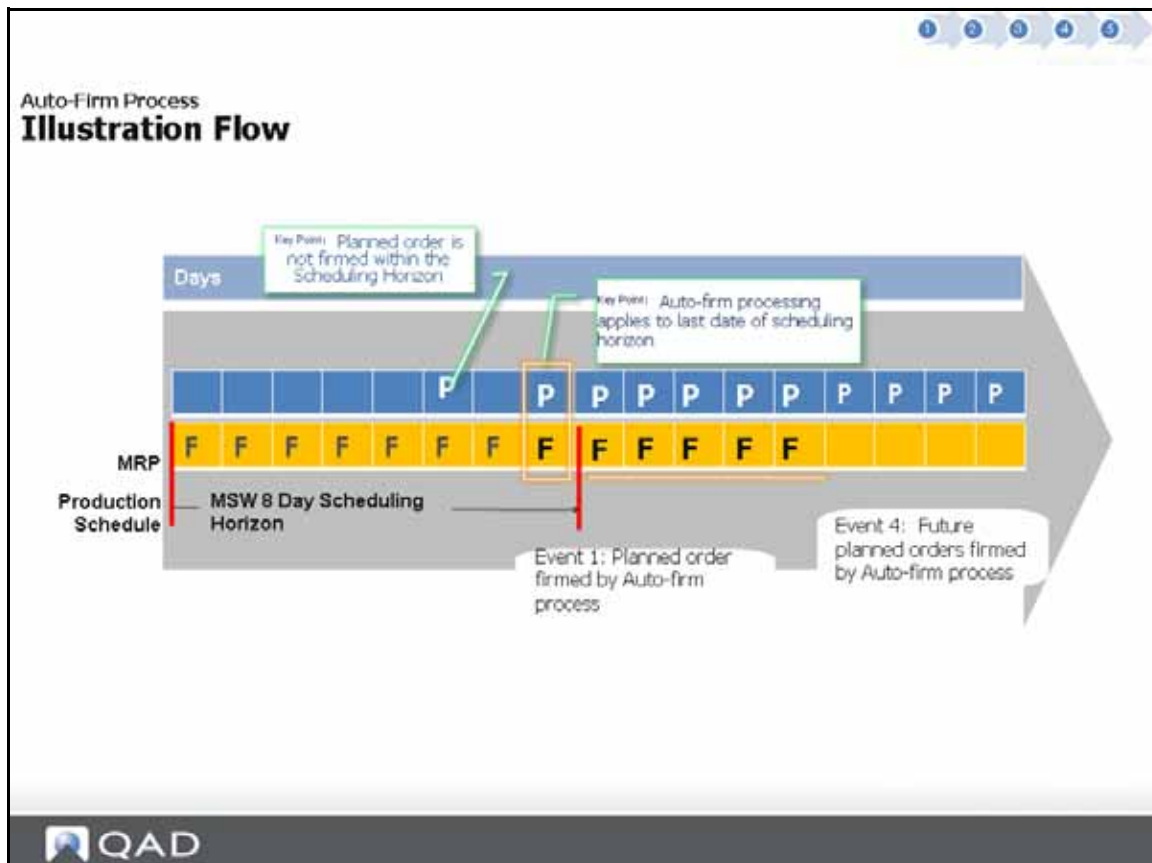
- When MRP is generating accurate planned orders.
- When a high percentage of the orders (95% or greater) are MRP planned orders.

What to decide:

- Do I use this process for all or some of my resources?
- **Answer:** You should auto-firm resources on a case by case basis.
- Can I still use the legacy firming programs?

For a planned work order approval, the answer is Yes. For a planned repetitive schedule approval, the answer is No.

Illustration Flow



Starting Point: A production schedule with firm orders MRP generated future planned orders.

Event 1: Auto-firm process runs today.

Event 2: new planned order created by MRP today.

Event 3: Auto-firm process runs again today.

Event 4: Auto-firm process runs each day after today.

Exception Illustration

The Auto-firm process

Exception Illustration

1. Setup

2. Run Auto-firm

3. Results

1. Setup

Production Line Maintenance | Auto Firm Planned Orders | Planning and Scheduling work...

Production Line plan

Site: Site1

Description: part assembly

Units/Hour: 10.00

Enable Run Size: 1.0

Number of Lines: 1.0

Duration Buffer (D/H/M/S): 5/00:00

Setup Time (D/H/M/S): 0/00:00

Auto Firm: ☒ (Auto-firm enabled)

Schedule ID: 100000

Time Period: Horizon End: Day

Period Number: 5

Calculate Date: 9/20/2010

Planned orders will be firmed with this due date

2. Run Auto-firm

Production Line Maintenance | Auto Firm Planned Orders | Planning and Scheduling work...

Site: Site1

Line: ☒ (Auto-firm selected for site)

Work Center: ☒ (Auto-firm selected for production lines)

Machine: ☒ (Auto-firm selected for production lines)

Include Production Lines: ☒

Include Work Centers: ☐

All Planned Orders in Scheduling Horizon: ☐

Include Kanban Registered Items: ☐

Update:

Output:

Batch ID:

3. Results

Resource Navigator | Master Scheduling | Production Scheduling | Shipment Report

Master Scheduling

Capacity

Resource ID	Horizon End	Record Type	Past Due	Wednesday	Thursday	Friday	Saturday	Sunday	09/13 - 09	Monday	Tuesday
pl-asm	9/20/2010	Remaining Capacity	-717.4	2.9	2	-68.5	7	8	-739.6	8	7

Schedule

Resource ID	Item Number	Nettable GOH	Past Due	09/16	09/17	09/18	09/19	09/20	09/21
pl-asm	8-dw101	61	43	10	20			50	10

Supply/Demand

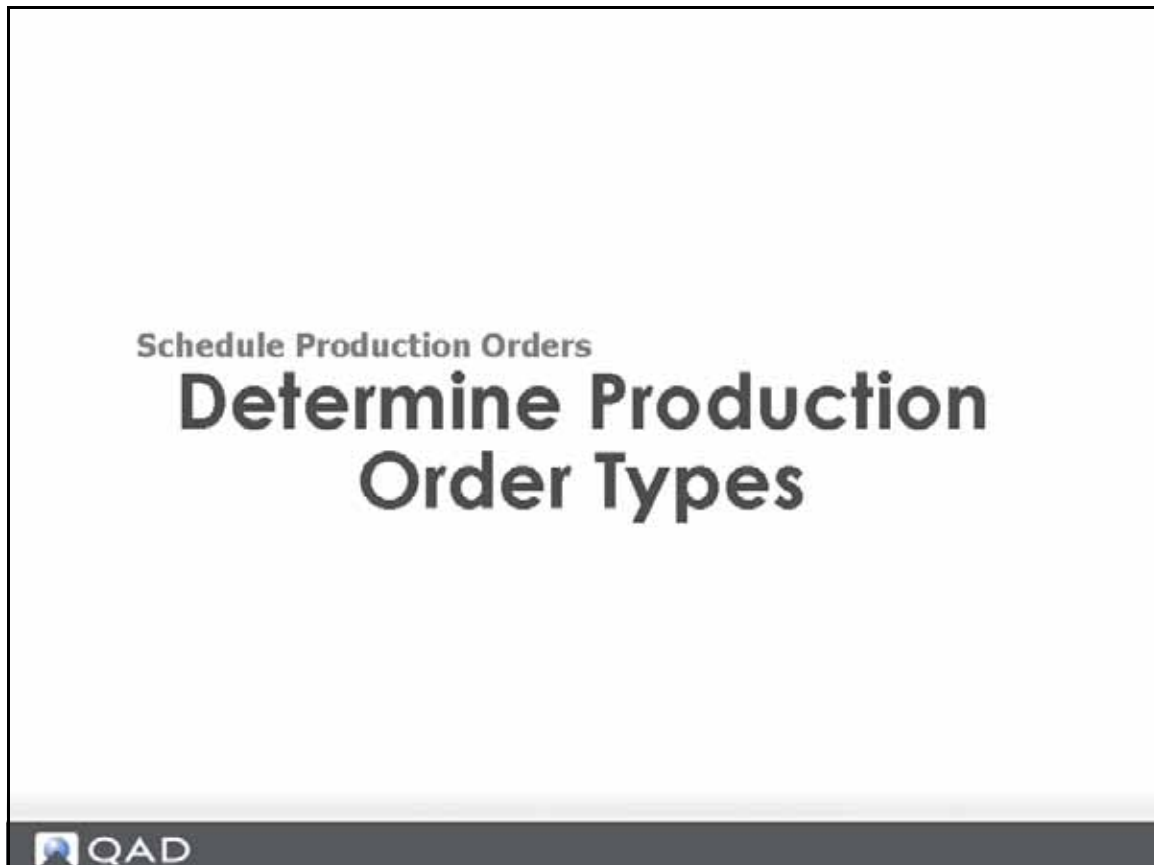
	Projected On Hand	Projected Available Balance	Supply	Manufactured	Purchased	Inter-site	Planned
	-1	-1	49	49			
	60	60	60	60	60	60	60
	49	49	49	49	49	49	49
	10	10	10	10	10	10	10
	20	20	20	20	20	20	20

Auto-firm will firm ONLY this planned order

QAD

You must set Auto Firm to Yes in both Production Line Maintenance and Work Center Maintenance if you auto-firm for work center resources. If Auto Firm is set to No in these programs, the system will not firm any planned orders. You can see the Auto Firm field status and the date of the last auto-firm in work center and production line browses in QAD EE.

Production Order Types Section

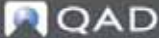


Determine a Production Order Type

Scheduling Production Orders

Determine a Production Order Type

Process Step	Repetitive Order Type	Discrete Order Type
Receive demand – sources of item demand	Not important	
MRP Planning	Not important	
Production scheduling (legacy solution)	Repetitive model with multiple programs and steps	Repetitive model with multiple programs and steps
Production scheduling (new solution)	A single unified scheduling application supporting both order types	
Production release authorization	Execute to schedule	Release/Print Shop Floor paper work
Material issuing/picking	Repetitive approach/programs	Discrete approach/programs
Production reporting	Repetitive approach/programs	Discrete approach/programs

 QAD

Discrete and Repetitive Production Orders

An item must be classified as discrete or repetitive scheduled.

Production orders are all orders associated with production—production lines, work centers, or other production areas—including discrete production orders, repetitive orders, scheduled orders, cumulative orders, and so on.

In the Resource navigator, when you select an item from a repetitive order, MSW displays all production lines defined for the item. If you select an item from a discrete order, MSW displays all work centers for the operation, including alternate routings.

Determine a Production Order Maintenance

Schedule Items

Determine a Production Order Type

Item Number: F-Bus105 Description: Pax 20.9 Cross Tube
Unit of Measure: EA Make To Stock: X

Item Planning Data

More Sched: ☐ Plan Orders: ☐ Time Fence: 1 MRP Required: ☐ Order Policy: POQ Order Qty: 0 Batch Qty: 1 Order Period: 1 Safety Stock: 100 Safety Time: 0 Reorder Point: 0 Item Rev: 1 Issue Policy: ☐

Super Planner: Supplier: PO Site: Int 1 Configuration Type: 1.0 Ins LT: 0 Cum LT: 0 Wkg LT: 0 Put LT: 0 ATP Enforcement: NONE Family ATP: 0 ATP Horizon: 0 Run Seq 1: Medium 2 2

Phantom: Minimum Order: 0 Maximum Order: 0 Order Multiple: 0 On Based Yield: 100.00% Yield Percent: 100.00% Run Time: 0.000 Setup Time: 0.000 ENT Type: NON ENT Auto ENT Processing: ☐ Network Code: Routing Code: F-Bus105 BOM Formula: ☐

Replenishment Method: Orders

QAD

In Item Planning Maintenance, the Pur/Man Code defines the item type:

- L = repetitive
- (all other codes) = discrete

Production order type determined when order is firmed.

The following table shows you the Pur/Mfg codes for production orders and order types.d.

Table 3.1

Pur/Mfg Codes for Production Orders

Pur/Mfg Code	Production Order Status	Production Order Type
N/A	P	Generic
Blank	F	Discrete
M	F	Discrete
L	E	Repetitive
All others	F	Discrete

Pur/Man. The Purchase/Manufacture code controls how the system explodes forecasts, plans and creates orders, and calculates costs for the item. Valid code options include P (Purchased), D (DRP), M (Manufactured), R (Routable), C (Configured), W (flow scheduled), F (family) and L (line manufactured).

Note In Production Order Maintenance, you can find error messages by Filtering on the Error column.

In Item Master Maintenance within QAD EA, you can set the Replenishment Method field.

Replenishment Method. Specify the method to replenish inventory. The default is Orders.

Kanban: Entering kanban creates a kanban record for the item in kanban. Kanban is a method of just-in-time (JIT) production that uses standard containers or lot sizes with a single card attached to each. It is a pull system in which work centers use a card to signal that items are to be withdrawn from supply sources. The kanban system defines a communication signal or card indicating that items need replenishment.

Orders: MRP uses order due dates to determine when quantities will be available to replenish inventory.

Purchase/Manufacture: Inventory is replenished by purchasing it from suppliers or manufacturing it internally, typically with work or production orders.

DRP: Inventory is replenished through distributed requirements planning (DRP) intersite requests, which balance supply and demand among sites.

Family: Inventory is replenished through family-level items. Components of the family item are special items that can be any type: manufactured, configured, or another family item.

Routable: Inventory is replenished from items produced internally.

Configured: Inventory is replenished through products that are configured to customer order and produced internally. These are indicated by a Pur/Mfg code of Configured in Item Master Maintenance (1.4.1).

Purchased: Inventory is replenished through purchased items, driven by purchase orders.

Manufactured: Inventory is replenished through manufactured items.

Convert a Production Order Type

Schedule Items
Convert a Production Order Type

Click For Next Page

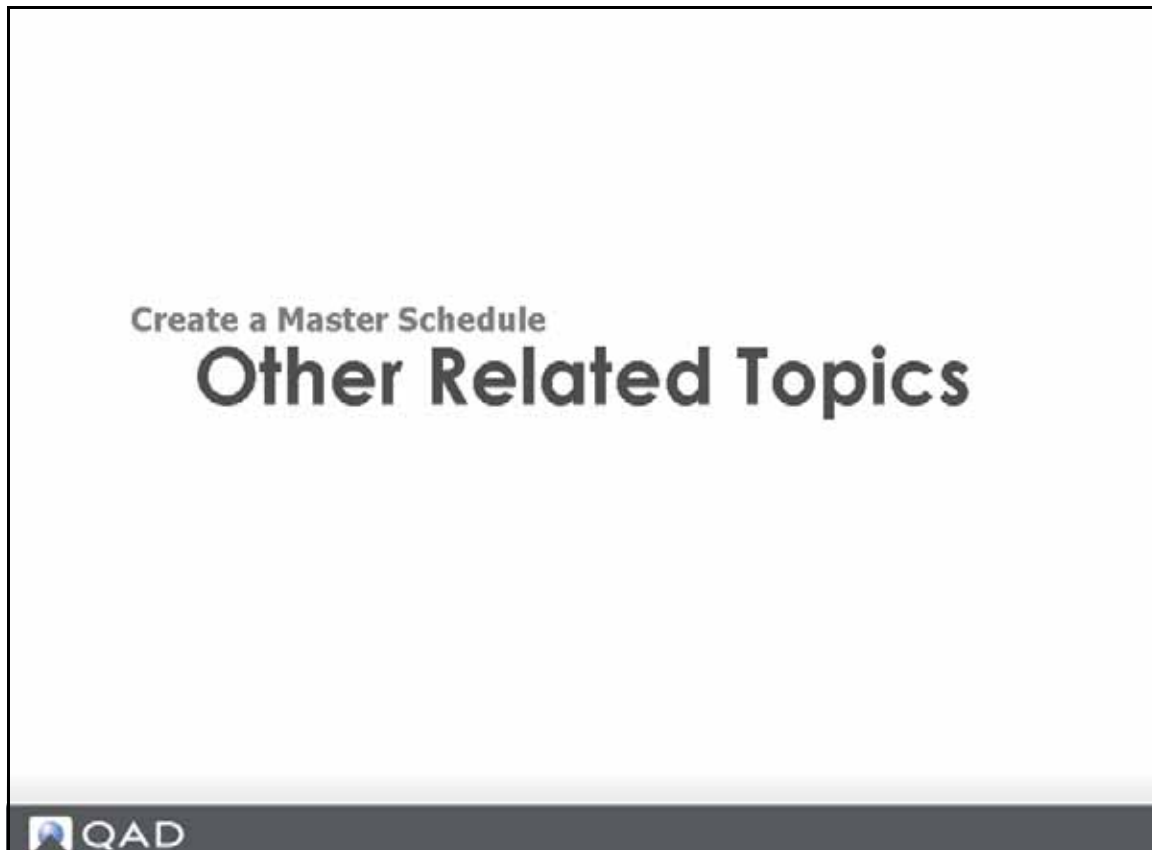
The screenshot displays the QAD Master Scheduling interface. The top section shows a capacity grid for Resource ID 1000000000, with a remaining capacity of 717.4. Below this is a schedule grid for Item Number 1000000000, showing a past due date of 09/13/14 and a future due date of 09/20/14. The bottom section shows the Production Order Maintenance form, where the Order Type is set to L (Repetitive). A green box highlights the Order Type field, and a red box highlights the Order Type dropdown menu. A green arrow points to the Order Type dropdown menu, and a red arrow points to the Order Type field. A green box contains the text: "The item is typically managed with Order Type = Repetitive". A red box contains the text: "System changed the Order Type = Discrete". A green box contains the text: "I changed the order status to (R) released".

QAD

Business Scenario: An item is typically defined as an L type, repetitive scheduled order, but customer requests special handling, so schedule the item using discrete processing.

Question: What are the advantages to managing an order discretely?

Other Related Topics Section



Other Topics

Identify Items Requiring Scheduling Intervention

Other Topics

- ▲ Create a master schedule
 - Leveling forecasted demand requirements
 - See training guide for training segment covering this topic
 - Splitting production orders
 - Topic covered in the Production Scheduling (PSW) training
- ▲ Order management
 - Modifying BOM/Routings
 - Topic covered in the Production Scheduling (PSW) training
- ▲ Calculations
 - How is order duration calculated?
 - How is the order release and due date calculated?
 - See training guide for training segment covering workbench calculation logic
- ▲ Verify material/component availability
 - Topic covered in the Component Availability training (CAC)
- ▲ Other
 - Suggestions & comments welcome



Hands-On Lesson Section



Exercise 2: Resolve Supply Shortages

Exercise 2 – Modify/Create a Production Order to Resolve Supply Shortages

- Retrieve your scheduling data
- Increase the current scheduled quantity to satisfy the demand requirement
- Firm the MRP planned order to resolve the demand requirement
- Move the scheduled production order due date
- Commit your changes
- Questions



Retrieve your Scheduling Data

- 1 Enter selection criteria site equals 10-202.
- 2 Enter Resource equals ASSY-01.
- 3 Click Search.
- 4 In the Navigator Panel, click on the production line ASSY-01.

Notice the red bulb next to the Resource ID on the Navigator Panel, indicating there is a Projected On Hand (POH) shortage for this resource.

Increase the Current Scheduled Quantity to Satisfy the Demand Requirement

The item 02303 indicates a POH shortage. You will increase the current scheduled quantity to satisfy the demand requirement by updating the schedule directly on the MSW Schedule Grid.

- 1 In the Schedule Grid, click on the item 02303.

The Schedule Grid Date column in the future should be highlighted in red.

- **Question:** What is the shortage amount?
- **Hint:** Use the Supply/Demand tab to find out.

- 2 In the Schedule Grid Date column, maneuver to the grid cell highlighted red; then adjust the scheduled quantity to fix the shortage.
- 3 Apply change by pressing the Enter key.
The red highlight goes away.
 - **Question:** Did the color change to yellow? If so, why?
 - **Hint:** Check the item safety stock setting.
- 4 Make a second adjustment to resolve item safety stock yellow issue by adjusting the quantity for date of <today+1> to 48 .
The system removes the yellow indicator.

Firm the MRP Planned Order to Resolve the Demand Requirement

The item 02308 indicates a POH shortage. Now, you will firm the MRP planned order to resolve the demand requirement. Use the Production Order Maintenance tab to review and firm the MRP planned order.

- 1 Change the production order status to **F**(irm) for the planned order.
This resources the POH shortage.
The firmed order now displays on the Schedule Grid.
The red visual indicator for item is gone, and the shortage is corrected.
Note If you modify an field on a planned production order, the system automatically firms it for you.
- 2 **Important:** Save your scheduling changes.
The system saves your changes. The system displays a warning message.

Move the Scheduled Production Order Due Date

Item 02305 displays a POH shortage based on forecast demand. Move in the scheduled production order due date. Use Production Order Maintenance to review and firm the MRP planned order.

- 1 In the Schedule Grid, click the item 02305.
The Schedule Grid Date Column for today/tomorrow should be highlighted in red.
 - **Question:** What is the shortage amount?
- 2 Click the Production Order Maintenance tab, review the orders and find the firm production order for which you can move the due date forward to resource the shortage amount.
 - **Hint:** The order for the quantity of 26, work order ID 90018.
- 3 Change the production order Due Date to a date that would resolve the shortage.
The red visual indicator for item is gone. The shortage is corrected.
- 4 **Important:** Save your changes in Production Order Maintenance.

Questions

- 1 True or False. You can only modify a production order quantity in Production Order Maintenance.
- 2 Is there an instance when you cannot modify the quantity in the Schedule Grid?
- 3 When is the open quantity zero?
- 4 True or False. When you make a quantity change against a production order, the quantity change applies to the entire order, not just a specific operation.
- 5 True or False. You can modify quantities directly in the Schedule Grid for all open orders in any horizon period.

Answers

- 1 False. You can update a production order quantity using one of the three UI/methods highlighted below:
 - Directly on the Schedule Grid
 - Production Order Maintenance
 - Production Order Maintenance Details
- 2 You cannot modify the value in Schedule Grid:
 - If the Schedule Grid cell value represents more than a single production order.
 - If the order is closed.
- 3 The open quantity is zero when the order quantity is equal to or less than the quantity completed or when supply has met demand.
- 4 True.
- 5 True.

Manage Resource Capacity Topics Section



Topics

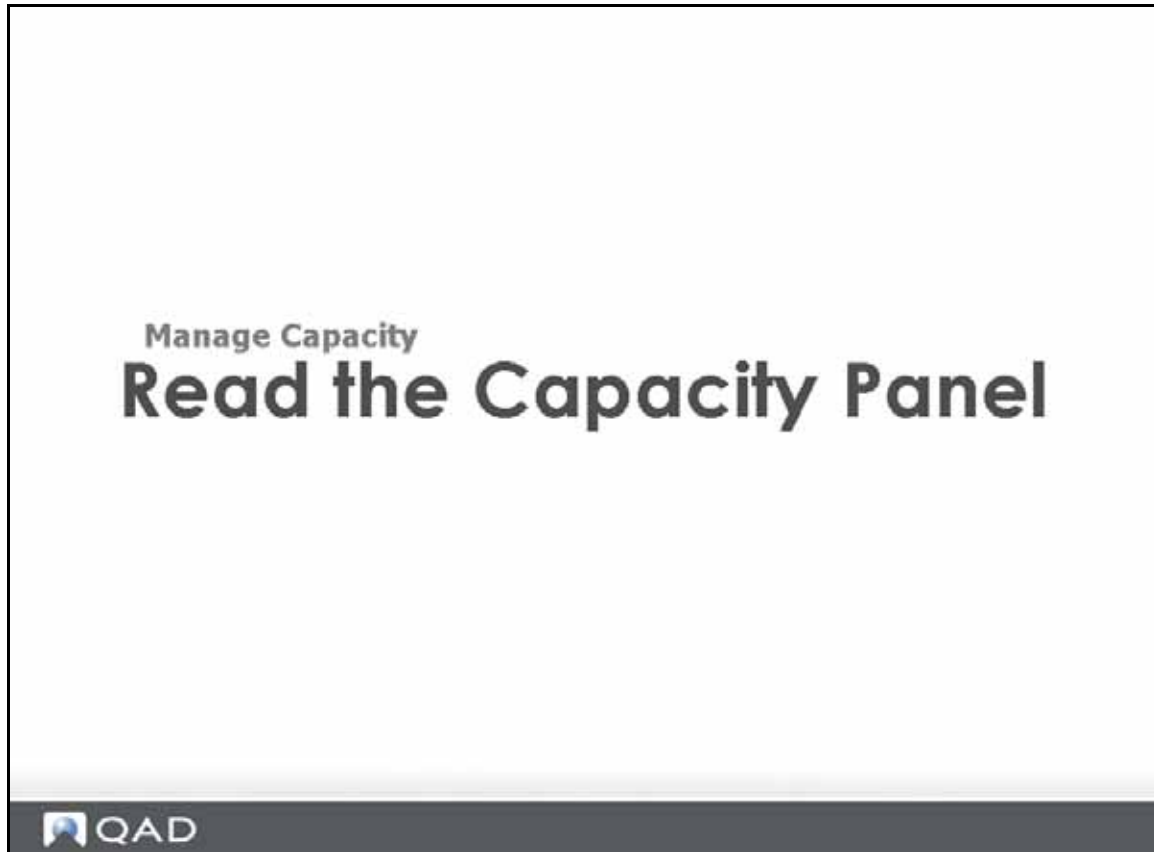
Manage Resource Capacity

Topics

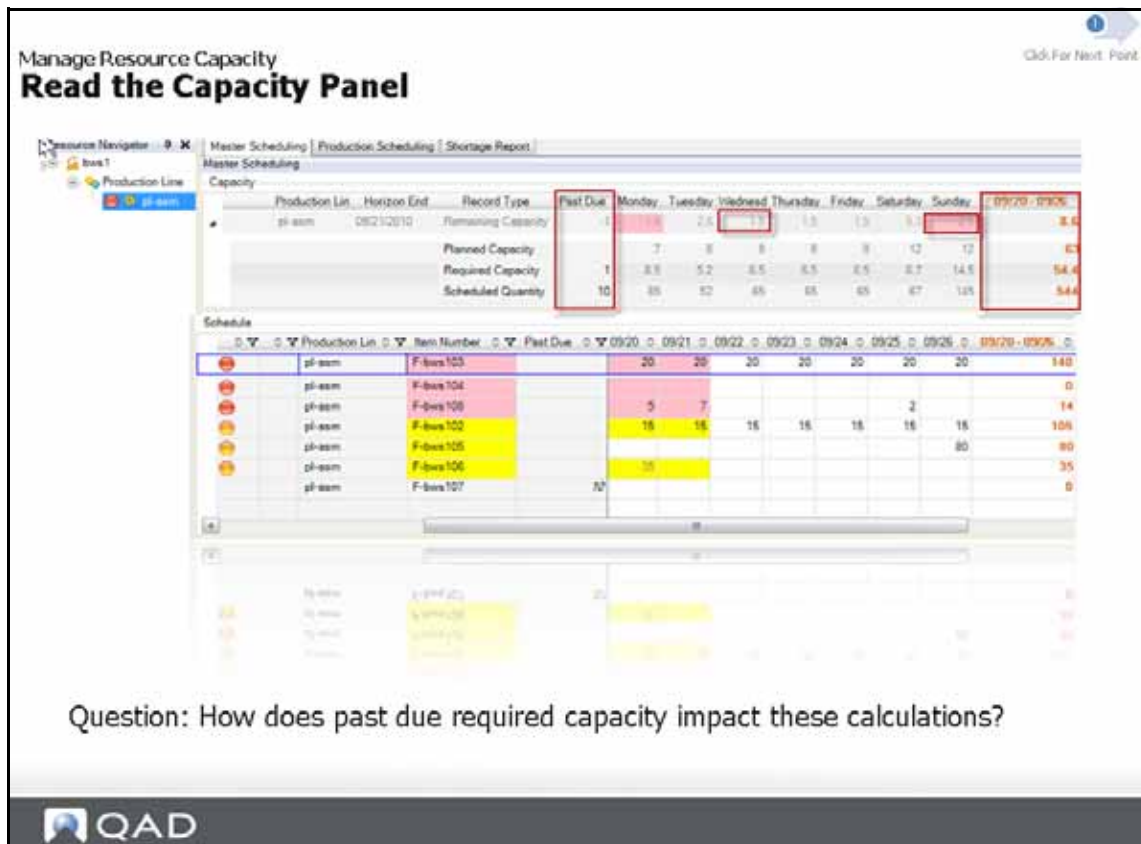
- ▲ Read the capacity panel
- ▲ Calendar exceptions
 - Business scenario
- ▲ Hands-on lesson
- ▲ View capacity trends
 - Introduction
 - Setup
- ▲ Other related topics



Read the Capacity Panel Section



Read the Capacity Panel



Available capacity information:

- Capacity is defined for each resource.
- Remaining capacity is the primary indicator to over/under capacity situations.

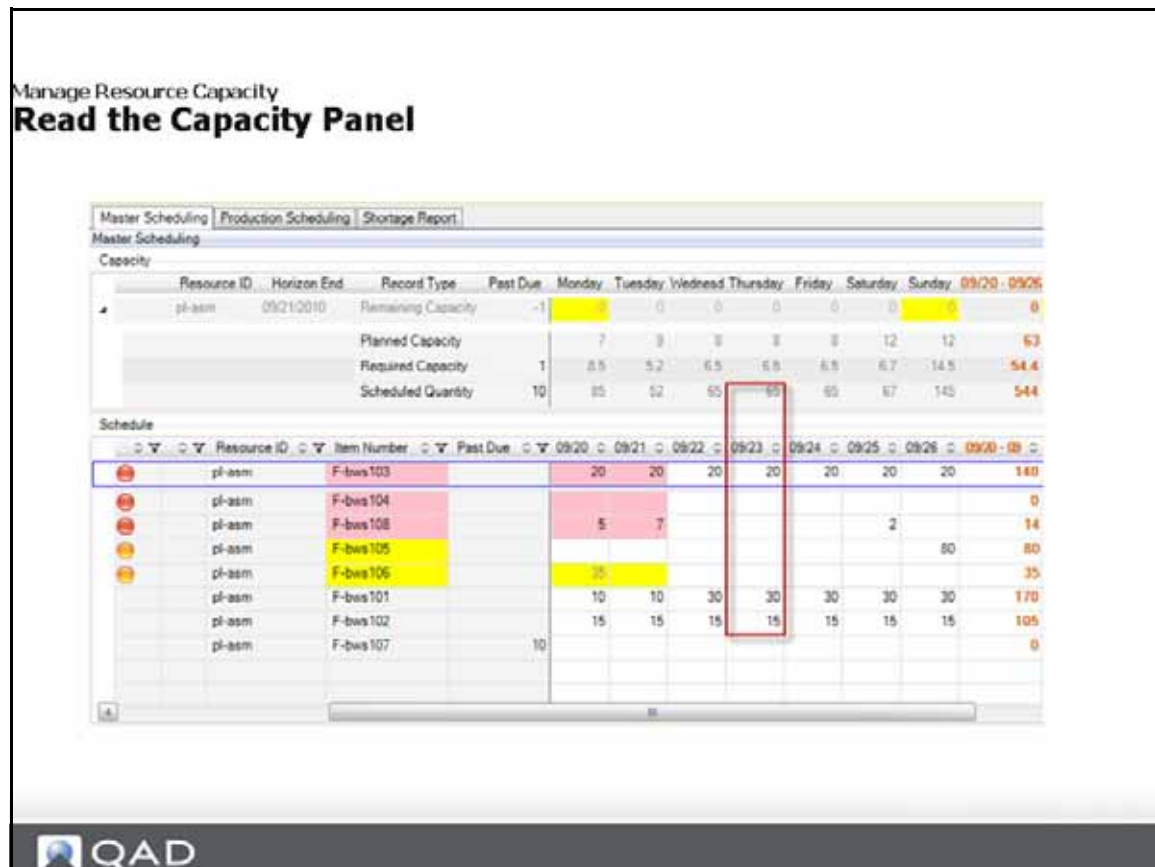
Question: How does past due required capacity impact these calculations?

The Capacity panel includes required capacity and capacity information for the selected resource on each day of the schedule horizon, starting with the current day.

In the Capacity Grid, you can optionally display the daily delta of required and planned capacity in the MSW. You can set the Consume Prior Remaining Capacity field in the Display tab of the User Preferences window so that the capacity row displays.

Note Currently, in the workbenches you cannot maintain the shift capacity of a work center.

Read the Capacity Panel: Calculations



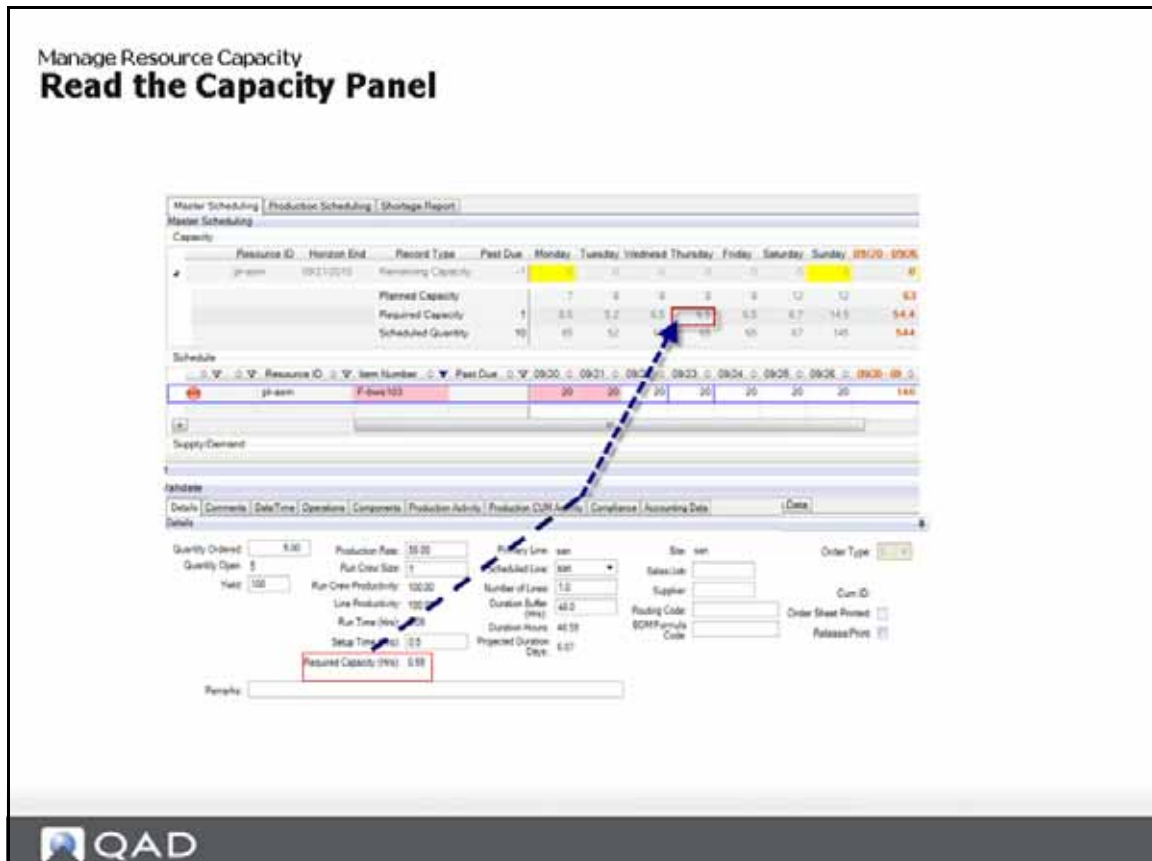
Calculated Capacity

Scheduled quantity is the sum of all production order open quantity per production order due date.

Capacity calculations start from the current system date and include the daily capacity. If the period available capacity results in a negative value, the system attempts to consume the excess capacity available from previous days and continues the consumption until either the period available capacity is zero or all previous days' excess capacity is consumed.

This calculation runs from the system date until the last day of the schedule horizon. When past due, the period available capacity is zero minus the past due required capacity.

Calculated Required Capacity



Required Capacity

Required Capacity is the sum of all production order required capacity per production order due date.

Calculated required capacity for each order:

$$\text{Required Capacity: } [(Open\ order\ QTY / production\ rate) / production\ efficiency\ (from\ resource\ calendar) + setup\ time]$$

In the MSW, shortage warning status applies to both required capacity and available capacity.

When you make updates to existing quantities in the Schedule Grid, the system performs required capacity calculations and displays changes.

Remaining Capacity

Manage Resource Capacity
Read the Capacity Panel

Master Scheduling | Production Scheduling | Shortage Report

Master Scheduling

Capacity

Production Lin	Horizon End	Record Type	Past Due	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	09/20 - 09/26
pl-asm	09/21/2010	Remaining Capacity	-1	1.5	2.8	3.5	3.5	3.5	3.5	3.5	8.6
		Planned Capacity		7	8	8	8	8	12	12	83
		Required Capacity	1	8.5	5.2	6.5	6.5	6.5	6.7	14.5	54.4
		Scheduled Quantity	10	85	52	65	65	65	67	145	544

09/20 - 09/26

Change How Content is Displayed

Production Scheduling User Interface

Inventory Date: 2 | ☐ Display Shift

Master Scheduling User Interface

Columns Visible

☒ Daily ☐ Weekly ☐ Monthly

☒ Consume Prior Days Remaining Capacity ☐ Include Forecast Demand

Changes require a restart to take effect

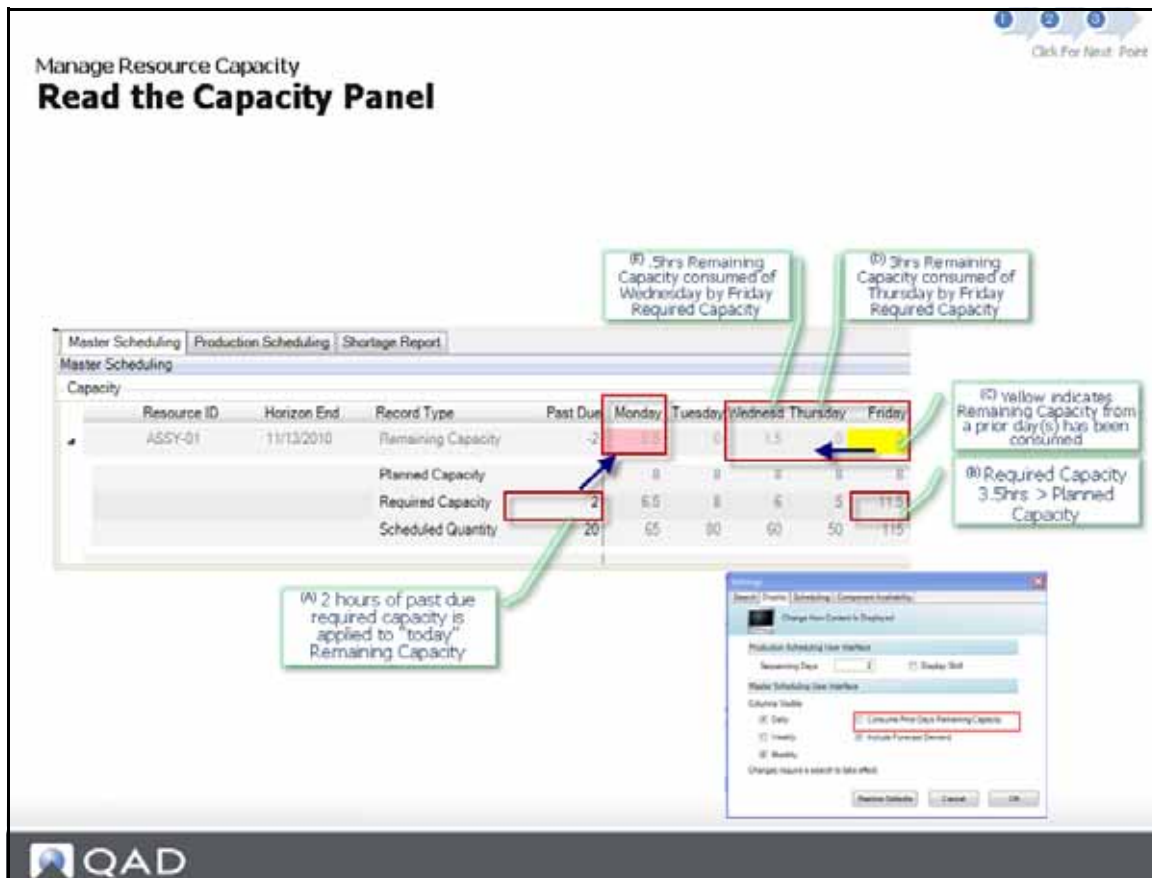
Restore Defaults Cancel OK

QAD

You can specify whether capacity is consumed by future required capacity or not by setting the Consume Prior Remaining Capacity field in the Display Window of User Preferences. Color coding extends beyond the firm scheduling horizon for visibility of capacity shortages. When you set the field to Yes, the cell displays with yellow shading when the system uses available capacity from prior days to satisfy the required capacity. It displays with red shading when there is not enough available capacity on or in days prior to the required capacity date.

Question: What is the limitation of this calculation?

Remaining Capacity (Continued)



Remaining Capacity using Prior Consumption Method

Remaining capacity calculation:

[If (Planned Capacity – Required Capacity) is < 0, then consume prior day(s) Remaining Capacity until Remaining Capacity = 0]

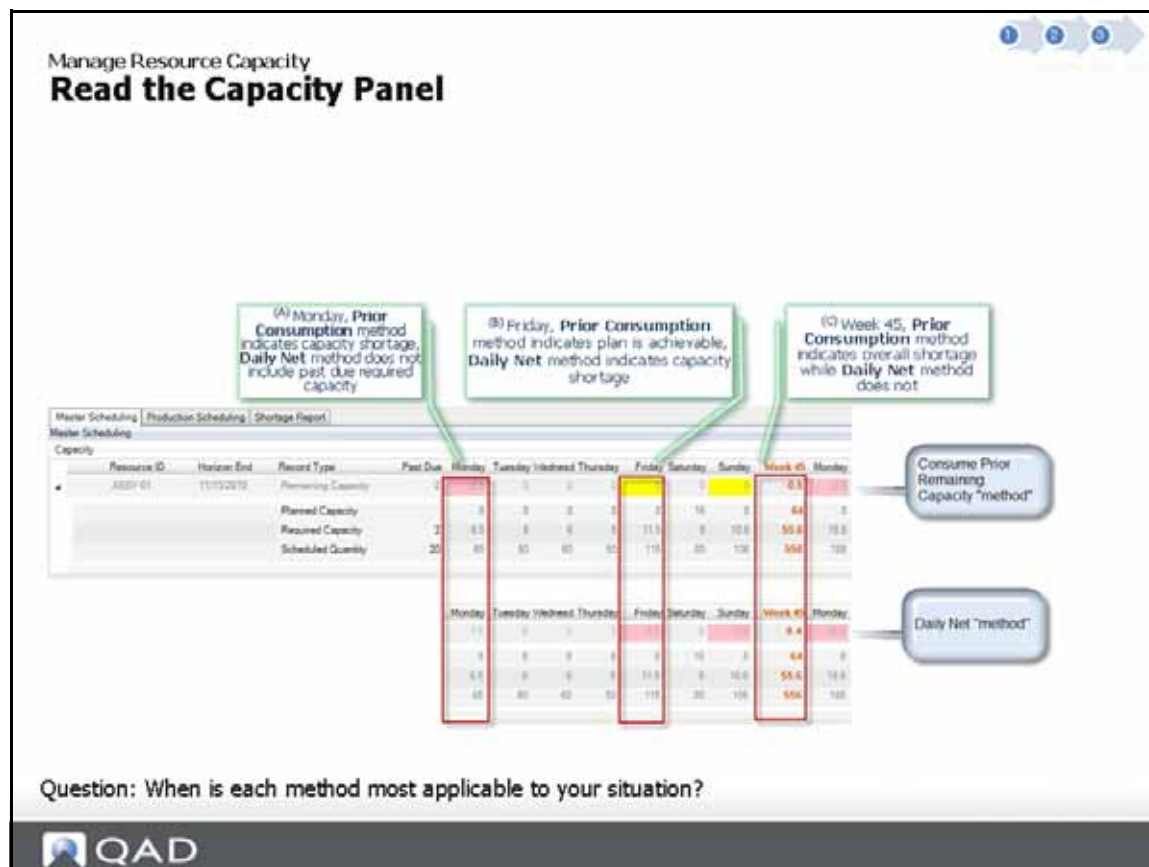
Consume Prior Remaining Capacity. Specify whether prior days remaining capacity is consumed by future required capacity.

Yes: The prior days remaining capacity is consumed by future required capacity.

No: The prior days remaining capacity is not consumed by future required capacity.

Questions: What is the primary assumption this calculation method uses? What are the benefits / applications of this calculation?

Compare Calculations



Comparing the Remaining Capacity Calculation Methods

The prior Consumption method determines if you have enough capacity to achieve the due dates defined per the master schedule. This method is ideal when looking at a long-term schedule.

The daily net method determines if you have enough capacity on a daily basis to complete my master schedule. This method is ideal to use when looking at short-term schedule, such as a week.

Question: When is each method most applicable?

Currently, you can only run one method at a time; however, you can switch methods.

Calendar Exceptions Section



Before and After Changes

Calendar Exceptions
Before and After Changes

Click For Next Point

Before Changes → After Changes

The screenshot displays the 'Calendar Exceptions' window in QAD software, comparing capacity data before and after changes. The top section shows a table of capacity values for Resource ID 'pl-asm' with a horizon end date of 09/21/2010. The bottom section shows a 'Calendar Exception' grid with columns for Shifts 1 through 4 and a 'Planned Capacity Weighted Prod' column. A dashed blue line indicates a change in capacity for Saturday.

Resource ID	Horizon End	Record Type	Past Due	Thursday	Friday	Saturday	Sunday	09/18 - 09/21
pl-asm	09/21/2010	Remaining Capacity	-1	8	8	8	8	8.5
		Planned Capacity		8	12	8	8	36
		Required Capacity	1	8	8	11.5	8	35.5
		Scheduled Quantity	10	80	80	115	80	355

Reference	Date	Capacity	Productivity	Shift1	Shift2	Shift3	Shift4	Planned Capacity Weighted Prod
OT	09/18/201	3.50	100.0%	0.00	100.0%	0.00	100.0%	11.5

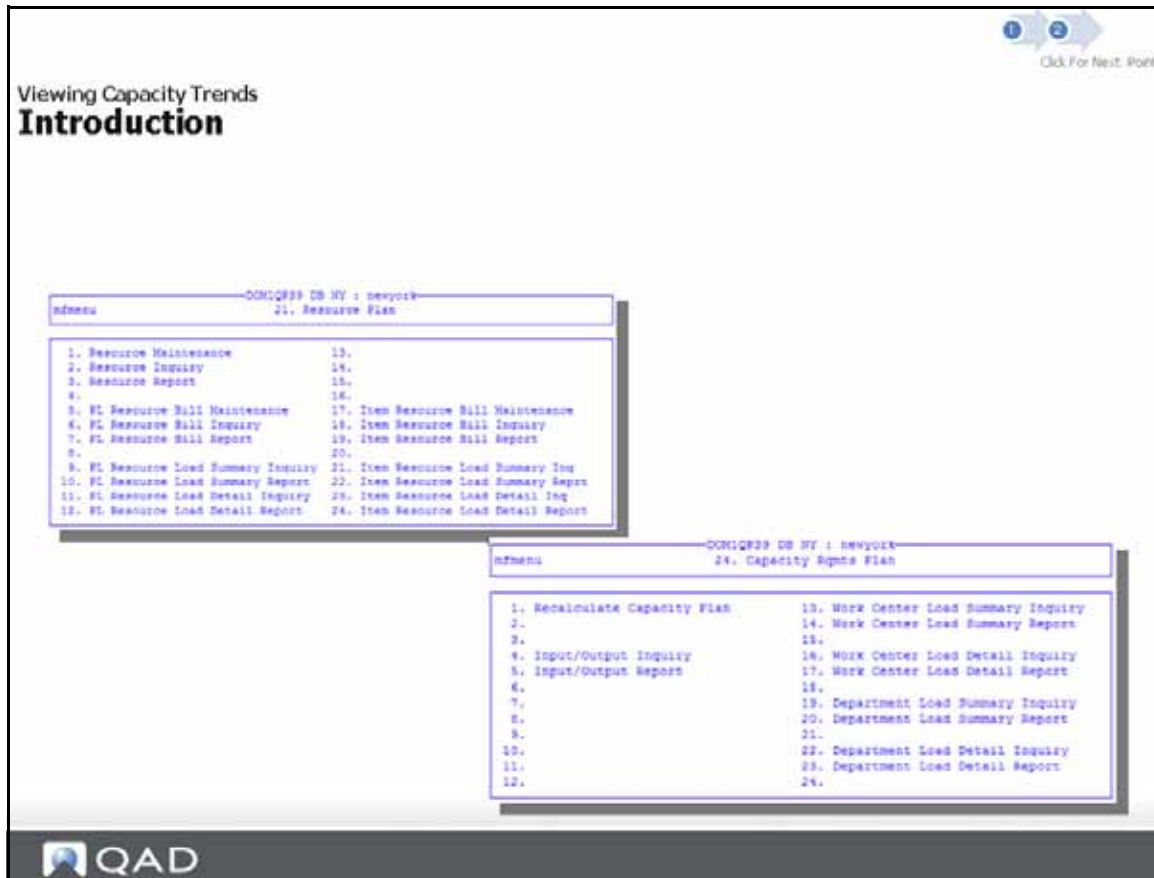
Business Scenario: Your standard capacity is eight hours per day, Monday through Friday. You need to schedule a PM or Downtime to remove capacity on Friday. You are behind schedule and wish to simulate the impact of adding additional capacity for Saturday. Assume that you cannot move and production order due dates.

Occasionally, exceptions such as overtime or machine downtime cause changes in productivity and capacity for various shifts. When you set up calendars in Calendar Maintenance, you specify a reference, such as downtime, and the number of hours per day affected. This information displays in the Calendar Exception Maintenance grid within MSW/PSW. Negative numbers can display for downtime or holidays. Holidays are days when no production is scheduled. Holidays differ from site to site.

View Capacity Trends Section



Introduction



Business Need: Visibility of capacity trends over a period of weeks or months.

In the past, you could use reports and inquiries to view capacity trends that are shown in the slide above

Required capacity calculations let you see what your capacity trends are over given periods of time. You can determine if your remaining capacity is trending down or trending up. This would be used to determine if you need an extra shift or more resources.

When you select the resource, the system displays capacity in weekly buckets for the selected resource. You can also view the capacity for all resources in the list so that you see that resource load is uniform across all resources.

Introduction (Continued)

Viewing Capacity Trends
Introduction

Click For Next Point

Resource	Horizon End	Record Type	Past Due	01/04 - 10/10	10/11 - 10/17	10/18 - 10/24	10/25 - 10/31	10/01 - 10/31
pl-mold	10/04/2010	Remaining Capacity	5.3	27	-2.7	-29.6	1.9	-12.8
PL-Mold	10/04/2010	Remaining Capacity		46.9	30.4	17.7	24.2	146.1
PL-Point	10/04/2010	Remaining Capacity	-30.1	67.3	-8.1	-60.5	34.9	9.7
Press-Ct	10/04/2010	Remaining Capacity	-11.3	152.6	142.4	126.1	133	622.5
Press1	10/02/2010	Remaining Capacity		56	56	56	56	248
Press2	10/02/2010	Remaining Capacity		56	56	56	56	248
Press3	10/02/2010	Remaining Capacity		56	56	56	56	248
WC-C251		Remaining Capacity		30.7	26.6	21.7	28.3	105.6
WC-Mold		Remaining Capacity		9.8	3.9	-8.9	-2.4	-1.1

Note: This was not available in the first release.

QAD

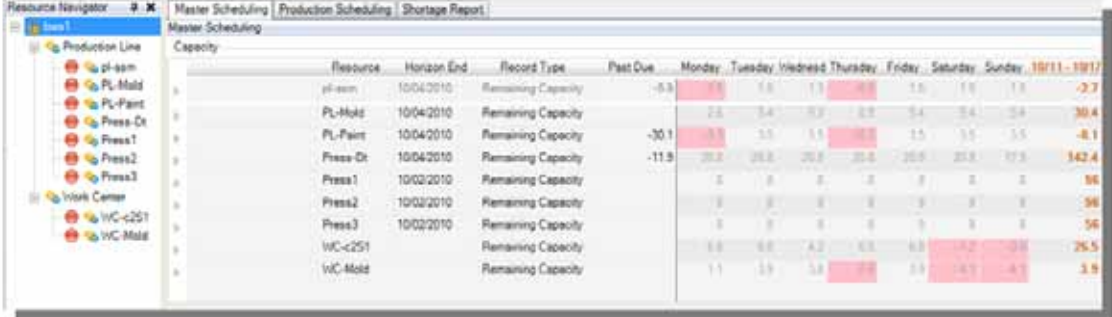
Solution: Visibility of my capacity trends over a period of weeks or months and the past due load.

Question: What decisions can be made from this summary view?

View Capacity Trends: Solutions

Viewing Capacity Trends
Introduction

- Solution
 - Visibility of my capacity issues across all my resources at a daily level
 - Shortages



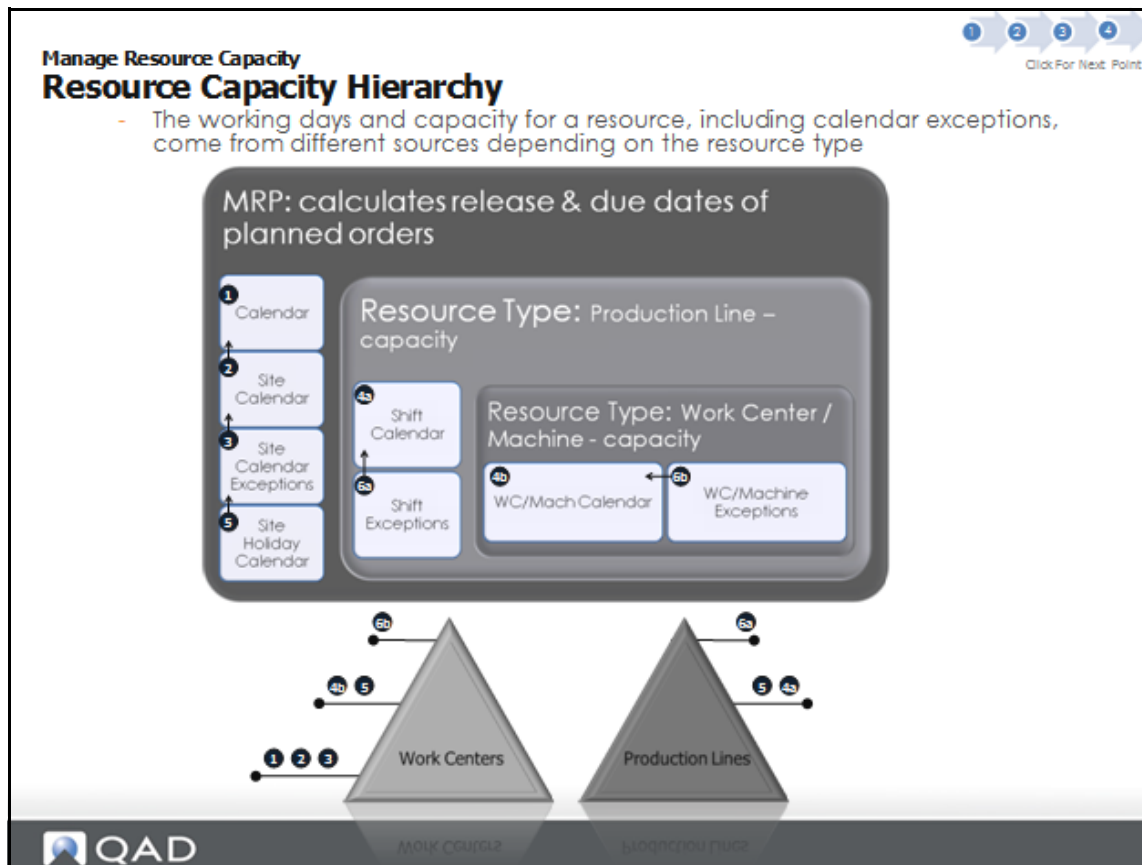
Question: What decisions can be made from this summary view?

QAD

Capacity Setup Section



Resource Capacity Hierarchy



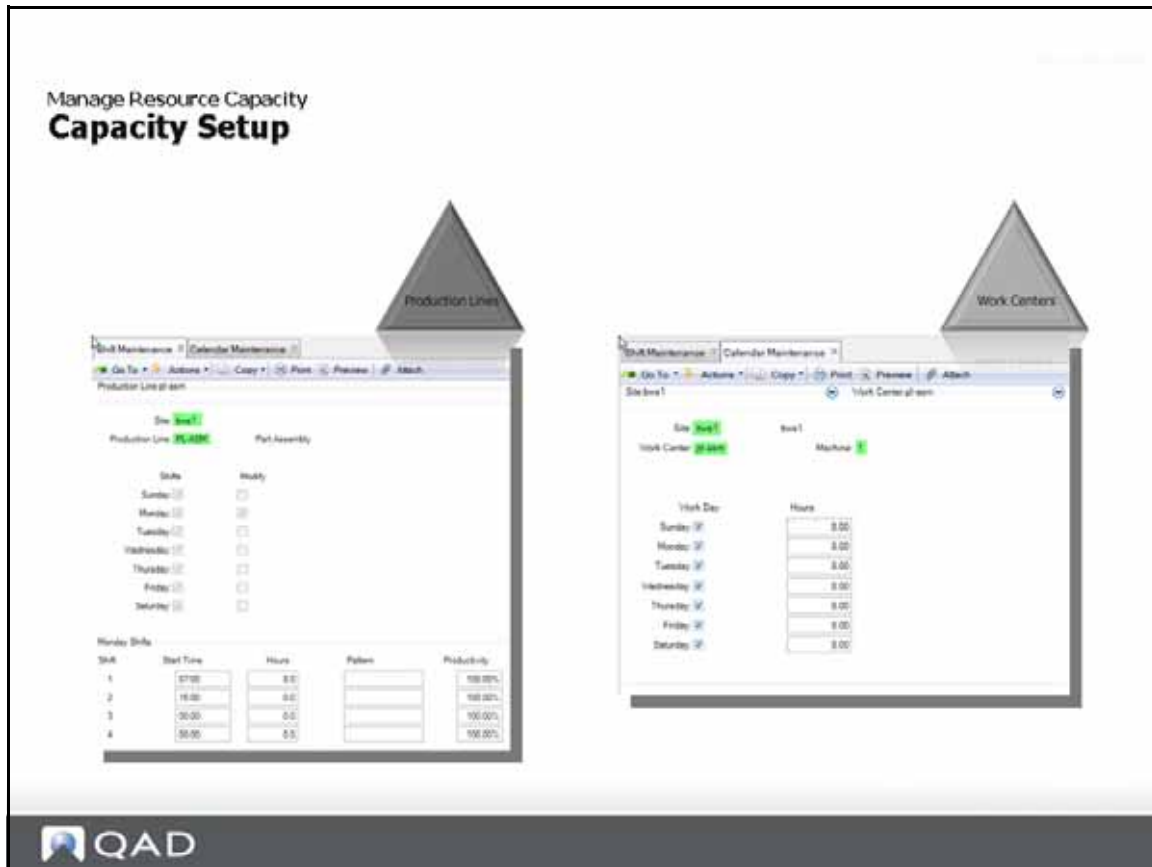
The working days and capacity for a resource, including calendar exceptions, come from different sources depending on the resource type.

Capacity for a work center first looks at calendar (no1 shown above) then site calendar (no. 2), and so on.

The capacity for production lines comes from the shift calendar.

When you set up an exception record (shift exception) for a production line, that record overrides all other records. Note that currently the site holiday record overrides all other records.

Capacity Setup



Use Calendar Maintenance (36.2.5) to specify normal work days and normal work hours for each site and its work centers. You create *shop* calendars for manufacturing using Calendar Maintenance, but you use Customer Calendar Maintenance (7.3.1) to create customer calendars. At least one calendar must exist.

You can create unique shop calendars by specifying some fields while leaving others blank. A default shop calendar has a blank site, work center, and machine. The system searches for a shop calendar in the following order:

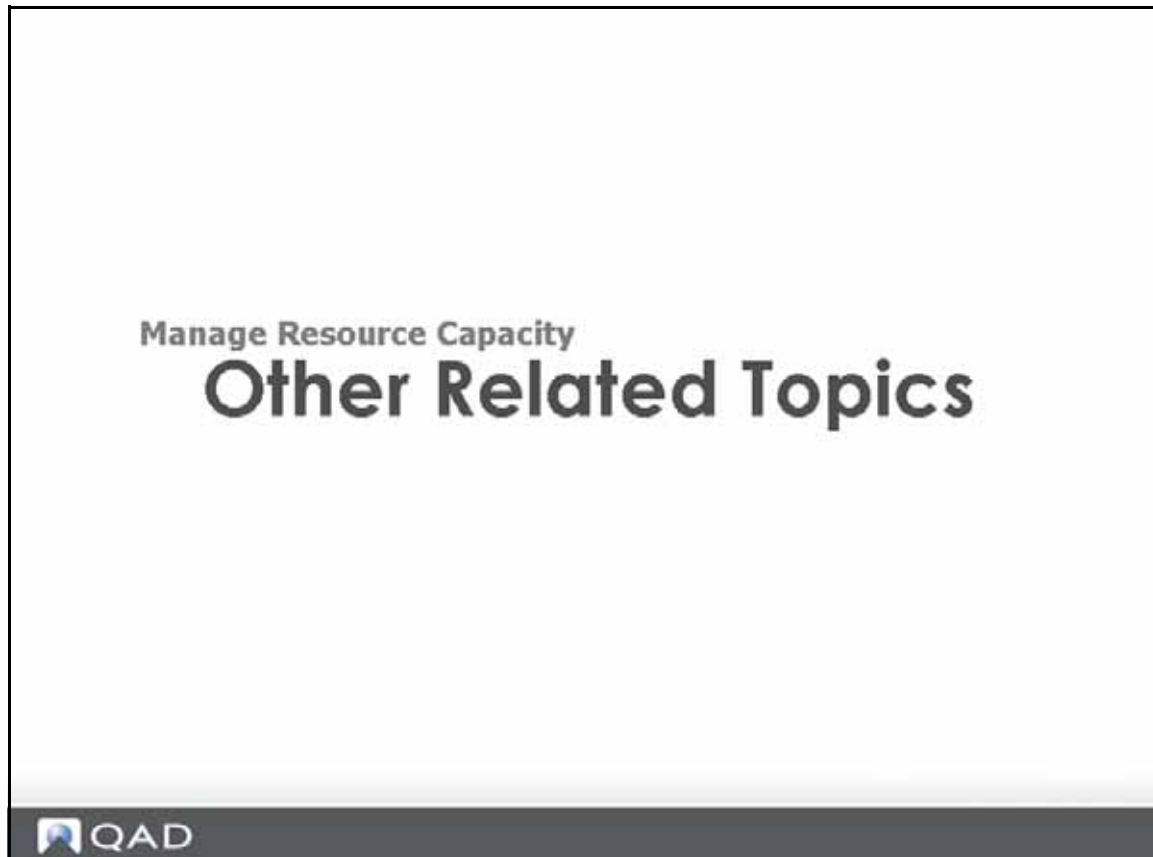
- For the specific site, work center, and machine combination
- For site and work center with a blank machine
- For site with both work center and machine blank

If shift patterns vary because of overtime, increased or reduced shifts, or plant shutdowns, enter exception hours. Set up exceptions for a date range by specifying the number of hours that are added to or subtracted from normal work hours.

Shop calendars are typically defined in this order:

- 1 Create a system calendar by leaving site and work center blank.
- 2 Create a calendar for each site with blank work centers. CRP uses this calendar to calculate capacity, including holidays.
- 3 Create work center calendars with site and work center filled in.

Other Related Topics



Other Topics

Manage Resource Capacity

Other Topics

- Create a master schedule
 - Leveling forecasted demand requirements with respect to capacity
 - Multi-level scheduling
 - Master scheduling at the resource "group" level
- Creating a production schedule
 - PSW use of calculated capacity
 - Topic covered in the production scheduling training (PSW)
- Other
 - Suggestions and comments welcome

Hands-On Lesson Section



Exercise 3: Review and Manage Resource Capacity

Exercise 3 – Review and Manage Resource Capacity

- Review capacity information to determine capacity issues
- Determine the required capacity details of a specific production order
- Increase capacity and create a calendar exception
- Questions



Review Capacity Information to Determine Capacity Issues

In this exercise, you review capacity information for the following two weeks to determine your capacity issues and opportunities. You verify your user preferences are set using the desired capacity calculation method, and use the daily net method.

- 1 In the Toolbar, click Option, then Preferences, then Display.
- 2 Uncheck the Consumer Prior Days Remaining Capacity field; then click OK.
- 3 Run a new search.
- 4 Enter Site equals 10-202.
- 5 Enter Resource equals ASSY-01.
- 6 Click Search.
- 7 **Important:** Save your changes.
- 8 Expand the Capacity Panel to view all four capacity rows.
 - **Questions:** What is your past due capacity and from which part numbers is the load coming? Where is your first capacity shortage? Where is your second?
- 9 Reviewing the Summary column for this week.

- **Question:** What is the remaining capacity?

10 Review the capacity information for next week.

- **Question:** What is the remaining capacity for the week?

Determine the Required Capacity Details of a Specific Production Order

1 In the Schedule Grid, click on the item 02301.

Hint: Do not select order 90017 because production has been reported against this order and the system does not recognize capacity.

2 Select the Date Column for tomorrow.

The Production Order Maintenance panel displays the selected production order record.

3 In Production Order Maintenance Details tab, review the Production Rate, Run Time (hours) and Required Capacity information.

- **Question:** What is the required capacity for this production order?

4 In the Setup time field of the selected order, enter setup time of 1 hour.

- **Questions:** Did you notice the required capacity of the order changed? Did you notice the capacity shortage has increased in the Capacity panel?

Increase Capacity and Create a Calendar Exception

You are over capacity for tomorrow. You should increase capacity by creating a calendar exception.

1 Tomorrow should show a capacity shortage of at least -.03 hours. If this is not the case, then ensure your item 02303 has a scheduled quantity for 48 parts for tomorrow.

2 Click the Calendar Exception tab, then click New.

3 In the Reference field, enter OT. (for overtime).

Note Every calendar exception record should have a reference entered to avoid confusion.

4 In the Date field, select date of tomorrow.

5 In the Capacity panel Shift1 field, enter 2 for two hours, then press Tab to leave the field. Notice that nothing has happened yet on the UI Capacity Panel.

6 Click Validate.

Notice that the capacity panel has updated.

7 **Important:** Do NOT save changes.

In the Capacity panel, the system increments planned capacity.

Remaining Capacity is now positive and the system removed the red visual indicator.

Note Please do not save changes, but if you saved, the calendar exception record would have been saved to the database, in Shift Maintenance, when you clicked the Save button on the workbench. This solution does not update work center capacity yet.

- 8 Delete the calendar exception record you just created.

Questions

- 1 True or False. Capacity is defined for each resource.
- 2 What is the primary indicator to over/under capacity situations?
- 3 True or False. The Capacity Panel includes required capacity and capacity information for the selected resource on each day of the schedule horizon, starting with the past date you specify.
- 4 True or False. Capacity calculations start from the current system date and include the daily capacity.
- 5 In the MSW, shortage warning status applies to both required capacity and what?

Answers

- 1 True.
- 2 Remaining capacity is the primary indicator to over/under capacity situations.
- 3 False. The Capacity Panel includes required capacity and capacity information for the selected resource on each day of the schedule horizon, starting with the *current* day.
- 4 True.
- 5 In the MSW, shortage warning status applies to both required capacity and available capacity.

Exercise 4: Compare and Contrast Capacity Calculation Methods

Exercise 4 – Compare and Contrast Capacity Calculation Methods

- Retrieve your scheduling data
- Take a snapshot of the Capacity Panel for reference
- Use the prior consume remaining capacity method
- Use the daily net capacity method
- Review capacity trends in weekly/monthly trends
- Questions



Retrieve your Scheduling Data

In this exercise, you compare and contrast the differences between the two capacity calculation methods: Consume Prior Days Remaining Capacity and Daily Net Capacity.

- 1 Enter selection criteria for site equals 10-202.
- 2 Enter Resource equals ASSY-01.
- 3 Run a new search.
The system prompts to save your changes.
- 4 **Important:** Click Ok, but do NOT save your changes from last step.

Take a Snapshot of the Capacity Panel for Reference

- 1 Expand the Capacity panel so that you can see all four rows. Maximize the rows.
- 2 Take a screen shot.
- 3 Print the screen shot for reference.

Note Optionally, you can open a second instance of the workbenches and perform the following steps.

Use the Prior Consume Remaining Capacity Method

You wish to review where you have capacity shortages where remaining capacity is negative even after prior remaining capacity is considered to start a production order early. You decide to use the Prior Consume Remaining Capacity method.

- 1 In the Toolbar, click Option, then Preferences, then Display.
- 2 Check Consume Prior Days Remaining Capacity field, then click OK.
- 3 Run a search.
- 4 Enter Site equals 10-202.
- 5 Enter Resource equals ASSY-01.
- 6 Click Search.
- 7 Expand the Capacity panel to view all four capacity rows, comparing the results to the screen shot using the Daily Net Method.
 - **Questions:** How is the past due required capacity now impacting remaining capacity for today? Where is your first capacity shortage?
- 8 Review the Summary column for this week.
 - **Question:** What is the remaining capacity?
- 9 Review the capacity information for the next week.
 - **Questions:** Why is remaining capacity (0) for several days where the required capacity is less than the planned capacity? What do the yellow indicators on the Remaining Capacity row mean?

Level Production for Your Forecasted Items

Demand is lumpy for your forecasted items, so you decide to smooth production for forecasted items and see how the severity of your capacity shortages are reduced.

- 1 Select item 02306.
- 2 Starting today, enter a quantity of 10 for each day for the next two weeks.
 For each day that you enter a quantity of 10 or modify an existing order to reduce the order to a quantity of 10.
 You carefully review the calculated values in all rows in the Capacity Panel before and after you enter the scheduled quantity for each day.
 You may have to delete or change the existing orders quantity to 0 (zero) for orders that were previously scheduled in weekly buckets.

Use the Daily Net Capacity Method

You wish to review where you have capacity shortages across all your resources in a single view. You decide to run a search for multiple resources, then use the Daily Net Capacity method.

- 1 In the Toolbar, click Option, Preferences, then Display.
 - 2 Uncheck the Consume Prior Days Remaining Capacity field, then click OK.
 - 3 Run a search.
 - 4 Enter Site equals 10-202.
 - 5 Enter Resource ID equals Group1.
 - 6 Click Search.
 - 7 In the Navigator panel, click on Site.
 - 8 Open the Capacity Panel wide enough to see all the resources.
The system displays all resources. With this capability, global visibility of resource capacity is possible.
 - 9 In the Navigator Panel, click on Production Lines.
The system displays resources for only production lines.
- Question:** Is there anything else of value that you can see with this view?

Challenge Exercise

You have now completed the basic lessons to visualize and correct item shortages and monitor resource capacity. To reinforce your new workbench skills, you decide to balance capacity to the production schedule through Sunday of next week.

- 1 Select resource Assy-01.
- 2 For this week and next week, ensure that there is no negative remaining capacity.
- 3 For this week and next week, ensure no items have negative PQOH balances; that is, no items should be highlighted in red.

Note The following list notes about this challenging exercise:

- Only two parts can be below safety stock.
- You can not move any production order due date beyond the Sunday of next week.
- The later in the week you perform this exercise, the more challenging it becomes.
- You can choose to use either the Daily Net Method or the Prior Consumption Method to assist you in achieving the end goals.
 - Hint: Using the Prior Consumption Method is easier to achieve the goal.

The following shows an example of your starting point.

Fig. 3.1
Example Starting Point

Master Scheduling Production Scheduling Shortage Report																
Master Scheduling																
Capacity																
Resource ID	Horizon End	Record Type	Past Due	Thursday	Friday	Saturday	Sunday	01/06 - 01/07	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	01/10 - 01/11
ASSY-01	01/11/2011	Remaining Capacity	-1.8	-3.3	-1.3	-0.3	0	-4.9	0	-0.4	0	0	0	0	0	-0.1
		Planned Capacity		8	8	8	8	32	8	8	8	8	8	8	8	8
		Required Capacity	1.8	9.5	9.3	8.3	5.5	32.6	10.2	8.7	7.6	7.8	5.5	6.5	6.5	52.8
		Scheduled Quantity	18	95	93	83	55	326	102	87	76	78	55	65	65	528
Schedule																
Resource ID	Item Number	Nettable QOH	Past Due	01/06	01/07	01/08	01/09	01/06 - 01/07	01/10	01/11	01/12	01/13	01/14	01/15	01/16	01/10 - 01/11
ASSY-01	02302	81		14	15	15	15	59	15	15	15	15	15	15	15	105
ASSY-01	02303	12	5	25	48	48	20	141	20	20	20	20	20	30	30	160
ASSY-01	02304	3						0								33
ASSY-01	02305	20						0								55
ASSY-01	02307	8	4	5				5								23
ASSY-01	02308			3				3	12							12

This might be similar to your starting point - several days with red indicators showing capacity shortages.

If you completed all lessons for master scheduling today - no items should currently be highlighted in red, but if they are - don't worry, you'll need to fix the shortages as part of this exercise

The following shows an example ending point.

Fig. 3.2
Example Ending Point

Master Scheduling Production Scheduling Shortage Report																
Master Scheduling																
Capacity																
Resource ID	Horizon End	Record Type	Past Due	Thursday	Friday	Saturday	Sunday	01/06 - 01/07	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	01/10 - 01/11
ASSY-01	01/11/2011	Remaining Capacity	-1.8	0	0	0	0	0	0	0	0	0	0	0	0	0
		Planned Capacity		8	8	8	8	32	8	8	8	8	8	8	8	56
		Required Capacity	1.8	6.1	7.8	5.5	5.5	24.9	10.2	8.7	7.6	7.8	5.5	6.5	6.5	52.8
		Scheduled Quantity	18	61	78	55	55	249	102	87	76	78	55	65	65	528
Schedule																
Resource ID	Item Number	Nettable QOH	Past Due	01/06	01/07	01/08	01/09	01/06 - 01/07	01/10	01/11	01/12	01/13	01/14	01/15	01/16	01/10 - 01/11
ASSY-01	02303	12	5	13	54	20	20	107	20	20	20	20	20	30	30	160
ASSY-01	02306	610				10	10	20	10	10	10	10	10	10	10	70
ASSY-01	02302	81		16	14	15	15	60	15	15	15	15	15	15	15	105
ASSY-01	02304	3						0								33
ASSY-01	02305	20		29	10			39	35							55
ASSY-01	02307	8	4	5				5					23			23
				3				3	12							12

capacity is balanced

Supply & Demand is balanced, no items in "red" with no more than 2 items below safety stock

Questions

- 1 Briefly state the purpose of the Consume Prior Remaining Capacity field and explain the difference when set to Yes and No.
- 2 Explain how this field setting impacts color changes.
- 3 The prior Consumption method determines if you have enough capacity to achieve what?
- 4 The daily net method determines if you have enough capacity to achieve what?
- 5 Where is the purpose of Calendar Exceptions?

Answers

- 1 The Consume Prior Remaining Capacity lets users specify whether prior days remaining capacity is consumed by future required capacity. When Yes, the prior days remaining capacity is consumed by future required capacity. When No, the prior days remaining capacity is not consumed by future required capacity.
- 2 When you set the field to Yes, the cell displays with yellow shading when the system uses available capacity from prior days to satisfy the required capacity. It displays with red shading when there is not enough available capacity on or in days prior to the required capacity date.
- 3 The prior Consumption method determines if you have enough capacity to achieve the due dates defined per the master schedule.
- 4 The daily net method determines if you have enough capacity on a daily basis to complete my master schedule.
- 5 Occasionally, exceptions such as overtime or machine downtime cause changes in productivity and capacity for various shifts. When you set up calendars in Calendar Maintenance, you specify a reference, such as downtime, and the number of hours per day affected. This information displays in the Calendar Exception Maintenance grid within MSW/PSW.

Exercise 5: Basic Scheduling

Exercise 5 – Basic Scheduling

- Set up a repetitive and discrete item for your site
- Add the items to a new production line ID
- Search for items in MSW
- Enter supply/demand for the items
- Adjust the schedule to resolve the supply shortages



This final MSW exercise takes you through a complete business scenario of a repetitive scheduled item and a scenario for a discrete scheduled item, starting with data setup and ending with saving your completed scheduling resolutions. The goal is for you to solidify your understanding of the following:

- Creating item supply/demand so it appears on the workbench
- Identifying an item requiring scheduling intervention
- Determining why an order is required
- Firming a production order
- Checking capacity impact

Set Up a Repetitive and Discrete Item for Your Site

You set up data in QAD EE programs first.

- 1 Set up a repetitive and discrete item number for your chosen site, using Item Data Maintenance (1.4.1).

Add the Items to a New Production Line

- 2 Add the items to a production line, using Production Line Maintenance (18.22.1.1):

- Add a run rate.
- Define a firm scheduling horizon of at least five days.

Note Add them to a production line you create; do not add them to existing production lines found in the system.

- 3 Set up shift capacity for the production line, using Shift Maintenance (18.22.1.22).
- 4 Run MSW.
 - **Question:** Why did you not see your items?

Enter Supply and Demand for the Items

- 1 Enter a forecast for your repetitive item for a few weeks, starting this week and a few weeks in the future, using Forecast Maintenance (22.1).
- 2 Enter safety stock for your discrete item, using Item Planning Maintenance (1.4.7).
- 3 Run a search in MSW.
 - **Question:** Why does the discrete item still not appear?
- 4 Run Net Change Materials Plan (23.1) for your site.
- 5 The system creates planned order for the discrete item.
- 6 Run a search again in MSW.

The system displays both the repetitive and discrete item

The concept of searching for items with supply or demand is important when understanding when and why items display or do not display in the workbenches.

Adjust the Schedule to Resolve the Supply Shortages

- 1 In MSW, search and retrieve records.
- 2 In the Schedule Grid, adjust the schedule for the repetitive item by moving dates.
 - **Questions:** What was the impact on capacity? Do you see the planned orders for future weeks displaying on the Schedule grid? Why does these quantities display on the Schedule Grid even though the orders are planned?
- 3 Select the discrete item and firm the production order.
 - **Question:** What was the impact to capacity?

Note Entering a quantity in the Schedule Grid has the same effect.
- 4 **Important:** Save your changes.

Getting Familiar with PSW

In Learning Central, the following training course corresponds to this chapter:

Planning and Scheduling Workbenches: 4. Creation of a Production Schedule - Functional Detail - 2011 Launch, code PLM11-1220.

Note This training course includes videos for both Chapter 4 and Chapter 5.

Play the video within the course with this chapter. The video informs you when to stop the video and take the hands-on lesson.

Overview

Getting Familiar with PSW UI

- ▲ **Introduction**
 - MSW UI for 2010.1 and 2011 QAD EE release
 - New features plus consolidation of 50 + legacy applications, reports, and scheduling steps into a single application
 - Flexible UI, but navigational design and amount of data available can be overwhelming at first
 - Primary workbench value is visibility to scheduling data
- ▲ **Objectives**
 - Most important aspect is to understand how to leverage the workbenches
 - Gain general understanding of each of the workbench components
 - Learn basic data retrieval approach and logic
 - Learn workbench navigation and techniques and UI customizing
- ▲ **Audience**
 - Experienced users of QAD .Net UI applications and browsers
 - First time workbench users

 QAD

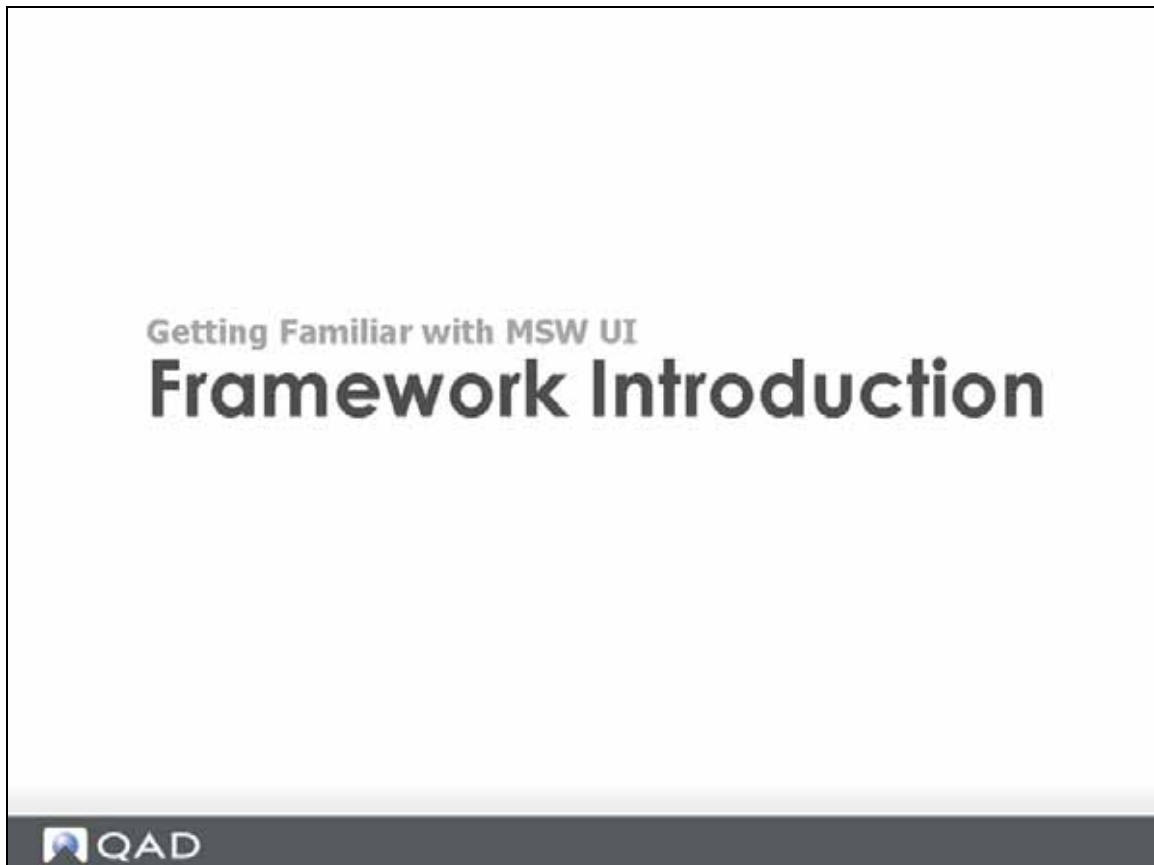
In this chapter, you will learn the fundamental PSW functions, operations, and setup.

Topics Covered

Topics Covered		
Category	Topics	Hands On
Workbench Framework Introduction		
Retrieve Scheduling Data	• Use selection criteria • Modify selection criteria • Basic rules	
Review Scheduling Data	• Sequence Grid • Production Order Browse • Supporting Data • Introduction to Capacity • Target data with the navigator • Group & Filter Data	Lesson 1
How to Manage the UI	• Add/remove fields • Create views • Create dual-monitor view • Other topics	Lesson 2



Framework Introduction Section



Framework Introduction

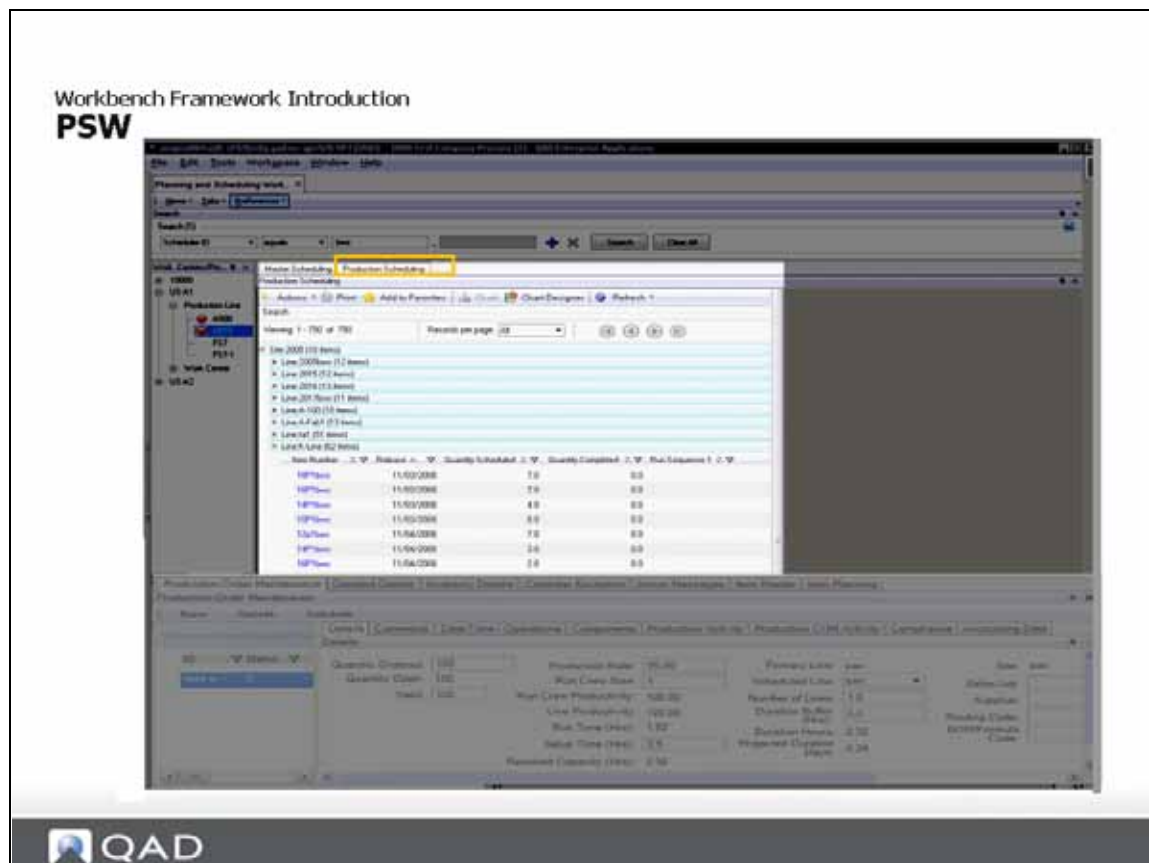
Workbench Framework Introduction
MSW

Master Scheduling (MSW)
A scheduling view for master scheduling

The screenshot shows the QAD Workbench Framework Introduction MSW (Master Scheduling) window. The window is divided into several sections. At the top, there's a title bar and a menu bar. Below the menu bar, there's a search bar and a list of tabs. The 'Master Scheduling' tab is selected, and a callout box points to it with the text 'Master Scheduling (MSW) A scheduling view for master scheduling'. The main area of the window displays a complex scheduling interface with multiple tables and data. The bottom of the window shows a 'Production Order Maintenance' section with fields for quantity, date, and other parameters.

The PSW tab sits next to the MSW tab in the Planning and Scheduling Workbenches application. For the PSW, you focus on daily, detailed scheduling, for example, a shift.

Components (Demonstration)



Resource (Navigator) Panel

Based on your selection criteria, the Resource (or navigator) panel displays the sites and resources and defaults to the first record. Resources are grouped by site and resource type; however, the PSW lets you schedule only production lines.

When you click on a production line resource in this frame, the Sequence Grid displays only those items associated with the selected resource. The Resource Navigator Frame highlights each resource with a POH shortage icon when one or more items associated with the resource have a POH shortage within the resources's defined scheduling horizon.

Search Panel

Use this area to select resources and items to schedule. The selection results are limited to sites that you can access, based on security records defined in Site Security Maintenance (36.3.15). Additionally, if you are in a multiple-domain environment, the system only displays sites in domains that you can access based on settings in User Maintenance (36.3.1)

Supporting Frames

The supporting frames support both the MSW and PSW. They include Production Order Maintenance, Calendar Exceptions, Demand and Inventory Details, and so on.

Components Demonstration (Continued)

Workbench Framework Introduction
Components

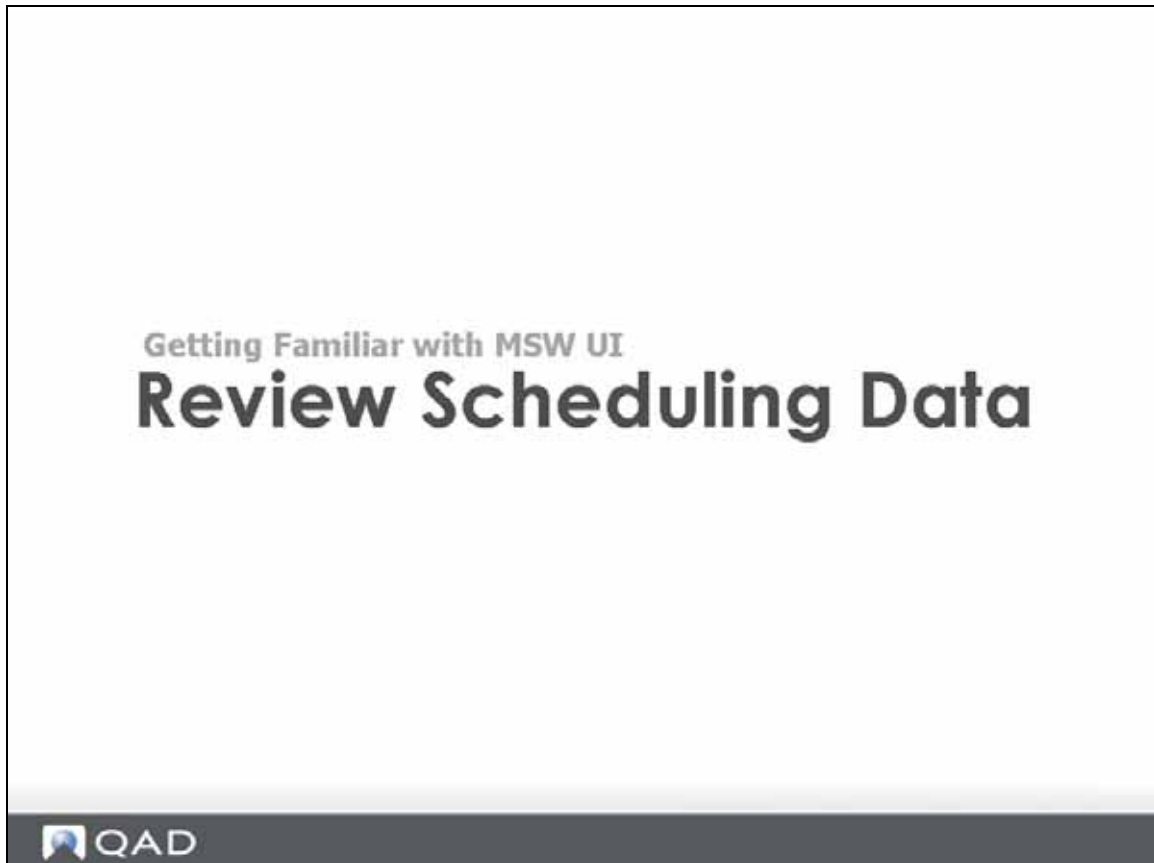
Search Panel extracts the content for both WB views

Navigator Panel drives the content focus of both WB views

Supporting Frames enables scheduling decisions for both WB views

QAD

Retrieve Scheduling Data Section



Retrieve Scheduling Data: Selection Criteria

The screenshot displays the 'Planning and Scheduling work...' window with the 'Search' panel active. The search criteria are set to 'Site equals bus1' and 'Scheduler ID equals brent'. The 'Search' button is highlighted. A callout box (1) points to the search panel, stating: '(1) Search Panel provides ability to search by 1 or more resource and site attributes'. Another callout box (2) points to the 'Search Preferences' dialog, stating: '(2) Search Preferences provides ability to select data horizons'. The 'Search Preferences' dialog shows 'History Horizon' set to 7 and 'Future Horizon' set to 60. The 'Process Operation Detail' checkbox is checked, and the 'Display Search Progress' checkbox is unchecked. The 'OK' button is highlighted.

Search Panel

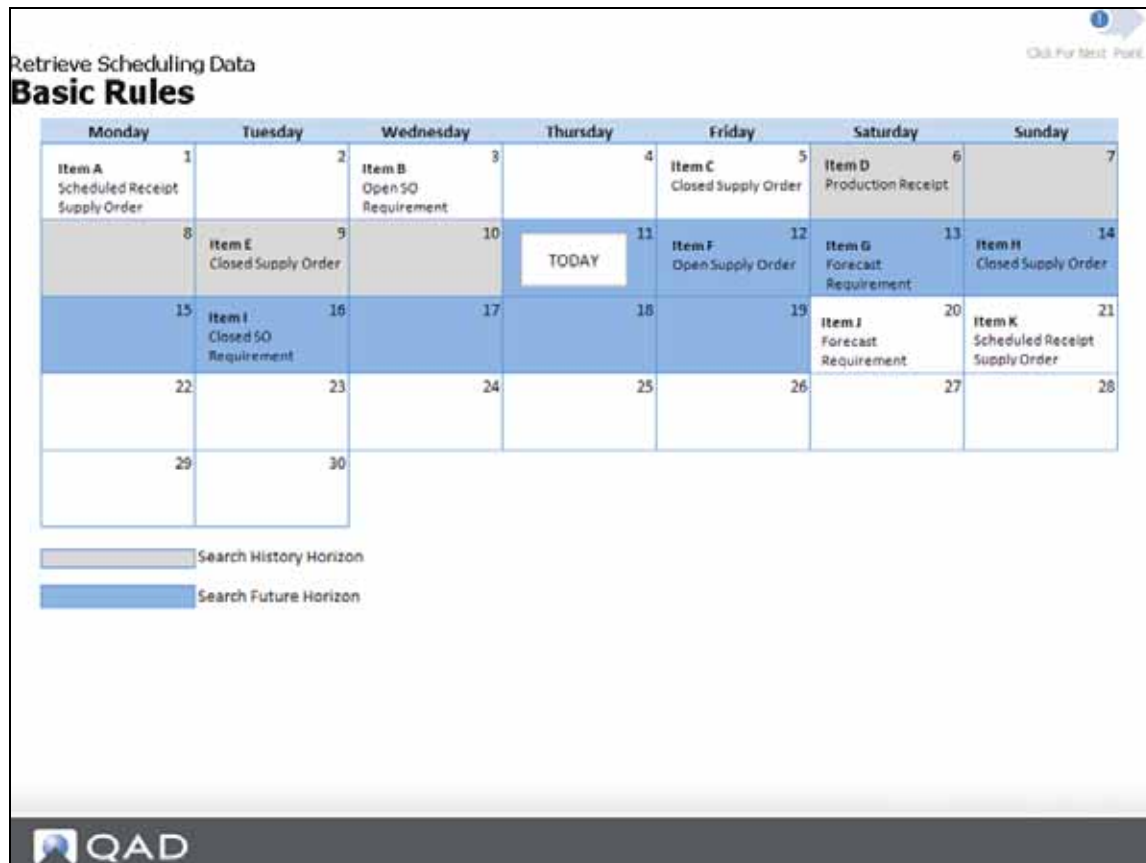
The PSW lets you build production schedules for production lines, not work centers and operations.

Search Preferences

You can use the search preferences to define the sequencing horizon. Click, Options, then Search, to find PSW sequence horizon settings.

The PSW horizon setting is based on calendar days, not the shop calendar, and always shows past due released orders.

Basic Rules



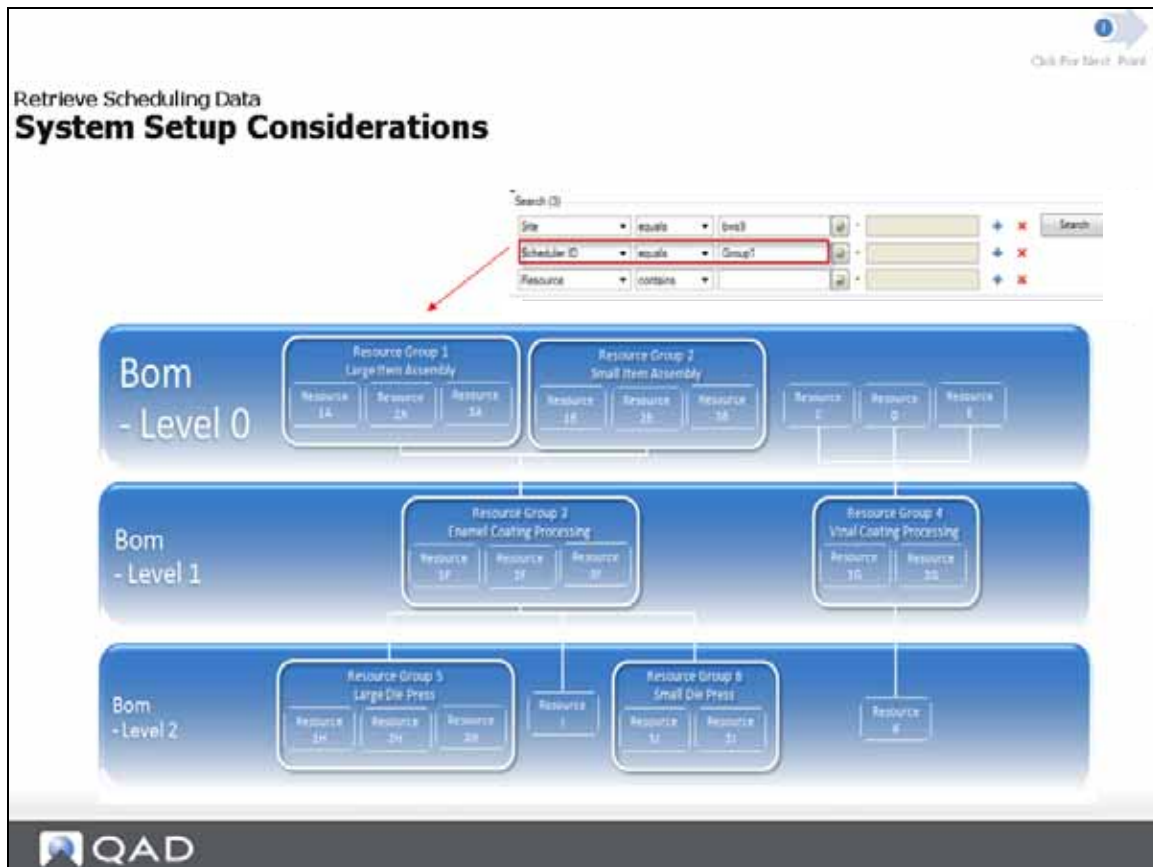
Basic Rules

Workbench search retrieves items and transaction records based on this criteria:

- Active supply/demand records
- Within the future horizon
- Prior to today
- Item activity within the history/future horizon
- Item receipts
- Item association with resource

Question: Which items would not appear on workbench?

System Setup Considerations

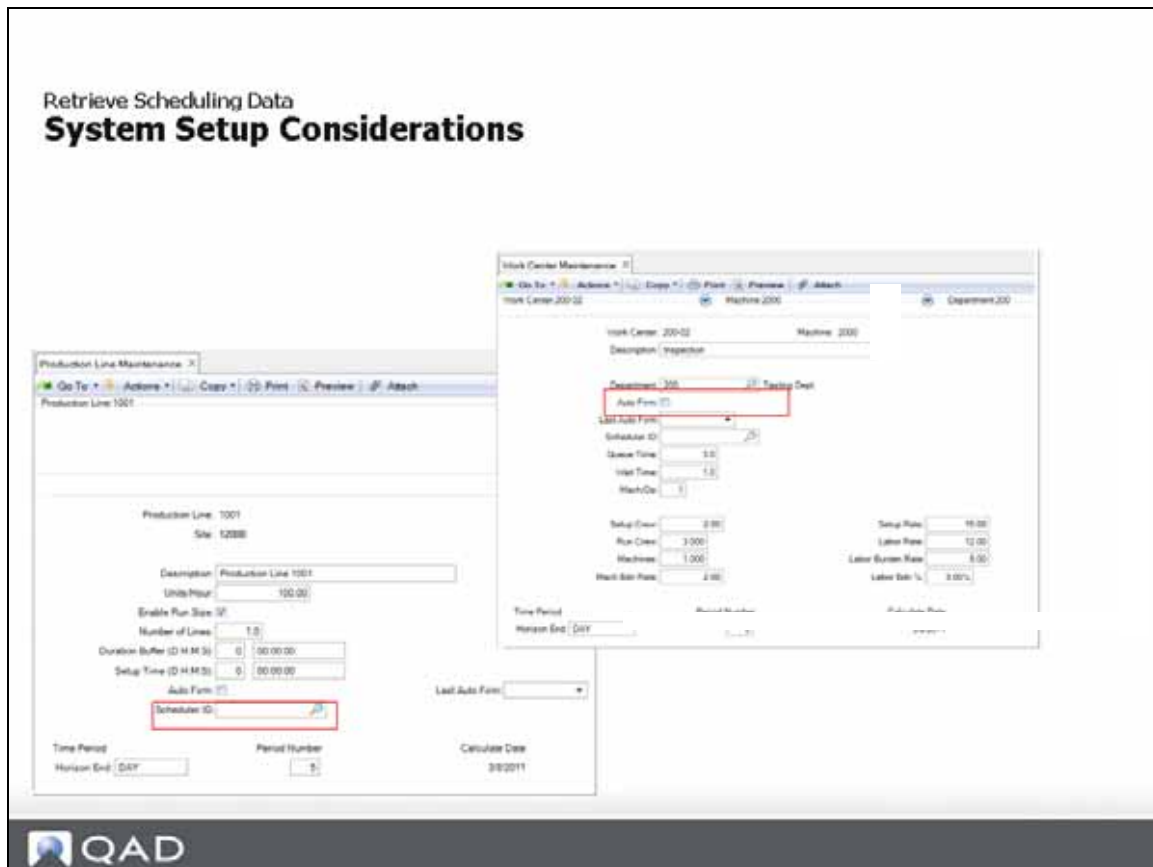


For optimum search performance with proper selection criteria, resource naming conventions are important

Question: Can resources be grouped?

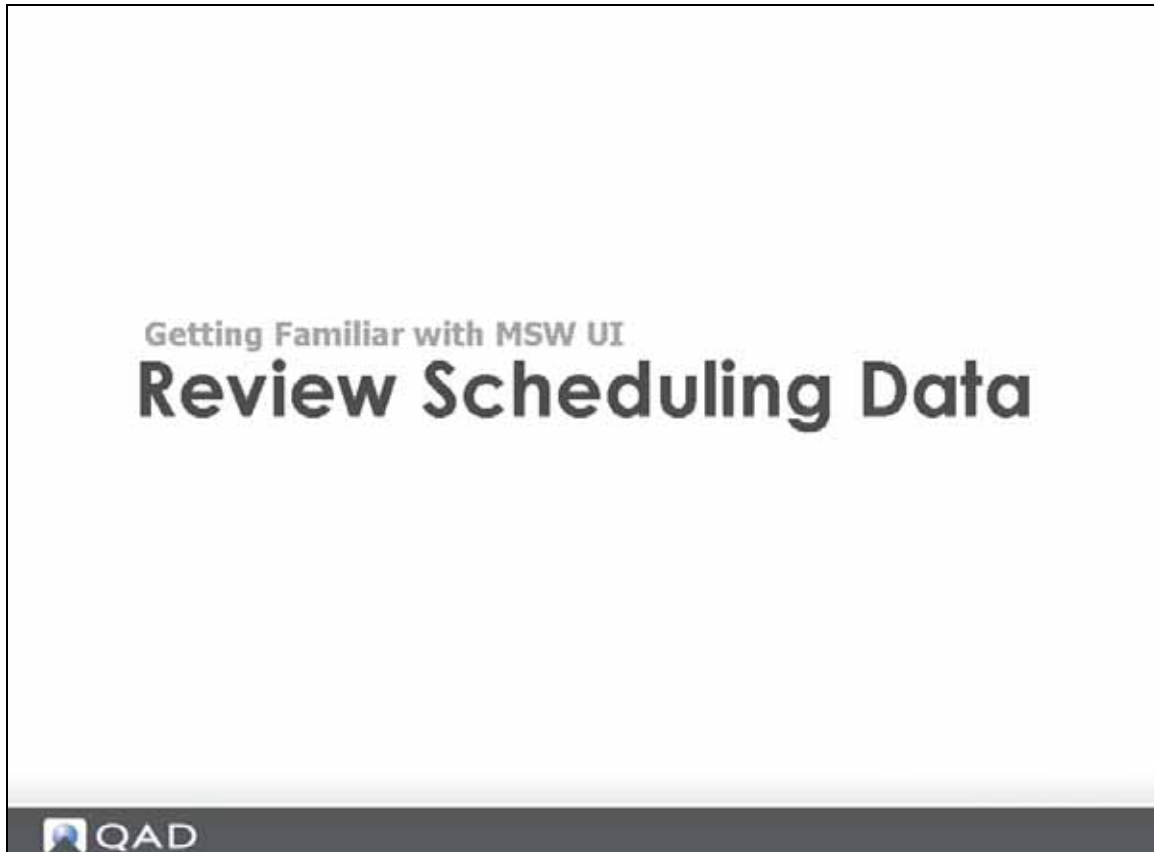
Answer: Yes, you can group resources, and in fact, it is logical to group the resources; however, in some instances you may not want to group resources.

System Setup Considerations (Continued)



You can group resources by entering a Scheduler ID in Work Center Maintenance (14.5) or Production Line Maintenance (18.1.1).

Review Scheduling Data Section





The Sequence Grid displays item supply records, that is, production orders, with bucketed quantities of the production order supply records for the item. The records represent the master production schedule for a given period. The summarized quantity values within the Sequence Grid are production order quantities.

In the PSW, you look at data from a release date perspective, not a due date perspective. Use the MSW to view from a due date perspective.

Production Order Browse

Review Scheduling Data
Production Order Browse

Planning and Scheduling Workbench

Search: [Middle/Show Search] [Save] [View] [Hide/Show Tab] [37] [Option]

Resource Hierarchy: [Production Line] [4557-01]

Master Scheduling: [Production Scheduling] [Storage Report]

ID	Qty	Size	Style	Item Number	Status	Quantity On Hand	Qty
1511	0	Large	72701	F-Box 101	E	Available	14
1512	0	Medium	72701	F-Box 102	E	Scheduled Receipt	14
1513	0	Medium	72701	F-Box 105	E	Available	14
1514	0	Small	72701	F-Box 103	E	Authorized Receipt	20
1515	0	Small	72701	F-Box 104	E	Available	5
1516	0	Large	72701	F-Box 107	F	Projected Shipment	0
1517	0	Medium	72701	F-Box 108	F	Sched Receipt Delayed	0

Production Order Browse displays all OPEN production orders retrieved in your search

QAD

Production Order Browse within the Planning and Scheduling Workbenches displays production orders with a zero open quantity if the production order is a discrete order. Repetitive scheduled orders with a zero quantity do not display; however, Production Order Browse still displays both production orders and scheduled orders.

Production Order Browse (Continued)

Review Scheduling Data
Production Order Browse

Click For Next: Post

1) Configure the view
Drag the columns you wish group your data by

2) Production Order Browse use to create dynamic queries to locate production orders meeting your criteria

3) Result - displays your data grouped by the Run Seq 1 attribute field

The screenshot shows the 'Production Order Browse' window. The main table displays production orders with columns for ID, Run Seq, Size, Style, Item Number, Status, Component Status, Quantity, and Order Date. A callout points to the 'Run Seq 1' column, indicating it can be used for grouping. Another callout points to the 'Production Order Browse' title, explaining its purpose. A third callout points to the 'Result' pane, which shows data grouped by 'Run Seq 1'.

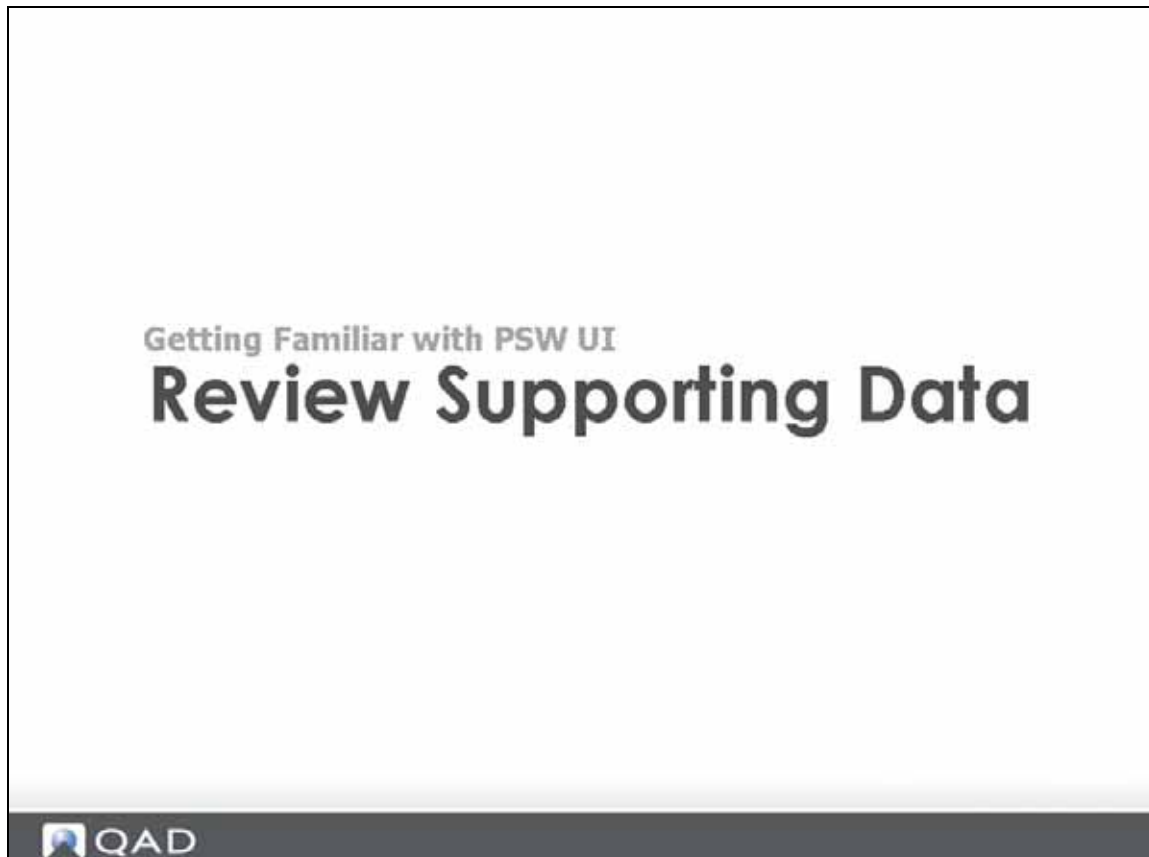
Use Production Order Browse to create dynamic queries. You can find those production orders that pertain to your scheduling issues. The system displays browse data by the Run Seq 1 field.

Run sequence fields can be used to control the sequence in which planned orders for line-manufactured items are added to a production line schedule. MRP uses run sequences when planned orders are approved for line manufacture.

If multiple items are produced on a single production line, efficiency can be improved by producing the items in a certain order. Run sequences let you control the order, or sequence, in which items are scheduled on a production line.

An item's run sequences are sorted by primary run sequence and then secondary run sequence. A two-digit numeric value should be the first characters of a run sequence. This convention provides enhanced control over the sorting of run sequences.

Review Supporting Data Section



Review Supporting Data: Item Details

Review Supporting Data
Item Details

Planning and Scheduling Workbench

Search

Resource Navigator

Master Scheduling | Production Scheduling | Shortage Report

Production Scheduling

Item 1

ASSY-01

11/11 Required: 1.8 Hours (18) Remaining: -1.8 Hours (-18)

11/12 Required: 8 Hours (80) Remaining: 0 Hours (0) Carry Forward: 1.8 Hours (18)

ID	Site	Seq	Run Seq	Style	Item Number	Sta	Component Status	Quantity Ordered	Open Quantity	Setup Time	Release
2004	0	Large	7270V	F-bus 101	E	Available	14	14	0	15/12/2010	
2017	0	Medium	7270V	F-bus 102	E	Scheduled Receipts	14	14	0	15/12/2010	
2252	0	Medium	7270V	F-bus 102	E	Available	14	14	0	15/12/2010	
80001	0	Medium	7270V	F-bus 105	E	Available	5	5	0	15/12/2010	
90005	0	Small	7270V	F-bus 103	E	Authorized Receipts	20	20	0	15/12/2010	
90003	1	Small	7270V	F-bus 103	E	Available	5	5	0	15/12/2010	
90011	0	Large	7270V	F-bus 107	F	Projected Shortage	5	5	0	15/12/2010	
90015	0	Medium	7270V	F-bus 108	F	Sched Receipt Delayed	3	3	0	15/12/2010	
11/13	Required: 6.3 Hours (63)	Remaining: -0.3 Hours (-3)	Carry Forward: 1.8 Hours (18)								

Production Order Maintenance | Demand Details | Inventory Details | Calendar Exception | Action Messages | Item Master | Item Planning

Production Order Maintenance

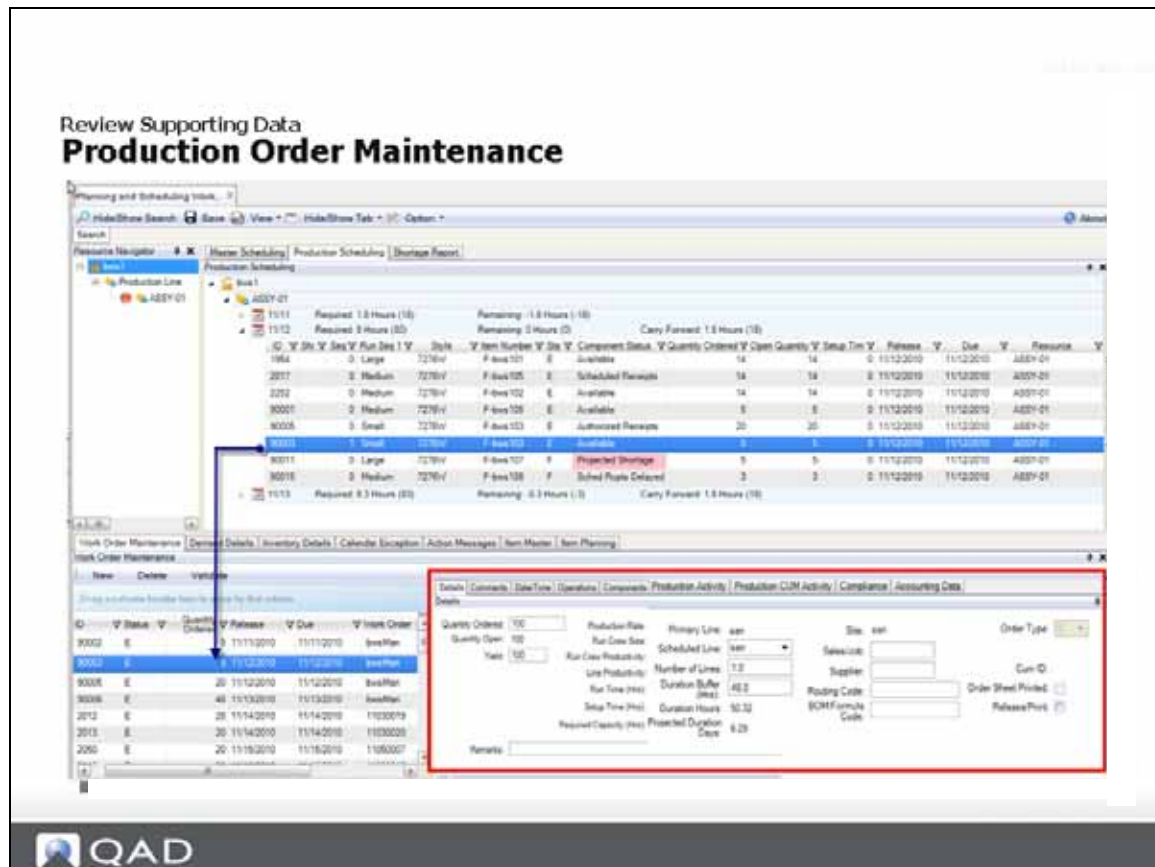
New Delete Validate

QAD

Use the supporting programs to view item details for items shown in the Sequence Grid.

For example, the Item Planning frame displays item master/planning details for a selected item. At any point during the scheduling process, you can refer to the item planning frame to find information to identify lead time, order quantity, and so on. If an item-site record exists, planning data from item-site record display for the selected item-site record. You can modify item details to include information from any field in the Item Master Maintenance.

Production Order Maintenance

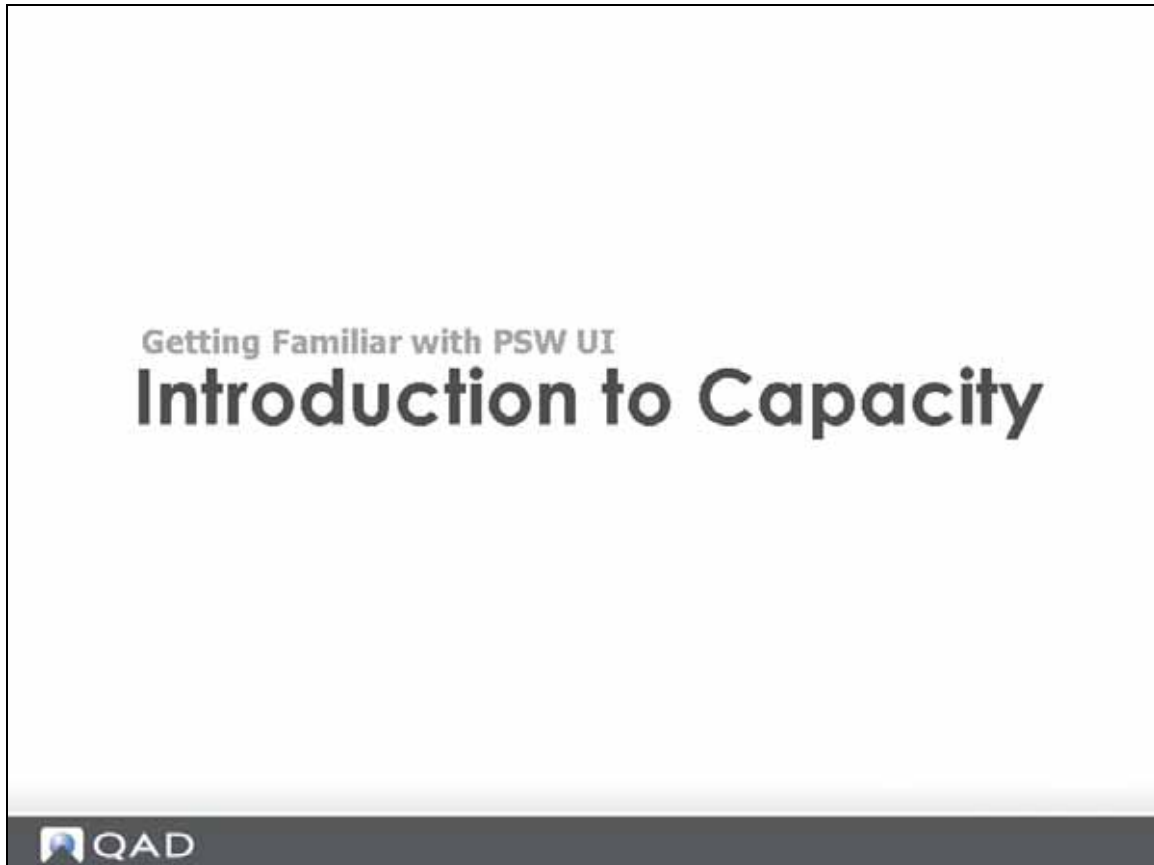


You can run Production Order Maintenance within the PSW. Production Order Maintenance lets you view individual item production order supply records for items that display in the PSW Sequence Grid.

Production Order Maintenance uses a horizontal layout and supports scheduling of work centers, production orders, and production lines. You can view, monitor, and interact with all operations of a production order independent of the Sequence Grid.

In Production Order Maintenance, the left-side displays production order summaries with the order ID, status, quantity ordered, and release date columns. For each of these fields, you can select to see all, custom, blanks, or non-blanks. If you select custom, the system displays an additional frame to enter additional filter criteria for the field. For example, if you customize data to display for the Qty Ordered field, you can specify operands so that only those orders that equal a quantity ordered of 500 display. You can also add or delete conditions.

Introduction to Capacity Section



Introduction to Capacity

Getting Familiar with PSW UI
Introduction to Capacity

Click For Next Point

Date	Required	Remaining
11/15	2.4 Hours (24)	-2.4 Hours (-24)
11/16	6.2 Hours (62)	1.8 Hours (18)
11/17	5.5 Hours (55)	2.5 Hours (25)

(1) **Required Capacity** – displays the required capacity of 5.5 hours / 55 parts scheduled

(2) **Past Due Remaining Capacity** - past due scheduled orders create a backlog in capacity requirements

(3) **Remaining Capacity** - capacity available to schedule additional work and (25) parts

QAD

PSW Remaining Capacity

Capacity calculations are focused on the release date, not the order due date.

The formula for remaining capacity available by release date/ shift is as follows:

Resource Capacity minus [Sum production orders by release date]

With the rule:

[Sumif (production order status > [planned])]

The formula for remaining capacity, in terms of the quantity that can be produced per the resource defined run rate, is as follows:

Production Line Run Rate x Remaining Capacity

Introduction to Capacity (Continued)

Getting Familiar with PSW UI
Introduction to Capacity

Click For Next Point

The screenshot displays the QAD PSW UI. The top section, 'Production Scheduling', shows a list of production orders. The bottom section, 'Production Order Maintenance', provides details for a selected order. A red box highlights the 'Required Capacity (Hrs)' field, which is set to 1.00. A yellow dashed line indicates the flow of data from the 'Required Capacity (Hrs)' field in the 'Production Order Maintenance' screen to the 'Required Capacity (Hrs)' field in the 'Production Scheduling' screen.

PSW Required Capacity

Required capacity is the amount of time to produce a production order, including both the run time and setup time.

Important Required capacity is based on the open quantity, not the original scheduled quantity.

The formula for required capacity for production orders per release date/shift is as follows:

$$\text{Prod Load} = [\text{Sum Production Order Required Capacity}]$$

With the rule:

$$[\text{Sumif (Production Order status} > [\text{P}]|\text{lanned})]$$

Introduction to Capacity (Continued)

Getting Familiar with PSW UI
Introduction to Capacity

Click For Next Point

The screenshot displays the 'Production Scheduling' window. On the left, a 'Resource Navigator' shows a tree structure with 'bws1' selected. The main area shows a table of production orders. A red box highlights the 'Required Capacity' column. A callout points to the 'Open Quantity' column, stating: 'Open Quantity - is the value used to compute the required capacity of an order'.

ID	Qty	Site	Seq	Run Seq	Item Number	Setup Time (Hrs)	Required Capacity	Open Quantity	Quantity Ordered
2106	0				F-bws101	1	2.5	15	15
90005	0				F-bws103	0	2	20	20
2351	0				F-bws102	0	1.4	14	15
90011	0				F-bws107	0	0.5	5	5
90003	1				F-bws103	0	0.5	5	5
90015	0				F-bws108	0	0.3	3	3

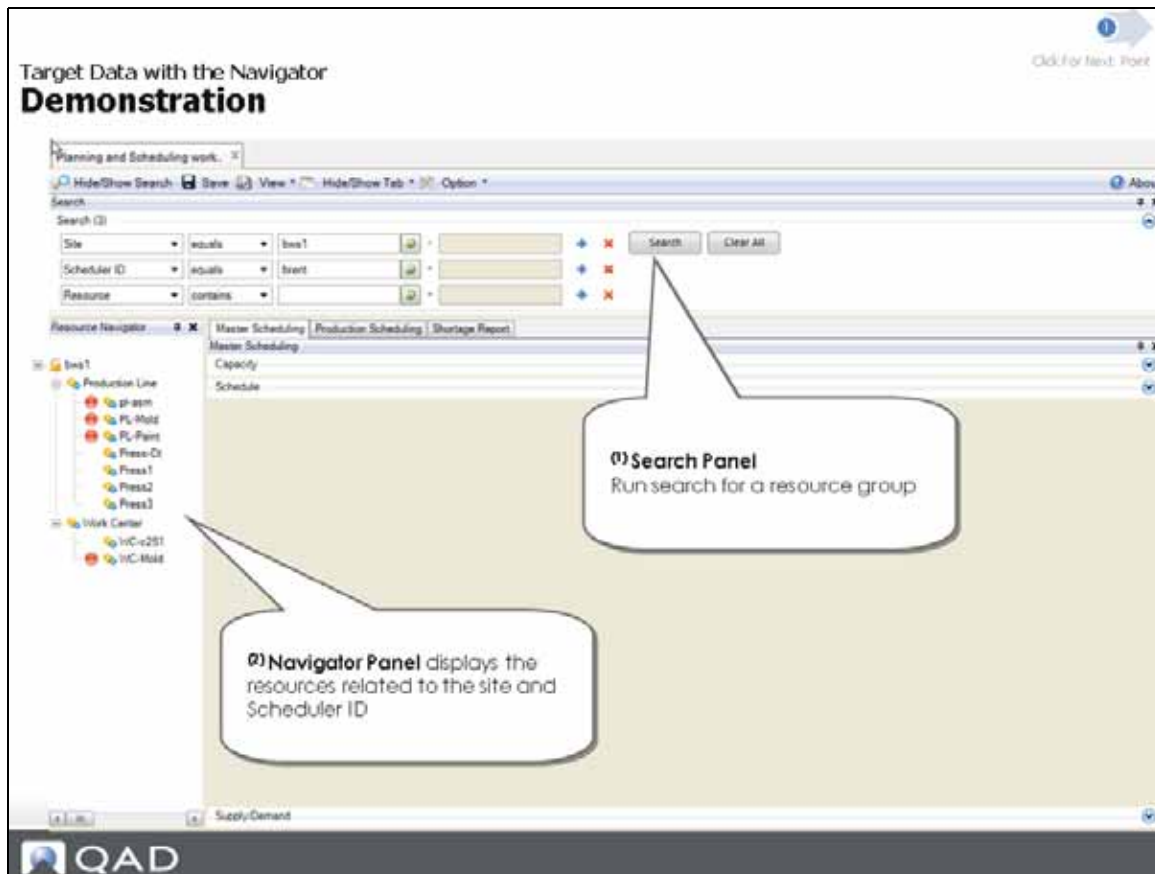
The Open Quantity column displays the value that the system uses to compute the required capacity of the order.

Question: In the screen above that shows the remaining capacity for 11/16 of (8), how is the capacity calculated? See *User Guide: Planning and Scheduling Workbenches* for the answer.

Target Data with Navigator Section



Target Data with Navigator: Demonstration



When you click at the site level in the navigator, the system displays all of the records for all production lines for that site in the Sequence Grid.

Important There is no display of work centers in the initial release of this product.

Target Data with Navigator (Continued)

Target Data with the Navigator
Demonstration (recap of prior MSW example)

Click For Next: Prod

0) Navigator Frame
Select to view all resources in view for the site

0) Schedule Grid displays all items across all my resources

QAD

Notice on Production Order Browse, the system displays all resources. The Sequence Grid responds to the navigator; however, Production Order Browse does not respond to the navigator.

Target Data with Navigator: Demonstration (Continued)

Target Data with the Navigator
Demonstration (recap of prior MSW example)

Click For Next Page

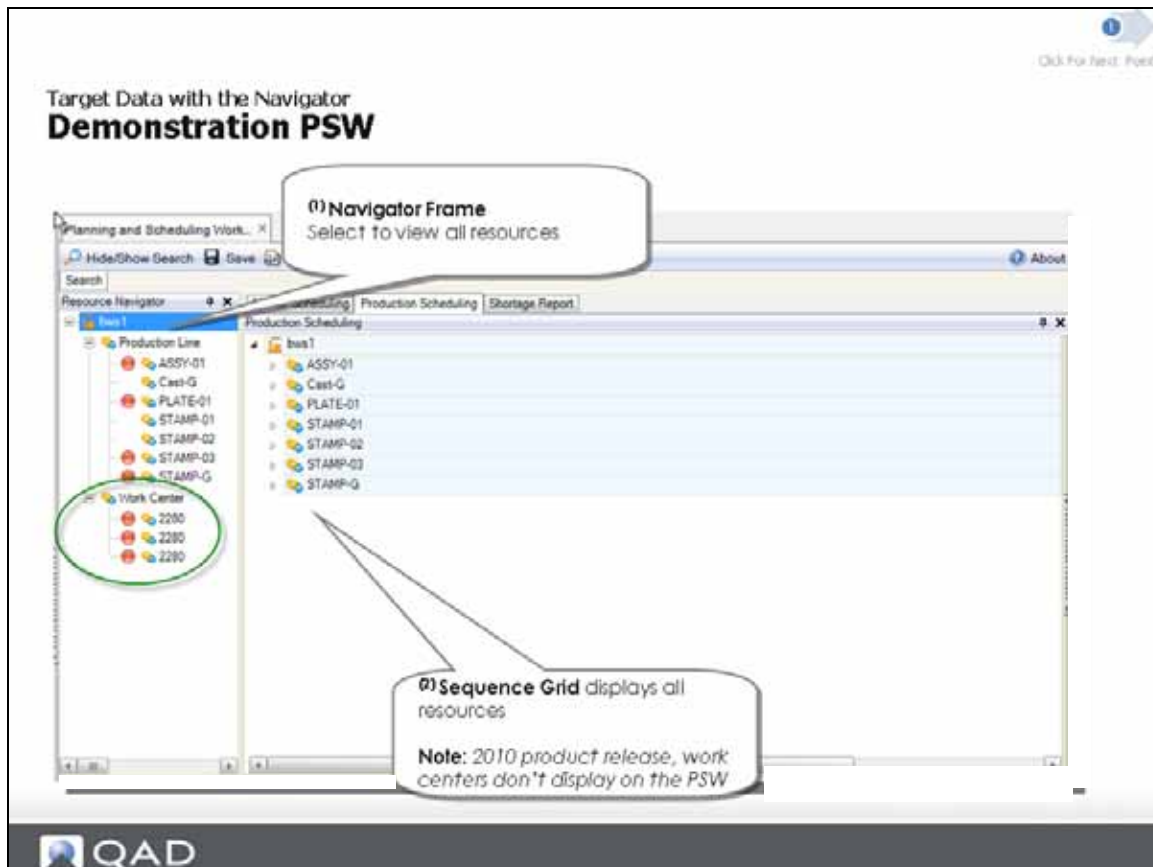
1) Navigator Frame
 Select to view a single resource

2) Schedule Grid displays all active items for the selected resource

Item Number	Nettable QOH	Past Due	08/17	08/18	08/19	08/20	08/21	08/22	08/23	08/24
F-Box101	81		5	18		11	18	10	30	30
F-Box102	27	10		18	5	20	18	18	18	18
F-Box103	11	24		18		90	20	20	20	20
F-Box104	5	16	13		75	83				
F-Box105						8	5	7		
F-Box106	410					8	15			
F-Box108	208		42			43				
F-Box107	8	40				8				

QAD

Target Data with Navigator: PSW



Demonstration PSW (Continued)

Target Data with the Navigator
Demonstration PSW

Click For Next Point

1) Navigator Frame
Select to view all resources

2) Production Order Browse
content does not change based on Resource Navigator selections

3) Sequence Grid displays only the selected resource

The screenshot displays the QAD PSW interface. On the left, the 'Navigator Frame' shows a tree view of resources including 'Cast-G', 'PLATE-01', 'STAMP-01', 'STAMP-02', 'STAMP-03', 'STAMP-G', 'York Center', '2280', and '2290'. The 'Production Order Browse' window on the right shows a list of production orders with columns for ID, Run Seq, SH, Seq, Resource, Run Seq 2, and Run Cross. The 'Sequence Grid' window at the bottom displays a grid of sequence data for the selected resource, with columns for ID, Run Seq, SH, Seq, Resource, Run Seq 2, and Run Cross.

ID	Run Seq	SH	Seq	Resource	Run Seq 2	Run Cross
90049	Blue	0	PLATE-01	Large	A	
90080	Large	0	STAMP-G	Large	A	
90084	Large	0	STAMP-G	Large	A	
90088	Medium	0	STAMP-G	Large	A	
90090	Medium	0	STAMP-G	Large	A	
90091	Large	0	STAMP-G	Large	A	
90093	Medium	0	STAMP-G	Large	A	
90095	Small	0	STAMP-G	Large	A	
90097	Large	0	STAMP-G	Large	A	
90099	Medium	0	STAMP-G	Large	A	
90100	Medium	0	STAMP-G	Large	A	
90003	Small	1	ASSY-01	Large	A	
90005	Small	2	ASSY-01	Large	A	
90001	Medium	3	ASSY-01	Large	A	
2252	Medium	4	ASSY-01	Large	A	

QAD

Filter and Sort Data Section



Sequence Grid and Production Order Browse

Filter and Sort Data

Sequence Grid and Production Order Browse

Sequence Grid
It was not intended that filtering would be used on this view during scheduling, but may be useful prior to exporting schedule to excel for shop floor consumption

Production Order Browse
Structured the view to display records by Run Seq 1 attribute

Production Order Browse
Applied a filter to display only un-sequenced production orders

The screenshot shows the QAD Planning and Scheduling Workbench interface. On the left, there is a 'Production Navigator' pane showing a tree structure of production lines and sequences. The main area is divided into two panes. The top pane, titled 'Sequence Grid', displays a table of production orders. The bottom pane, titled 'Production Order Browse', displays a table of production orders. A filter is applied to the 'Production Order Browse' view to display only un-sequenced production orders. The QAD logo is visible in the bottom left corner.

ID	Seq	Run Seq 1	Style	Item Number	Qty	Component Status
90002	1	Small	7276W	F-bus101	5	Available
90005	2	Small	7276W	F-bus101	20	Authorized Receipt
90001	3	Medium	7276W	F-bus105	5	Available
2017	4	Medium	7276W	F-bus105	14	Scheduled Receipt
2362	6	Medium	7276W	F-bus100	14	Available
1954	7	Large	7276W	F-bus101	14	Available
90016	6	Medium	7276W	F-bus108	3	Sched Rptg Delay
90011	8	Large	7276W	F-bus101	5	Projected Shortage

ID	Seq	Run Seq 1	Run Seq 2	Run Seq 3	Item Number	Setup Time (Hrs)	Site
900 (L40)	1	B			F-bus101	0	R
900 (Custom)	1	A			F-bus101	0	E
1954 (Hordanks)	3	A			F-bus101	0	E
9001	3	B			F-bus101	0	R
1952	3	A			F-bus101	0	E
1954	3	A			F-bus101	0	E
1955	3	A			F-bus101	0	E
1956	3	A			F-bus101	0	E
1957	3	A			F-bus101	0	E
2322	3	A			F-bus104	0	E

Sequence Grid

It was not intended that filtering would be used on this view during scheduling, but may be useful prior to exporting schedule to excel for shop floor consumption

Production Order Browse

The browse is structured the view to display records by Run Seq 1 attribute.

In the slide above, a filter was applied to display only un-sequenced production orders.

Filter and Sort: Production Order Browse Demonstration

Filter and Sort Data
Production Order Browse

① Focus on Resource ASSY-01 The Sequence Grid only displays resource "ASSY-01"

② Production Order Browse The record content is not changed by the Resource Navigator

③ Production Order Browse Applied a filter to display only production orders currently assigned to the resource "ASSY-01"

The screenshot shows the QAD Production Order Browse window. The left pane displays a Resource Navigator with a tree structure. The main pane shows a Sequence Grid for resource ASSY-01, listing production orders with columns for ID, Qty, Seq, Run Seq, Style, Item Number, and Qty. The right pane shows a Production Order Browse table with columns for ID, Qty, Seq, Resource, Seq 2, Run Crew, Item Number, Setup Time, and Qty. The table is filtered to show only production orders assigned to resource ASSY-01.

ID	Qty	Seq	Resource	Seq 2	Run Crew	Item Number	Setup Time (Hrs)	Qty
1995	0	4	ASSY-01	3	A	F-box101	0	E
1996	0	4	ASSY-01	3	A	F-box101	0	E
1999	0	4	ASSY-01	3	A	F-box101	0	E
1996	0	4	ASSY-01	3	A	F-box101	0	E
1997	0	4	ASSY-01	3	A	F-box101	0	E
2323	0	4	ASSY-01	3	A	F-box104	0	E

- (1) Focus on Resource ASSY-01. The Sequence Grid only displays resource ASSY-01.
- (2) Production Order Browse: The record content is not changed by the Resource Navigator
- (3) Production Order Browse: Applied a filter to display only production orders currently assigned to the resource ASSY-01.

Hands-On Lesson Section



Exercise 1: Enter Search Selection Criteria and Review Results

Exercise 1- Enter Search Selection Criteria and Review Data Results

- Start the PSW
- Select items on the Sequence Grid
- Review data in PSW
- Review data in supporting frames
- Questions



In this exercise, you will learn how to retrieve data and review data results in the Production Scheduling Workbench view. You will also learn the difference between the Production Scheduling Sequence Grid and Production Order Browse.

Start the PSW

- 1 Ensure that MSW/PSW are enabled by setting the Use Plan/Sched Workbenches field to Yes in QAD EE Site Maintenance (1.1.13).
- 2 Start the .NET UI, then navigate to the QMI environment.
- 3 In the .NET UI Menu Navigator, enter Production Scheduling Workbench. You can also find the application by:
 - a Using the updated EE process maps (not available in SE process maps)
 - b Looking under the Manufacturing / Repetitive/ Advanced Repetitive/ Schedule Menu, then selecting Production Scheduling Workbench.
 - c Looking under the Forecast / Master Plan / Production Scheduling Workbench Menu.
- 4 Add the program to your Menu Favorites in .NET UI for quick future reference.

Retrieve the Scheduling Data using the Search Panel

- 1 Enter selection criteria as Site equals 10-202.
- 2 Enter Resource equals ASSY-01.
- 3 Click Search.
The system retrieves item/resource records.
- 4 Minimize the Search Panel.

Become Familiar with the Sequence Grid

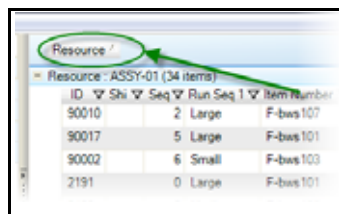
- 1 Select the Production Scheduling tab.
The system displays resource ASSY-01 with several date rows.
- 2 Expand the Release Date rows and review the records.
 - **Question:** What do the records represent?
 - **Hint:** What is in common related to the work order status of each order? Specially, which order statuses are not displayed on this view?
- 3 Right-Click on the resource ASSY-01 row, use the Expand/Collapse All option and click Collapse. Next, try Expand.
The system collapses and expands all date rows.
Use expand/collapse functions as a method to quickly view all data or collapse all data and then target a specific release date.

Become Familiar with Production Order Browse

You are ready to review data in Production Order Browse. You can structure the Production Order Browse view to look similar to the Sequence Grid view, which is structured by resource and release date.

- 1 In Production Order Browse, drag the Resource Column to group your data by resource.
The system groups the data by resource. Data should look like the following:

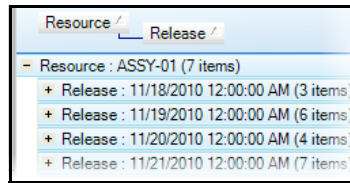
Fig. 4.1
Results of Dragging Resource Column



ID	Shi	Seq	Run Seq	Item Number
Resource - ASSY-01 (34 items)				
90010	2	Large		F-bus107
90017	5	Large		F-bus101
90002	6	Small		F-bus103
2191	0	Large		F-bus101

- 2 Drag the Release Date column and drop it below the Resource group icon.
The system groups data by the resource/release date. Data should look like the following:

Fig. 4.2
Results of Dragging Release Date Column



Resource	Release
Resource : ASSY-01 (7 items)	
+ Release : 11/18/2010 12:00:00 AM (3 items)	
+ Release : 11/19/2010 12:00:00 AM (6 items)	
+ Release : 11/20/2010 12:00:00 AM (4 items)	
+ Release : 11/21/2010 12:00:00 AM (7 items)	

- 3 Compare the data displayed in the Sequence Grid, on the left, to the Production Order Browse, on the right. Compare the first release date row displayed on the left and right.
 - **Question:** Is there any difference in the number of release date rows? Do you remember why the Sequence Grid, on the left, only shows a couple release dates rows, but the browse on the right shows several more rows?
 - **Hint:** There is a setting for this in User Preferences to control this that is discussed later in this chapter.

Review Customer Demand Records for the Item You are Scheduling

- 1 Select an order for item 02301 on the Sequence Grid.
- 2 Select the Demand Details tab.
The system displays the item demand records.
- 3 Select another item on the Sequence Grid.
The system displays the item's demand records.
 - **Question:** How is this information useful when making decisions regarding changing the release date of an item?

Review Other Production Orders

- 1 On the Sequence Grid, select item 02308.
- 2 Select the Production Order Maintenance tab and review the other planned orders for the item.
The system displays three or four production orders for the item.
 - Notice the order status for the other orders. Do these orders display on the Production Order Browse frame. See the next step to find out why.
- 3 In the Production Order Browse frame, filter on item 02308, by right-clicking on the icon in the item number column, then selecting 02308 from the drop-down list.
The system displays production order record ID 90015.
 - **Question:** Not all orders for 02308 display on the Production Order Browse frame, but all display in Production Order Maintenance, why?
 - **Hint:** The reason for this was discussed in the PPT training recording and has to do with the production order status.
- 4 In Production Order Maintenance, (F)irm the planned order for the QTY of 12.
The order now displays on the Production Order Browse frame.

- Only planned orders display on the Production Order Browse and not in the Sequence Grid.
- You can still view planned orders by using the Production Order Maintenance tab.
- By changing the order status from P to (F)irm, you saw how the production order ID immediately displayed on the Production Order Browse frame.

Note For the initial 2010 Release, the order you firmed does not display until you re-apply the filter for the 02308 item number. Re-apply the filter for the 02308 to see the order you firmed.

Questions

- 1 True or False. The Planning and Scheduling Workbenches have a Search mechanism that extracts data for both the MSW and PSW but a Navigator Panel that drives content only for work centers.
- 2 Name at least two criteria for which the workbench searches and retrieves item transaction records.
- 3 When retrieving data, how can you retrieve production lines or work centers in groups?
- 4 The Sequence Grid displays all production orders with an open quantity with a status greater than what?

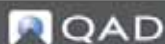
Answers

- 1 False.
- 2 Search criteria records include: active supply/demand records within the future horizon, prior to today; item activity within the history/future horizon; item receipts, and items associated with the resource.
- 3 To group resources, enter a unique Scheduler ID for each group in Production Line Maintenance or Work Center Maintenance.
- 4 The Sequence Grid displays all production orders with an open quantity greater than P(lanned) and less than C(losed).

Exercise 2: Capacity Calculations, Navigator Panel, and Data

Exercise 2 - Become Familiar with Capacity Calculations, Navigator Panel, and Manipulating Data

- Understand capacity information and calculations displayed
- Determine the required capacity details of a specific production order
- Retrieve data using the Search Panel
- Use the Navigator Panel to target resources
- Apply a filter to the Production Order Browse
- Look for all items numbers with certain ID attribute/prefix/suffix
- Group data by resource in Production Order Browse



In this exercise you will become familiar with:

- Displayed PSW capacity calculations
- The Navigator Panel and how it relates to the PSW Sequence Grid and Production Order Browse
- Filtering, sorting, and grouping data

Note This exercise is a continuation from a prior lesson in this chapter; refer to prior lesson to use the same Search selection criteria if you have closed the workbench.

Become Familiar with Capacity Information and Calculations

In this exercise, you review capacity information for past due scheduled production orders.

- 1 In the Sequence Grid, review the first Release Date Row for <Yesterday>.

The system displays 1.8 required capacity and displays three production orders records with a release date of yesterday.

- Compare the required capacity to the remaining capacity information.
- **Question:** What is your conclusion of the information displayed?

- 2 Determine how the required capacity quantity of (18) was calculated.

- Notice that order ID 90010 has a schedule quantity of 10 but an open quantity of 4.

- **Question:** Which value is used in the required capacity calculation?
- 3 Review the Release Date row for <today>.

The system displays 6.1 hours and several firm scheduled orders.
 - 4 Review the following Release Date row for <today+1>.
 - **Questions:** What is the remaining capacity? How many more parts can be scheduled?
 - 5 Enter 1(one) hour setup time for Order ID 90008 in the PSW Sequence Grid Setup Time (hours) field.

The system updates the required and remaining capacity.

This demonstrates the interactive nature of the PSW Sequence Grid and the recalculation of the capacity.
 - 6 Remove the setup time hours you entered above back to 0 (zero) setup hours.

The system displays the original capacity calculations.

Drill Down into Order Detail to Review Required Capacity

You wish to determine the required capacity details of a specific production order.

- 1 In the Sequence Grid, find order ID 90010 and item number 02307.
- 2 In Production Order Maintenance, review the production rate, run time (hours) and required capacity information.

The system displays the required capacity as .4 hours.

 - Notice that the required capacity is based on the open quantity of the order.
- 3 Enter the setup time as 2 hours, then Tab to another field to exit.

The system displays a strike-through for the value you entered. Required capacity does not change.

 - **Question:** Why does the Required Capacity not change?
 - **Answer:** The order is currently in production, the system no longer includes setup time in required capacity.

Retrieve Scheduling Data using the Search Panel for Multiple Resources

- 1 Enter selection criteria Site equals 10-202.
- 2 Enter Scheduler ID equals Group1.

The system prompts to save.
- 3 **Important:** Do not save.
- 4 Minimize the Search Panel.

Use the Navigator Panel to Target Resources

You ran a search that pulled data from multiple production lines and work centers. You are now ready to use the Navigator Panel to target the resources you wish to view and manage on the PSW.

- 1 In the Navigator Panel, expand `site`, `production line`, and `work center` lists.
The system displays several production lines and work centers. The resources with the red bulb indicator depict resources with scheduling issues to address.
- 2 In the Navigator Panel, select `site`.
The PSW Sequence Grid displays all items scheduled across all resources in view.
 - **Question:** Do work centers display on PSW?

Note The 2011 product release does not display work centers on the PSW.
- 3 In the Navigator Panel, select `production line`.
The Sequence Grid displays all items scheduled across all production lines.
- 4 In the Navigator Panel, select `ASSY-01`.
The PSW Sequence Grid displays all items scheduled on the selected resource. This demonstrates the ability to use the navigator to focus data on the PSW.
- 5 Review the production orders in PSW Production Order Browse.
The Production Order Browse displays orders for all production lines.
 - **Question:** Do you see production orders for other resources other than `ASSY-01`?

Note Production Order Browse is not impacted by the Navigator Panel. The Production Order Browse shows all resources whether you selected that resource in the Sequence Grid or not.

Apply a Filter to the Production Order Browse

Production Order Browse contains production order records for production lines; however, you wish to display only production orders for a specific production line. You decide to apply a filter to the Production Order Browse.

- 1 In the Navigator Panel, select production line `ASSY-01`.
The PSW Sequence Grid displays only items for the selected production line. Production Order Browse displays all items/orders/production lines.
- 2 In the Production Order Browse Resource column, apply a filter on `ASSY-01`. To do this, right-click on the filter icon in the column, then select `ASSY-01` from the drop-down list.
Production Order Browse only displays orders for the selected production line.
 - **Question:** When might such a filter be useful?
- 3 Remove the filter on the Resource column by selecting `(All)`.

Look for Items with Certain ID, Attribute, Prefix, or Suffix

- 1 In the Sequence Grid, click the Item Number column Filter icon.
- 2 Select `custom`.
- 3 In the Operand field, select `contains`, then an Operand field value of `02`, then click OK.
The system displays a list of parts which match this selection,
 - Try additional columns upon which to apply a filter. Think of scenarios applicable in your environment,
- 4 Remove the item filter.

Group Data by Resource in Production Order Browse

The Production Order Browse contains production order records for many production lines; for this exercise, you decide to display production orders for a specific production line.

- 1 In the Navigator Panel, select `production line`.
The Sequence Grid displays all production lines.
To see orders by lines, you apply grouping by resource; go on to the next step.
- 2 In Production Order Browse in the Resource column, drag the column to the shaded area with the message: `Drag a Column here to group by that column`.
Production Order Browse displays data grouped by resource (production line).
Note The Sequence Grid should look similar to the Production Order Browse in structure. There are many business applications for filtering and grouping data on the Production Order Browse. This training guide provides illustrations in other training topics.

Questions

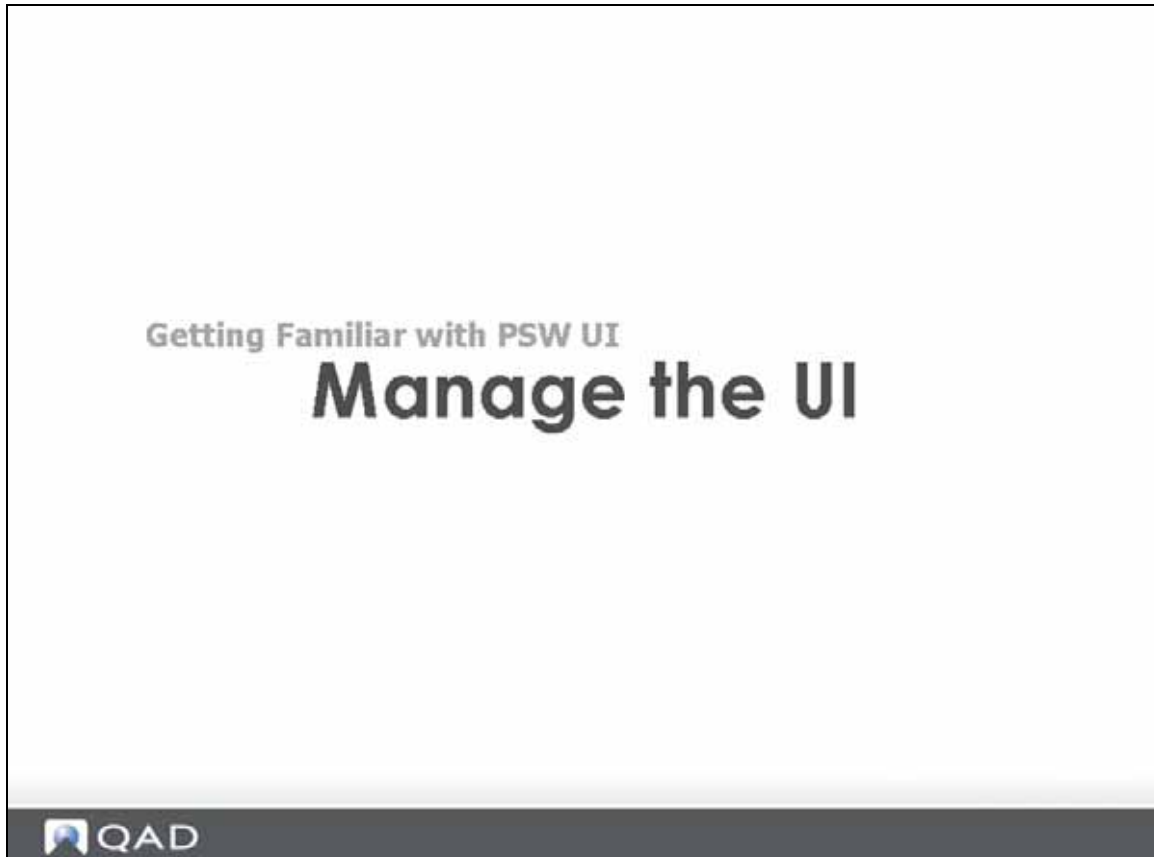
- 1 Is required capacity calculated by order release date or due date?
- 2 Based on your selection criteria, the Navigator Panel displays the sites and resources and defaults to what?
- 3 True or False. The PSW lets you schedule both work centers and production lines.
- 4 On the Sequence Grid, resources are grouped by site and what?
- 5 True or False. When you click on a production line resource in the Navigator Panel, the Sequence Grid displays all items associated with every production line assigned to the Scheduler.

Answers

- 1 Required capacity is calculated by Release date.
- 2 Resources default to the first record.
- 3 False. The PSW lets you schedule only production lines.

- 4 In the Sequence Grid, resources are grouped by site and production line.
- 5 False. The Sequence Grid displays only those items associated with the selected resource that you clicked on in the Navigator Panel.

Manage the UI



Manage the UI: Overview

Manage UI

Overview

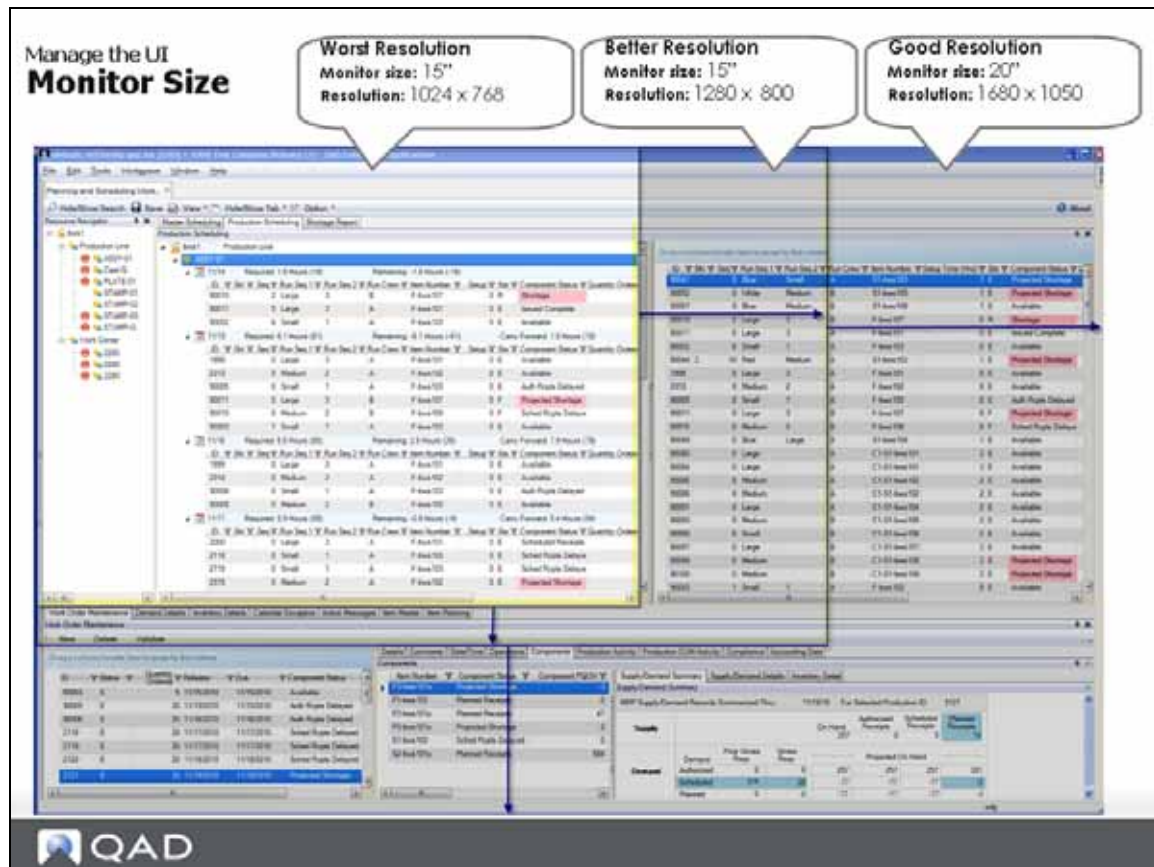
- ▲ Every user has different needs and personal preferences
 - Monitor Size
 - General Housekeeping
 - Add/Remove Fields
 - Create Views
 - Use Auto-Hide
 - Create a Dual Monitor View
 - Other Topics

 QAD

Monitor Size Section



Monitor Size



Small monitor size/resolution reduces usability.

Usability improves or worsens with monitor and resolution attributes as follows:

Table 4.1
Attributes and Usability

Attribute	Results
Small monitor	Reduces usability
Low resolution	Reduces usability
Higher resolution	Improves usability
Larger monitor	Improves usability

Add or Remove Fields



Add or Remove Fields

Manage the UI
Add/Remove Fields

(1) The default columns are identical on both the Sequence Grid and Production Order Browse

(2) User definable Production Order Browse columns Allows user add/move columns

(3) User definable Sequence Grid columns Allows user add/move columns

(4) IT dept customize list, add/remove fields via Browse Maintenance.

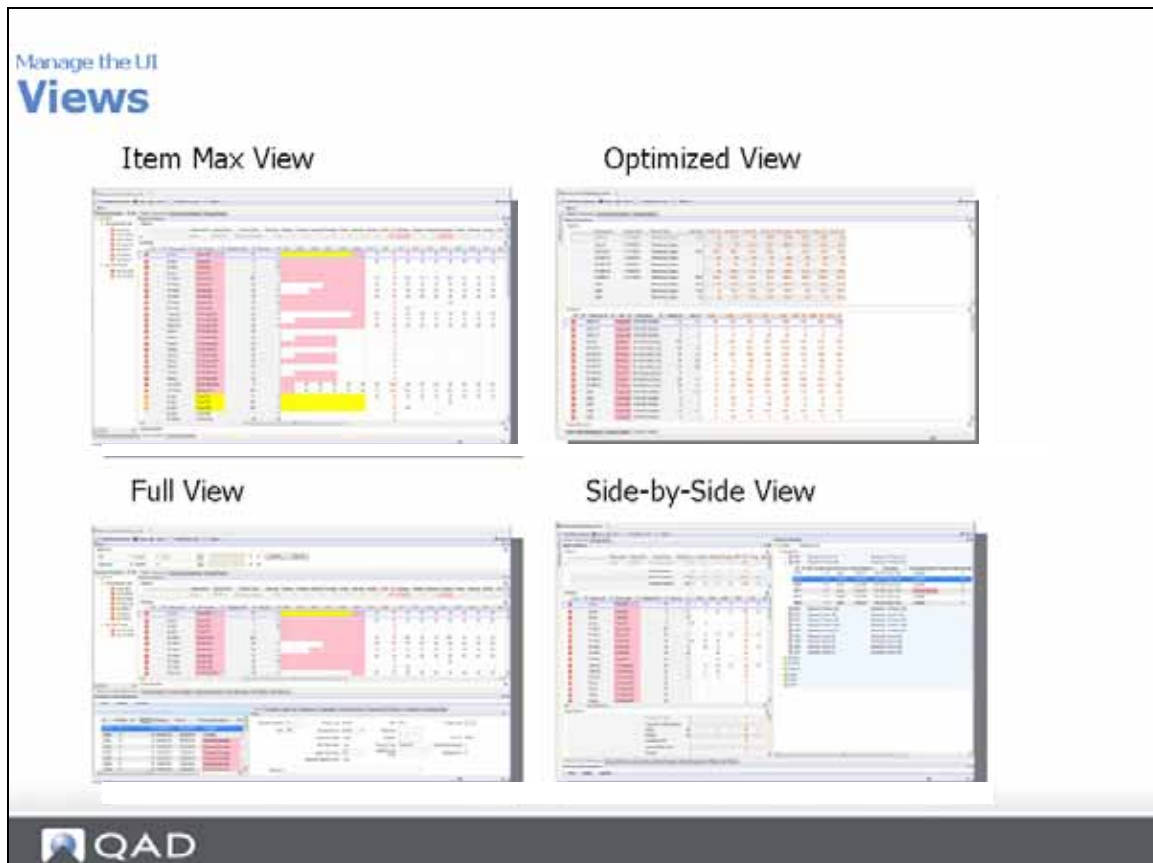
The screenshot shows the 'Add/Remove Fields' dialog in the QAD Planning and Scheduling Workbench. The dialog has two tabs: 'Sequence Grid' and 'Production Order Browse'. The 'Sequence Grid' tab is active, showing a list of columns with checkboxes. The 'Production Order Browse' tab is also visible, showing a similar list. The 'Columns' pull-down menu is open, showing a list of fields to be added or removed. The 'Columns' menu is highlighted with a green circle.

You select the fields to display in columns by right clicking on the column, then selecting from the Column pull-down menu. If you want more or different fields to display in the pull-down your IT department can customize the list through the QAD EE Browse Maintenance in .NET UI.

Create Views



Create Views



Views

There are a number of components of the workbenches that can be customized and saved as part of a view:

- Item maximum view: Item data is made as large as possible to focus on just the item information.
- Optimized view: Sequence Grid and Capacity Panel are opened and optimized as the focus is on data in just the two areas for the current scheduler.
- Full view: The entire Sequence Grid displays along with data in a supporting program for any selected item.
- Side-by-side view: MSW and PSW are open to display both schedule types side by side.

Create Views: Example

Create Views Example

1. Personalize Field List on Sequence Grid from standard list of fields or user definable fields

2. Group Records Allows user to group data in meaningful way

3. Filters Allows user to filter records which meet the criteria requested

4. Personalize Field List on Production Order Browse from standard list of fields or user definable fields

The screenshot displays the QAD PSW interface with a 'Production Scheduling' window. It shows a list of production orders with columns for ID, Seq, Y, Seq, Y, Run Seq, Y, Item Number, Y, Seq, Y, Component Status, Y, Quantity Ordered, Y, and Date. The interface includes a 'Resource Navigator' on the left and a 'Production Order Browse' window on the right. The callouts highlight the ability to customize field lists and group records in both the main grid and the browse window.

You can easily create your own view by:

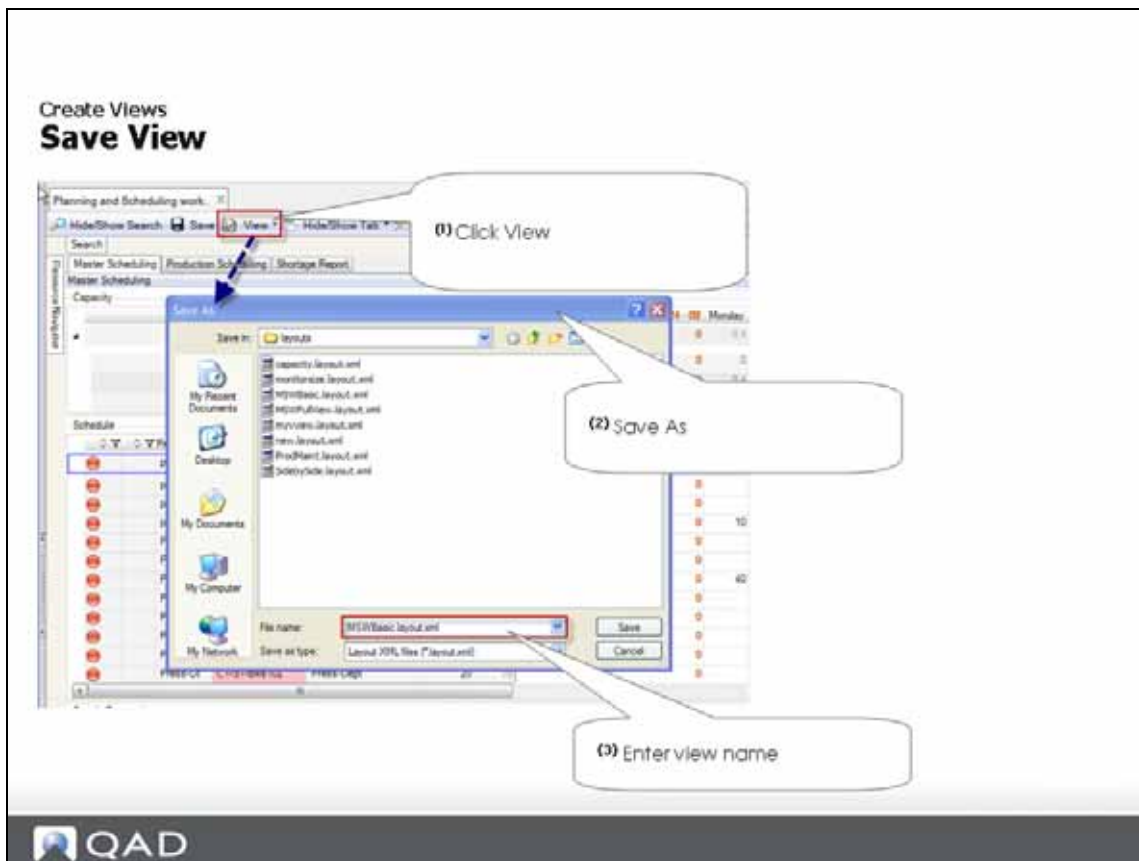
Personalizing the field list: You can add fields or user-definable fields.

Group records: Group records by Scheduler ID to easily view only those item records you are scheduling.

Filters: You can filter records to meet your specific criteria.

Personalize Field List: Add fields or remove them in Production Order Browse so that you narrow down and focus in on only data of interest to you.

Save Your View

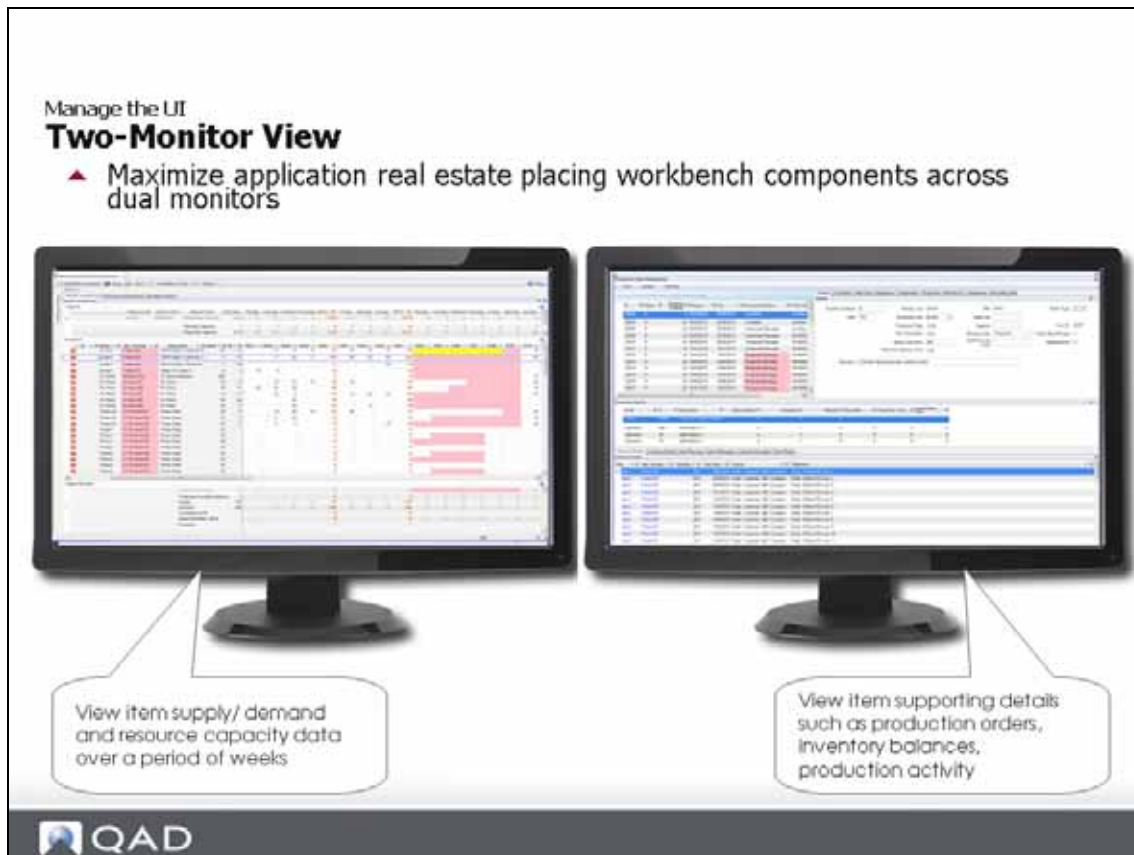


From the Views pull-down menu, select Save or Save As to save the view. If you select Save As, name your view, then save the view.

Dual-Monitor View



Dual-Monitor View



Maximize application real estate placing workbench components across dual monitors.

View item supporting details such as production orders, inventory balances, production activity.

View item supply/ demand and resource capacity data over a period of weeks.

Note If you start two separate session of the Planning and Scheduling Workbenches, data you manipulate in the one MSW session does not display in a separate session of the PSW, and vice versa.

Other Topics

Manage the UI

Other Topics

- Adding User-Defined Fields To WB
 - Can add user-defined fields to MSW and PSW



Hands-On Lesson Section



Exercise 3: Personalize Your PSW UI

Exercise 3 – Personalize Your PSW UI

- Apply your view, get familiar
- Add/remove fields from the Sequence Grid
- Save your changes, creating a new view
- Add/remove fields from Production Order Browse
- Group by key item attributes
- Save the group-by structure, creating a new view



Apply Your View - Get Familiar

- 1 Begin by entering selection criteria Site equals 10-202.
 - 2 Enter Scheduler ID equals Group1.
 - 3 In the Navigator Panel, click on ASSY-01.
 - 4 On Toolbar, click View, then select your saved view from prior MSW lesson.
- Note** If you have no views created, then create a view now with the Save As command.

Add/Remove Fields on the Sequence Grid

The system default fields on the Sequence Grid are not sufficient for the data filtering and sorting required in your environment, so you add/remove fields from the Sequence Grid in this exercise.

- 1 In the Sequence Grid, right-click and select Columns, then de-select/remove the Run-Seq2 field.
Run Seq 2 field is removed from Sequence Grid.
- 2 In the Sequence Grid, right-click and select Columns, then de-select/remove the Run Crew field.
The Run Crew field is removed from Sequence Grid.

- 3 In the Sequence Grid, right-click and select Columns, then select/add the Tool field. The Tool field is added to Sequence Grid.
- 4 In the Sequence Grid, select the Tool column, then hold down the left mouse button and drag the column to the right of the Due Date column.
 - **Question:** Did the changes you applied to the Sequence Grid apply to the Production Order Browse too?

Save Your Changes, Creating a View

- 1 On Toolbar, select View, then Save.
Your changes have been saved to your existing view.

Add/Remove Fields from the Production Order Browse

The system default fields on the Production Order Browse are not sufficient for the data filtering and sorting required in your environment. You decide to add/remove on the Production Order Browse.

For this exercise, you should perform all the same steps in step 1 and 2 of “Apply Your View - Get Familiar” on page 243.

Important Once you do, click View, then Save.

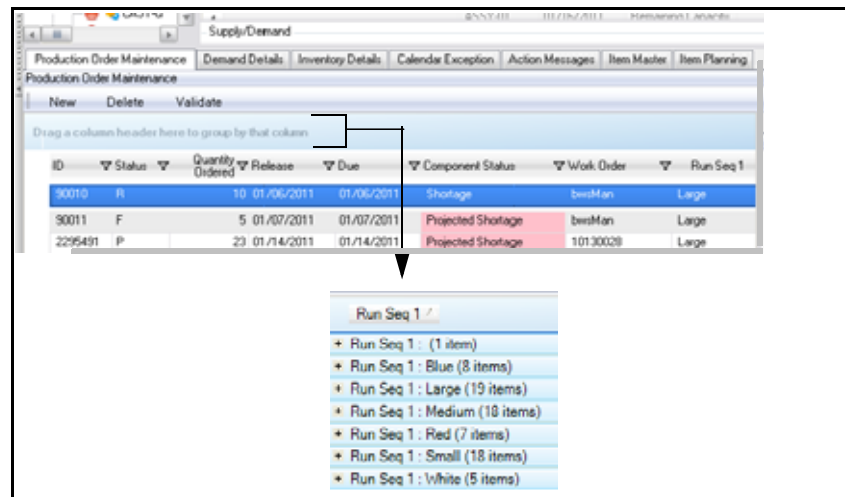
Your changes have been saved to your existing view.

Group by Key Item Attributes

You wish to view the data on the Production Order Browse, grouped by your key item attributes. You do this by grouping by the Run Seq1 column.

- 1 In the Production Order Browse Run Seq1 column, drag the column to the Drag a column here to group by that column target; see Figure 4.3.
The Production Order Browse displays data grouped by Run Seq1. You should have similar results to the following:

Fig. 4.3
Production Order Browse Results



Save the Group-By Structure as Part of your View

Since this is your primary method of viewing data on the Production Order Browse frame, you save the group-by structure from prior step as part of your view.

1 On Toolbar, click View.

2 **Important:** Save your changes.

Your changes have been saved to your existing view.

3 On Search Panel, run Search.

The changes you made to your view should remain in place.

Note If you did not save your changes to your View, after running a search, any UI changes you made are lost.

Questions

- 1 True or False. If you want more or different fields to display in the pull-down your IT department can customize the list through the QAD Enterprise Application (EA) Browse Maintenance in .NET UI.
- 2 True or False. The default columns are identical on both the Sequence Grid and Production Order Browse.
- 3 True or False. Production Order Browse columns are taken from QAD EA Production Order Browse and therefore, are not user definable.
- 4 Which of the following views are available in the PSW.
 - Item maximum view
 - Optimized view
 - Full view:
 - Side-by-side view

- 5 Name at least two ways to personalize your view.

Answers

- 1 True. The IT department customizes the list of fields that you can add.
- 2 True. The default columns are identical.
- 3 False. The columns are user definable.
- 4 All of them are available.
- 5 You can easily create your own view by:
 - Personalizing the field list: You can add fields or user-definable fields.
 - Group records: Group records by Scheduler ID to easily view only those item records you are scheduling.
 - Filters: You can filter records to meet you specific criteria.
 - Personalize Field List: Add fields or remove them in Production Order Browse so that you narrow down and focus in on only data of interest to you.

Create a Production Schedule

In QAD Learning Central, the following training course corresponds to this chapter:

Planning and Scheduling Workbenches: 4. Creation of a Production Schedule - Functional Detail - 2011 Launch, code PLM11-1220.

Note This training course includes videos for both Chapter 4 and Chapter 5.

Play the video within the course with this chapter. The video informs you when to stop the video and take the hands-on lesson.

Create a Production Schedule

Create a Production Schedule

- ▲ Introduction
 - Workbenches let you create a production schedule at the production line/order, not work center/operational level
 - After a master schedule is adopted, create a production schedule by refining master schedule details, such as shifts, resources, and material requirements
- ▲ Objectives
 - Learn basic/core features and concepts
 - Learn how to create and modify a production schedule
 - Learn primary features that assist in creating a production schedule
- ▲ Audience
 - Users who completed Getting Familiar with the PSW UI training



Using PSW, you can build production schedules with full knowledge of resources, orders, items, the shop floor, and more. Besides just scheduling items, you can:

- Determine production order status and whether they are sequenced or unsequenced.
- Determine production progress.
- Define the sequence horizon and configure the display.
- Modify orders and order quantities.
- Create, delete, copy, and split production orders.
- Modify production order status or duration.
- Calculate order dates.
- Define defaults, shifts, and sequences.
- Sequence/unsequence production orders.
- Display shop floor activity and dispatch production to the shop floor.
- Print dispatch lists, picklists, production orders.
- Report production.

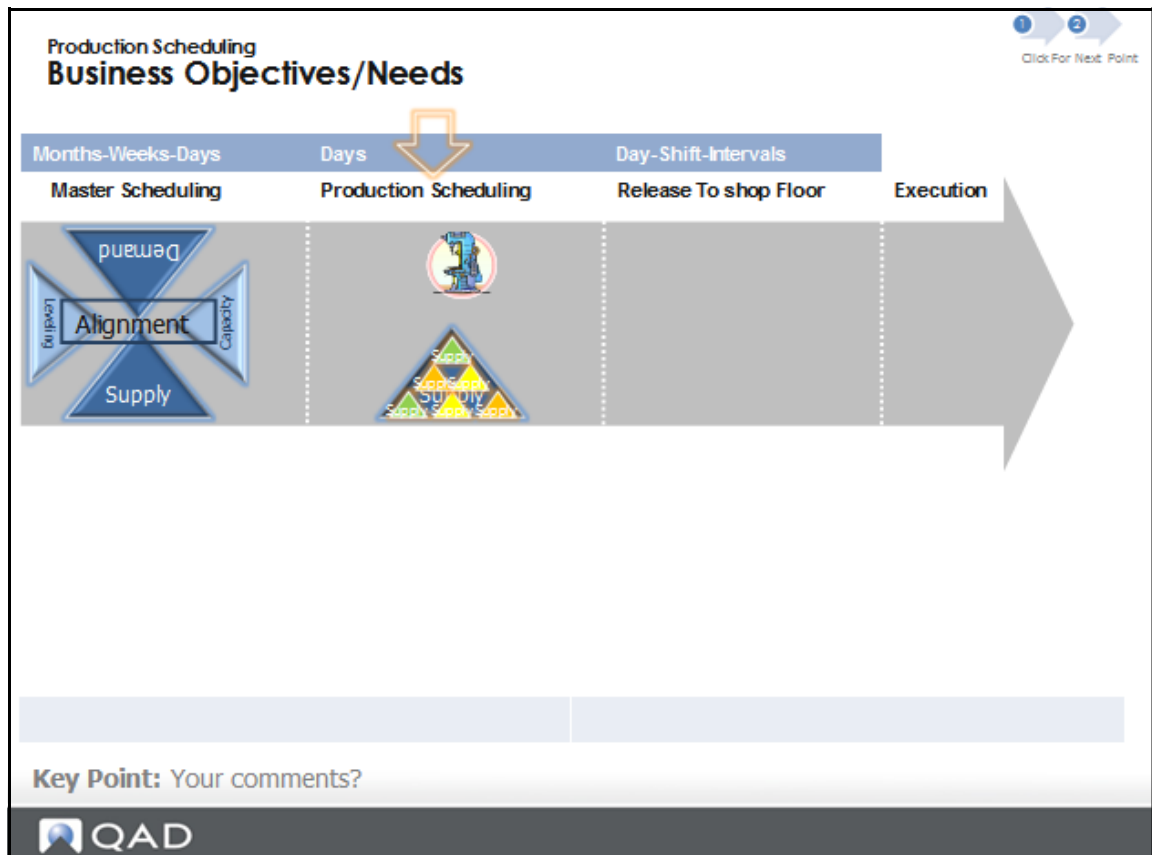
Topics Covered

Topics Covered		
Category	Topics	Hands On
Overview	• Production scheduling flow	
Concept	• Scheduling by release vs. due date • Defining your sequence horizon	
Production order scheduling	• Scheduling by release date	Lesson 1
	• Scheduling by shift	Lesson 2
	• Scheduling multi-resources	Lesson 3
Supporting features and concepts	• Splitting a production order	
	• Anchoring production order due date	

Overview Section



Business Objectives and Needs

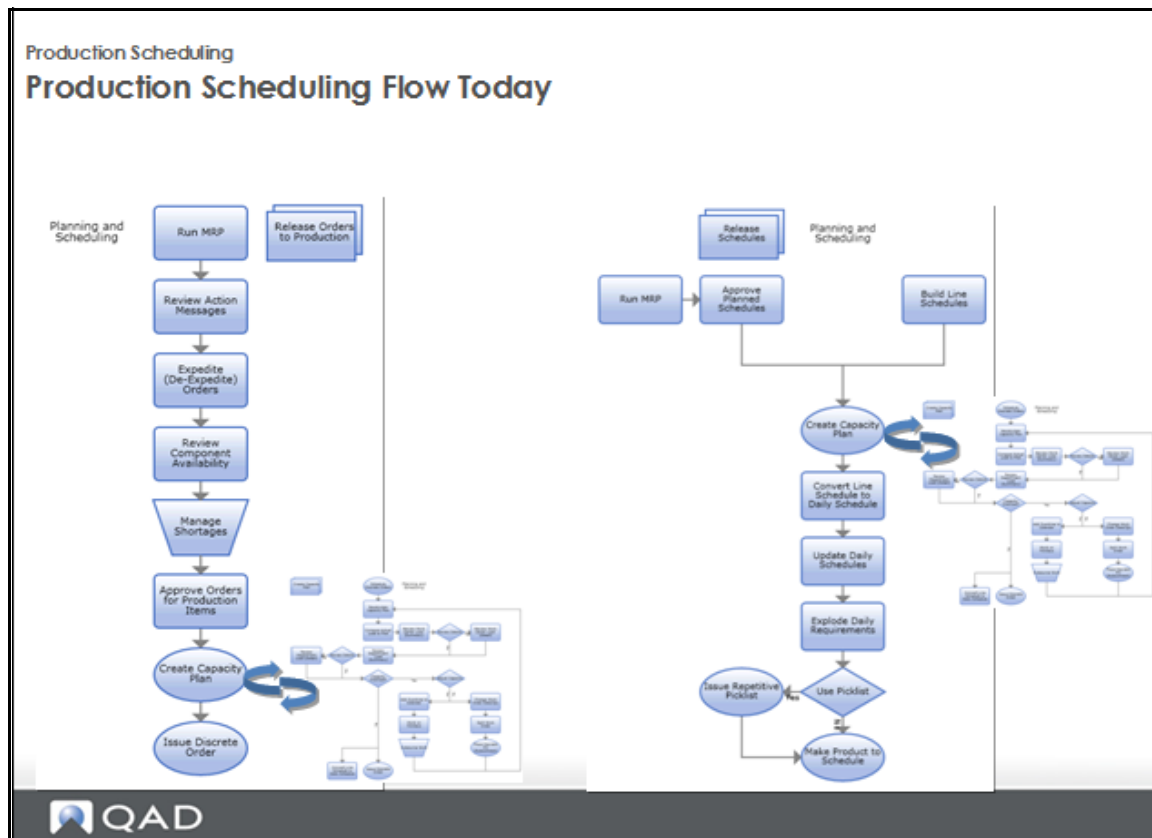


The following describes the business objectives, need, and approach:

Table 5.1
Business Objectives/Needs.

Business Objective	Business Need/Approach
Maximize production efficiency and use of resources	Ability to create a production schedule factoring item attributes to reduce machine setup and optimize production throughput.
Ensure the component requirements support the production schedule,	Sequencing production orders within a release date & shift

Production Scheduling Flow Today

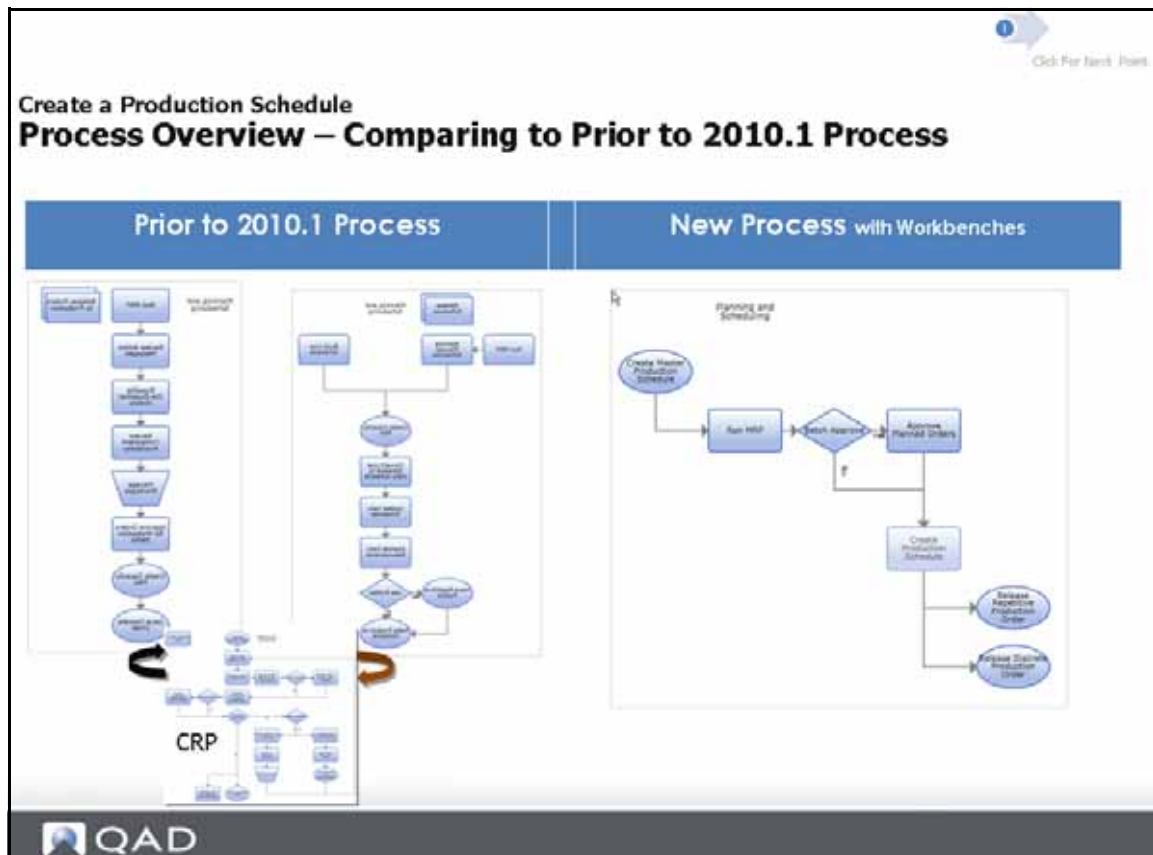


- 1 Run MRP to release orders to production.
- 2 Review action messages.
- 3 Expedite/de-expedite orders.
- 4 Review component availability
- 5 Manage shortages.
- 6 Approve production orders for items.
- 7 Create capacity plan.
- 8 Issue discrete order.

Once you release schedules, approve planned schedules, and build line schedules, you:

- 1 Create capacity plan.
- 2 Convert line schedule to daily schedule.
- 3 Update daily schedules.
- 4 Explode daily requirements.
- 5 Issue repetitive picklist, if used.
- 6 Make product to schedule.

Comparing to Prior to QAD EA 2010.1 Process



Today, you:

- 1 Create a master production schedule.
- 2 Run MRP.
- 3 Approve planned orders, if needed.
- 4 Create a production schedule.
- 5 Release repetitive production orders.
- 6 Release discrete production orders.

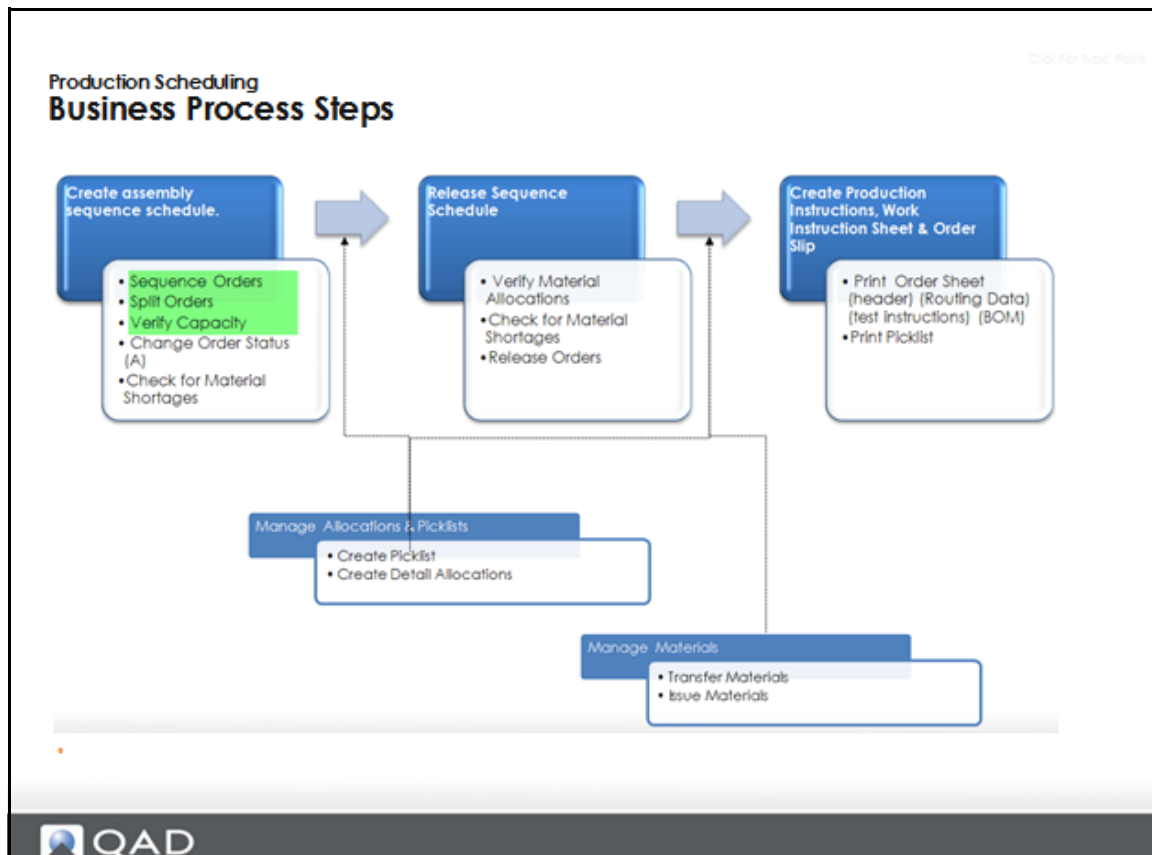
Process Overview

Create a Master Schedule

Process Overview – Comparing to Prior to 2010.1 Process

Prior to 2010.1 Process	New Process with Workbenches
Discrete and repetitive scheduling performed in separate applications	Unified master scheduling solution for repetitive and discrete orders
Capacity planning performed in a separate process map/flow/solution	Capacity planning and master scheduling are integrated in a single solution
Over 12 core steps/programs to create a production schedule for <i>Discrete</i> / <i>Repetitive</i> scheduling	Two core steps (1 primary) to create a production schedule for <i>both</i> repetitive and discrete orders

Business Process Steps



Create assembly sequence schedule:

Sequence orders, split orders, verify capacity, change order status, check for material shortage.

Note This training covers sequence orders, split orders, and verify capacity.

Release sequence schedule:

Verify material allocators, check for material shortages, release orders.

Create production instructions, work instruction sheet, and order slip:

Print order sheets, print picklist.

Manage allocations and picklists:

Create picklists, create detailed allocations.

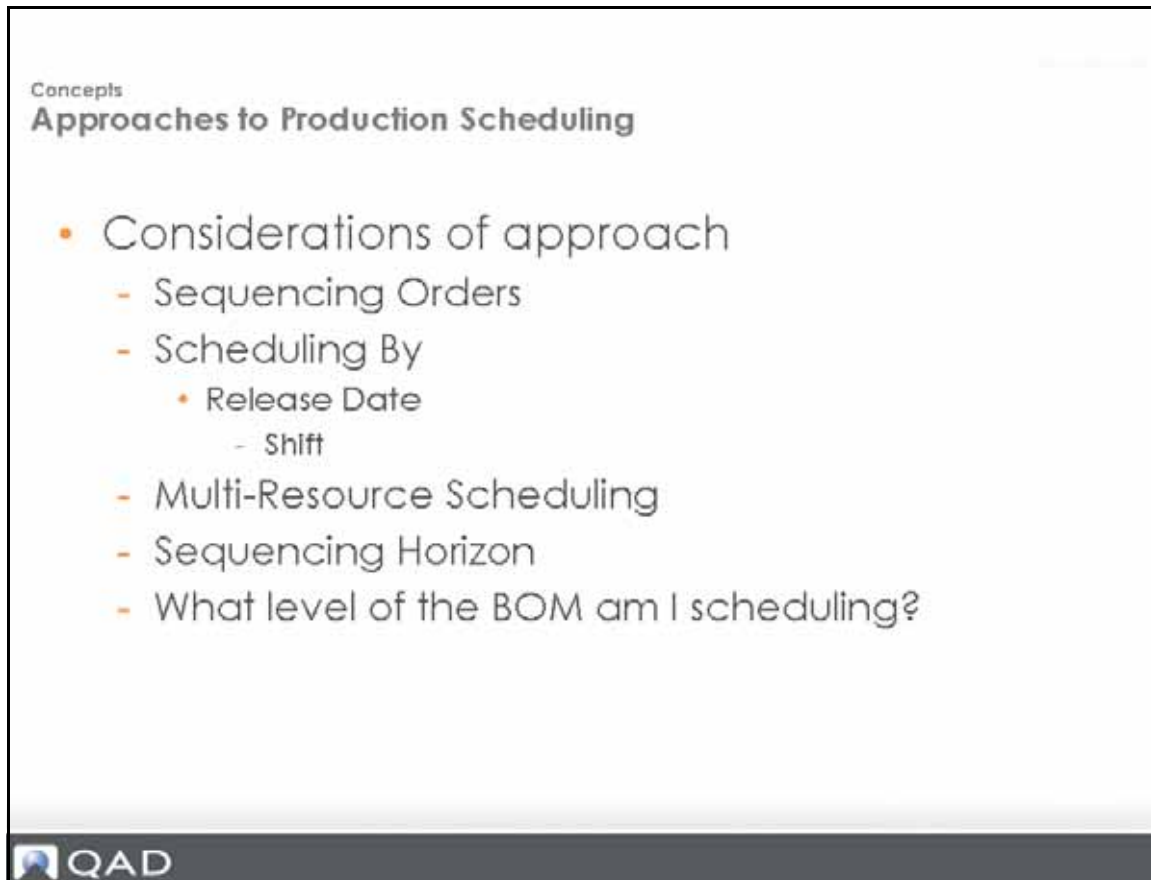
Manage materials:

Transfer materials, issue materials.

Scheduling by Release Versus Due Date Section



Approaches to Production Scheduling



Concepts

Approaches to Production Scheduling

- Considerations of approach
 - Sequencing Orders
 - Scheduling By
 - Release Date
 - Shift
 - Multi-Resource Scheduling
 - Sequencing Horizon
 - What level of the BOM am I scheduling?

QAD

Before you schedule with the PSW, you should consider:

- Sequence orders

Which orders are currently sequenced and released to the shop floor - what is their current status? Before scheduling the next shift or the next day's production, knowing production's current progress to the schedule is key when factoring what can be scheduled for the next shift/day: Are there orders that should be released and sequenced over the next x time period?
- Schedule by release date and shift

In PSW, you schedule by release date, not due date.
- Multi-resource scheduling

Create and maintain a production schedule for production lines.
- Sequence horizon

The PSW horizon setting is based on calendar days, not the shop calendar, and always shows past due released orders. For manageability, the PSW should contain a much smaller data set.

BOM level

Consider the BOM level for which you schedule items. You can use CAC features to check component and parent item availability, too.

Scheduling by Release Date Versus Due Dates

Concepts

Scheduling By Release Date vs Due Dates

- Prior to the Production Scheduling Workbench (PSW), it was not possible to manage or schedule by order release date.



Day	Due Date	Scheduled	Routing	BOM Code
Monday:	03/16/09	5.0	A-F510	A-F510
Tuesday:	03/17/09	3.0	A-F510	A-F510
Wednesday:	03/18/09	3.0	A-F510	A-F510
Thursday:	03/19/09	0.0	A-F510	A-F510
Friday:	03/20/09	0.0	A-F510	A-F510
Saturday:	03/21/09	20.0	A-F510	A-F510
Sunday:	03/22/09	0.0	A-F510	A-F510
Total:		29.0		

The release date is the date the production order is scheduled to be released to production. Release dates also determine the date components are required. Normally components are picked when an order is released.

The due date is the date this order is due to be completed. The due date defaults to today's date plus the manufacturing lead time for the item. This is the date you plan to have product available for shipment to the customer or issue to another manufacturing order. All MRP plans are based on this due date.

When you create an order in Work Order Maintenance, the due date is calculated from the release date.

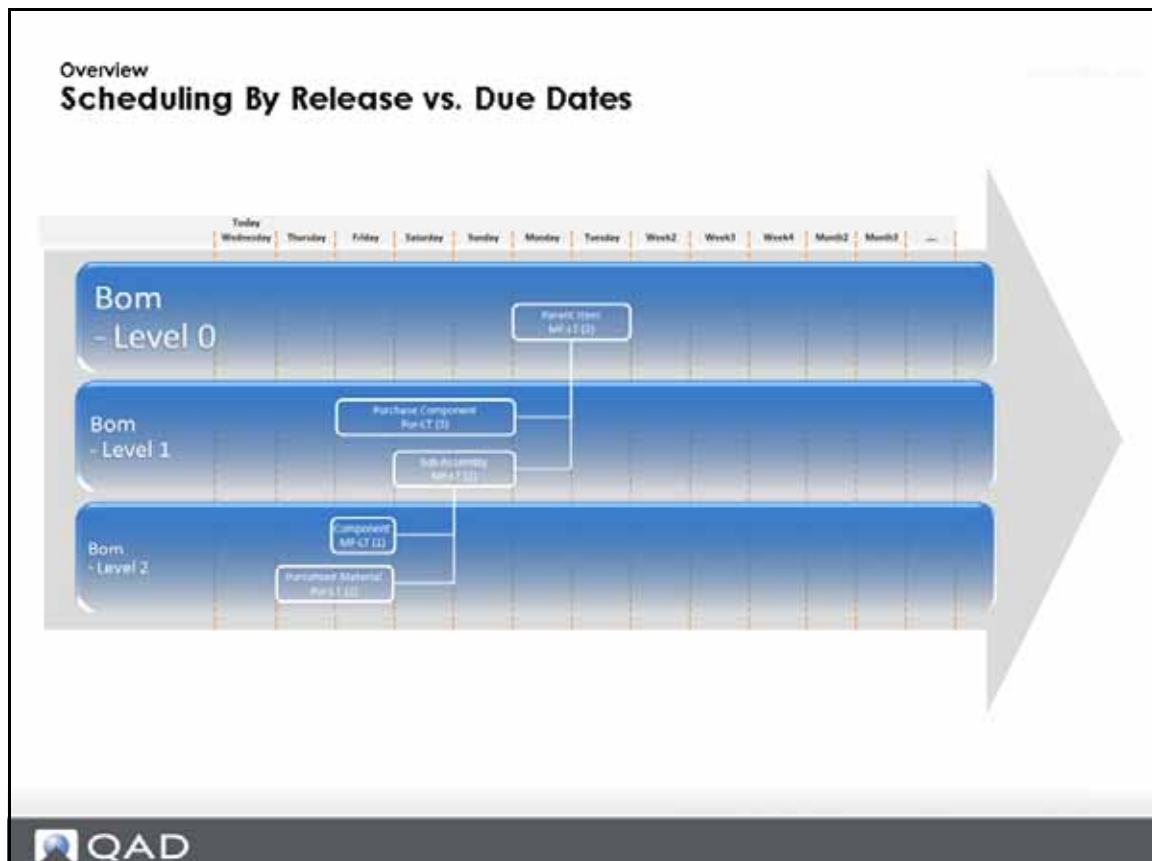
Knowing the Difference in Dates

Why is it important to know the difference in release dates and due dates?

The answer is that knowing the difference:

- Impacts your demand requirements for the lower level materials to ensure they are available when you need them.
- Provides for a buffer between the time you start the job and when you complete it.

Scheduling By Release Versus Due Dates: BOM Levels



Knowing the Difference in Dates

Why is it important to know the difference in release dates and due dates?

The answer is that knowing the difference:

- Impacts your demand requirements for the lower level materials to ensure they are available when you need them.
- Provides for a buffer between the time you start the job and when you complete it.

Scheduling by Release Versus Due Date: Example

The screenshot displays the QAD software interface for production scheduling. The title bar reads 'Overview Scheduling By Release vs. Due Dates'. The interface is divided into several panes:

- Left Pane (MSW View):** Shows a list of production orders. A callout box labeled '1. MSW view displays orders by due date' points to the 'Due Date' column, which shows dates like 08/28/10 and 08/29/10.
- Right Pane (PSW View):** Shows a detailed view of a production order. A callout box labeled '2. PSW view displays orders by release date' points to the 'Release Date' column, which shows 08/28/10.
- Bottom Pane:** Shows a table of production orders. A callout box labeled '3. In this case, order release & due dates align' points to a row where the 'Release' and 'Due' dates are both 08/28/10.

The QAD logo is visible in the bottom left corner of the screenshot.

- 1 MSW displays orders by due date.
- 2 PSW displays orders by release date.
- 3 For the example above, release and due dates align.

When a Scheduler creates the production schedule, typically for the next 24-48hrs, the schedule context is Production Order release date, not due date. In some cases, the Production Order release/due date are the same, and in other cases they may be 1-60 days different. For most companies, a production order is completed on the same day it starts and generally never extends beyond a full 24 hrs.

Scheduling by Release Versus Due Dates: Calculations

Overview
Scheduling By Release vs. Due Dates

The screenshot shows the 'Work Order Maintenance' window with the 'DataTime' tab selected. The table displays the following data:

Level	ID	Description	Resource	Release	Due	Duration	Sub	Seq	Due Time
Order	2106		2280/01	11/16/2010	11/16/2010				
Operatio	999	Backflush	2280	11/16/2010	11/16/2010				
Operatio	30	Testing	2280/3	11/16/2010	11/16/2010				
Operatio	20	General Assembly	2280/2	11/16/2010	11/16/2010				
Operatio	10	SubA Assem / Weld	2280/1	11/16/2010	11/16/2010				

Why are the order release and due dates not equal?

Order Release Date is calculated based off the order duration.

If the order duration is > 0, then the order release & due dates will be different

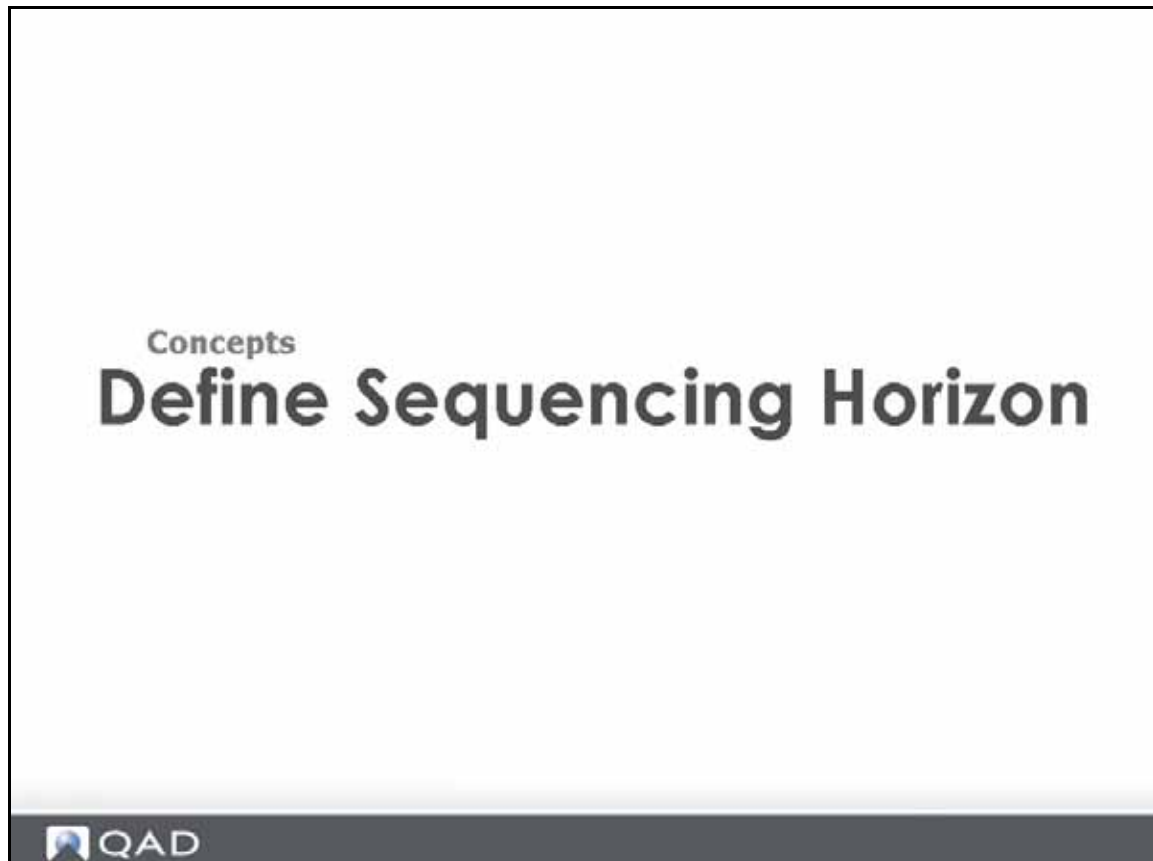
Question: Where does order duration come from? It:

- Defaults from item MF-LT
- Is manually adjusted by user
- Is a calculated value (available in 2011 release)

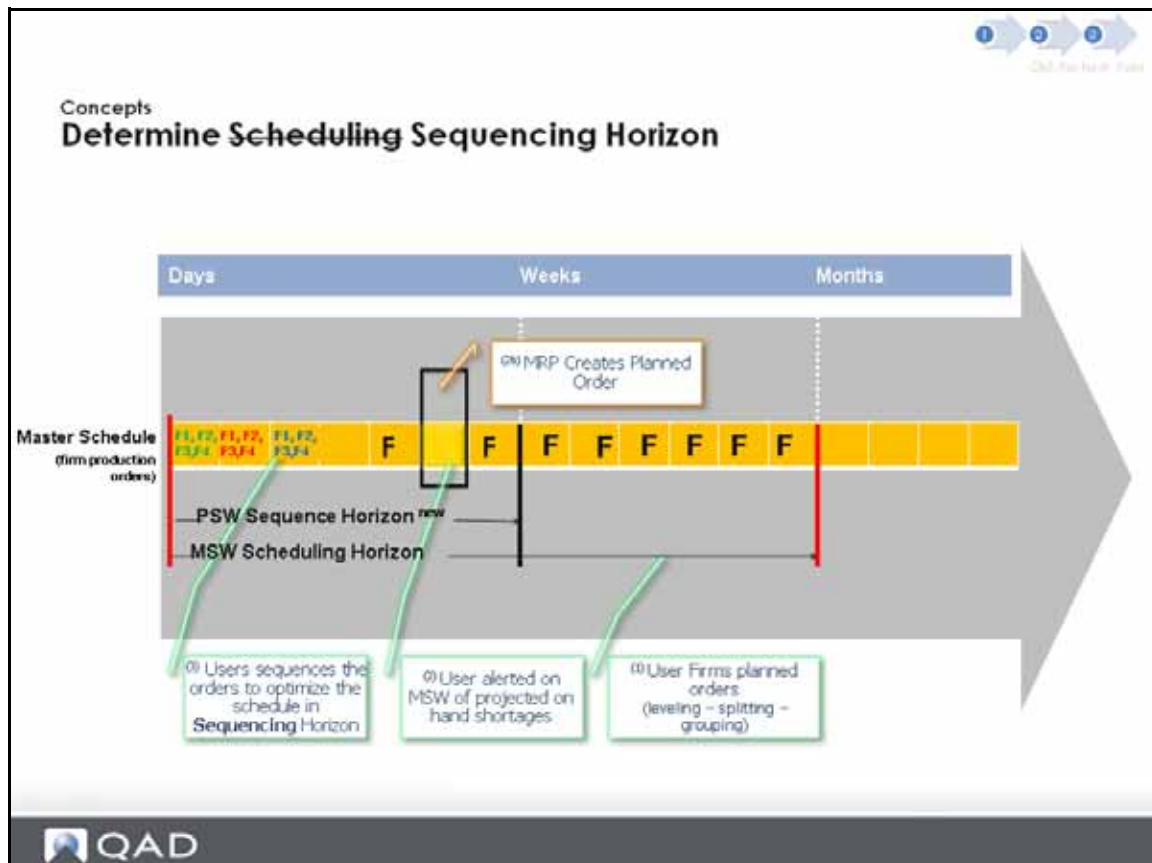
The duration of a specific operation—the time between its start date and due date—is determined by the setup, run, and subcontract times for the operation.

Duration is calculated only at the order level and takes into account working and non-working days in its calculation.

Define Sequencing Horizon Section



Determine Sequencing Horizon



Use the PSW to set a smaller schedule in an attempt to optimize production on the shop floor. You focus on sequencing the orders by attribute.

The sequence horizon determines the number of sequencing buckets that show in the PSW. If the horizon is three days, for example, then you see today plus two more days in the PSW. Past due orders always display in the Sequence Grid even if they are not within the current sequencing horizon.

Determine Your Sequencing Horizon

Concepts
Determine your Sequencing Horizon

Controls the number of production release dates displayed on the PSW

Change How Content is Displayed

Production Scheduling User Interface
Sequencing Days: 2

Master Scheduling User Interface
Columns Visible:
☒ Daily ☐ Consume Prior Days Remaining Capacity
☐ Weekly ☒ Include Forecast Demand
☒ Monthly

Changes require a search to take effect.

Restore Defaults Cancel OK

Master Scheduling Production Scheduling Shortage Report

Production Scheduling

Production Line

Item	Required	Remaining
06/22	Required: 11.9 Hours (119)	Remaining: -11.9 Hours (-119)
06/23	Required: 9.5 Hours (95)	Remaining: -9.5 Hours (-95)
06/26	Required: 2.4 Hours (24)	Remaining: -2.4 Hours (-24)
06/27	Required: 8 Hours (80)	Remaining: 0 Hours (0)
06/28	Required: 9.5 Hours (95)	Remaining: 2.5 Hours (25)
06/30	Required: 10.2 Hours (102)	Remaining: -2.2 Hours (-22)
06/31	Required: 8.4 Hours (84)	Remaining: -0.4 Hours (-4)

Today is the 27th

- Notice there are a few past due release date buckets
- Notice 6/29 release date is missing

QAD

Question: Does Sequence Days (horizon) represent Calendar or Working Days?

See *User Guide: Planning and Scheduling Workbenches* for the answer.

Question: How is display of release dates impacted by Calendar Exceptions versus Non-Working Days?

Try it for yourself.

Production Order Scheduling

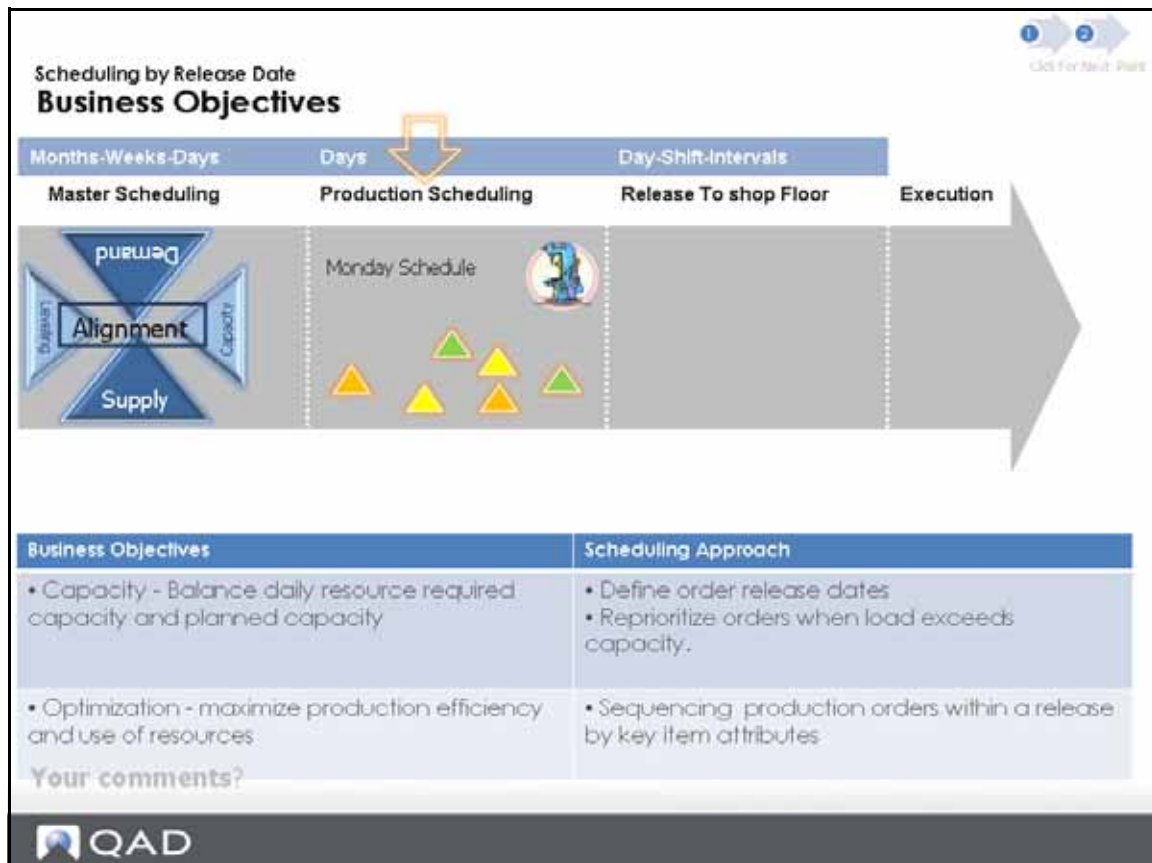


The subjects listed above are discussed in the following topics.

Schedule By Release Date Section



Business Objectives



The following depicts business objectives and the approach to meeting the objective:

Table 5.2
Business Objective and Approach

Business Objective	Business Approach
Balance daily production line required capacity and planned capacity.	Define order release dates. Reprioritize orders when load exceeds capacity.
Maximize (optimize) production efficiency and use of resources	Sequencing production orders within a release by key item attributes

Modify Order Release Date

Scheduling by Release Date
Modify Order Release Date

Method 1: Drag & drop order to target release date

Method 2: Enter a new release date with calendar

The screenshot displays the QAD PSW interface. The top window, 'Scheduling by Release Date', shows a 'Sequence Grid' with columns for 'Order', 'Date', 'Time', 'Status', and 'Release Date'. A green arrow points from the 'Order' column to the 'Release Date' column, indicating a drag-and-drop action. The bottom window, 'Production Order Maintenance', shows a 'Pull-Down Calendar' for selecting a new release date.

Modify the order release date in two ways in PSW:

- 1 Drag the order to a new release date within the Sequence Grid.
- 2 Retrieve the production order in Production Order Maintenance within PSW, then enter a new release date using the pull-down calendar.

Define the Production Order Sequence

Scheduling by Release Date
Define the Production Order Sequence

(b) Method 2
Drag & drop order to target sequence

(a) Method 1
Drag & drop order to target sequence

How do you assign the very first order sequence # for a given release date?
— Hint: Only one method above can do this.

QAD

Question: How do you assign the very first order sequence number for a given release date?

Hint: Only one method above can do this.

You sequence production orders in PSW by dragging and dropping single or multiple orders after a sequenced job. Once you drop the orders, the system assigns the sequence number to the order(s) as greater than the prior sequenced numbers. Shift numbers are also automatically assigned if an order is dropped on a particular shift.

Locating Orders with Similar Attributes

Scheduling by Release Date
Locating orders with similar attributes

1) Remaining Capacity
I have additional remaining capacity to schedule additional orders

2) Configure Browse
Display only un-sequenced orders and display key item attributes

3) Drag & Drop
Selected order to the target position

What are the differences & similarities between the Production Order Browse (on right) and the Production Sequencing Grid (on left)?
— As you work with this application, keep this in mind, what did you notice?

QAD

- 1) Remaining capacity: I have additional remaining capacity to schedule additional.
- 2) Configure browse: Display only un-sequenced orders and display key item attributes.
- 2) Drag and drop: To move the selected order to the target position.

Question: What are the differences and similarities between the Production Order Browse (on right) and the Production Sequencing Grid (on left)?

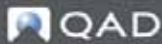
As you work with this application, keep this in mind, what did you notice?

Hands-On Lesson Section



Exercise 1: Sequencing Production Orders within a Release Date**Exercise 1 - Sequencing Production Orders within a Release Date**

- Retrieve scheduling data
- Sequence firm production orders by key item attributes
- Use the Sequence Grid to locate future orders
- Use Production Order Browse to locate and move up future orders
- Manually sequence an order for tomorrow
- Questions

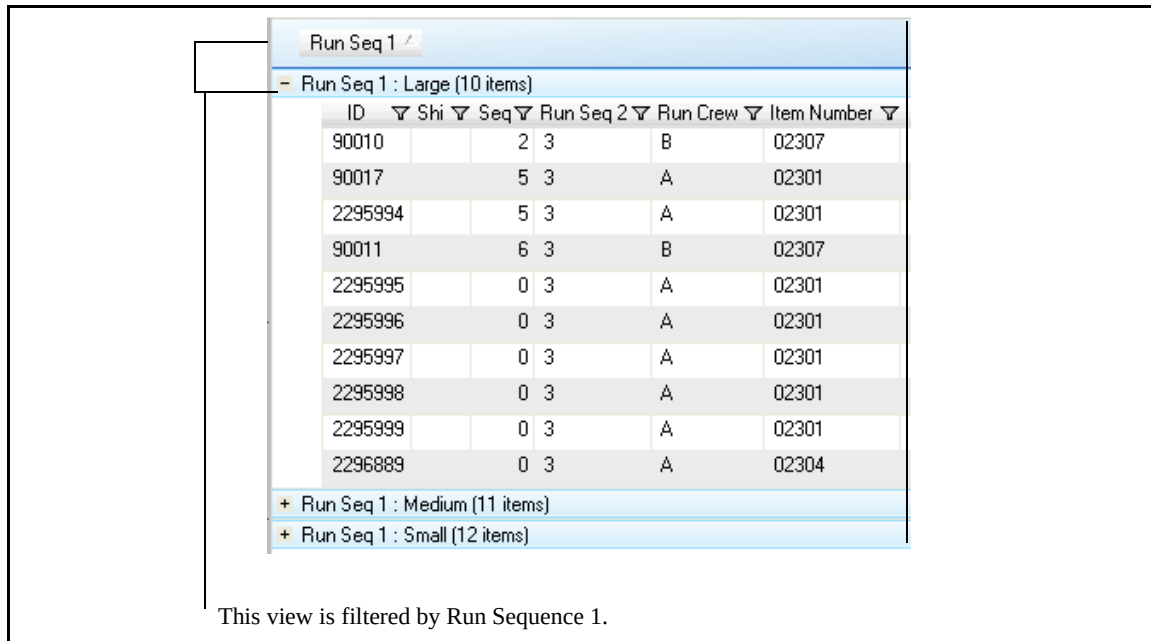


Important For the following exercises:

- Do NOT save any of your changes.
- Ensure your training data was refreshed today. If you just completed training today from the previous PSW chapter 4, you do not need to update your data. You should have saved views that were saved by Run Sequence 1. If you have not done this, go back and create the view from the previous exercise in this chapter. It should look like the following:

Fig. 5.1

View Filtered by Run Sequence 1



ID	Shi	Seq	Run Seq 2	Run Crew	Item Number
90010		2	3	B	02307
90017		5	3	A	02301
2295994		5	3	A	02301
90011		6	3	B	02307
2295995		0	3	A	02301
2295996		0	3	A	02301
2295997		0	3	A	02301
2295998		0	3	A	02301
2295999		0	3	A	02301
2296889		0	3	A	02304

+ Run Seq 1 : Medium (11 items)

+ Run Seq 1 : Small (12 items)

This view is filtered by Run Sequence 1.

Retrieve Scheduling Data

- 1 Enter selection criteria Site equals 10-202.
- 2 Enter Resource equals ASSY-01.
- 3 Click search.
- 4 In the Navigator Panel, click on Production Line ASSY-01.
- 5 Minimize the search panel.
- 6 Select your saved view from the PSW training.

Sequence Firm Production Orders by Key Item Attributes

In prior chapters of this training guide, you created a master production schedule that may have spanned several days, weeks, or months. To prepare the production schedule for today's production, you define the specific sequence that each production runs in order to optimize labor and machine utilization. In this exercise, you sequence firm production orders by key item attributes.

To do this, you use the Sequence Grid to drag and drop the orders into the optimal sequence using the Run Seq 1 item attribute column as the primary sequencing reference.

- 1 In the Sequence Grid, expand the Release Date for <today>.

Several production order records display.

 - **Question:** A production order record is already sequenced; what is the order ID, item number and Run Seq 1 attribute of this order?
- 2 Using the mouse, click on order 90005; then, drag and drop it on top of order 90003.

The system assigns order ID 90005 as Seq number 2.

- **Question:** Why did we choose order 90005 to run after or with order 90003?
- **Hint:** The answer has something to do with the Run Seq 1 item attribute.

- 3 Multi-select both production order records with the Run Seq 1 item attribute of Medium. To multi-select, use the CTRL key in combination with the mouse left button.

Both the orders with the medium Run Seq 1 attribute should now be sequenced after the Run Seq 1 small orders.

- 4 Now sequence the two remaining orders with the Large Run Seq 1 Attribute and sequence them after the Medium Run Seq 1 attribute orders.

All orders are now sequenced.

Use the Sequence Grid to Locate Future Orders

Continuing from the prior step, you notice that you have additional capacity available to schedule additional orders for <today>. If you ignore the prior orders that were not completed yesterday, the system depicts that you have approximately (1.9) hours remaining capacity for <today> or in other words, you can schedule approximately (19) more parts.

For this exercise, you find additional orders that can be scheduled today in which the future orders have matching item attributes to the orders currently scheduled for today. You use the Sequence Grid to locate future orders to move up.

- 1 In the Sequence Grid, expand the Release Date for <tomorrow>.

The system displays several orders with release date of <tomorrow>.

- 2 In the Sequence Grid for <tomorrow>, select order 90008; then, drag and drop it to the correct sequence location for <today>.

Order 90008 should have sequence # (3) (4) or (5) if you put it in the correct location.

Remaining capacity should now = (.9 hours).

- You should have sequenced the order 90008 with the orders that shared the common attribute of Medium.
- **Question:** What is the remaining number of parts you can schedule for <today>?

Use Production Order Browse to Locate and Move Up Future Orders

Now try using Production Order Browse to locate future orders to move up.

- 1 Open and expand Production Order Browse.

The system displays records grouped by Run Seq 1 item attribute code.

If the data does not display by Run Seq 1 item attribute code, then you did not complete a prior step as expected. To correct this, group your data by the Run Seq 1 column in Production Order Browse.

- 2 In Production Order Browse, apply a filter to the SEQ column by selecting the SEQ column Filter value of 0 (zero).

Production Order Browse now only displays unsequenced production orders.

- The concept is to use Production Order Browse to find unsequenced production orders to add to <today's> production schedule. Typically, you do not want to consider orders that are already sequenced.
 - This method is the primary use case/method expected in using the PSW for locating firmed production orders that require sequencing.
- 3 In Production Order Browse, expand the Run Seq 1 grouping of the Small attribute. The system displays all unsequence orders with the Small attribute.
 - 4 In Production Order Browse, select 90006 and drag and drop it onto the Sequence Grid on order 90005.
Order 90006 is sequenced, and remaining capacity is now negative.
 - **Question:** Why is remaining capacity now negative? By how much?
 - 5 **Important:** Do not save your changes.
The following figure is confirmation of the last step if all steps were done correctly.

Fig. 5.2
PSW Results

Master Scheduling

Production Scheduling

Shortage Report

Production Scheduling

bws1

ASSY-01

11/21

Required: 1.8 Hours (18)

Remaining: -1.8 Hours (-18)

11/22

Required: 9.1 Hours (91)

Remaining: -1.1 Hours (-11)

Carry Forward: 1.8 Hours (18)

ID	Seq	Run Seq 1	Run Seq 2	Item Number	Sh	Run View	Req	Sta	Component Status	Quantity Ordered	Open Quantity
90003	1	Small	1	F-bws103	A	0.5	E	Available	5	5	
90005	2	Small	1	F-bws103	A	2	E	Authorized Receipts	20	20	
90006	3	Small	1	F-bws103	A	2	E	Authorized Receipts	20	20	
2468	4	Medium	2	F-bws102	A	1.4	E	Available	14	14	
90015	5	Medium	2	F-bws108	B	0.3	R	Sched Rcpts Delaye	3	3	
90008	6	Medium	2	F-bws105	B	1	E	Available	10	10	
2248	7	Large	3	F-bws101	A	1.4	E	Available	14	14	
90011	8	Large	3	F-bws107	B	0.5	R	Projected Shortage	5	5	

Manually Sequence an Order for Tomorrow

The orders are sequenced for <tomorrow's> release date; however, the first production order needs to be manually sequenced. In this exercise, you manually enter the seq value of 1 for the first production order record.

- 1 In the Sequence Grid, expand the Release Date for <tomorrow>.
The system displays several orders with release date of <tomorrow>.
 - Notice that no orders are sequenced.
- 2 In the Sequence Grid, select any production order; then, drag and drop it on another order within the same release date of <tomorrow>.
There should be no change to the order sequence.
 - **Question:** The system did not assign a sequence to the order you dragged and dropped because it did not know what your intention was. So how then do you sequence the first production order?
 - **Hint:** See the next step.

- 3 For the last production order record displayed, in the SEQ column, enter 1(one).
The system assigns the order sequence 1.
Note You must always manually assign the first sequence number for the first order you wish to sequence for each release date/shift.
- 4 Select another unsequenced production order record and drag and drop it on top of the sequenced production order record.
The system assigns a sequence order of 2.
Note The point of this exercise is to demonstrate that you must manually assign the first sequence number to the first record, and from that point forward, you can use drag and drop for further sequencing.
- 5 In Search Panel, run a search.
- 6 **Important:** Do NOT save your changes.

Questions

- 1 In the PSW, when you determine which orders are currently sequenced and released to the shop floor, list two things you should know about the orders first.
- 2 True or False. In PSW, you schedule by due date, not release date.
- 3 True or False. The PSW Sequencing horizon considers non-working days and holidays.
- 4 True or False. The PSW always shows past due released orders.
- 5 Why should the PSW Sequencing Grid contain a much smaller data set?

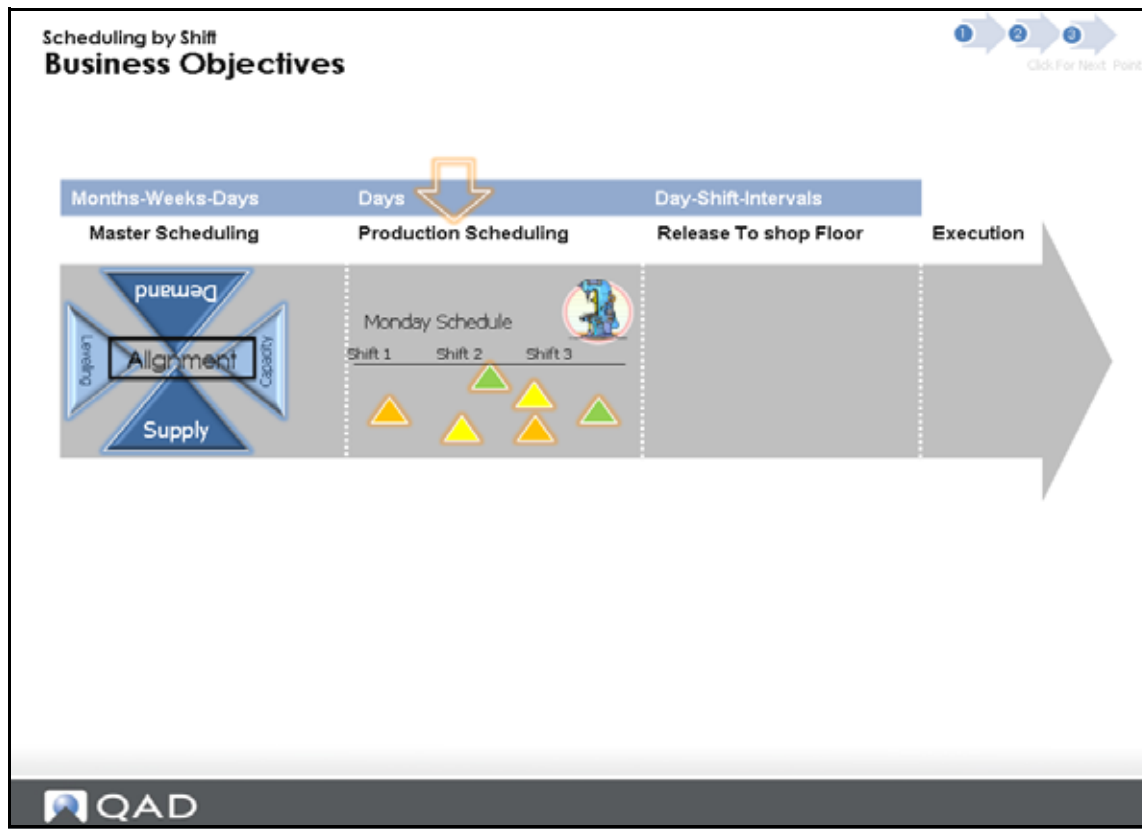
Answers

- 1 You should know:
 - What can you do to minimize setup, such as what can you combine to minimize the setup.
 - How many setups you have and what is the impact of the setups.
 - The current status of the orders.
 - If there orders that should be released and sequenced over the next x time period.
- 2 False. You schedule by release date.
- 3 True. It is based on calendar days.
- 4 True. The PSW always shows past due release orders.
- 5 The horizon is smaller and therefore, easier to manage.

Schedule By Shift Section



Business Objectives



Business Objective and Approach

Business objective include:

- Direct shop execution by shift
- Measure shop floor performance to schedule by shift

The approach is to assign production orders to a specific shift.

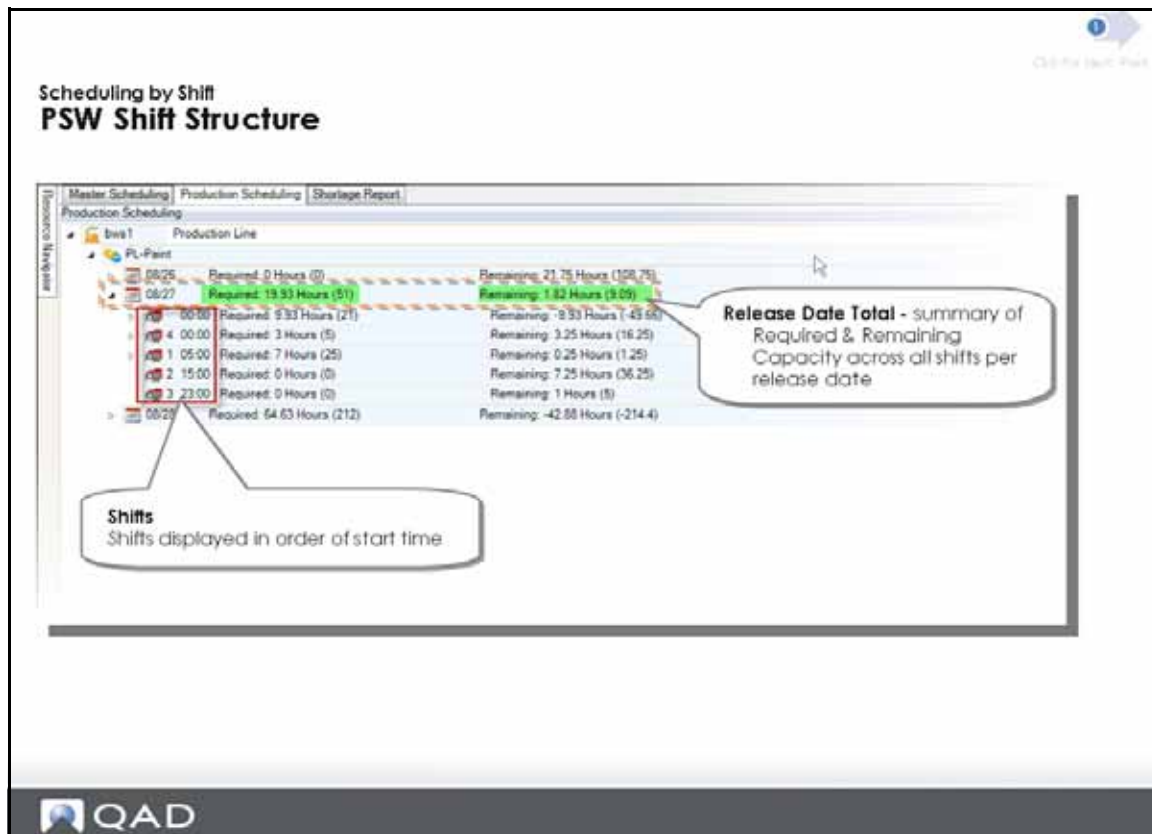
Business Considerations

Depending on the number resources, shifts and items you schedule, the PSW UI may become difficult to use/manage due to the additional overhead of the shift structure displayed.

If you are not measuring performance to shift, then it may not make sense to take this approach.

If you are not scheduling by shift today, would suggest to not start using these feature immediately.

PSW Shift Structure



What is the row with the blank shift 00:00 and what is the meaning of it?

Orders are not assigned to a specific shift yet when they have a blank shift of 00:00. These orders are typically created by the system.

Why is shift 4 prior to shift 1 in the display above?

The key to the order is in Production Line Shift Maintenance. You can see shift IDs, not shifts, in Production Line Maintenance. The shifts display in the Sequence Grid by the shift start time as depicted in Production Line Shift Maintenance.

Shift Structure Setup

Scheduling by Shift
Shift Structure - Setup

Production Scheduling

Production Line

PL-Point

08/26 Required: 0 Hours (0)

08/27 Required: 19.93 Hours (51)

08/28 Required: 64.63 Hours (212)

08/29 Required: 9.93 Hours (21)

08/30 Required: 3 Hours (5)

08/31 Required: 7 Hours (25)

09/01 Required: 0 Hours (0)

09/02 Required: 0 Hours (0)

09/03 Required: 0 Hours (0)

Shift Maintenance

Planning and Scheduling work...

Go To Actions Copy Print Previous Attach

Production Line: PL-Point

Shifts

Sunday [X] [X]

Monday [X] [X]

Tuesday [X] [X]

Wednesday [X] [X]

Thursday [X] [X]

Friday [X] [X]

Saturday [X] [X]

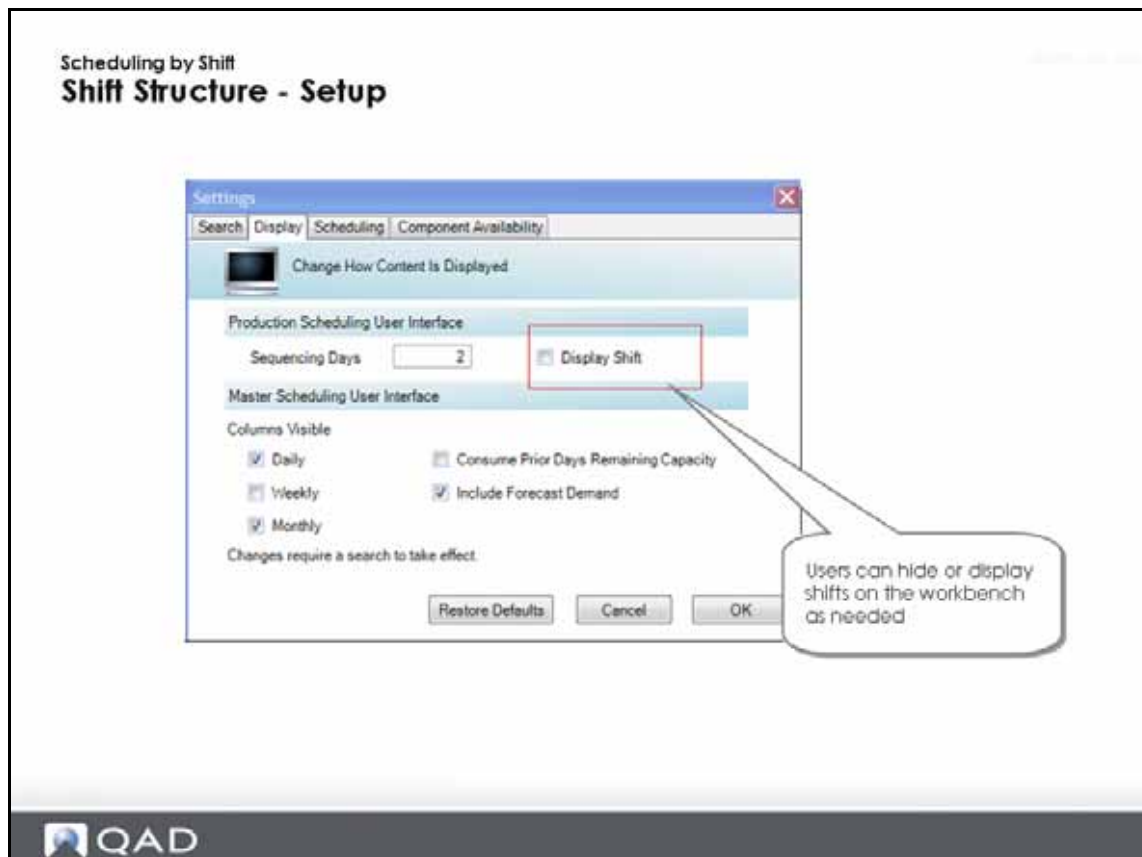
Sunday Shifts

Shift	Start Time	End Time	Capacity
1	08:00	7:25	100.00%
2	15:00	7:25	100.00%
3	23:00	1:0	90.00%
4	00:00	6:25	50.00%

Shift Setup
Shift Maintenance defines the shift start times and shift capacity.

QAD

Shift Structure Setup (Continued)



You must set up the PSW to display shifts by setting the Display Shifts field under the Production Scheduling UI heading in the Display tab of User Preferences. Once you set the field, you must run the Search.

Questions: Are there benefits to defining capacity by shift even if you don't schedule by shift? What would expect to be the impact of assigning a production order to a shift where the productivity is less than 100%?

Shift Structure Display

Scheduling by Shift
Shift Structure - Display

1) I have production orders I need to move from default shift (0) to the specified shifts

2) I can select the desired order and drag/drop it to the target Shift on the Sequence Grid.

3) I have additional remaining capacity to schedule additional orders on Shift 2 & 3

QAD

Questions: What if I did not assign all production orders to a shift? How could this be interpreted? Is there a negative impact?

Hands-On Lesson Section



Exercise 2: Scheduling Orders within a Release Date and Shift

Exercise 2 - Scheduling Orders within a Release Date and Shift

- Retrieve your scheduling data
- Review the PSW at the shift level
- Assign production orders for a given release date to a specific shift
- Learn how assigning an order to different shifts can impact required capacity
- Questions



In the following exercises, you learn how to use the PSW for scheduling orders within a release date and shift.

Important Do NOT save scheduling changes from prior lessons. Ensure your training data was refreshed for today. The following is not dependent on any prior lesson.

Retrieve your Scheduling Data

- 1 In the Search Panel, enter selection criteria Site equals 10-202.
- 2 Enter Resource equals PLATE-01.
- 3 Click Search.
You may be prompted to save changes.
- 4 **Important:** Do NOT save changes from prior lessons.
- 5 Minimize the Search Panel.
- 6 In the Navigator Panel, click on production line PLATE-01.

Review the PSW at the Shift Level

A production schedule has already been partially created at the shift level. Review the production progress to date against this schedule.

- 1 In the Sequence Grid, review the production orders which are scheduled for <yesterday>. The system displays several production orders past due.
 - **Question:** Can you determine for which shifts the orders were due to be completed?
 - The default configuration of the application is to not display shift detail, let's enable shift detail in the display.
- 2 Select **Toolbar Options, Preferences, then Display**.
- 3 Under **Production Scheduling**, select **Display Shift**.
There is no immediate impact until you run a new search.
- 4 In the Search Panel, run the search.
The PSW now displays shift details.
- 5 Review results on Sequence Grid.
Notice that the release date of yesterday has production orders that are not yet completed on all shifts. This can mean that orders are complete, but production has not been reported yet, or that production is behind schedule.

Assign Production Orders for a Given Release Date to a Specific Shift

In prior steps, you created a master production schedule that may have spanned several days, weeks, or months. To prepare the production schedule for today's production, you want to define what each shift should produce. To do this, you assign the production orders for a given release date to a specific shift. You use the Production Sequence Grid to drag and drop the orders to the designated shift.

- 1 In the Sequence Grid, expand the Release Date to <today>.
Several production order records display.
 - Notice that the orders are not assigned to any shift.
- 2 Select (with mouse) order 90040 and drag and drop it on top of Shift 4.
Order 90040 is assigned to shift 4.
 - **Question:** What is the impact to the required and remaining capacity of Shift 4?
 - If you do not know what the prior values are undo the transaction by dragging and dropping the order back to Shift 0 and move the order back to Shift 1.
- 3 For order 90049, select Shift ID 1 (one) and tab out of field.
This steps demonstrates the ability to assign an order to a shift without drag and drop.
- 4 Select (with mouse) order 90055, and drag and drop it on order 90045 on Shift 2.
The system assigns Order 90055 to Shift ID 2 and Sequence 2.
 - **Question:** Why did we assign order 90055 to Shift 2?
 - **Hint:** Notice the Run Seq 1 field values for both orders.

Important Do not save your changes.

Learn how Assigning an Order to Different Shifts can Impact Required Capacity

You are now ready to learn how assigning an order to different shifts can impact the required capacity (run time of the order),

What is the reason shifts would have different productivity? Starting from a baseline of 100%, you may need to factor breaks, labor skill, a reduced labor force, preventive maintenance, and so on.

Important For the following exercises, do not save your scheduling changes from prior lessons. Ensure your training data was refreshed today. The exercises are not dependent on any prior exercises.

Retrieve data by:

- 1 In the Search Panel, enter selection criteria Site equals 10-202.
- 2 Enter Resource equals PLATE-01.
- 3 Click Search.
You may be prompted to save.
- 4 **Important:** Do not save.
- 5 Minimize the Search Panel.
- 6 In the Navigator Panel, click on Production Line PLATE-01, then look at the release date for <today>.

Shift 0 has 85% resource productivity, Shift 1 and Shift 2 have 100% resource productivity, Shift 3 has 90% productivity, and Shift 4 has 50% productivity. You set these percentages in Shift Maintenance in QAD EA. You must continue and assign a production order to all four shift IDs and review the impact to the required capacity.

- 1 In the Sequence Grid, expand the Release Date of <tomorrow> and close all production orders except order 90041.

The required capacity should now show 3.35 hours,

- **Hint:** To close the orders, just change the order status to C in the Production Order Browse Status column.

Note For the 2010 release, the required capacity displays as 6.3 hours. A system defect.

- 2 Review the production order details for order 90041 and review the order details for the order run time and required capacity.

The run time (hours) = 2.35.

- **Question:** how is the run time determined for this order?
- **Hint:** Order run rate * weighted resource productivity for a given release date.

- 3 Move order 90041 to Shift ID 1.

The system now displays the required capacity as 3 hours.

- **Question:** What is the run time?

- 4 In Production Order Details, review order 90041 and review the order run time and required capacity.

The run time (hours) = 2.

- **Question:** When you assign an order to a specific shift, it uses the resource productivity defined for the shift. For Shift 1, what is the resource productivity?

- 5 Move the order 90041 to Shift ID 4.

The required capacity should now display as 5 hours.

- 6 Review the production order details of order 90041 and review the run time and required capacity.

The run time (hours) = 4.

- **Question:** When you assign an order to a specific shift, it uses the resource productivity defined for the shift. For Shift 4, what is the resource productivity?

Questions

- 1 True or False. You can only change an order's release date by dragging and dropping.
- 2 What happens to shift numbers in the PSW when you drag and drop an order?
- 3 True or False. You can configure the PSW display to show sequenced orders, but not un-sequenced orders.
- 4 Shifts are displayed in the order of what?
- 5 You have remaining capacity showing on the PSW. What can you do with it?

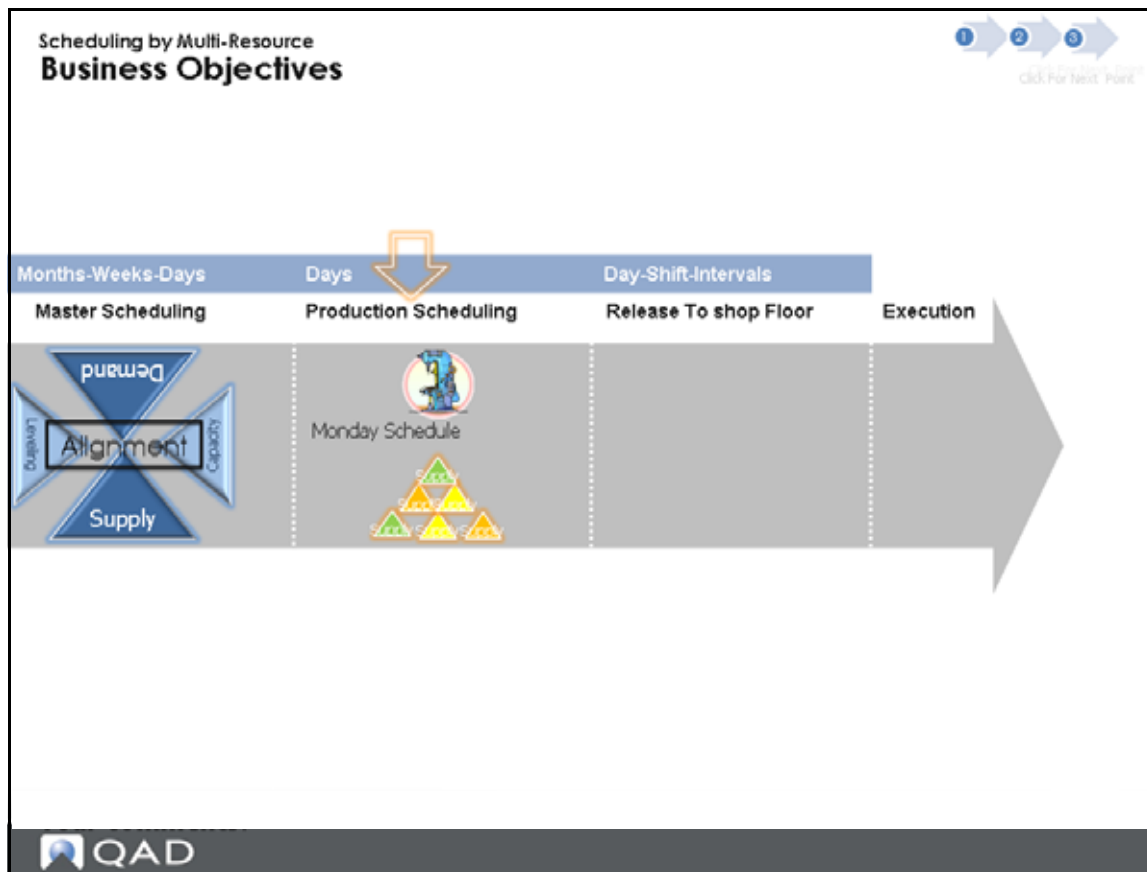
Answers

- 1 False. You can enter a new release date using the pull-down calendar in Production Order Maintenance within PSW.
- 2 Shift numbers are automatically assigned if an order is dropped on a particular shift.
- 3 False. You can display both sequenced and unsequenced orders by configuring the display.
- 4 Shifts display in the order of their start time.
- 5 You can schedule additional orders for shifts with the remaining capacity.

Scheduling by Multi-Resource Section



Business Objectives



Business Objective and Approach

Business objective include:

- Direct shop floor execution at the resource level
- Measure shop floor performance by specific machine

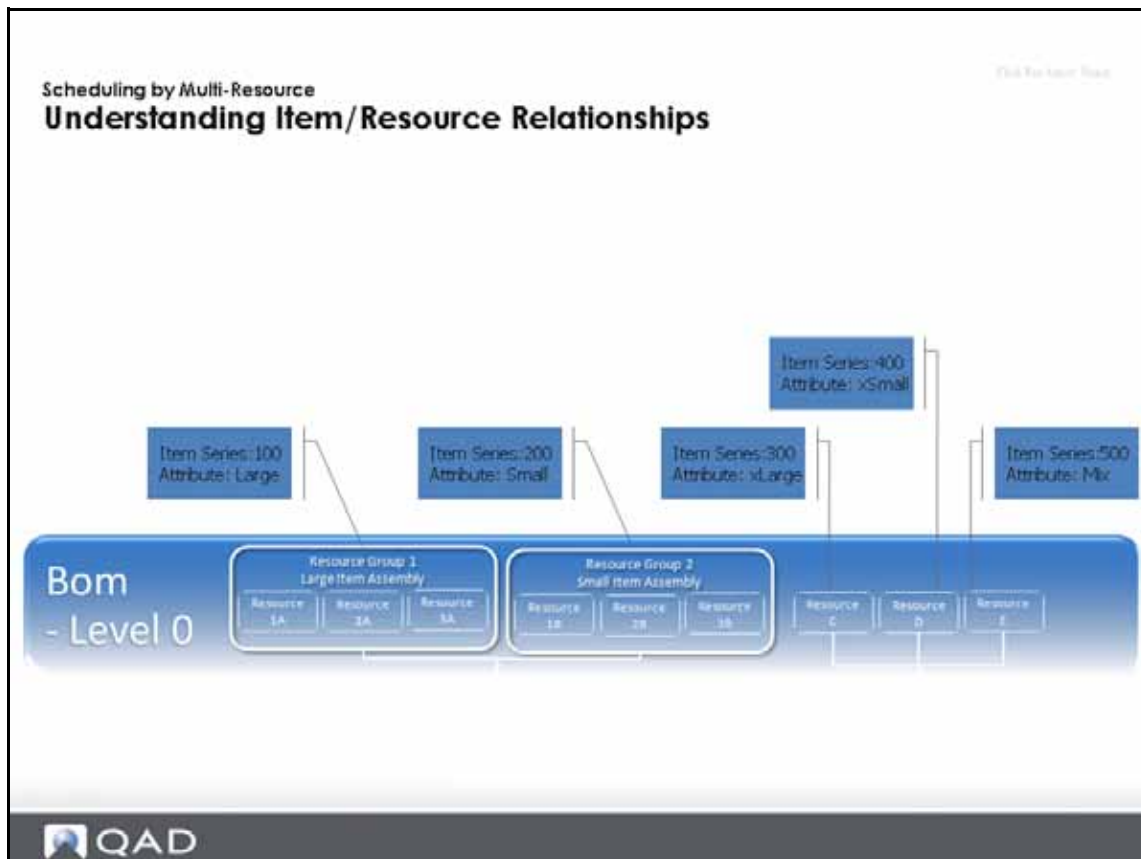
The approach is to assign production orders to a specific machine.

Business Considerations

Does each item have a primary resource?

Do you need to define a resource group?

Understanding Item/Resource Relationships

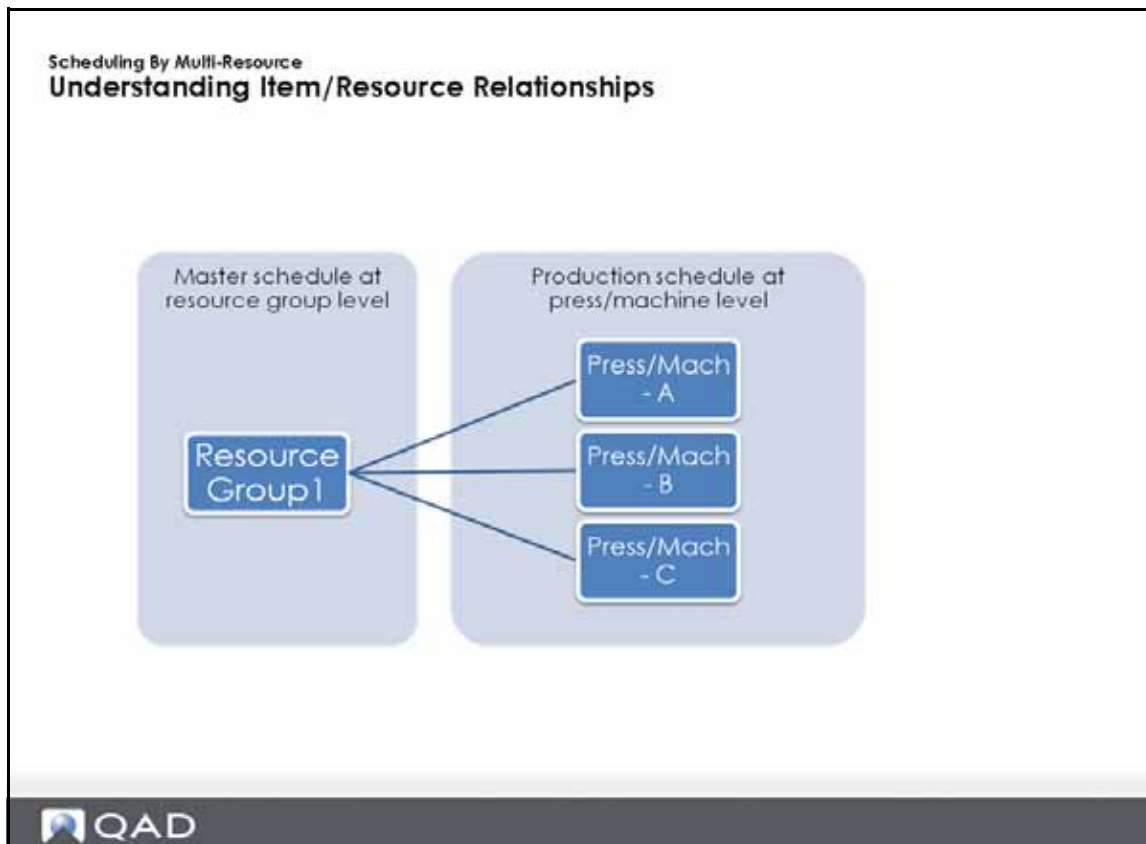


A Resource group represents a group of resources which process items with similar or identical attributes.

Associate each item produced to both a Resource Group and each resource (alternate resource) it can be produced on.

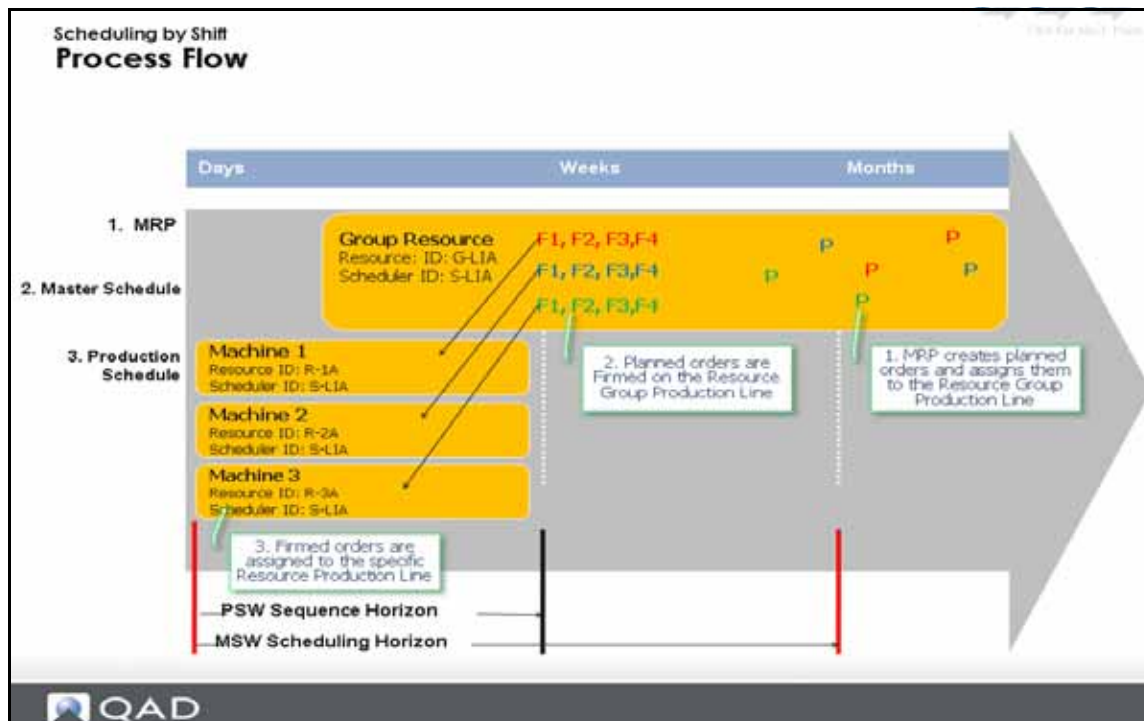
Question: What should the primary resource be assigned for each item?

Understanding Item/Resource Relationships (Continued)



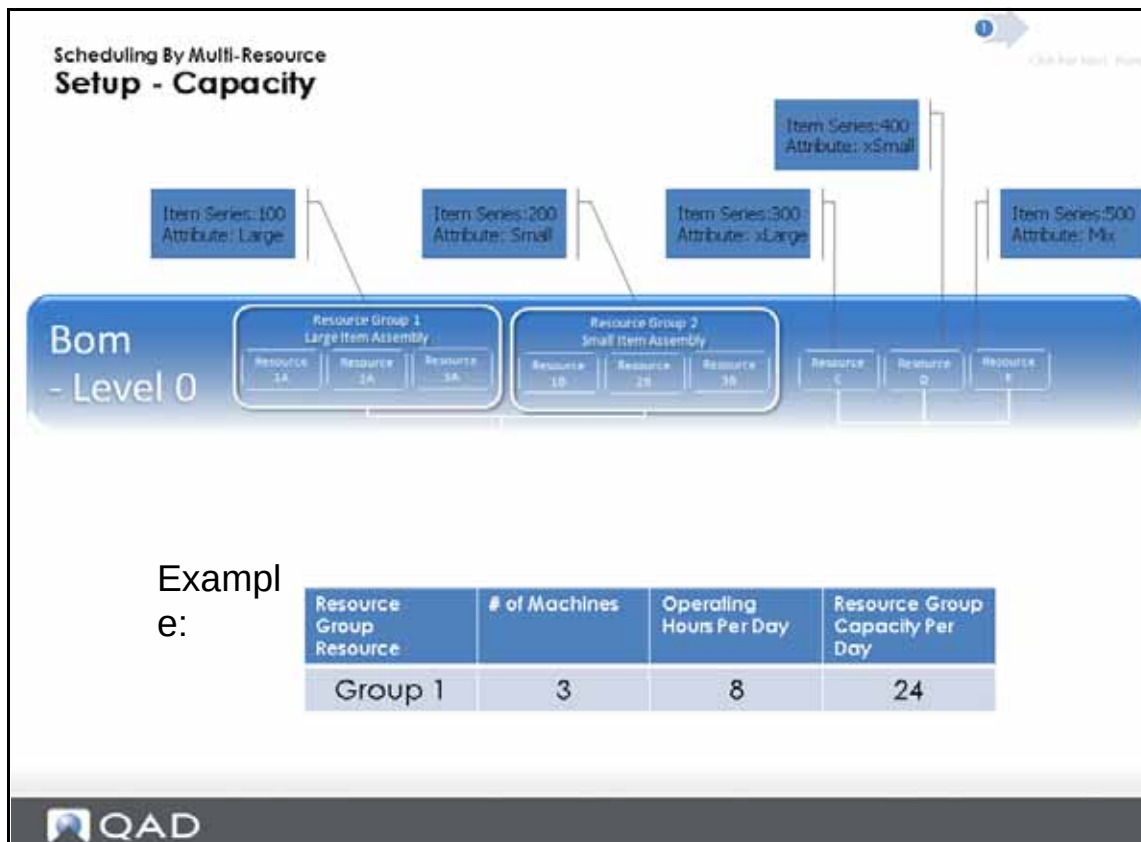
Business Scenario: You master schedule at the Resource Group level over the mid-term horizon, and assign production orders to the target resource in the short-term horizon.

Process Flow



Solution Approach: You master schedule at the Resource Group level over the mid-term horizon, and assign production orders to the target resource in the short-term horizon.

Setup: Capacity



Question: What is the resource capacity for the resource group versus the individual resources belonging to the resource group?

Capacity for the Resource Group (resource) is equal to the number of “machines” within the resource group.

Setup Capacity (Continued)

Scheduling by Multi-Resource
Setup Capacity

2010 Product Release – Define the total operating hours of all resources in the resource group

2011 Product Release – Define the operating hours of the resource group – system calculates the total planned capacity of (24hrs) for you

Stamp-G 24 hrs

Stamp-01 8 hrs

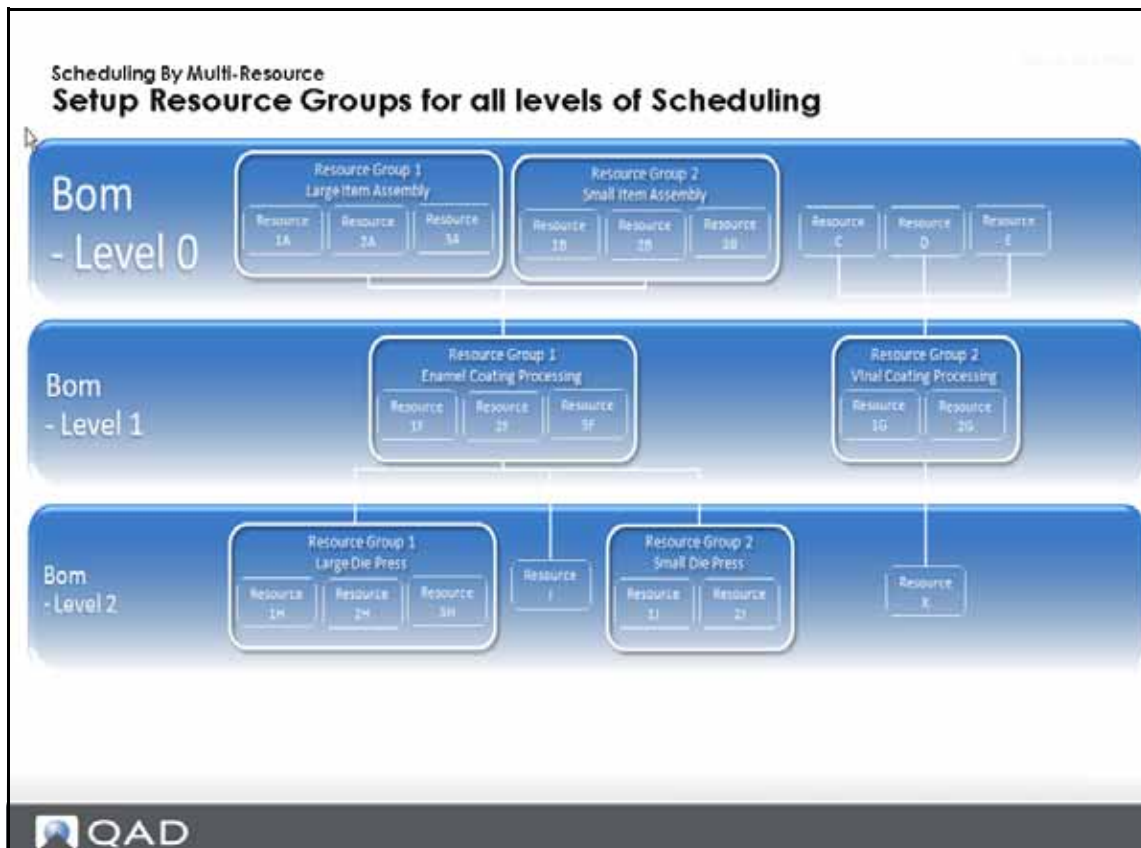
Stamp-02 8 hrs

Stamp-03 8 hrs

QAD

The setup method is different between product releases.

Setup Resource Groups for All Scheduling Levels



Complete the setup for all levels of the BOM.

What is an example of a resource group in your environment?

Think about creating resource groups in situations where items are scheduled and there is no primary resource upon which the items are created.

PSW Example Basic

Scheduling by Multi-Resource
PSW Example Basic

1) Drag and Drop 1 or more selected records to the target resource (production line)

2) Manual Entry Select from a list of defined production lines for item

QAD

Modifying Resources by Dragging and Dropping

For a selected production order, you can drag and drop from the source resource to the target resource.

- 1 Select the production order in Production Order Maintenance Summary List within PSW.
 - 2 Drag the order to the PSW Sequence Grid target resource.
- A drop indicator displays, indicating the location at which you can drop the production order.

Note The indicator does not display if the production line target is not defined as a primary or alternate production line.

PSW updates and recalculates data.

Manually Modifying a Resource

- 1 Move to the Production Order Maintenance tab in PSW, then select Details.
- 2 Manually enter a new production line in Scheduled Line field or select from the drop-down list.

PSW Example Advanced

Scheduling by Multi-Resource
PSW Example Advanced

(1) Production Order Browse
Applied a filter to display only production orders currently assigned to the default resource "Stamp-G"

(2) Assign orders to specific resource
Assign the production orders to the target production lines Stamp-01, Stamp-02, Stamp-03

ID	Release	Resource	Run Date	Item Number	Run Seq	Sh	Se
9000	11/10/2010	STAMP-G	A	C1-S1-Item104	1	1	1
9001	11/10/2010	STAMP-G	B	C1-S1-Item107	1	1	1
9002	11/11/2010	STAMP-G	A	C1-S1-Item104	1	1	1
9003	11/11/2010	STAMP-G	A	C1-S1-Item104	1	1	1
9004	11/11/2010	STAMP-G	A	C1-S1-Item104	1	1	1
9005	11/11/2010	STAMP-G	B	C1-S1-Item108	1	1	1
9006	11/11/2010	STAMP-G	B	C1-S1-Item108	1	1	1
9007	11/11/2010	STAMP-G	A	C1-S1-Item102	1	1	1

Solution Approach: Define your Search criteria and create a view to support multi-resource scheduling. In the graphic above:

- (1) Using Production Order Browse: A filter is applied to display only production orders currently assigned to the default resource Stamp-G.
- (2) Assign orders to specific resource. Assign the production orders to the target production lines Stamp-01, Stamp-02, Stamp-03.

MSW Example

Scheduling by Multi-Resource
MSW Example

Click For Next Page

Planning and Scheduling Workbench

Search: Hide/Show Search Save View Hide/Show Tab Option

Search (4)

Size equals bws1

Resource contains Stamp

Resource Navigator

- bws1
 - Production Line
 - STAMP-01
 - STAMP-02
 - STAMP-03
 - STAMP-04

Master Scheduling

Capacity

Production Line	Horizon End	Record Type	Past Due	Today	Friday
STAMP-01	11/09/2015	Remaining Capacity	1	7	8

Schedule

Production Line	Item Number	Quantity	Past Due	Today	Friday
STAMP-01	C1-S1-bws101	20			
STAMP-02	C1-S1-bws101	20			
STAMP-03	C1-S1-bws101	20			
STAMP-04	C1-S1-bws101	20	10	20	25

Supply/Demand

QAD

1) Multi-Resource view for selected item - Applied a filter to display all resources which can schedule the item "C1-S1-bws101"

Solution Approach: Define your Search criteria and create a view to support multi-resource scheduling.

Hands-On Lesson Section

Scheduling Multi-Resource

Hands On Lesson

 QAD

Exercise 3: Items Scheduled on Multiple Resources

Exercise 3 – Learn the Data Display for Items Scheduled on Multiple Resources for Both MSW and PSW

- Retrieve your scheduling data
- Use MSW to familiarize yourself with items and data and compare to PSW data
- Assign an order from the primary resource to an alternate resource
- Move orders from the primary default line to the alternate production lines



The following exercises are aimed at familiarize yourself with how data is displayed for items scheduled on multiple resources on both the MSW and PSW. The exercises focus on the aspect of production scheduling across multiple resources.

Important Do not save your scheduling changes from prior lessons. Ensure your training data was refreshed today. The exercises are not dependent on any prior lesson.

Retrieve your Scheduling Data

- 1 Select Toolbar Options, Preferences, then Display.
- 2 Under Production Scheduling, de-Select (disable) Display Shift.
- 3 Set the Sequencing Days field to 2.
- 4 In the Search Panel, enter selection criteria Site equals 10-202.
- 5 Enter Resource Contains Stamp.
- 6 Click Search.
You may be prompted to save.
- 7 **Important:** Do NOT save.
- 8 Hide the Search Panel and Capacity Panel.

- 9 In the Navigator Panel, click on Production Line Stamp-G.

Use MSW to Familiarize Yourself with Items/Data and Compare to PSW Data

Stamp-G is the department level production line where planned orders from MRP default. It is also the production line for which you firmed planned orders. You added them to the master schedule over the next several days and weeks into the future. Now, you are ready to review the items on the current master scheduled on the primary production line Resource Stamp-G.

- 1 In the MSW Schedule Grid, review the items and scheduled quantities on the production line you selected for <today>.
 - Ensure you have selected Production Line Stamp-G in the Navigator Panel.
 - All quantities, displayed in the firm scheduling horizon are firmed orders that you need to assign to specific production lines (Stamp-01, Stamp-02, Stamp-03).
- 2 In the PSW Sequence Grid, review the items and scheduled quantities on this production line for STAMP-G for <today>.
 - **Question:** Are the items and orders displayed on the MSW Schedule Grid the same as the items and orders displayed on the Sequence Grid for today?
 - **Suggestion:** If you have two monitors available, it may be helpful to move the right-click on the production scheduling tab, select **F loat** and move the Production Scheduling tab to the second monitor. This should make it easier to compare the data on both MSW and PSW views.

Note Shifts should not be displaying if you disabled them.

- 3 In the Navigator Panel, Select production line STAMP -03 .
The system displays the same item numbers, but different scheduled quantities for each item.
 - Not all items have scheduled quantities on STAMP-03. Other items without quantities appear on STAMP-03 because this resource is defined as an alternate resource per QAD EE Production Line/Item Maintenance programs.
- 4 In the MSW Schedule Grid, select item 53103 and select the Schedule Grid cell of tomorrow.
In the Production Order Maintenance Detail Panel, you can see that this item depicts that you have assigned production orders from the STAMP-G default production line to the specific STAMP-03 production line.
- 5 Select the PSW Sequence Grid.
The system displays the same item records for 53103.
 - This illustrates that the MSW and PSW data are the same—PSW is just a more detailed view.

Assign an Order from the Primary Resource to an Alternate Resource

Continuing from the prior scenario, you want to view all primary and alternate resources for a selected item and then assign an order from the primary resource to an alternate resource. You use the MSW to do this, filtering on the selected item and moving it to an order to an alternate line with the Production Order Detail panel.

Note You have to define the alternate on the production line in Production Line Maintenance (18.1.1), and you must make your search criteria generic enough to pick up the alternate resources. For example, enter `resource contains STAMP` in the search to pick up production line STAMP-1 and STAMP-2 and the alternate STAMP-G.

- 1 In the MSW Schedule Grid, Item Number column, filter on item 53103.
The Schedule Grid displays 1 or more records for item 53103.
 - If you only see one record for item 53103, then you are not seeing all the records, continue on next step to correct.
- 2 In the Navigator Panel, select production line STAMP-03.
The Schedule Grid displays only item 53103.
- 3 In the Navigator Panel, select `Production Line`.
The Schedule Grid displays four records for item 53103.
 - **Question:** What do these four records indicate to you?
- 4 In the Navigator Panel, select `production line` on the MSW Schedule Grid; then select the record for production line STAMP-G or item number 53103.
The Schedule Grid displays a scheduled quantity of 5 for tomorrow.
 - The work order ID selected by default should be 90090 for a quantity of 5.
- 5 Review Production Order Maintenance Details tab for order 90090.
The Details tab displays the primary line STAMP-G and the scheduled line `Stamp-G`.
- 6 Modify the scheduled line; select STAMP-01.
The system updates the Schedule Grid, moving the order to production line STAMP-01.
 - You can Tab out of field to apply selected value.

Note This approach is one method of moving orders between production lines—moving them from the default/primary production line to the alternate production lines. The next exercise shows you another method using the PSW.

Move Orders from the Primary Default line to the Alternate Production Lines

Continuing from the prior scenario, you create a production schedule for each production line, STAMP-01, STAMP-02, STAMP-03. You use the PSW to move the orders from the primary default line, STAMP-G, to the alternate production lines, STAMP-01, STAMP-02, STAMP-03. You then use Production Order Browse to drag and drop to move the orders to the targeted lines.

- 1 In the Navigator Panel, select `Production Line`.
The PSW Sequence Grid displays all four production lines.

Note To drag and drop orders to alternate lines, you must ensure on the Navigator Panel that your selection is at the production line/site level.
- 2 In the PSW Sequence Grid, expand STAMP-G for <today>.
The system displays several orders that are scheduled on STAMP-G.
- 3 Select order 90080 and drag and drop it to the target production line STAMP-01 for <today>.

The PSW Sequence Grid shows the order 90080 moved to the new production line.

Note This is the basic method for using drag and drop on the PSW to move orders between lines, but this method may not be effective if you have an abundance of data on the UI, so go on to learn another way.

- 4 Open the PSW Production Order Browse panel and apply a filter to the Resource column for production line STAMP-G.

Production Order Browse only displays orders assigned to STAMP-G.

- This is a good approach to use the Production Order Browse to display all orders on a source resource so that you can move orders to one or more alternate resources on the PSW Sequence Grid.

- 5 In Production Order Browse, group records by the Release Date column, and then group by the Run Seq 1 column.

- You group to organize data in an effective way, making the data easier to comprehend and more efficient to move orders between resources. By grouping the data by release date, you can focus on the orders first with the nearest release dates.

Note You group by dragging the column to shaded area with the text, Drag a column header here to group by that column.

- 6 In Production Order Browse, select all three orders shown for the Large attribute for release date of <today> and drag them to the PSW Sequence Grid for STAMP-01 <today>.

The system assigns the orders to the target production line.

- 7 Using the same method for orders with a Release Date of <today>, assign the Medium attribute orders to production line STAMP-02.

One small order should display on the Production Order Browse for Release Date of <today>.

- 8 Using the same method for orders with a Release Date of <today>, assign the Small attribute orders to production line STAMP-03 for <today>.

No orders should display on the Production Order Browse for Release Date of <today>.

- **Question:** Was there enough capacity on all three production lines?
- The answer should be yes.

- 9 Fill up remaining capacity for <today> on each production line Stamp-01, Stamp-02, Stamp-03 by using the methods above. Use Production Order browse to identify orders with future release dates.

Remaining capacity for each production line, <today> should be less than or equal to 0.

- **Question:** Any comments/thoughts on this approach?

Important Do NOT save your changes.

Questions

- 1 What is the motivation for multi-resource scheduling?
- 2 A resource group represents a group of resources that processes what?

- 3** True or False. You master schedule at the resource group level over the mid-term horizon, and assign production orders to the target resource in the short-term horizon
- 4** How do planned orders get assigned to the resource group?
- 5** What is the resource capacity for the resource group versus the individual resources belonging to the resource group?

Answers

- 1** Direct shop floor execution at the resource level or measure shop floor performance by specific machine.
- 2** A Resource group represents a group of resources that processes items with similar or identical attributes.
- 3** True.
- 4** MRP creates planned orders and assigns them to the resource group.
- 5** Capacity for the resource group (resource) is equal to the number of machines within the resource group.

Split Production Order Section



Split Production Order

Supporting Features & Concepts
Split Production Order

The screenshot shows the 'Production Scheduling' window with the 'Shortage Report' tab selected. The 'Production Line' for 'ASSY-01' is expanded, showing a list of dates and their corresponding required and remaining hours. A callout box points to a 'Projected Shortage' entry, suggesting splitting the order based on capacity shortage.

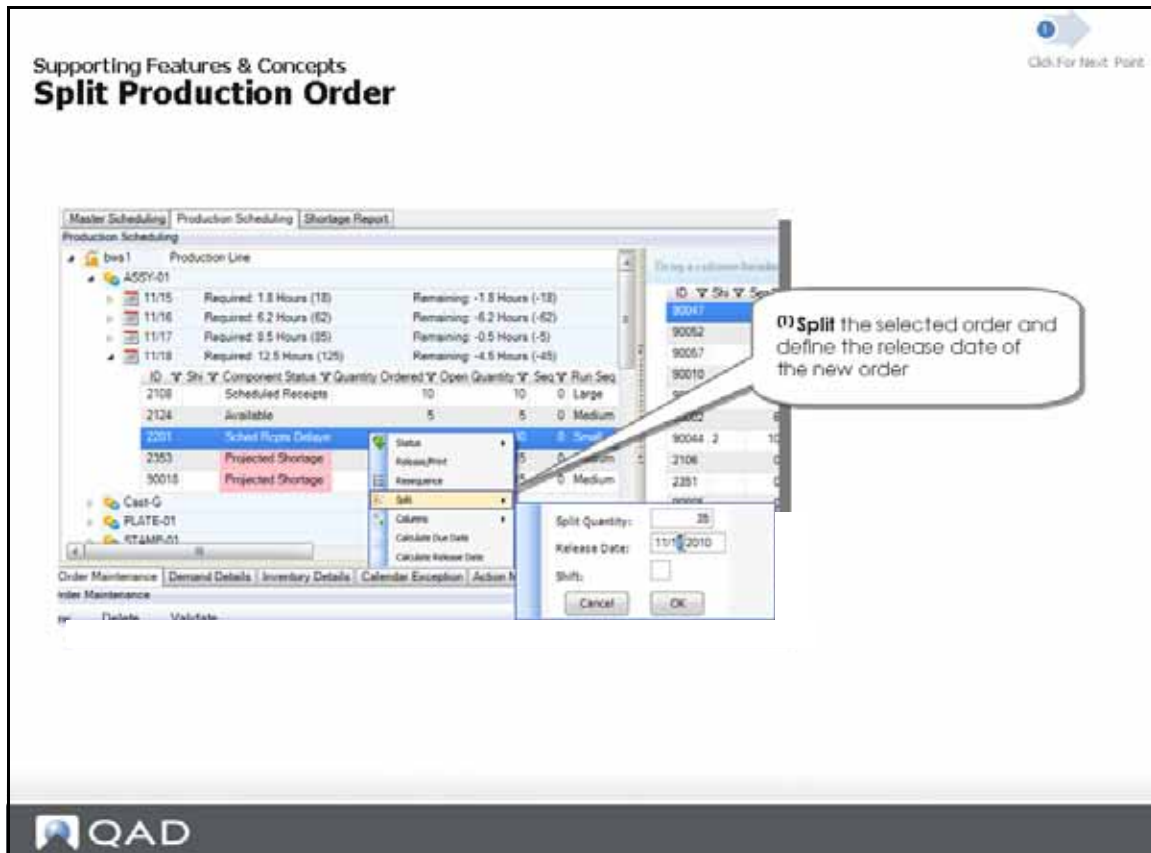
Date	Required Hours	Remaining Hours
11/15	1.8 Hours (18)	-1.8 Hours (-18)
11/16	6.2 Hours (62)	-6.2 Hours (-62)
11/17	8.5 Hours (85)	-0.5 Hours (-5)
11/18	12.5 Hours (125)	-4.5 Hours (-45)

Callout: Consider splitting this order & based on the capacity shortage.

Business Scenario: You desire to split a production order to:

- Accommodate a capacity constraint within a day or shift
- Produce in small batch versus the standard MRP/forecast quantity
- Produce based on material availability
- Split and track by work order number

Split Production Order: Solution Approach



Solution Approach: Split production order with the split function. The split creates a new order ID. The new order keeps the same work order number, but a new ID.

System processing consists of the following:

1. Creates a new (copy) production order with split quantity.
2. Reduces the original production order by the Quantity To Split field.

PSW lets you split a production order into smaller production orders while tracking costs to a cumulative order. To split a new discrete production order into several production orders:

- 1 Select the production order to split.
- 2 Split the order by selecting the line, then right-clicking to display the pull-down menu.
- 3 Select Split.
A window displays additional options.
- 4 Enter the split quantity, release date, and the shift.
- 5 Press OK.

Standard Split Function

Supporting Features & Concepts
Split Production Order

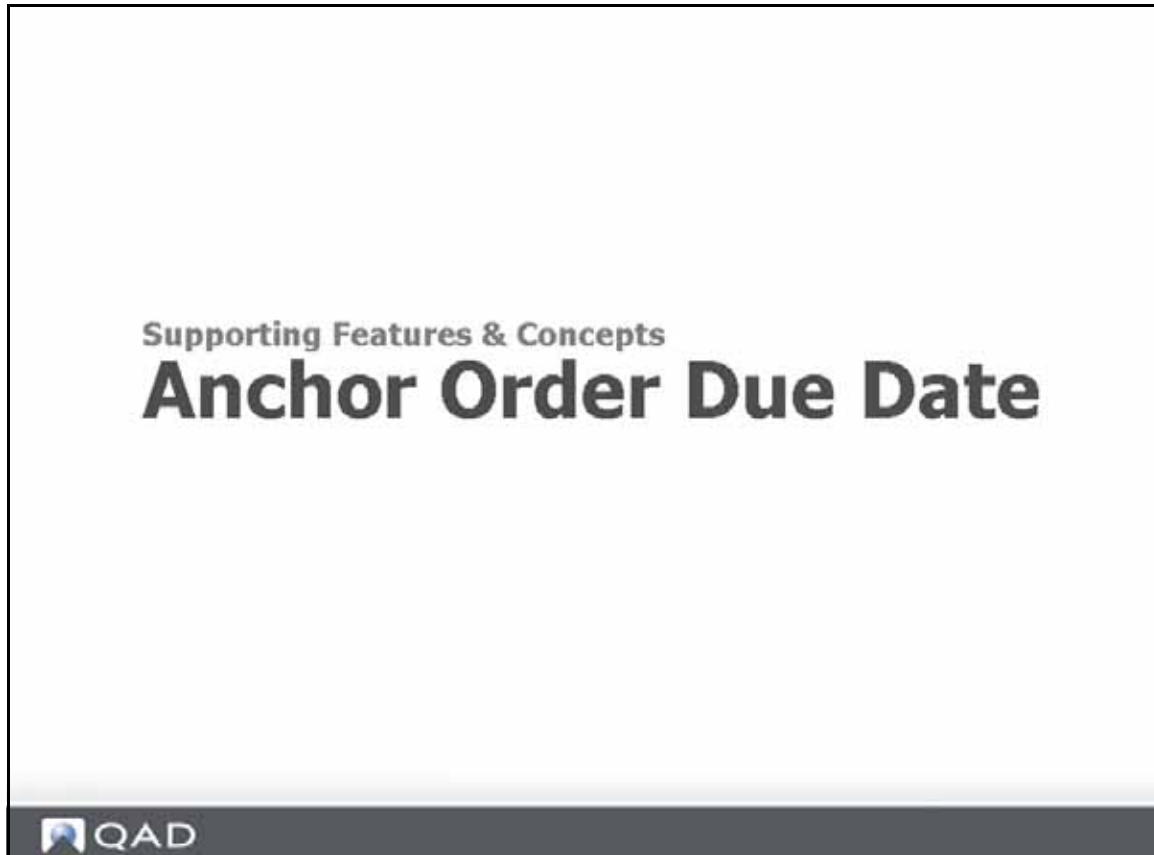
Click For Next Point

The screenshot displays the 'Split Production Order' function in the QAD software. The left pane shows the 'Work Order Split' dialog with fields for Work Order, Item, Quantity, and Split ID. The right pane shows a 'Production Scheduling' table with columns for ID, Status, Component, Status, Quantity, and Run Set. A callout box points to a row in the table with the text: 'Example the selected order has issued materials, the Split function is not available for this order'.

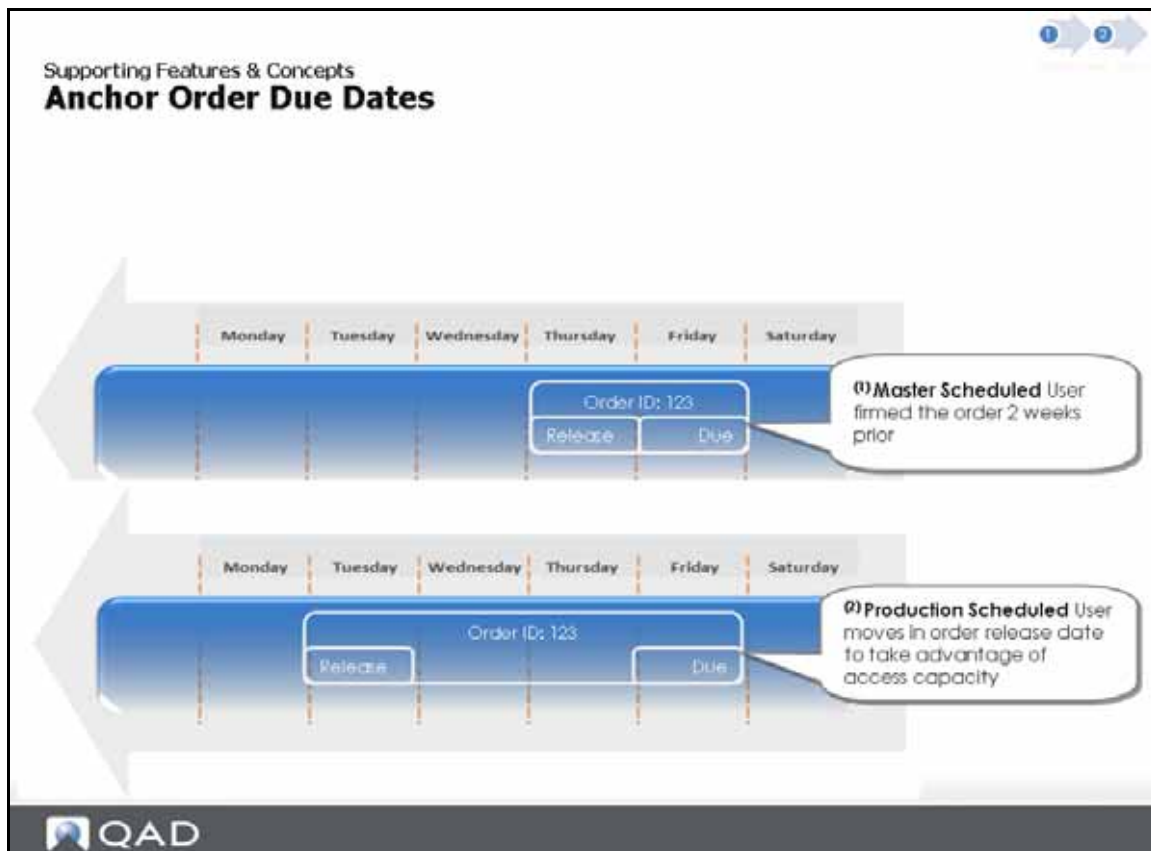
Solution Approach: Use the legacy Work Order Split (16.9) for orders:

- Order status is allocated/released.
- Materials issued/picked for order.
- Production reported against order.
- Order Type is discrete.

Anchor Order Due Date Section



Anchor Order Due Date



Business Scenario: You desire to change the order release date with changing the order due date.

Master schedulers typically define production order due dates. Occasionally, you may need to start a production order earlier than planned; however, you want production order due dates to stay intact. Anchoring a due date lets you lock in the production order due date so that it does not change during the production schedule process.

The master schedule provides the shop floor with a schedule that shows works orders due by Friday. You must determine upon which date the production orders run, but only the Master Scheduler can change the Friday due date; therefore, you anchor the Friday due date.

Note If you change the order to after the due date, the system displays an error message.

Solution Approach

Supporting Features & Concepts
Anchor Order Due Dates

1) Enable Anchoring

2) Validation – with anchoring enabled, you could experience this situation/error

3) Modify order release date – the order due date retains the original due date

QAD

Solution Approach: Enable anchoring

- Enables monitoring performance to plan.
- Provides authorization control.
- Provides baseline reference.

The Anchor Order Date field is in the Scheduling tab of the Settings User Preferences window.

Anchor Order Date. Enter a production order due date that the system locks and prohibits changing during the production schedule process.

Hands-On Lesson Section



Exercise 4: Split an Order and Anchor the Order Due Date

Exercise 4- Split an Order and Anchor a Due Date

- Retrieve data
- Split an order
- Anchor a due date



- 1 Start the workbenches, then in the Search Panel, enter selection criteria Site equals 10-202.
- 2 Enter Resource equals ASSY-01.
- 3 Click search.
- 4 In the PSW, select an order to split.
- 5 Split the order by selecting the line, then right-clicking to display the pull-down menu.
- 6 Specify the split quantity, release date, and shift.
- 7 Press OK.
PSW splits the production order as specified.
- 8 Anchor the order due date by selecting Options in the toolbar, then the Scheduling tab.
- 9 Enter Due Date in the Anchor Due Date column, then review data.

Other Related Topics Section

Manage Resource Capacity

Other Topics

- Production Scheduling
 - Scheduling orders running over multiple days
 - Calculating Order Run Time
 - Calculating Order Duration
 - Calculating Order Release & Due Dates
 - PSW forward capacity consumption logic:
 - * Extended functionality available in 2011 release for items listed above
 - How and when to apply setup time
- Integrated workbench Component Checking
 - Topic covered in the Component Availability Checking (CAC)
- Other
 - Suggestions and comments welcome



Release Orders to Production

In Learning Central, the following training course corresponds to this chapter:

Planning and Scheduling Workbenches: 5. Releasing to the Shop Floor - Functional Detail - 2011 Launch, code PLM11-1230

Play the video within the course with this chapter. The video informs you when to stop the video and take the hands-on lesson.

Overview

Release To Production

▲ Introduction

- Workbenches let you authorize and release work
- After a production schedule is adopted, authorize and release work to production

▲ Objectives

- Learn basic/core features and concepts
- Learn how to authorize, release and print orders as part of the production scheduling process
- Learn how to leverage supporting application collections to provide direct access of schedules and necessary documentation by the shop floor personnel

▲ Audience

- Users who completed Create a Production Schedule(PSW) training



Now that you have learned how to create a production schedule, you are ready to learn how to release orders to production. There is no need to use tools outside of the QAD Planning and Scheduling Workbenches to do this.

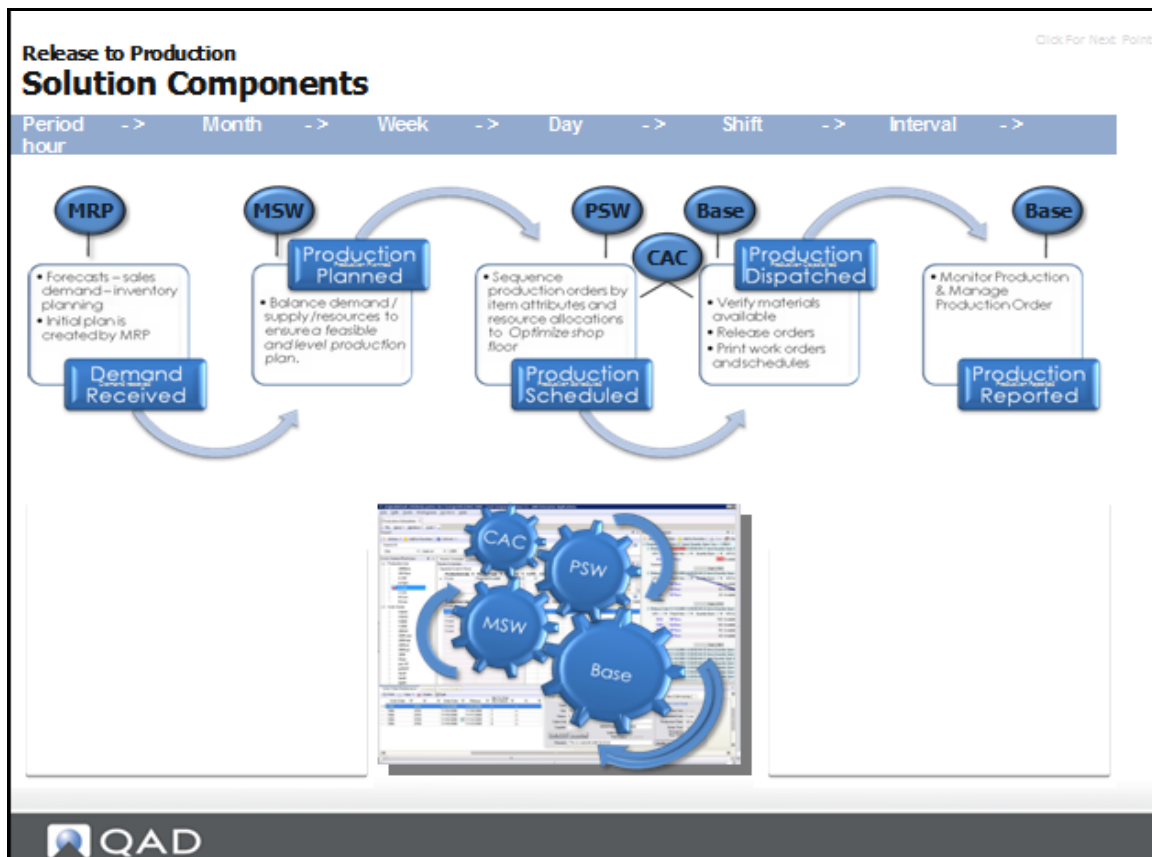
Topics Covered

Topics Covered		
Category	Topics	Hands On
Overview	• Process Flow • General considerations	
Discrete Production Orders	• Authorize / Release Orders • Dispatch Orders	Lesson 1
Repetitive Production Orders	• Authorize • Dispatch Orders	Lesson 2

Overview Section

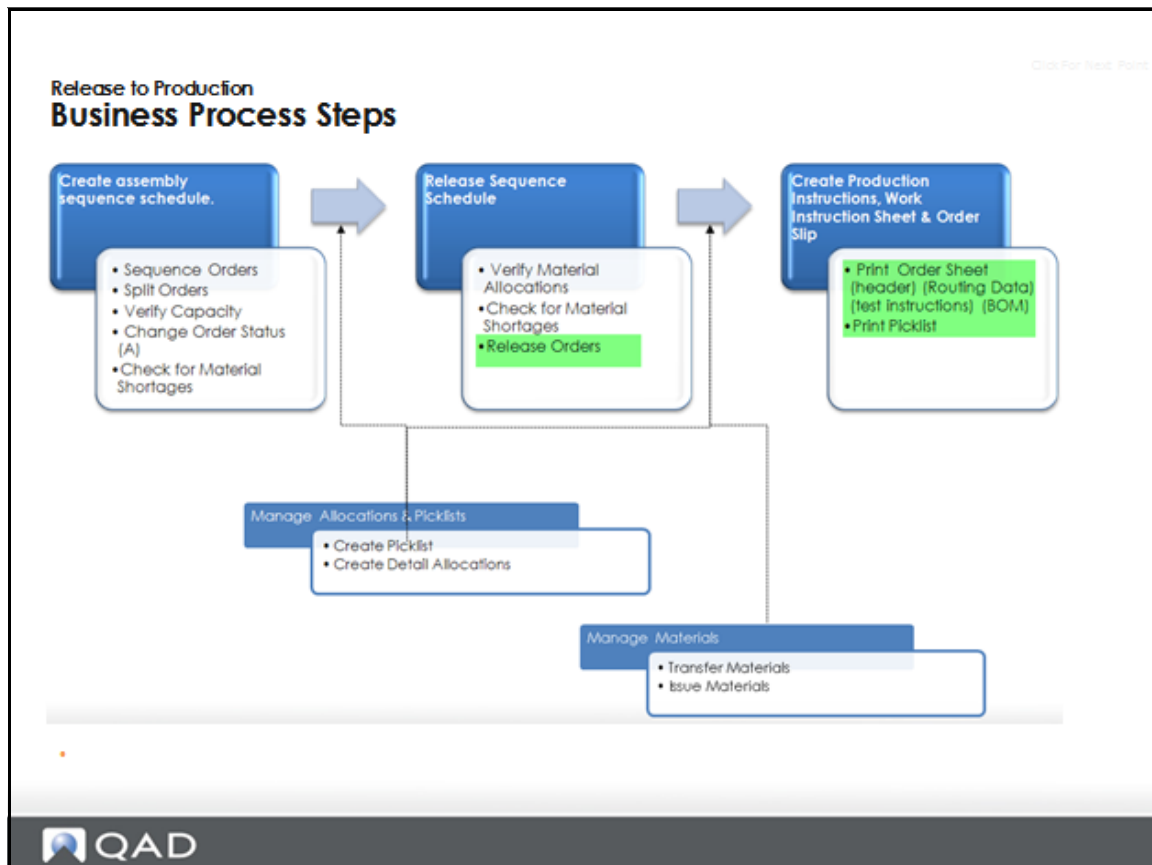


Solution Components



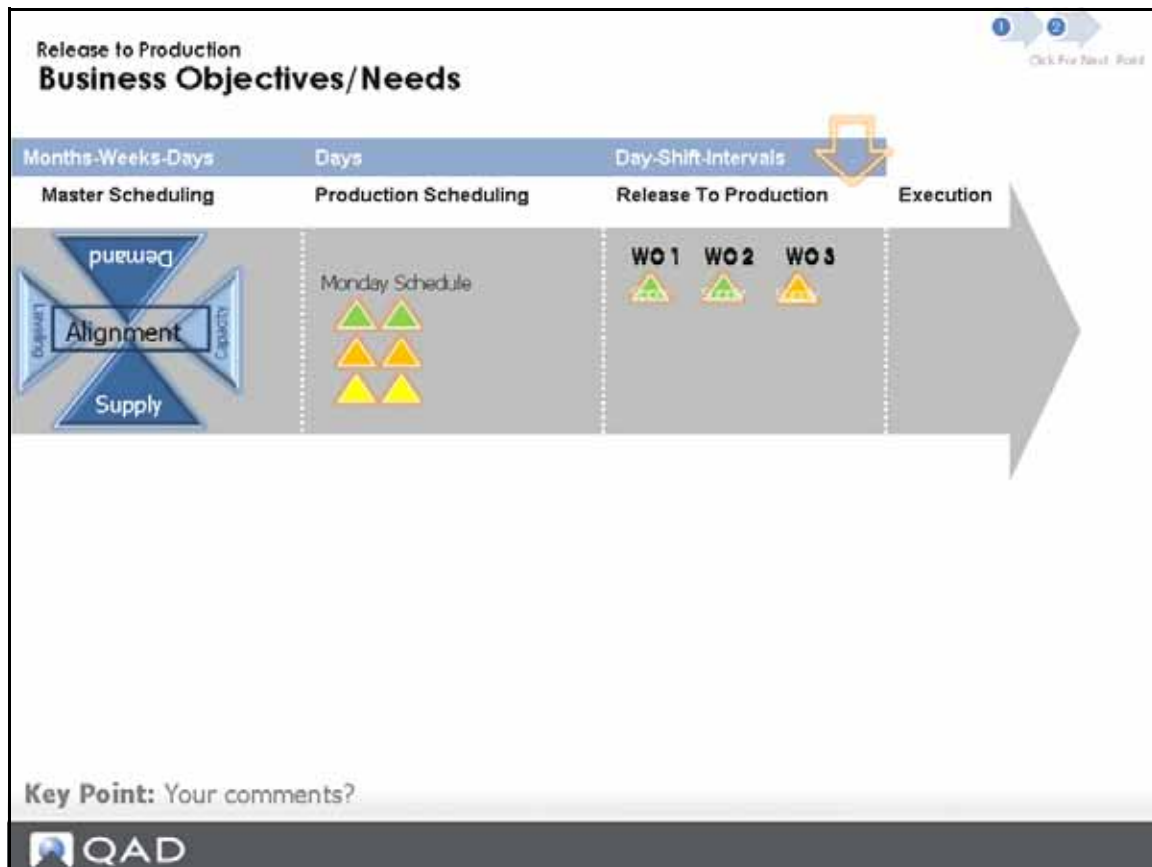
In the production process flow, you must authorize and release orders for discrete and repetitive processes. This chapter focuses on the two authorization processes.

Business Process Steps



- 1 Create assembly sequence schedule:
 - Sequence or split orders
 - Verify capacity
 - Change order status to A(pproved)
 - Check for material shortages
- 2 Release sequence schedule.
 - Verify material allocations
 - Check for material shortages
 - **Release orders (this chapter)**
- 3 **Create production instructions, work instruction sheet and order slip (this chapter)**
 - Print order sheet (this chapter)
 - Print picklist (this chapter)
- 4 Manage allocations and picklists
- 5 Manage materials

Business Objectives/Needs



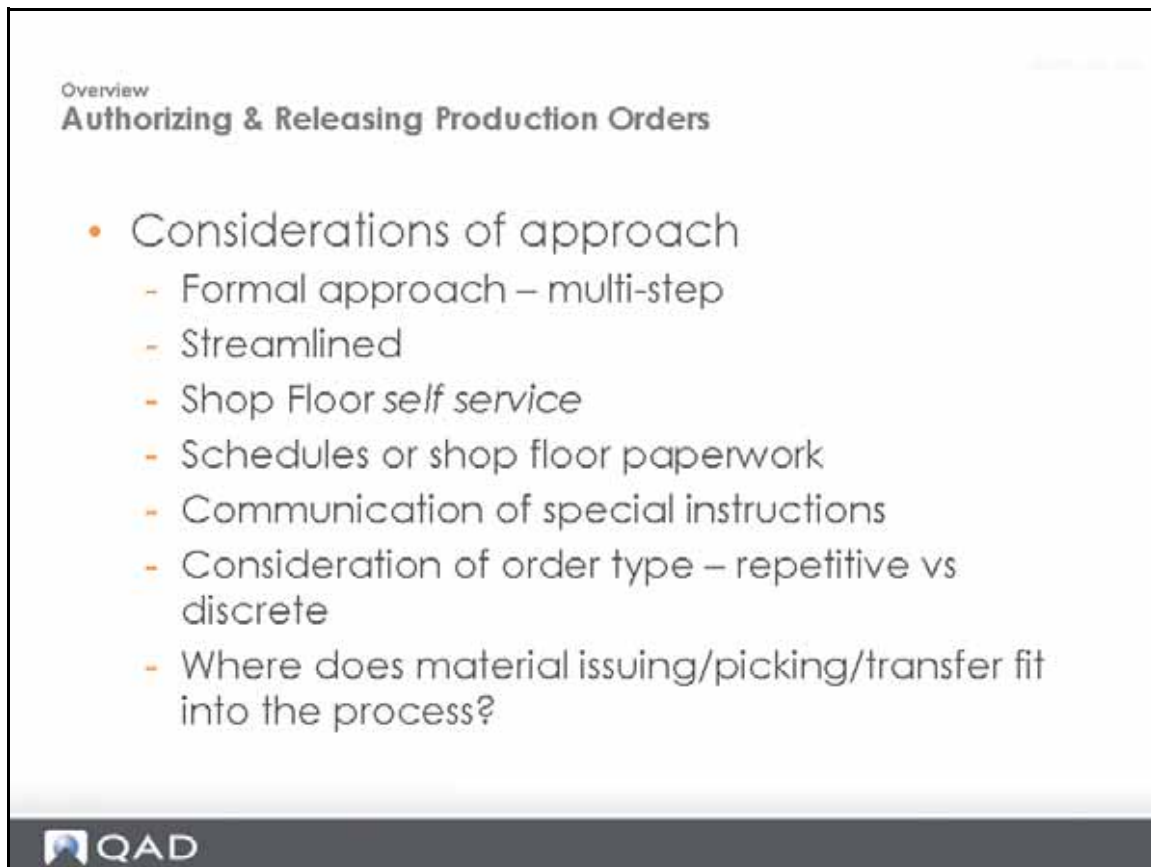
Business Objective

- Provide production with timely and accurate production schedules.
- Provide production with timely shop floor paperwork, if required.

Business Need/Approach

- Release production orders and schedules to production efficiently.
- Production to access schedules and production orders details directly – self service.

Authorizing and Releasing Production Orders: Approach



Overview

Authorizing & Releasing Production Orders

- Considerations of approach
 - Formal approach – multi-step
 - Streamlined
 - Shop Floor *self service*
 - Schedules or shop floor paperwork
 - Communication of special instructions
 - Consideration of order type – repetitive vs discrete
 - Where does material issuing/picking/transfer fit into the process?

 QAD

You should consider whether you require a formal or non-formal approach to authorizing; that is, do you need to authorize, then release, then print, or just print?

For formal authorization, you may also have to include shop floor paperwork, such as BOM data, routings, and so on.

Or your company may require that you include special instructions, for example, packing instructions.

Authorize Release to Production Section



Process Overview: Comparison

The image compares two QAD process flows for authorizing and releasing production orders. The left side shows the 'Prior to 2010.1 Process' which is a multi-step, error-prone manual process. The right side shows the 'New Process with Workbenches' which is a streamlined, automated process.

Authorize / Release Production - Discrete Process Overview – Comparison

Prior to 2010.1 Process

This process involves multiple manual steps and data entry:

- Work Order Status Change:** A screen with a large red question mark, indicating confusion or error. Fields include Work Order, Item Number, and Quantity. A green oval highlights the 'Change Work Status' button.
- Work Order Maintenance:** A screen with fields for Work Order, Item Number, Type, and Quantity. A green oval highlights the 'Work Order Status' button.
- Work Order Release:** A screen with fields for Work Order, Item Number, Quantity, and Release Date. A green oval highlights the 'Release' button.

New Process with Workbenches

This process is streamlined and automated:

- Planning and Scheduling Workbench:** A screen showing a list of work orders with columns for Item, Quantity, and Status. A green oval highlights the 'Release' button.
- Work Order Release:** A screen showing a list of work orders with columns for Item, Quantity, and Status. A green oval highlights the 'Release' button.

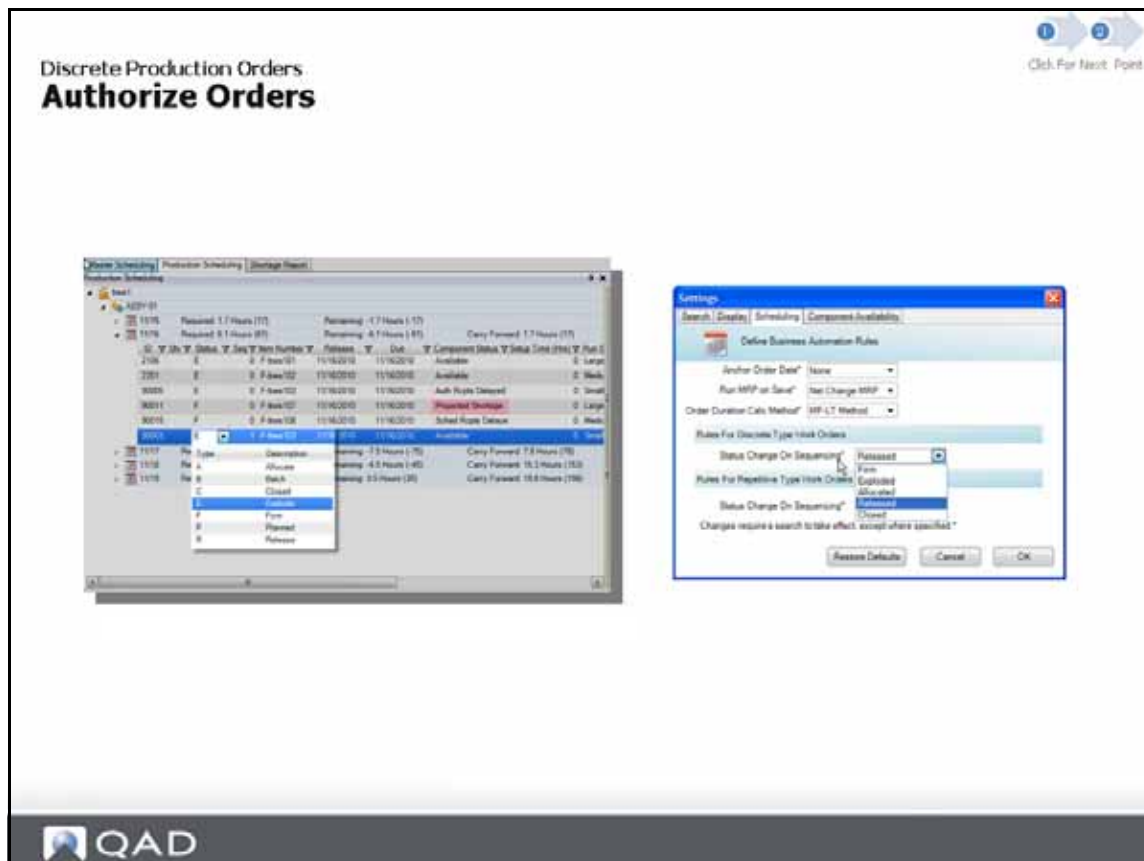
Prior to 2010.1 Process

Identifying discrete orders to authorize was a tedious and error-prone process.

New Process with Workbenches

The new process includes orders that are not authorized, released and printed and that can be clearly be seen in the workbenches.

Discrete Production Orders: Authorize Orders



Business Scenario:

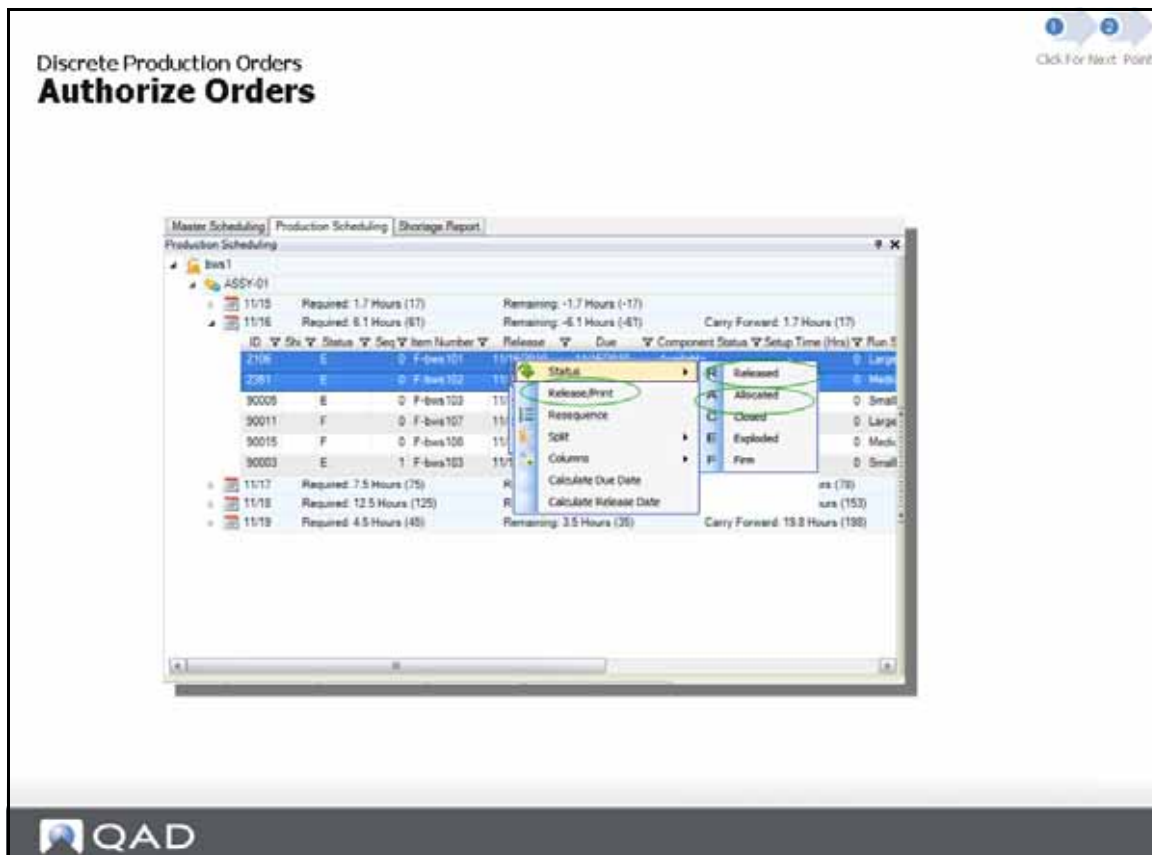
You have firmed (scheduled) production orders over a period of days, weeks and months, which of those orders are ready to be authorized/released to the shop floor?

Solution Approach:

Manual (select new order status)

Business event triggers (sequencing)

Authorize Orders (Continued)



The workbench lets you perform a multi-order update, within the context panel. Upon a save, the system:

1. Creates detail allocations for BOM components
2. Flags orders for printing.

Dispatch Orders Section





Process complex to a point relied on the scheduler to perform this work.

New Release To Production collections makes it possible for the shop floor to issue materials and print the necessary paperwork.

Dispatch Orders

Discrete Production Orders
Dispatch Orders

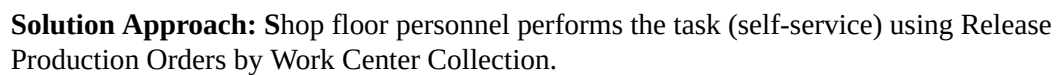
1) Select Orders to Release/Print - workbench improves accuracy and simplifies

2) Print selected orders - simplified selection criteria ensure you only print the orders you intended to print

QAD

Business Scenario: Print production schedules and shop floor paper work designated production line or work center

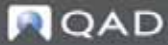
Solution Approach: Production Scheduler performs the tasks using Planning and Scheduling Workbench.



Hands-On Lesson Section

Release to Production - Discrete

Hands On Lesson



Exercise 1: Release Discrete Orders to the Shop Floor

Exercise 1 - Release Discrete Orders to the Shop Floor Production Lines

- Retrieve your scheduling data
- Select orders to release and print
- Select orders to authorize, have shop floor review orders, then run the authorization



In the following exercises, you learn the process and steps to release production orders to the shop floor using the workbenches for discrete production orders on production lines.

Important Do NOT save your scheduling changes from prior lessons. Ensure your training data was refreshed today. The exercises are not dependent on any prior exercises.

Retrieve your Scheduling Data

- 1 Select Toolbar Options, Preferences, Restore Defaults on each Tab (Search, Display, Scheduling),
There is no immediate impact until you run a new search.
- 2 In the Search Panel, enter selection criteria Site equals 10-202.
- 3 Enter Resource Equals ASSY-01.
- 4 Click Search.
You may be prompted to save.
- 5 **Important:** Do NOT save.
- 6 In the Navigator Panel, click Production Line.

Select Orders to Release and Print

Production line ASSY-01 has a mix of repetitive and discrete items produced. As a scheduler, you need to release discrete production orders daily. You use the PSW to select orders to release/print and then use the Print Selected Orders for Print to print the orders.

- 1 In the PSW Sequence Grid, review the production orders scheduled <today>.
- 2 Sequence all orders for the release date from Small to Large.
- 3 Select order 90011 for item 02307 and right-click on your mouse, selecting Release/Print.

The system changes the order status to R(elease) and release/print is checked on the production order.

- **Questions:** Where can you find the indicator/field that shows the order is selected for print? Has the order sheet been printed before? How do you know?

- 4 **Important:** Save your changes.
- 5 In the .NET Menu Search Panel, type Print Orders Selected for Print; then, open the Print Orders Selected For Print program.
- 6 In Print Orders Selected For Print, select Production Line = ASSY-01; then set the output set to page.

The system prints order 90011, picklist, routing, and so on.

- The Print Orders Select For Print program was specifically designed to simplify the print process, letting you print orders that you selected for print from the workbenches.

- 7 Print the order again using the same criteria in the previous step.

The system does not print the order.

- The system ensures that orders are not printed accidentally. The system tracks if a production order has been printed.
- **Question:** How could you re-print this order?

- 8 On the workbenches, run a Search to update your data. There is no need to change the selection criteria.

- 9 In the PSW Sequence Grid, select order 90011 for item 02307.

- **Question:** How can you tell if the order has been printed?
- **Hint:** Review Production Order Maintenance Detail panel for information.

Select Orders to Authorize, Have Shop Floor Review Orders, then Run the Authorization

Since you release discrete production orders daily, you are now ready to use the PSW to select orders to authorize, and let the shop floor review the orders through the Release Production Orders by Production Line browse collection. You use the browse collection to print the authorized orders.

- 1 Select order 90015 for item 02308; then, right-click on your mouse to select STATUS A.

The system changes order status to A(located).

- 2 **Important:** Save your changes.
- 3 In the Menu Search Panel, type `Release Production`; then, open the `Release Production Orders By Production Line` program.
Note If you receive an error message when opening the browse, this may be a defect.
- 4 Enter selection criteria `site equals 10-202` and `production line equals assy-01`.
- 5 Run the search.
 The system displays planned, firm, authorized, released and WIP orders.
 - This is the information a production line supervisor/operator views.
- 6 Review order 90011 and 90015.
 Order 90015 displays as authorized (allocated/released) and order 90011 displays as released.
 The line operator is now ready to work on 90015.
- 7 As the operator, release/print the production order by selecting order 90011.
- 8 Select the supporting tab `Work Order Release/Print` and print the selected production order.
 The system prints the order.
Note You may notice that the system is not defaulting the expected order ID, 90011; this is a limitation of QAD EA browse collections. Alternately, you can use `Work Order Maintenance (16.1)` to change the order status and release the order.
- 9 Enter order 90015 in `Work Order Release/Print` field.
Note You should only have to do this when multiple production orders exist that have the same production order number.
- 10 Run `Search` to refresh the browse to view the new order status of R(eleased).

Questions

- 1 True or False. When you sequence a production order, you can change the status to A or R.
- 2 Which of the following occur upon a save after a multi-order update:
 - a The system creates detail allocations for BOM components.
 - b The system notifies you of BOM component allocations through .NET UI notifications.
 - c The system flags orders for printing.
 - d The system automatically prints the orders and notifies you of the printer location.
- 3 What .NET UI feature makes it possible for the shop floor to issue materials and print the necessary paperwork?
- 4 What benefits does the new browse collection provide to the shop floor personnel?

Answers

- 1 True. You can change the status to A or R.
- 2 A and C.
- 3 The Release to Production Orders by Work Centers browse collection.
- 4 Shop floor personnel can use Release Production Order by Work Centers browse collection *themselves* to check component availability, then release and print orders.

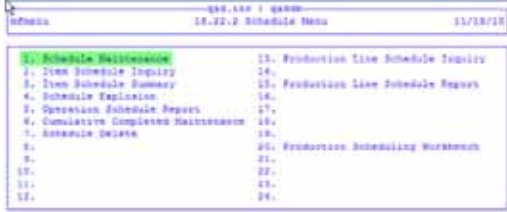
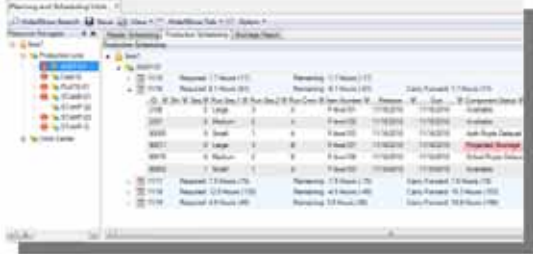
Authorize Production Section



Authorize Production: Repetitive Process

1 2
Click For Next Page

Authorize Production - Repetitive Process Overview – Comparison

Prior to 2010.1 Process	New Process with Workbenches
 QAD 16.22.2 Schedule Menu 11/18/18 1. Schedule Maintenance 2. Item Schedule Inquiry 3. Item Schedule Summary 4. Schedule Expansion 5. Operation Schedule Report 6. Cumulative Completed Maintenance 7. Schedule Delete 8. 9. 10. 11. Production Line Schedule Inquiry 12. Production Line Schedule Report 13. 14. 15. Production Scheduling Workbench 16. 17. 18. 19. 20. 21. 22. 23. 24.	 Planning and Scheduling Workbench Production Order: 1000000000 Item: 1000000000 Quantity: 1000000000 Start Date: 11/18/18 End Date: 11/18/18 Production Order: 1000000000 Item: 1000000000 Quantity: 1000000000 Start Date: 11/18/18 End Date: 11/18/18



Process Prior to QAD EA 2010.1

No direct method to control what the next job (sequence) the floor will work on.

New Process

Sequencing the production orders or assigning the orders to shifts provides more control.

Authorize Orders

Repetitive Production Orders
Authorize Orders

Click For Next Point

ID	Shift	Seq	Run Seq 1	Run Seq 2	Run Crew	Item Number	Setup Time (Hrs)	Sta	Component Status	Qty
90057	1	Blue	Medium	B	51-bws108	1	E	Available		
90044	2	Red	Medium	A	51-bws102	1	E	Projected Shortage		
90047	1	0	Blue	Small	A	51-bws103	1	E	Projected Shortage	
90052	1	0	Inhib	Medium	B	51-bws105	1	E	Projected Shortage	

QAD

Repetitive Business Scenario

You have firmed (scheduled) production orders over a period of days, weeks and months, which of those orders are ready to be authorized/released to the shop floor?

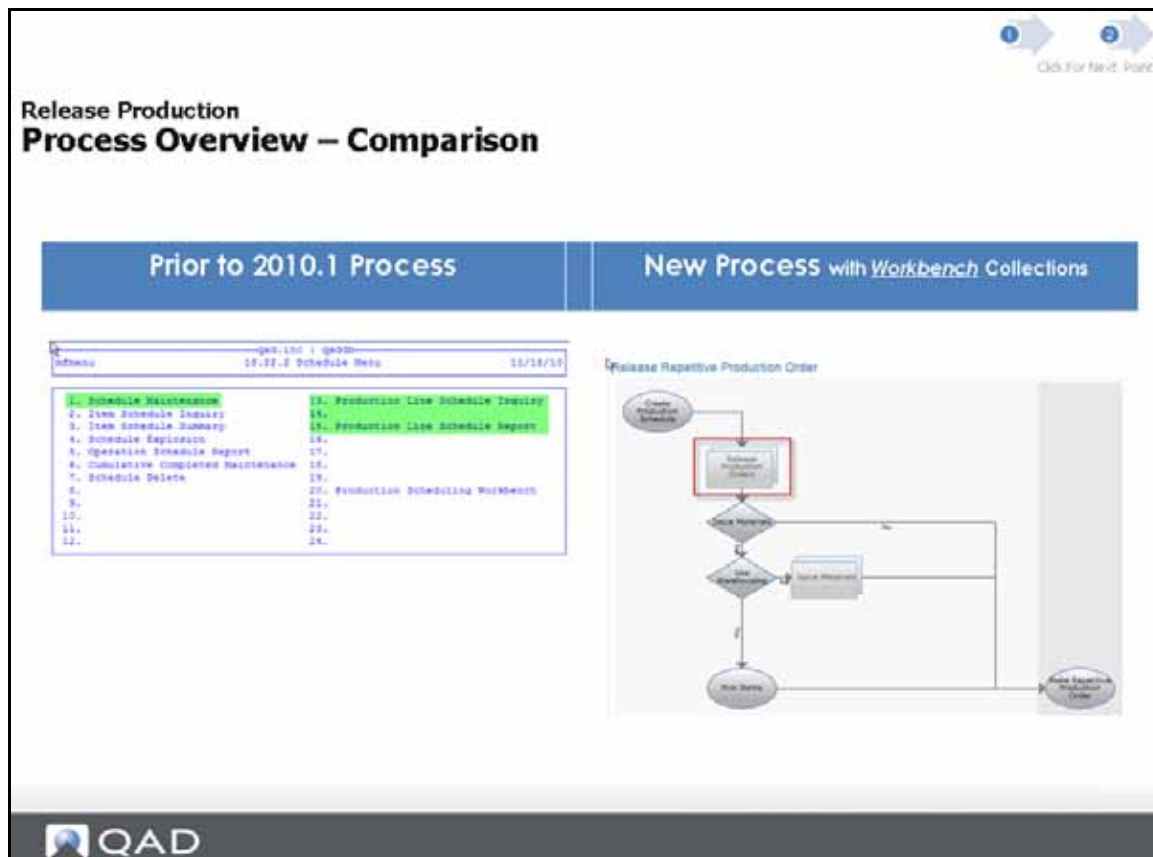
Solution Approach: Use order attributes to signify authorization for repetitive order types:

- Sequenced orders
- Orders assigned to shifts
- Order status E

Dispatch Orders Section



Process Overview: Comparison



Process Prior to QAD EA 2010.1

Production relied on the scheduler to provide timely updates of production schedule

New Process

Production floor can now access the most current schedule real-time.

Repetitive Production Orders: Dispatch Orders

Repetitive Production Orders
Dispatch Orders

Click For Next Point

The screenshot shows the QAD software interface for managing production orders. The top section, 'Production Scheduling', displays a table of production orders. The bottom section, 'Work Order Maintenance', contains various input fields for order details. A 'Remarks' field at the bottom contains the text 'customer special request - premium ship'.

Business Scenario: Communicate special work instructions to production.

Solution Approach: Enter Remarks or Comments on order.

Dispatch Orders (Continued)

Repetitive Production Orders
Dispatch Orders

Click For Next Point

The screenshot shows the 'Production Scheduling' window in QAD. The 'Master Scheduling' tab is selected. The 'Production Line' is 'bws1' and the 'Assembly' is 'ASSY-01'. The 'Required' time is 1.7 Hours (17) and the 'Remaining' time is -1.7 Hours (-17). The 'Carry Forward' is 1.7 Hours (17). The table below shows the production orders:

ID	Shi	Seq	Run Seq 1	Run Seq 2	Run Crea	Comp	Avail	Auth	Sched
90003	1	Small	1	A					
90005	2	Small	1	A					
2351	3	Medium	2	A					
90015	4	Medium	2	B	F-bws108	R	Sched		
2106	5	Large	3	A	F-bws101	E	Available		

Export schedule to excel

QAD

Business Scenario: Print production schedules for designated production lines

Solution Approach, Continued: Production Scheduler performs the task using Planning and Scheduling Workbenches

Exporting to Excel and printing the data in the spreadsheet is the most basic method to instructions to the shop floor.

Dispatch Orders: Solution

Repetitive Production Orders
Dispatch Orders

Click For Next Page

Working and Scheduling Work Release Production Orders by... Release Production Orders by...

Search (2)

Site: equile Item: [] Search Clear All

Production Line: equile [sety-01]

Release Date: less than [Tomorrow]

Viewing 1 - 20 of 20 Records per page: 100

Release Date 11/15/2010 12:00:00 AM (3 items)

ID	Parent Item	Work Order Status	Component Status	Quantity Open	Quantity Order	Shift	Seq
90002	F-box103	E	Available	5.0	5.0	8.0	11/15/2010
90010	F-box101	H	Shortage	4.0	10.0	3.0	11/15/2010
90017	F-box101	E	Issued Complete	8.0	10.0	8.0	11/16/2010

Release Date 11/16/2010 12:00:00 AM (6 items)

ID	Parent Item	Work Order Status	Component Status	Quantity Open	Quantity Order	Shift	Seq
90015	F-box106	F	Sched Rcpts Delayed	3.0	3.0		
90003	F-box103	E	Available	5.0	5.0	1.0	
90011	F-box101	F	Projected Shortage	5.0	9.0		
2106	F-box101	E	Available	18.0	18.0		
2061	F-box102	E	Available	13.0	18.0		
90005	F-box103	E	Auth Rcpts Delayed	20.0	20.0		

Release Date 11/17/2010 12:00:00 AM (8 items)

Release Date 11/18/2010 12:00:00 AM (3 items)

QAD

1) Define search criteria - to display orders to release/run at designated production line

2) View Active Next Order Line operator has visibility to the current order in process and the next order to start

Solution Approach Continued: Shop floor personnel (self-service) using Release Production Orders by Production Line collection.

Hands-On Lesson Section



Exercise 2: Release Repetitive Orders to the Shop Floor

Exercise 2 - Release Repetitive Orders to the Shop Floor Production Lines

- Retrieve your scheduling data
- Generate the production schedule
- Review released orders to determine the next production order to work on



In the following topics, you learn the process and steps to release production orders to the shop floor using the workbenches for repetitive production orders on production lines. The exercises are a continuation from the first exercise in this chapter.

Note Repetitive orders do not have to be released and printed; however, discrete orders do have to be printed.

Retrieve your Scheduling Data

- 1 In the Search Panel, enter selection criteria Site equals 10-202.
- 2 Enter Resource Equals ASSY-01.
- 3 Click search.
- 4 In the Navigator Panel, click on Production Line.

Generate the Production Schedule

Production Line ASSY-01 has a mix of repetitive and discrete items produced. As a scheduler, you need to release discrete production orders daily. You use the PSW to generate the production schedule.

- 1 In the PSW Sequence Grid, review the production orders scheduled <today>.

Note If the orders are not sequenced from the exercise in “Exercise 1: Sequencing Production Orders within a Release Date” on page 273, please sequence them now.
- 2 Right-click the mouse on the PSW Sequence Grid Release Date row for <today> and select the Excel Export option.

The system sends the schedule to Excel.

 - Notice that the entire PSW view was exported to the spreadsheet, not just a single release date.
- 3 Review and manipulate the spreadsheet until satisfied.

Note A scheduler may delete future release dates that they do not want to publish to the shop floor. A scheduler may delete/hide columns they do not want the shop floor to see; they can also use a Macro to automate this process.

Review Released Orders to Determine the Next Production Order for Work

For production Line ASSY-01, you can have the shop floor access the scheduler directly by themselves instead of exporting the data to excel. You can let the shop floor review the Release Production Orders by Production Line browse collection in QAD EE to determine the next production order upon which to work.

- 1 In the Menu Search Panel, type Release Production and open the Release Production Orders By Production Line program.
- 2 Enter selection criteria site equals 10-202.
- 3 Enter production line equals ASSY-01.
- 4 Run the search.

The system displays planned, allocated, authorized, released and orders in production.

 - This is the information a production line supervisor/ operator would view
- 5 Group the data by Release Date and expand the schedule for <today>.
 - Notice that the production orders are sequenced. Some orders may have the status or A or R, but the majority have the order status of E(xploded). The E orders are the repetitive orders.
- 6 Sort the Sequence column ascending.

The system displays all orders in sequence of 0-6.

 - **Questions:** Why is there an order with 0 sequence? What do you notice about the quantity open of this order?
 - The production line operator would use this browse information to communicate the next order to produce.

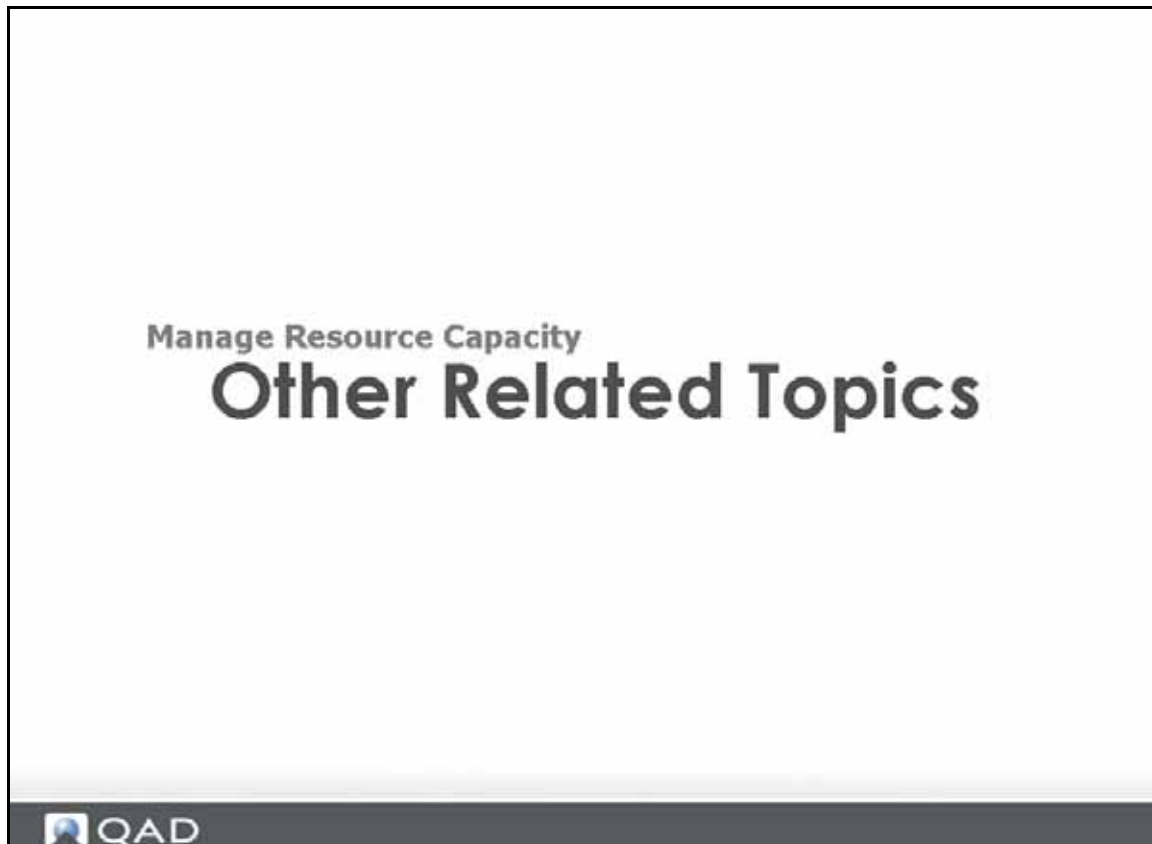
Questions

- 1 In the process prior to QAD EA 2010.1 method of sequencing without the workbenches, what was the biggest problem for schedulers?
- 2 What is one of the two ways to communicate special instructions to the shop floor using the workbenches?
- 3 Name two benefits the browse collections provide when dispatching repetitive orders.

Answers

- 1 No direct method to control the next job upon which the floor would work.
- 2 Use Comments or Remarks to enter instructions.
- 3 You can define search criteria to display orders to release or run at a production line. You have visibility to the next order to start.

Other Related Topics Section



Other Related Topics

Release Production

Other Topics

- **Integrated workbench Component Checking**
 - CAC can provide real-time visibility to material availability prior to authorizing and releasing production orders
 - Topic covered in the Component Availability Checking (CAC)
- **Issue – Picking & Transfer Materials**
 - CAC can provide real-time visibility to material availability to aid in material issuing/picking process
 - Topic covered in the Component Availability Checking (CAC)
- **Other**
 - Suggestions and comments welcome



Monitor Production

In Learning Central, the following training course corresponds to this chapter:

Planning and Scheduling Workbenches: 6. Performance Monitoring - Functional Detail - 2011 Launch, code PLM11-1240

Play the video within the course with this chapter. The video informs you when to stop the video and take the hands-on lesson.

Overview

Monitor Production

- ▲ Introduction
 - Workbenches let you monitor production activity against the schedule
 - After schedule/orders are dispatched to production, production activity can be monitored within the workbenches
- ▲ Objectives
 - Learn basic/core features and concepts
 - Learn how CUM order production details differ from standard production order details
 - Learn how repetitive schedules are consumed
- ▲ Audience
 - Users who completed Monitor Production (PSW) training

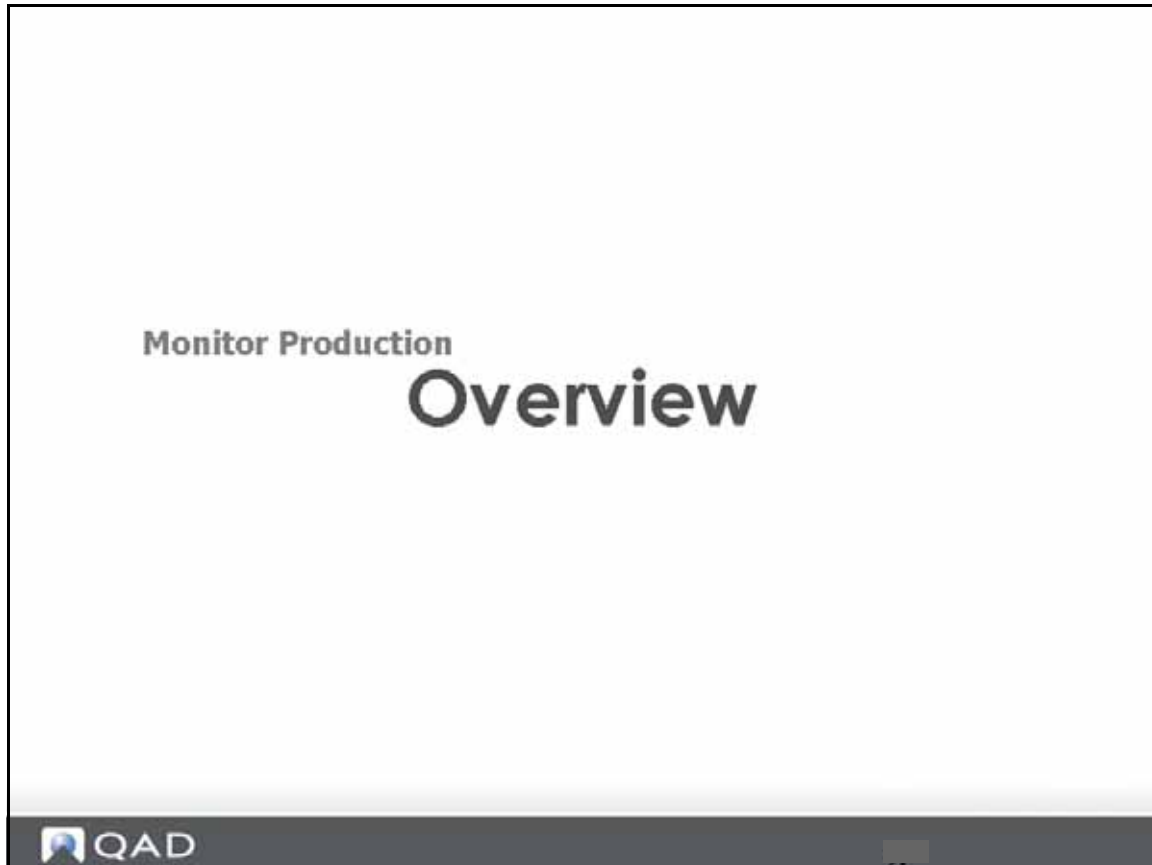


Now that you have learned how to create a production schedule, you are ready to learn how to release orders to production. There is no need to use tools outside of the QAD Planning and Scheduling Workbenches to do this.

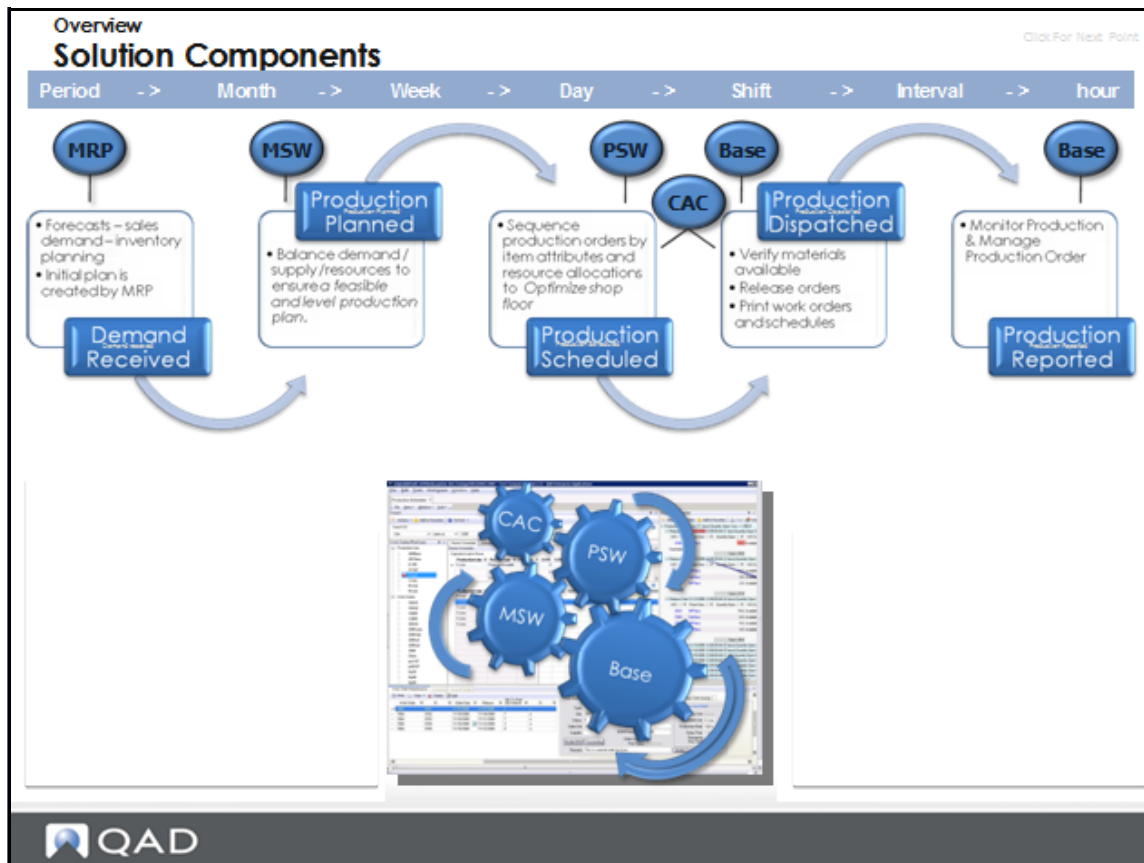
Topics Covered

Topics Covered		
Category	Topics	Hands On
Overview	• Monitor Production	
Monitor Production Activity	• Visualize Completes to Schedule	
Review Production Activity Detail	• Discrete Production Orders	Lesson 1
	• Repetitive Production Orders	Lesson 2
Manage Orders	• Closing Orders • Deleting Schedule History • Financial Impacts	

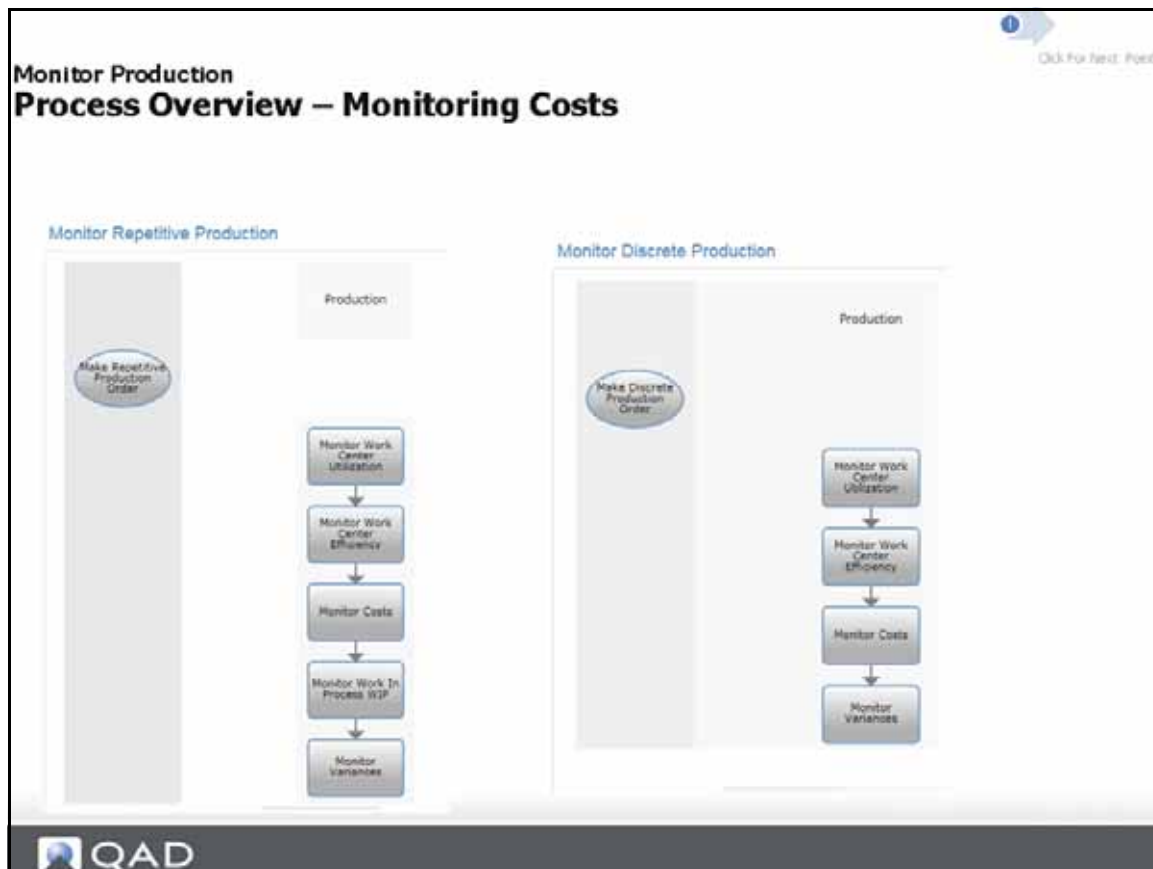
Overview Section



Solution Components



Process Overview: Monitoring Costs



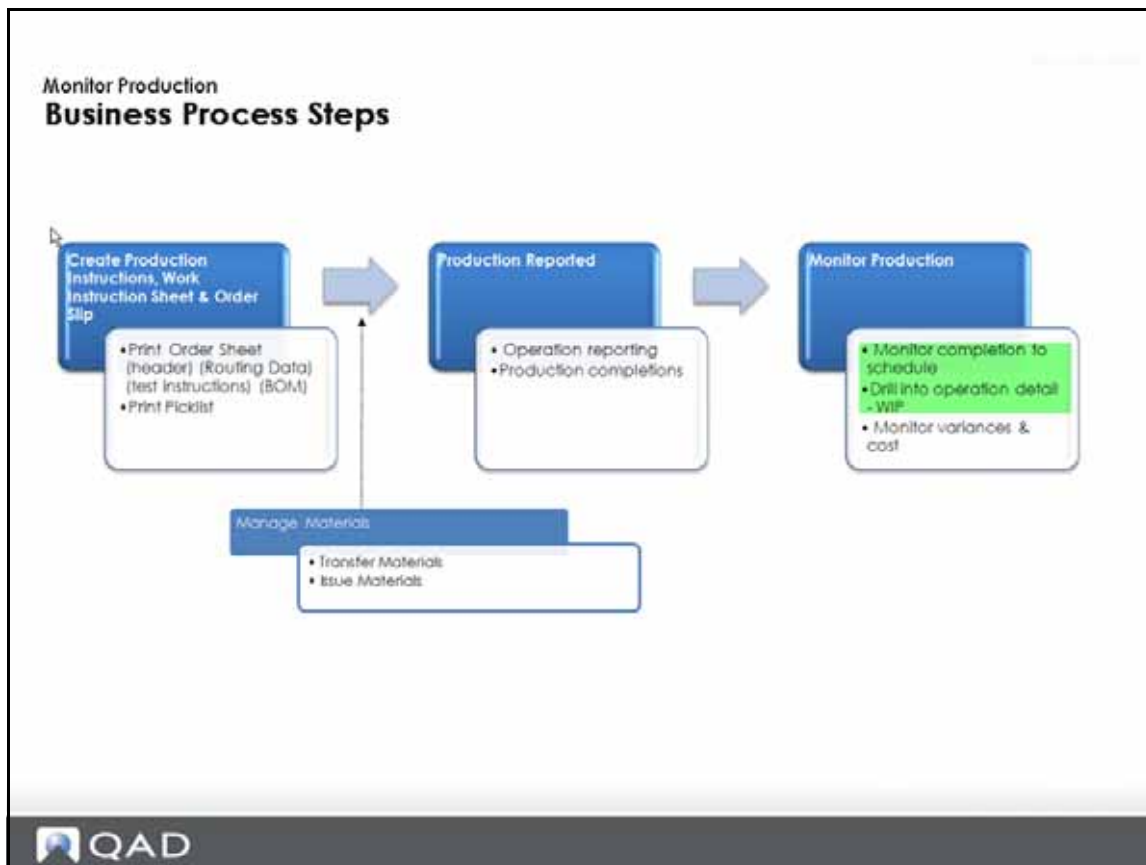
To make a repetitive production order, you must monitor:

- Work order utilization
- Work center efficiency
- Costs
- WIP processes
- Variances

To make a discrete production order, you must monitor:

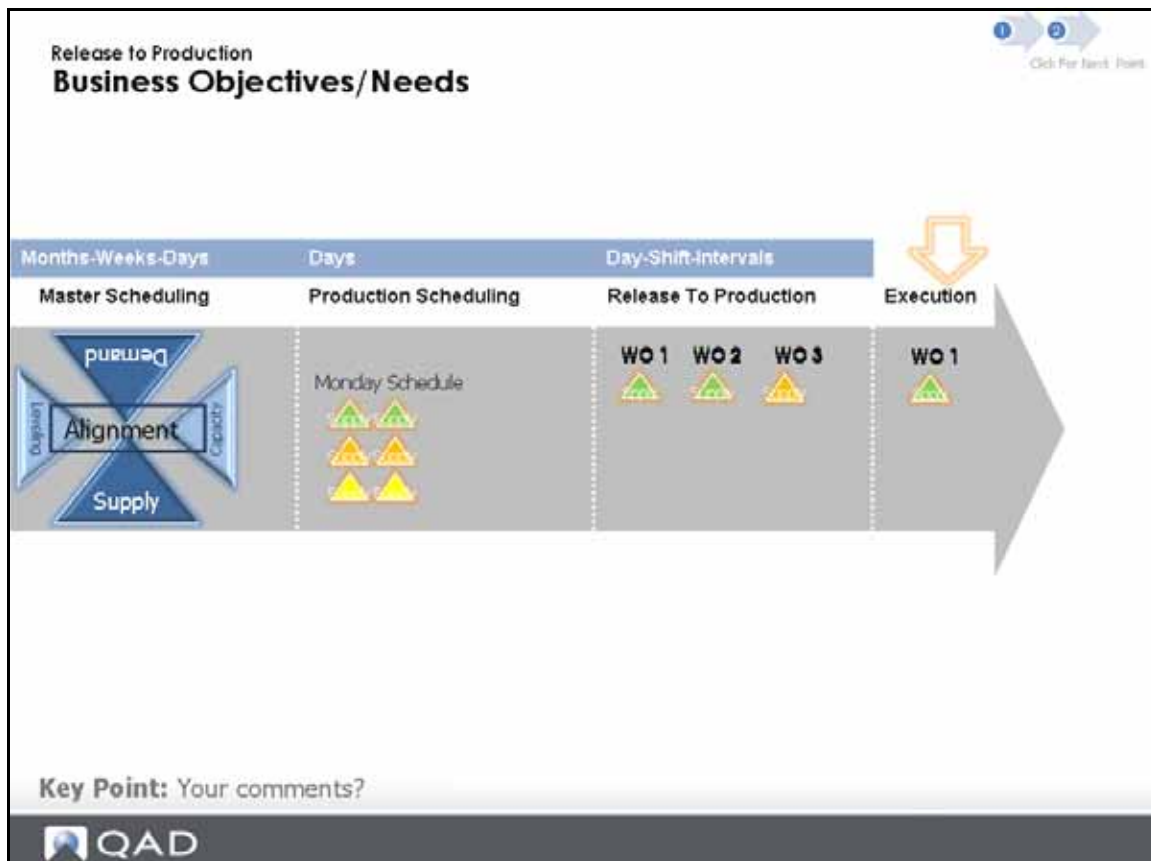
- Work center utilization
- Work center efficiency
- Costs
- Variances

Business Process Steps



- 1 Create production instruction, work instruction sheet and order slip:
 - Print order sheet.
 - Print picklist.
- 2 Manage materials, if needed by:
 - Transferring materials
 - Issuing materials
- 3 Report production:
 - Operation reports
 - Production completion
- 4 Monitor production:
 - Monitor completion to schedule
 - Drill into operation details and WIP
 - Monitor variances and costs

Business Objectives/Needs



Business Objective

Provide a production schedule which is obtainable.

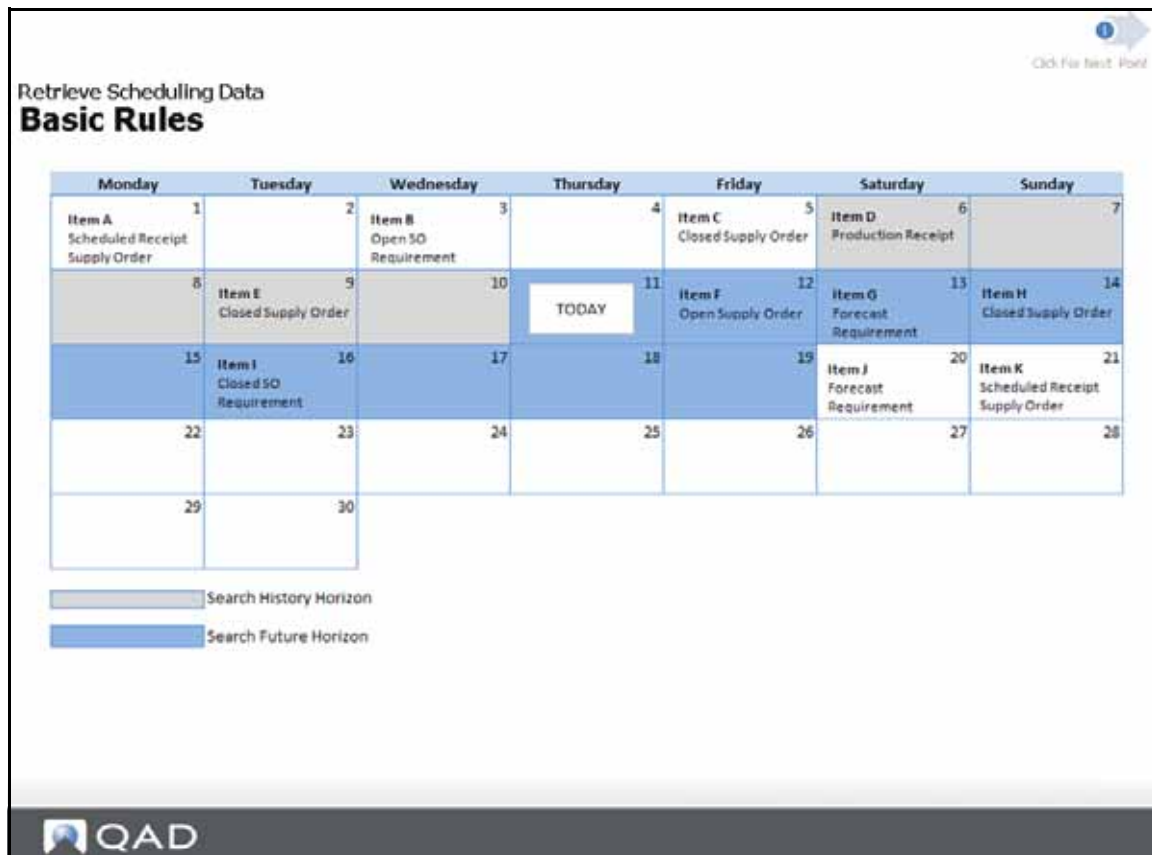
Business Need and Approach

Visibility to timely/real-time schedule attainment when creating the next production schedule release.

Visualize Completions to Schedule: Basic Rules



Basic Rules



Workbench search retrieves items and transaction records based on this criteria:

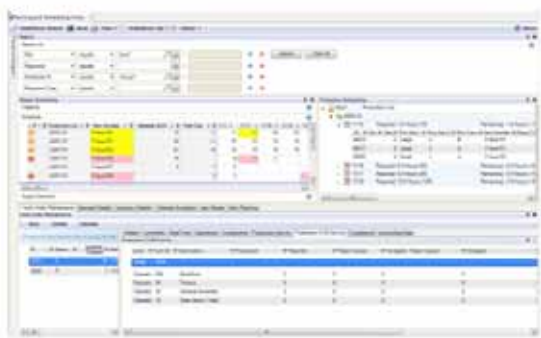
- Active supply/demand records
 - Within the future horizon
 - Prior to today
- Item activity within the history/future horizon
- Item receipts
- Item association with resource

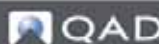
Question: Which items would not appear on workbench?

Process Overview: Comparison


[Click For Next Page](#)

Visualize Completions to Schedule Process Overview – Comparison

Prior to 2010.1 Process	New Process with Workbenches																																																
QAD 100 QAD00 Admin 10.0 Work Order Reports Menu 11/17/10 <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr><td>1. Work Order By ToDO Report</td><td>33. Co/By-Product Work Order Inquiry</td></tr> <tr><td>2. Work Order By ToDO Report</td><td>34.</td></tr> <tr><td>3. Work Order Status Report</td><td>35.</td></tr> <tr><td>4. Work Order Cost Report</td><td>36.</td></tr> <tr><td>5. Work Order WIP Cost Report</td><td>37.</td></tr> <tr><td>6. Work Order Material Report</td><td>38. Work Order Components Change</td></tr> <tr><td>7.</td><td>39. WIP Components Change Report</td></tr> <tr><td>8.</td><td>20.</td></tr> <tr><td>9.</td><td>21.</td></tr> <tr><td>10.</td><td>22.</td></tr> <tr><td>11.</td><td>23.</td></tr> <tr><td>12.</td><td>24.</td></tr> </table> QAD 100 QAD00 Admin 10.02-2 Schedule Menu 11/17/10 <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr><td>1. Schedule Maintenance</td><td>33. Production Line Schedule Inquiry</td></tr> <tr><td>2. Item Schedule Inquiry</td><td>34.</td></tr> <tr><td>3. Item Schedule Summary</td><td>35. Production Line Schedule Report</td></tr> <tr><td>4. Schedule Explorer</td><td>36.</td></tr> <tr><td>5. Operation Schedule Report</td><td>37.</td></tr> <tr><td>6. Cumulative Completed Maintenance</td><td>38.</td></tr> <tr><td>7. Schedule Delete</td><td>39. Production Scheduling Workbench</td></tr> <tr><td>8.</td><td>20.</td></tr> <tr><td>9.</td><td>21.</td></tr> <tr><td>10.</td><td>22.</td></tr> <tr><td>11.</td><td>23.</td></tr> <tr><td>12.</td><td>24.</td></tr> </table>	1. Work Order By ToDO Report	33. Co/By-Product Work Order Inquiry	2. Work Order By ToDO Report	34.	3. Work Order Status Report	35.	4. Work Order Cost Report	36.	5. Work Order WIP Cost Report	37.	6. Work Order Material Report	38. Work Order Components Change	7.	39. WIP Components Change Report	8.	20.	9.	21.	10.	22.	11.	23.	12.	24.	1. Schedule Maintenance	33. Production Line Schedule Inquiry	2. Item Schedule Inquiry	34.	3. Item Schedule Summary	35. Production Line Schedule Report	4. Schedule Explorer	36.	5. Operation Schedule Report	37.	6. Cumulative Completed Maintenance	38.	7. Schedule Delete	39. Production Scheduling Workbench	8.	20.	9.	21.	10.	22.	11.	23.	12.	24.	
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Process Overview: Comparison (Continued)

Monitor Production Process Overview – Comparison	
Prior to 2010.1 Process	New Process with Workbenches
• Several reports to access production progress	• Workbenches provide high-level summary and detail views of schedule attainment
• Low visibility to performance to schedule – especially in discrete env's	

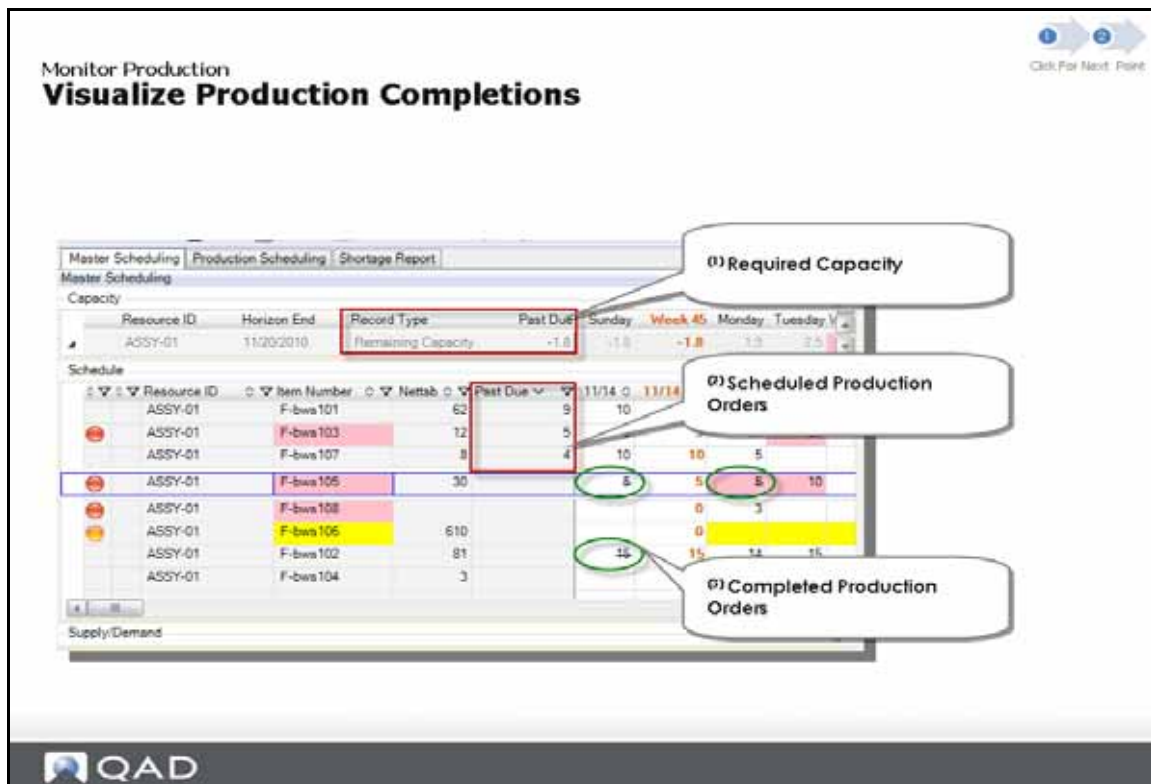
Process Prior to 2010.1

- Several reports to access production progress.
- Low visibility to performance to schedule, especially in discrete environments.

New Process

- Workbenches provide high-level summary and detail views of schedule attainment.

Visualize Production Completions



Solution Approach: MSW provides visualization of:

- Past due required capacity
- Past due scheduled production orders
- Completed production orders

Business Scenarios:

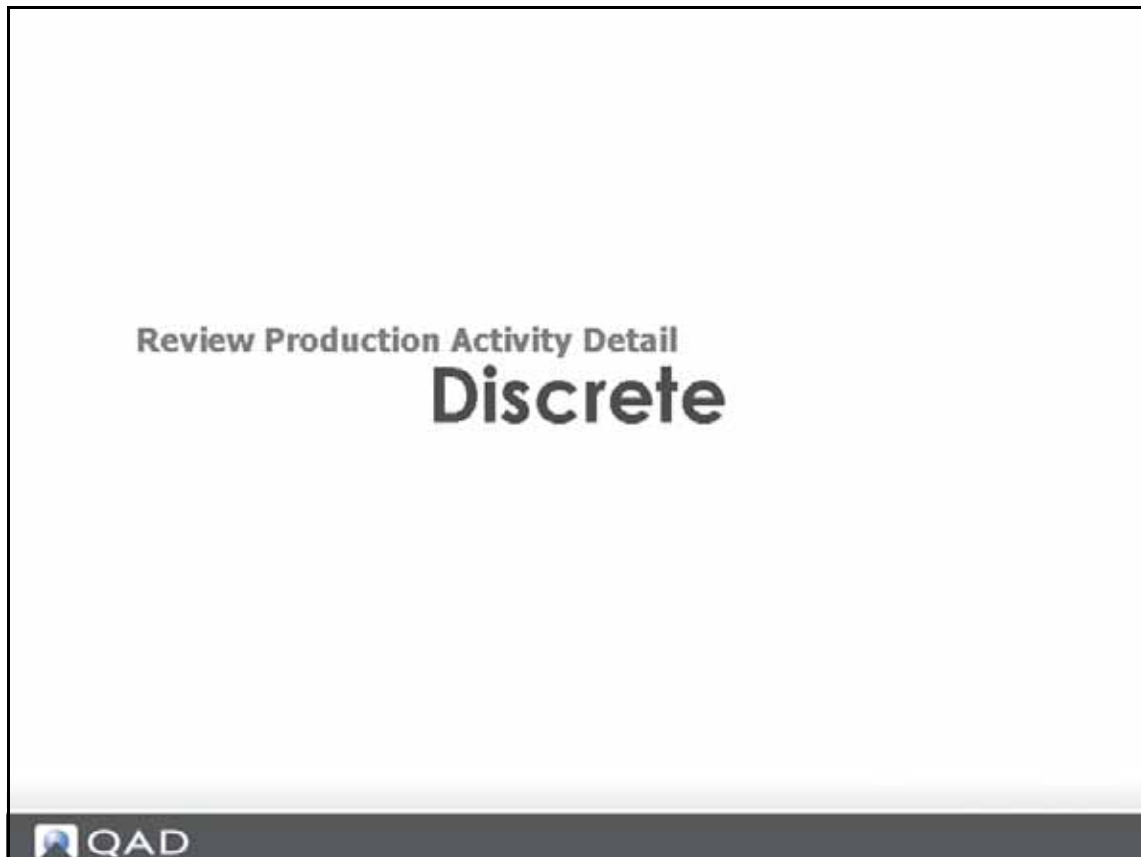
MSW provides visualization of:

- Past due required capacity
- Past due scheduled production orders
- Completed production orders
- Reviewing past schedules and completions

PSW provides visualization of:

- Past due scheduled production orders

Discrete Section



Process Overview: Comparison

Visualize Completions to Schedule
Process Overview – Comparison

Prior to 2010.1 Process

Extra effort to access legacy reports & information

New Process with Workbenches

WIP details a click away on workbenches

QAD

Standard QAD EA Process

Extra effort to access legacy reports & information.

Workbenches Process

WIP details a click away on workbenches.

Solution Approach

Review Production Activity Detail
Discrete

Click For Next Point

Order Summary - summarizes order level information concerning completed, reworked and labor hours

Operation Details - Review the production activity details and WIP

QAD

Solution Approach: Production Order Maintenance / Production Activity Tab displays Production Activity of discrete orders.

Repetitive Section



Process Overview: Comparison

Visualize Completions to Schedule
Process Overview – Comparison

Prior to 2010.1 Process

QAD EA Standard Process

1. Operations Transaction Inquiry
 2. Operation Time Detail Inquiry
 3. Work Analysis Report
 4. Report Analysis Report
 5. Report Analysis Report
 6. Wip Adjustment Analysis Report
 7. Work Time By Report Report
 8. Work Center Dispatch Report
 9. Rep Operations Accounting Report
 10. Complete Order Cost Report
 11. Wip Status Report
 12. Operations Summary Report

13. Wip Valuation Report
 14. Order Valuation Report
 15. Wip Adjustment Valuation Report
 16. Operations By Item Report
 17. Operations By Employee Report
 18. Operations By Work Center Report
 19. Productivity By Item Report
 20. Productivity By Employee Report
 21. Productivity By Work Ctr Report
 22. Efficiency By Item Report
 23. Efficiency By Employee Report
 24. Efficiency By Work Center Report

New Process with Workbenches

QAD EA Standard Process

1. Operations Transaction Inquiry
 2. Operation Time Detail Inquiry
 3. Work Analysis Report
 4. Report Analysis Report
 5. Report Analysis Report
 6. Wip Adjustment Analysis Report
 7. Work Time By Report Report
 8. Work Center Dispatch Report
 9. Rep Operations Accounting Report
 10. Complete Order Cost Report
 11. Wip Status Report
 12. Operations Summary Report

13. Wip Valuation Report
 14. Order Valuation Report
 15. Wip Adjustment Valuation Report
 16. Operations By Item Report
 17. Operations By Employee Report
 18. Operations By Work Center Report
 19. Productivity By Item Report
 20. Productivity By Employee Report
 21. Productivity By Work Ctr Report
 22. Efficiency By Item Report
 23. Efficiency By Employee Report
 24. Efficiency By Work Center Report

QAD

QAD EA Standard Process

No performance tracking for production against a scheduled repetitive order or visibility of progress at the operation level. You had no idea if your production was on time, using this method.

Extra effort to access legacy reports and information.

Workbenches Process

New production activity detail now available for repetitive order types.

Repetitive - Solution Approach

Review Production Activity Detail
Repetitive

Click For Next Page

The screenshot displays the QAD Production Activity window. The top section shows a summary for order 30017, including required and remaining hours. The bottom section shows a detailed table of production activities for order 30017.

Order Summary – summarizes order level information concerning completed, reworked and labor hours

Operation Details – Review the production activity details at the operation level

ID	Sh	Seq	Run Seq	Open Quantity	Quantity Ordered	Run Seq 2	Run Cntr	Item No
30017	2	Large	4	10	3	6	F-bus1	
30002	6	Small	5	5	1	4	F-bus1	

Level	ID	Description	Open Quantity	Completed	Rejected	Reworked	Actual Run Time
Order	30017		6	2	0	0	
Operatio	300	Backflush	6	4	0	0	0
Operatio	20	Testing	6	4	0	0	0
Operatio	20	General Assembly	0.0	10	0	0	0
Operatio	10	SubA Assm/Yield	0.0	10	0	0	0

Solution Approach: Production Order Maintenance / Production Activity Tab displays Production Activity of repetitive orders

Use the Production Activity window to track production order activity. For an order, you can view the operation and description, open completed, rejected, and reworked quantity; the actual run time; and the actual setup time.

The actual time shows the time required to manufacture a single unit. Run time for an operation is a function of total run time, work center or shop calendar hours, and the machines per operation. Run time is expressed in terms of an hourly production rate. This time is differentiated expected run time. The actual time is the time required to set up a resource.

Solution Approach (Continued)

Review Production Activity Detail
Repetitive

Click For Next Page

Resource Navigator: Production Line: A55Y-01, CASH-01, PLATE-01, STAMP-02, STAMP-03, STAMP-03, Inlet Center

Master Scheduling: Production Scheduling: A55Y-01, 11/15, Required: 1.7 Hours (17), Remaining: -1.7 Hours (-17)

Production Scheduling: 90010 F Bus 107, 2 Large, 4, 10, 3, B

90010 F Bus 107, 5 Large, 8, 10, 3, A

90002 F Bus 107, 6 Small, 8, 5, 1, A

Required: 6.1 Hours (61), Remaining: -6.1 Hours (-61), Carry Forward: 1

Work Order Maintenance: Demand Details | Inventory Details | Calendar Exception | Action Messages | Item Master | Item Planning

Work Order Maintenance: New | Delete | Validate

Production CUM Activity: Details | Comments | Date/Time | Operations | Components | Production Activity | Production CUM Activity | Compliance

Production CUM Activity: Level | Cum ID | Description | Processed | Rejected | Reject Queue | Scrapped | Reject Queue | Scrapped | Reworked | In Queue

90017 Order: 257

2106 Operat: 999 Backflush, 8, 2, 2, 0, 2, 0, 0, 0

2107 Operat: 30 Testing, 8, 0, 0, 0, 0, 0, 16, 0

2108 Operat: 20 General Assembly, 28, 0, 0, 0, 0, 0, 5, 0

2109 Operat: 10 SubA Assm / Weld, 30, 0, 0, 0, 0, 0, 0, 0

2190

CUM Orders – aggregate all production activity against an item over a specified period of time for a specific BOM/Routing configuration

Cum Operation Details – Review the production activity details at the operation level to identify critical information, such as WIP

QAD

Solution Approach: Production Order Maintenance / Production Activity Tab displays Production CUM Activity of repetitive orders.

Cum(ulative) orders are the aggregate of all production activity against an item over a specified time period for a specific BOM or routing configuration.

Cum operation details let you review the production activity details at the operation level. This lets you identify critical information.

Use the Production CUM Activity window to track cumulative order activity. For an order, you can view the CUM ID, the quantity processed, rejected, or in the reject queue; the number scrapped, reworked, and the number in and out of the queue. You can also see the actual run time and the actual setup time.

Manage Orders Section



Manage Orders

Monitor Production Click For Next Slide

Manage Orders

Business Scenarios	Repetitive Process	Discrete Process
What happens to a completed production order?	Automated processing	Requires user action
How do I close a production order that was not fully completed?	Same process	
Should I delete scheduled order history?	Schedule Delete	Not applicable
What are the financial and inventory impacts of closing a production order?	No Impact	Considerations

 QAD

The slide above depicts the difference in the repetitive and discrete order processing when managing orders.

Hands-On Lesson Section



Exercise 1: Monitor Production Activity**Exercise 1 – Monitor Production Activity using the Workbenches**

- Retrieve your scheduling data
- View all past due production orders
- View orders by due date
- View completed orders
- Drill down into production activity details for a repetitive order
- Drill down into production activity details for a discrete order



In the following topics, you learn the process and steps to monitor production activity using the workbenches. Once completed, you should know how to:

- Identify globally, past due production orders
- Identify orders completed on the MSW
- Drill down into production order details for repetitive and discrete orders

Important Ensure your training data was refreshed today. The exercises are not dependent on any prior exercises.

Retrieve your Scheduling Data

- 1 Select Toolbar Options, Preferences, Restore Defaults on each Tab (Search, Display, Scheduling).

There is no immediate impact without a new search.

- 2 In the Search Panel, enter selection criteria Site equals 10-202.
- 3 Enter Scheduler ID Equals Group1.
- 4 Click search.
- 5 Hide the Search Panel.

View all Past Due Production Orders

You retrieved data from several of the resources you manage. Now you wish to review all past due production orders. You use the MSW Past Due Column to quickly view all past due production orders.

- 1 In the Navigator Panel, click `site`.
- 2 MSW Schedule Grid, click on Past Due Column to sort descending.
The system displays several items/resources with past due production orders.
 - **Questions:** For Item 53008, where is the past due quantity of 8 from? What was the production order due date?

View Orders by Due Date

Continuing from the prior step, you want to review production activity against orders completed today. You use the MSW to view orders by due date.

- 1 In the MSW Schedule Grid, click on the Date Column for <today>; then click twice to sort descending.
The system displays all orders due today.
 - **Question:** Can you identify which orders have been completed?
 - **Hint:** Item 02305 has a strike-through in the scheduled quantity, indicating the order is closed/completed.

Note When orders are completed/closed, they continue to display on the MSW. Review the search rules in the Chapter on Getting Familiar with the MSW.
- 2 Select item 02035 on production line ASSY-01.
- 3 Open the Supply/Demand Panel to review production activity.
 - **Questions:** What does the Receipts row show for the item? How much was completed and when?

View Completed Orders

Continuing from the prior step, you want to review production activity of orders completed yesterday. You use the MSW to view completed orders per yesterday by changing the search horizon to include yesterday and the day before.

- 1 Select Toolbar Options, Preferences, Search, History Horizon 2.
There is no immediate impact until you run a new search.
- 2 In the Search Panel, enter selection criteria `site equals 10-202`.
- 3 Enter resource `equals ASSY-01`.
- 4 Click search.
- 5 In the MSW Schedule Grid, use the scroll bar to view yesterday's production.
The system displays two days in the past on the MSW Schedule Grid.

Note This demonstrates the ability to visualize production schedule history.

- **Question:** Does the PSW show any orders which were scheduled in the past?
- 6 In the MSW Schedule Grid, select item 02305.
Displays 2 completed production orders in the past
- **Question:** Did you drag the scroll bar on the MSW to view the Schedule Grid Date columns in the past?
- 7 Select the PSW Sequence Grid
Does not display the completed orders for the 02305
- Illustrates that the MSW displays completed production orders, but the PSW displays only open production orders.

Drill Down into Production Activity Details for a Repetitive Order

You want to drill down into further production activity details of a repetitive order. You use the Production Order Detail Supporting tab.

- 1 In the MSW Schedule Grid, select item 02305.
The system defaults order 90000.
- 2 In Production Order Maintenance, select the Production Activity tab.
The system displays a completed quantity of 5.
 - **Question:** What is the quantity open?

Note You can resize the columns in the panels to make them smaller to view the data easier.
- 3 Select the Production CUM Activity tab.
The system displays a processed quantity of 10.
 - **Question:** Is there any WIP for this item?

Note You can resize the columns in the panels to make them smaller to view the data easier.
- 4 PSW Sequence Grid, select Release Date of <yesterday>; then select order 90017.
The system displays a quantity scheduled of 10 and an open quantity of 9.
 - **Question:** What is the WIP for this order?
 - **Hint:** See the next step.
- 5 In Production Order Maintenance, select the Production Activity tab.
The system displays WIP information.
 - **Question:** What is the WIP at operation 10 versus 30?
 - This demonstrates the ability to view not only the production activity of a repetitive order, but the activity at the operation level.
- 6 Select the Production CUM Activity tab.
The system displays a different WIP/process quantity at each operation.

- **Questions:** What is the CUM processed for this item? What is the quantity processed at operation 999 versus operation 10? Which operation has the highest WIP? Which operation has the highest Rejected parts?
- This demonstrates the ability to visualize the WIP in a summarized/concise manner.

Drill Down into Production Activity Details for a Discrete Order

You want to drill down into further detail of discrete order production activity. You use the Production Order Detail Supporting tabs.

- 1 In the MSW Schedule Grid, select item 02307 .
The system defaults on order 90010.
- 2 In Production Order Maintenance, select the Production Activity tab.
The system displays a completed quantity of 5.
 - **Questions:** What is the Order open Quantity? How many parts were Rejected? What is the most likely reason operation 30 show a quantity open of 10?

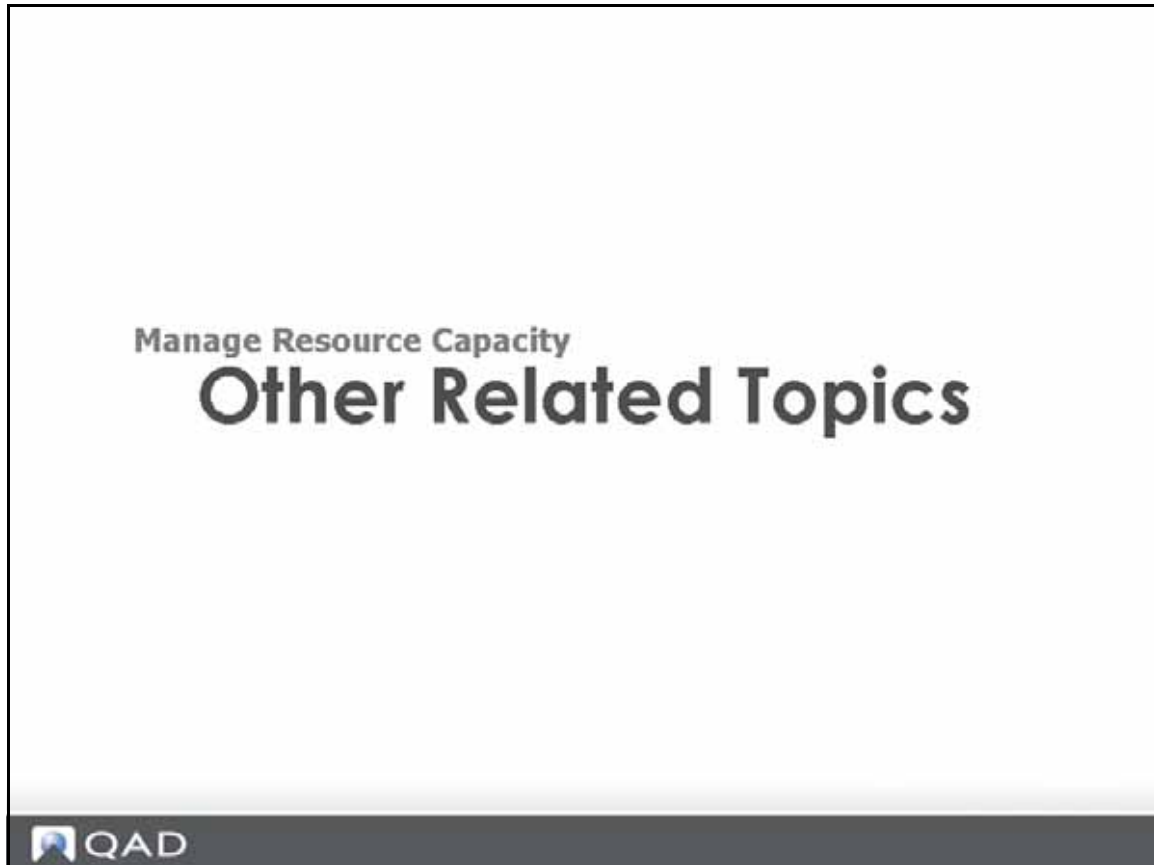
Questions

- 1 Which one of these things can you monitor in the workbenches?
 - a Work order utilization
 - b Work order efficiency
 - c Costs
 - d Variances
 - e WIP processes
- 2 Which production order type must be closed as part of the production reporting process?

Answers

- 1** E. WIP of scheduled orders.
- 2** Discrete orders.

Other Related Topics Section



Other Related Topics

Monitor Production

Other Topics

- **Operation Metric Reports**
 - Operation metric reports can provide summary statistics of schedule attainment
- **Integrated workbench Component Checking**
 - CAC can provide immediate visibility to production orders released to floor where material shortages arise
 - Topic covered in the Component Availability Checking (CAC)
- **Other**
 - Production reporting – differences between discrete and repetitive production activity
 - Includes discussions how a repetitive schedule is consumed
 - Monitoring and tracking production variances
 - Suggestions and comments welcome

