



QAD Enterprise Applications 2011
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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About This Course

Course Description

The following table summarizes the content of this training guide.

Table 0.1
Chapter Summary

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 Table 0.2, 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 Employee 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. A list of courses that correspond to the chapters includes the following:

Table 0.2
List of Training Videos and Corresponding Chapters

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.

QAD Web Resources

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

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

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”.
- 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

Table 0.3
Visual Indicator Summary

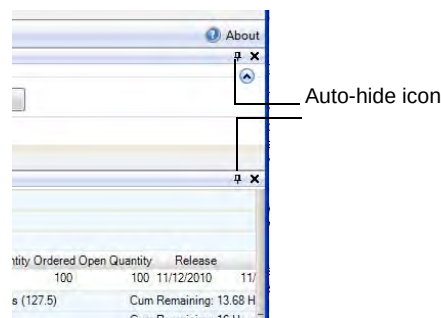
Area	Indicator	Meaning
Resource List		The resource includes one or more items with a potential scheduling problem.
Required Capacity	Yellow	The capacity required.
Period Available Capacity	Red	- Period available capacity is less than or equal to 0 for every day prior to this date. AND - Required capacity 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.
Projected On-Hand	Yellow	Projected on-hand is less than safety stock value plus seasonal demand.
	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:

Fig. 0.1
Auto-hide Icon

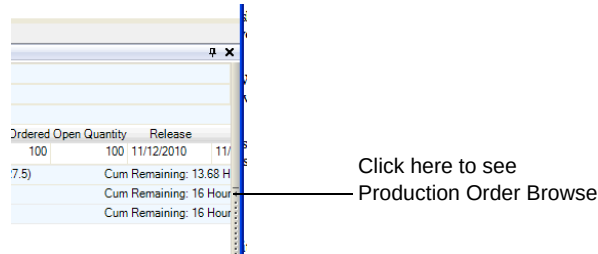


8 Training Guide — Planning and Scheduling Workbenches

- 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:

Fig. 0.2

Accessing Production Order Browse



- If you double click on the Production Order Maintenance tab, the system moves the Production Order Maintenance program to the top of the workbenches. Double-clicking on 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

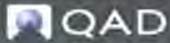
- Solution does not address operational scheduling
- Advanced Repetitive and Discrete Scheduling
- QAD 2010.1 EE and QAD 2011 EE releases



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.

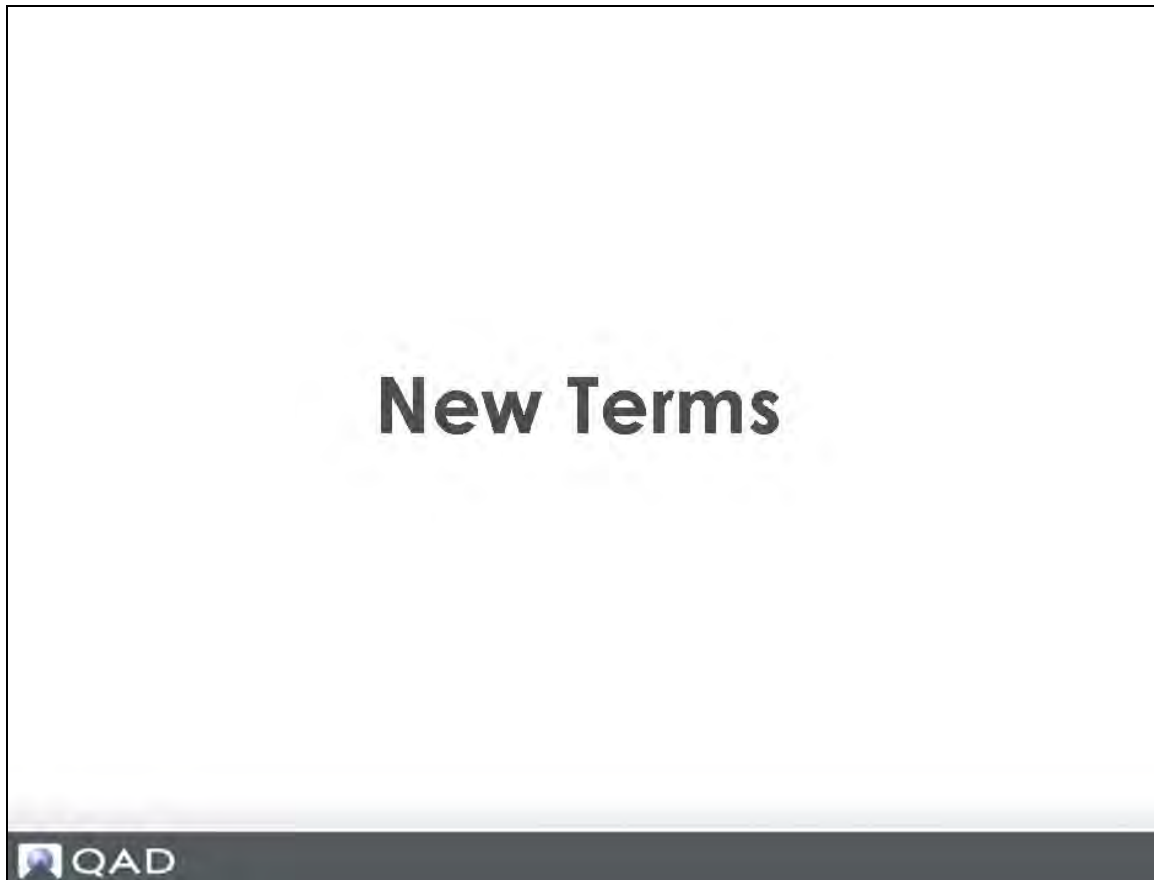
In addition, the following should be considered before you use the workbenches.

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?

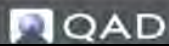
New Terms



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. A dashed blue arrow points from the 'S' in the 'Order Type' field to the 'S' in the 'Nettable QO' column header of the Schedule table.

Resource	Item Number	Nettable QO	Past Due	03/03	03/04	03/05	03/06	03/07	03/08	03/09
san	tool-1		100							
100-02	qps1188		100							

Details

Production Rate: 55.00	Primary Line: san	Site: san	Order Type: S
Run Crew Size: 1	Scheduled Line: san	Sales/Job:	
Run Crew Productivity: 100.00	Number of Lines: 1.0	Supplier:	Cum ID:
Line Productivity: 100.00	Duration Buffer (Hrs): 0.0	Routing Code:	Order Sheet Printed: ☐
Run Time (Hrs): 1.82	Duration Hours: 2.32	BOM/Formula Code:	Release/Print: ☐
Setup Time (Hrs): 0.5	Projected Duration Days: 0.29		
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 shows the QAD Master Scheduling interface. On the left, the Resource Navigator lists resources under 'bws1'. Under 'Production Line', 'pl-asm' is highlighted with a red box. Under 'Work Center', 'WC-Mold' is highlighted with a red box. Blue dashed arrows point from these boxes to the 'pl-asm' resource entries in the Schedule table.

Resource ID	Item Number	Nettable QOH	Past Due	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		

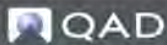
Resource

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).

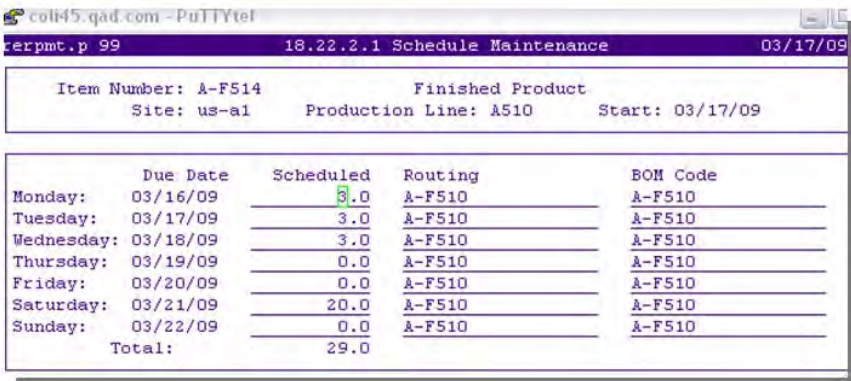
Schedule a Repetitive Item Multiple Times per Day Section

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



Schedule a Repetitive Item Multiple Times per Day

Schedule a Repetitive Item Multiple Times per Day



col45.qad.com - PuTTYtel
erpmt.p 99 18.22.2.1 Schedule Maintenance 03/17/09

Item Number: A-F514 Finished Product
Site: us-a1 Production Line: A510 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		

QAD

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

Master SchedulingProduction SchedulingShortage Report

Production Scheduling

bws1

PL-Paint

09/09 Required: 9 Hours (40) Remaining: -9 Hours (-45)

09/10 Required: 26.06 Hours (92) Remaining: -26.06 Hours (-130.3)

00:00 Required: 11.39 Hours (40) Remaining: -11.39 Hours (-56.96)

4 00:00 Required: 0 Hours (0) Remaining: 6.25 Hours (31.25)

1 05:00 Required: 10 Hours (40) Remaining: -2.75 Hours (-13.75)

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

2 15:00 Required: 0 Hours (0) Remaining: 7.25 Hours (36.25)

3 23:00 Required: 4.67 Hours (12) Remaining: -3.67 Hours (-18.33)

09/11 Required: 20.44 Hours (70) Remaining: -20.44 Hours (-102.19)



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



Manage Repetitive Order Details

Manage Repetitive Order Details

The screenshot shows the 'Production Order Maintenance' window in QAD. It features a table of production orders and a detailed view for the selected order (ID 90016).

ID	Status	Quantity Ordered	Release	Due
90015	R	3	09/10/2010	09/10/2010
90016	F	5	09/14/2010	09/14/2010
22315	F	7	09/15/2010	09/15/2010
22395	P	2	09/25/2010	09/25/2010

Details for ID 90016:

- Quantity Ordered: 5.00
- Quantity Open: 5
- Yield: 100
- Run Crew Size: 1
- Run Crew Productivity: 100.00
- Line Productivity: 100.00
- Run Time (Hrs): 0.09
- Setup Time (Hrs): 0.5
- Required Capacity (Hrs): 0.59
- Primary Line: 90016
- Scheduled Line: 90016
- Number of Lines: 1.0
- Duration Buffer (Hrs): 48.0
- Duration Hours: 45.59
- Projected Duration Days: 6.07
- Order Type: 1
- Supplier: 1
- Routing Code: 1
- BOM Formula: 1
- Cum ID: 1
- Order Sheet Printed: ☐
- Release/Print: ☐

Remarks:

Prior Limitations and Challenges

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

Business Needs

Do you:

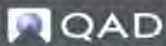
- Add special instructions to a production order?
- Link the customer order ref ID to the scheduled order?

What else might be important?

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

Schedule Discrete Orders on Production Lines Section

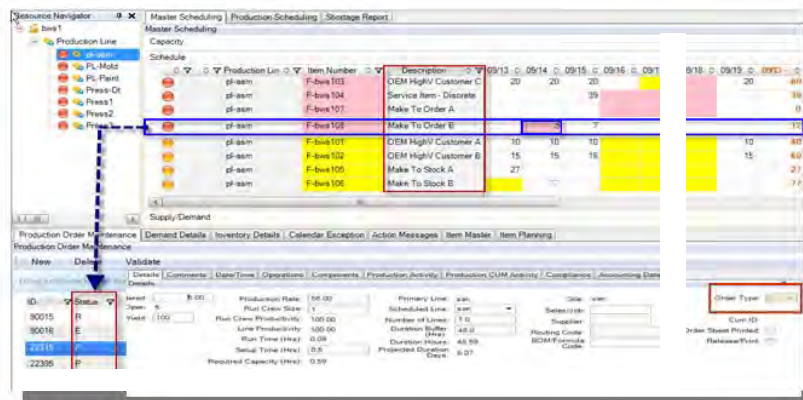
Schedule Discrete Orders on Production Lines



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



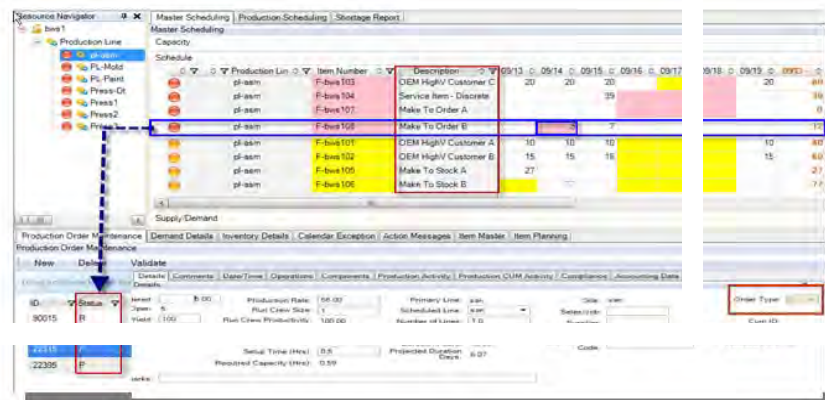
For customers who schedule discrete orders, Work Order Maintenance (16.1) was essentially the only tool/UI for master scheduling orders.

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



Solution Approach

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

Value

Value added includes:

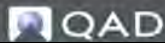
- Simplifies scheduling compared to WC/OP level
- Schedule at shift level
- No completed routing setup needed – finance can have the routing

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

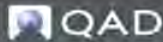
**Schedule Discrete, Repetitive,
and Kanban Orders on a
Shared Resource**



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?



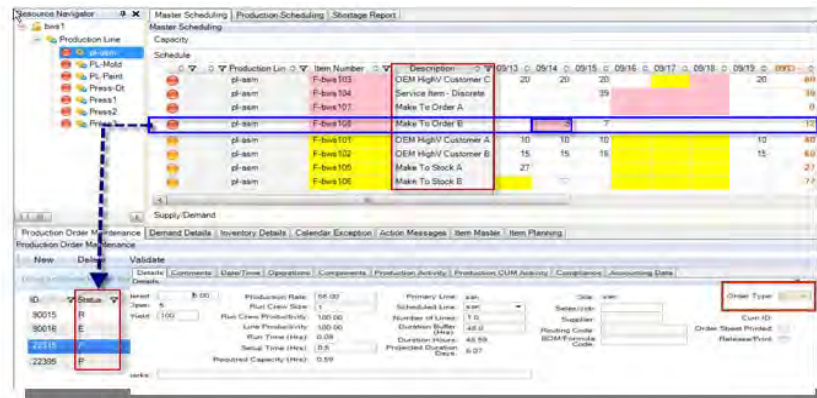
You can view/schedule Kanban production items in the MSW.

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

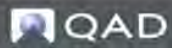


Most companies required the ability to do true mix-mode scheduling of discrete, kanban, or repetitive orders on a single resource (work center/production line).

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

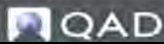
**Track Performance to
Schedule**



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

Production Activity View (Order 15151):

Level	ID	Description	Open Quantity	Completed	Rejected	Rescheduled	Actual Run Time	Actual Setup Time
Order	15151		8	0	0	0	0	0
Operator	999	ASM Station 3	8	1	0	0	0	0
Operator	20	ASM Station 2	6	3	0	0	0	0
Operator	10	ASM Station 1	0.0	3	0	0	0	0

Production CUM Activity View (Order 22355):

Level	Cum ID	Description	Processed	Rejected	Reject Queue	Scrapped	Rescheduled	In Queue	Out Queue
Order	22355		2	0	0	0	0	0	0
Operator	999	ASM Station 3	2	0	0	0	0	0	0
Operator	20	ASM Station 2	2	0	0	0	0	0	0
Operator	10	ASM Station 1	2	0	0	0	0	0	0

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

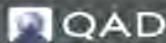
- MSW UI for 2010.1 and 2011 QAD EE release
- New features plus consolidation of 50 + legacy applications, reports, and scheduling steps into a single application
- Flexible UI, but navigational design and amount of data available can be overwhelming at first
- Primary workbench value is visibility to 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

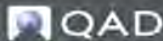


In this chapter, you learn the fundamental operations of the Planning and Scheduling Workbenches, including how to:

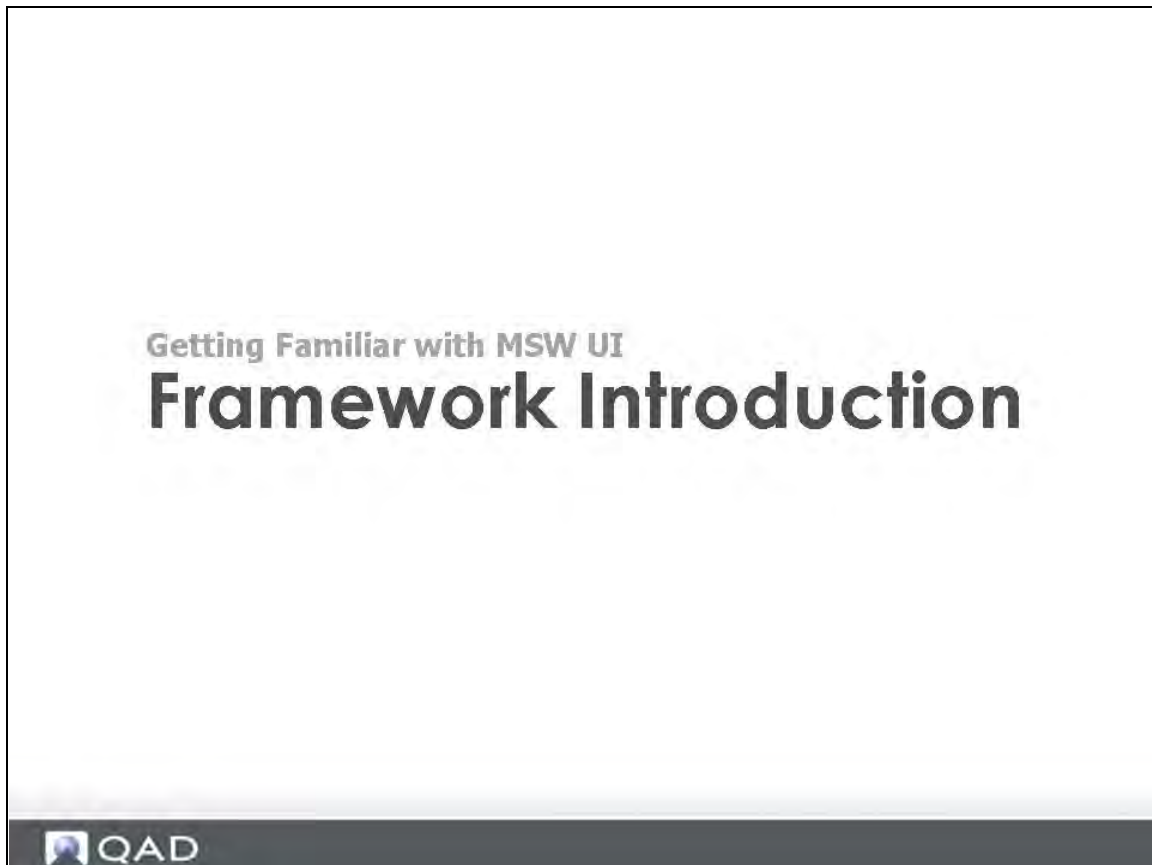
- Recognize panels and maneuver within and among them
- Retrieve data
- View data
- Modifying the layout to performing a basic scheduling lesson

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

Workbench Framework Introduction
MSW

Master Scheduling (MSW)
A scheduling view for master scheduling

The screenshot displays the MSW (Master Scheduling) interface within the QAD Workbench. The interface is divided into several sections:

- Master Scheduling (MSW):** A scheduling view for master scheduling, showing a table with columns for Production Line, Item Number, Record Type, Past Due, and a series of dates (07/07, 07/08, 07/09, 07/10, 07/11, 07/12, 07/13, Week 1, 07/14, 07/15, 07/16, 07/17).
- Capacity:** A table showing the remaining capacity for production lines A510, A511, A512, and A513. The 'Planned Capacity' is 8 for all lines.
- Schedule:** A table showing the schedule for production lines A510, A511, A512, and A513. The 'Record Type' is 'Projected Available Balance' for A510, 'SUPPLY' for A511, 'DEMAND' for A512, and 'Cumulative ATP' for A513.
- Supply/Demand:** A table showing the supply and demand for production lines A510, A511, A512, and A513.
- Production Order Maintenance:** A section at the bottom of the interface for managing production orders, including fields for Quantity Ordered, Quantity Open, and various dates and times.

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

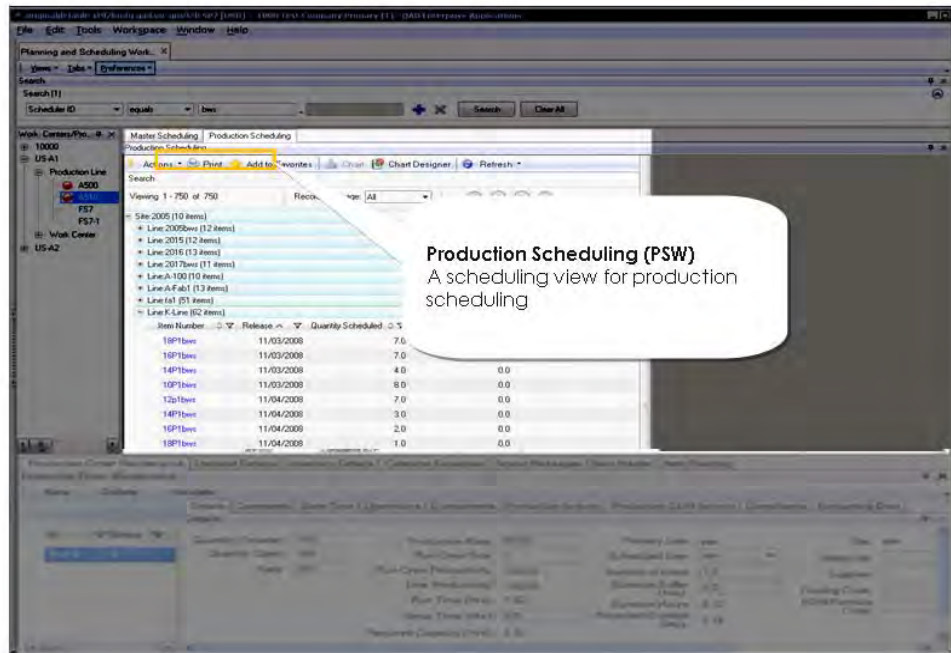
MSW displays all work orders for an item in a single view and:

- 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



Workbench Framework Introduction- Components

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

QAD

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

Retrieve Scheduling Data
Selection Criteria

Search (4)

Site equals bws1

Scheduler ID equals brent

Resource Type equals

Resource equals

Search Clear All

Search Panel provides ability to search by 1 or more resource and site attributes

Search Preferences provides ability to select data horizons

Settings

Search Display Scheduling Component Availability

Define The Date Range Content To Display

History Horizon 7

Future Horizon 60

☒ Process Operation Detail

☐ Display Search Progress

Changes require a search to take effect.

Restore Defaults Cancel OK

QAD

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.

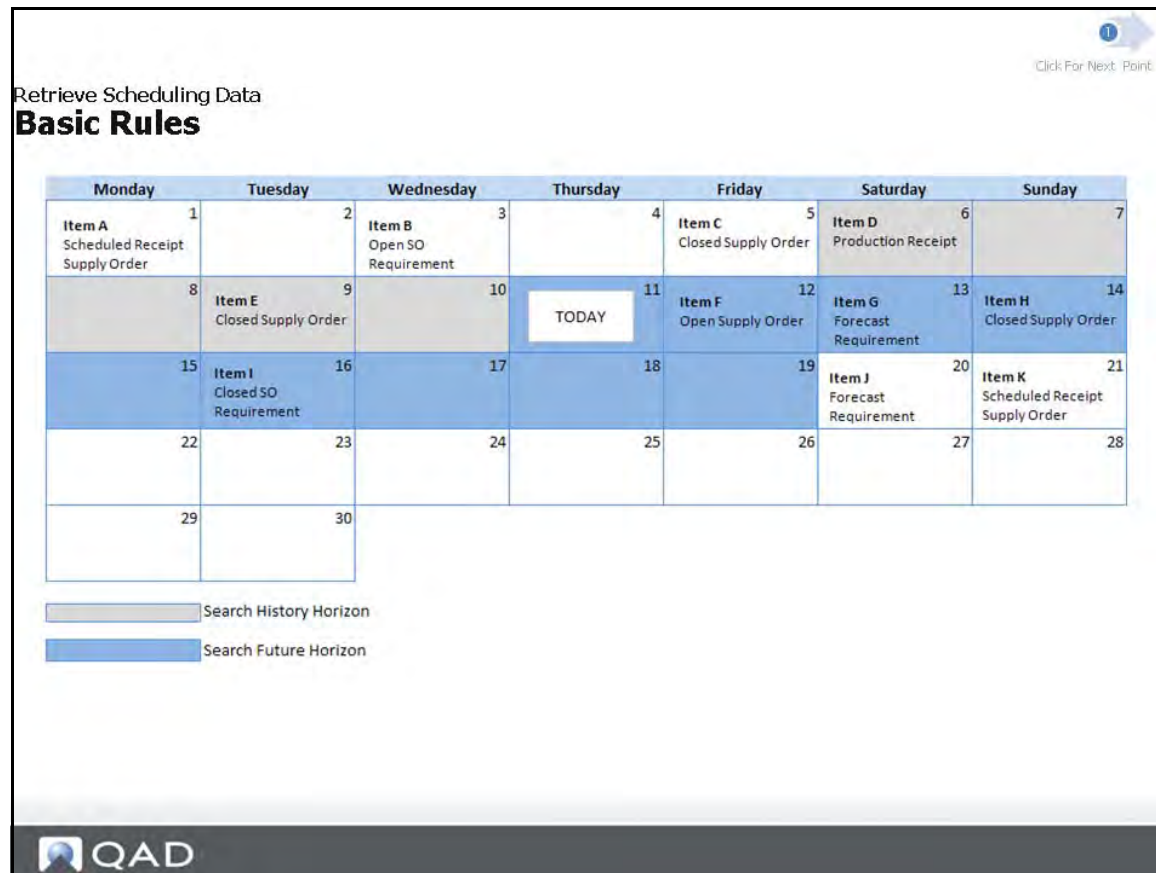
Note In the exercises and text, the Scheduler ID code is for logical grouping of resources that you want to display simultaneously in the workbenches. So, for example, a Scheduler ID can be Group1 that represents resources for a group of products, or a product family.

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.

Selection Criteria and Performance

Retrieve Scheduling Data
Selection Criteria and Performance

Click For Next Point

The screenshot displays the 'Planning and Scheduling work...' window. The 'Search' tab is active, showing search criteria for Site, Scheduler ID, Resource Type, and Resource. The 'Time to run search on a selected dataset' graph shows a linear increase in time as the number of days increases from 0 to 90. The 'Settings' window is also open, showing the 'Define The Date Range Content To Display' section with 'History Horizon' set to 7 and 'Future Horizon' set to 50. The 'Display Search Progress' checkbox is checked.

Days	Time (H:M:S)
0 Days	0:00:00
45 Days	0:00:17
90 Days	0:00:35

Horizontal Data Set Group B

QAD

For optimum performance, a focused selection criteria is important:

- 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.

Important Data retrieval can take a significant amount of time when the system retrieves a large number of records.

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

Retrieve Scheduling Data

System Setup Considerations

Click For Next Point

Search (3)

Site	equals	bws9		+	-	
Scheduler ID	equals	Group1		+	-	
Resource	contains			+	-	

Bom - Level 0

- Resource Group 1: Large Item Assembly
 - Resource 1A
 - Resource 2A
 - Resource 3A
- Resource Group 2: Small Item Assembly
 - Resource 1B
 - Resource 2B
 - Resource 3B
- Resource C
- Resource D
- Resource E

Bom - Level 1

- Resource Group 3: Enamel Coating Processing
 - Resource 1F
 - Resource 2F
 - Resource 3F
- Resource Group 4: Vinal Coating Processing
 - Resource 1G
 - Resource 2G

Bom - Level 2

- Resource Group 5: Large Die Press
 - Resource 1H
 - Resource 2H
 - Resource 3H
- Resource I
- Resource Group 6: Small Die Press
 - Resource 1J
 - Resource 2J
- Resource K

QAD

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

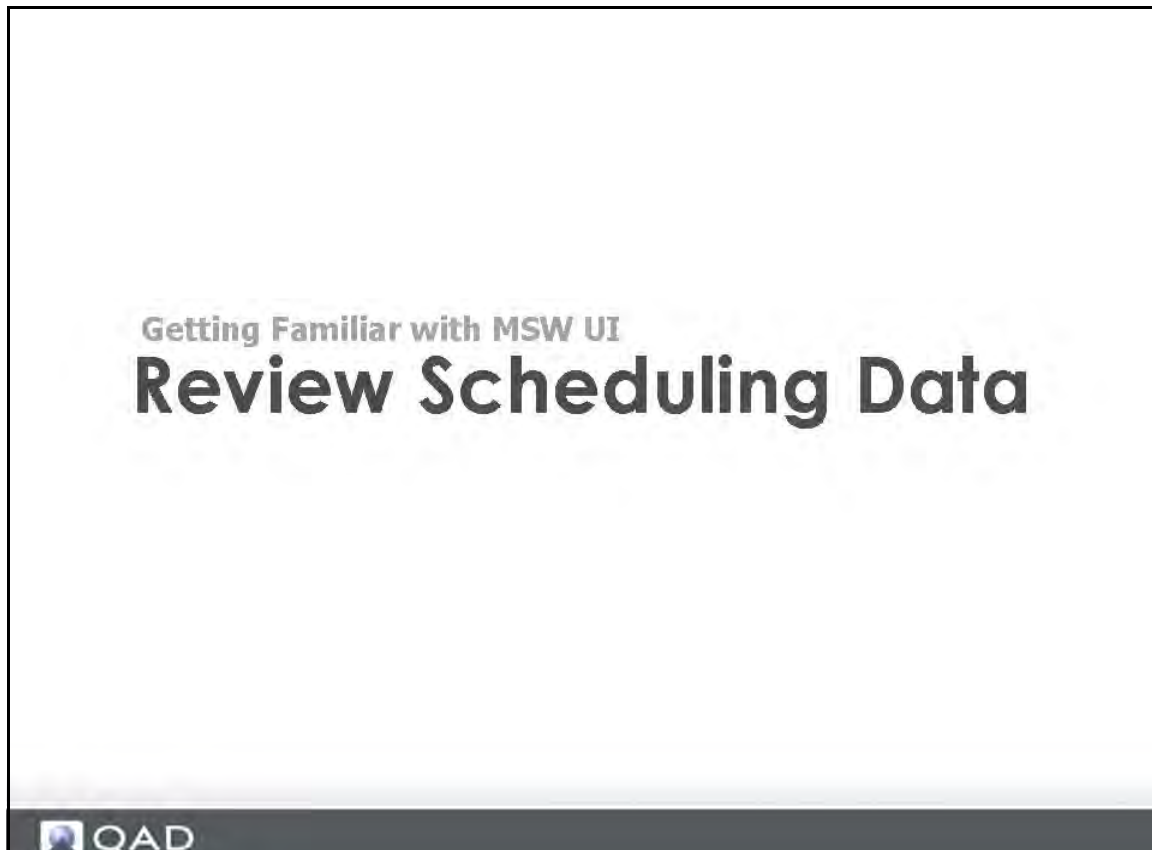
System Setup Considerations

The screenshot displays two overlapping windows from the QAD software interface. The 'Production Line Maintenance' window (left) shows details for 'Production Line: 1001' at 'Site: 12000'. It includes fields for 'Description', 'Units/Hour' (100.00), 'Enable Run Size' (checked), 'Number of Lines' (1.0), 'Duration Buffer (D H M S)' (0 00:00:00), 'Setup Time (D H M S)' (0 00:00:00), 'Auto Firm' (unchecked), and a 'Scheduler ID' field (highlighted with a red box). The 'Work Center Maintenance' window (right) shows details for 'Work Center: 200-02' and 'Machine: 2000'. It includes fields for 'Description' (Inspection), 'Department' (200), 'Auto Firm' (checked), 'Last Auto Firm' (dropdown), 'Scheduler ID' (highlighted with a red box), 'Queue Time' (3.0), 'Wait Time' (1.0), 'Mach Op' (1), 'Setup Crew' (2.00), 'Run Crew' (3.000), 'Machines' (1.000), 'Mach Bn Rate' (2.00), 'Setup Rate' (15.00), 'Labor Rate' (12.00), 'Labor Burden Rate' (5.00), 'Labor Bn %' (3.00%), 'Time Period' (Horizon End: DAY), 'Period Number' (5), and '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



[illegible]

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

Option

About

Resource Navigator

Master Scheduling

Production Scheduling

Shortage Report

bws1

Production Line

pl-asm

Capacity

Schedule

Resource ID	Item Number	Nettable QOH	Past Due	09/17	09/18	09/19	09/20	09/21	09/22	09/23	09/24	09/25
pl-asm	F-bws102	81	10	30	15	5	50	15	15	15	15	15
pl-asm	F-bws103	11	24	150	30		240	20	20	20	20	20
pl-asm	F-bws101	61		80	10		80	10	10	30	30	30
pl-asm	F-bws106	610					0					
pl-asm	F-bws104	1	16	55		75	120					
pl-asm	F-bws105	205		62			62					
pl-asm	F-bws107	6	40				0					
pl-asm	F-bws108			550			550	5	7			2

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
bws1	F-bws108	12.0	9/14/2010	Order, Customer: ABC Company	Order: SOBws104 Line: 55
bws1	F-bws108	2.0	9/25/2010	Order, Customer: ABC Company	Order: SOBws104 Line: 66



Inventory Details

Review Supporting Data
Inventory Details

The screenshot displays the 'Inventory Details' window in the QAD software. The window has a title bar 'Planning and Scheduling work...' and a menu bar with 'Hide/Show Search', 'Save', 'View', 'Hide/Show Tab', and 'Option'. Below the menu bar is a 'Resource Navigator' pane on the left showing a tree structure with 'bws1' and 'pl-asm'. The main area contains a table with columns for 'Resource ID', 'Item Number', 'Nettable GOH', 'Past Due', and a series of dates from 09/17 to 09/25. The table lists items F-bws102 through F-bws108. Below the table is a 'Supply/Demand' section with tabs for 'Production Order Maintenance', 'Demand Details', 'Inventory Details', 'Calendar Exception', 'Action Messages', 'Item Master', and 'Item Planning'. The 'Inventory Details' tab is active, showing a list of items with columns for 'Item Number', 'Site', 'Qty On Hand - Inv Matr', 'Qty On Hand - Inv Detail', 'Location', 'Lot/Serial', 'Reference', 'Status', 'Expire Date', and 'Date Created'.

Resource ID	Item Number	Nettable GOH	Past Due	09/17	09/18	09/19	09/20	09/21	09/22	09/23	09/24	09/25
pl-asm	F-bws102	81	10	30	15	5	50	15	15	15	15	15
pl-asm	F-bws103	11	24	230	30		240	20	20	20	20	20
pl-asm	F-bws101	81		80	10		90	10	10	30	30	30
pl-asm	F-bws106	610					8					
pl-asm	F-bws104	1	16	55		75	130					
pl-asm	F-bws105	205		62			62					
pl-asm	F-bws107	6	40				8					
pl-asm	F-bws108			550			550	5	7			

QAD

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

Review Supporting Data

Item Planning

Planning and Scheduling work...

Hide/Show Search

Save

View

Hide/Show Tab

Option

About

Resource Navigator

Master Scheduling

Production Scheduling

Shortage Report

Production Line

pl-asm

Capacity

Schedule

Resource ID

Item Number

Nettable 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	30	15	5	50	15	15	15	15	15	15
pl-asm	F-bus103	11	24	750	30		240	20	20	20	20	20	20
pl-asm	F-bus101	61		80	10		90	10	10	30	30	30	30
pl-asm	F-bus106	610					0	32					
pl-asm	F-bus104	1	16	55		75	130						
pl-asm	F-bus105	205		62			62						
pl-asm	F-bus107	6	40				0						
pl-asm	F-bus108			550			550	5	7				

Supply/Demand

Production Order Maintenance

Demand Details

Inventory Details

Calendar Exception

Action Messages

Item Master

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-bus102

30

0

0

100.00%

POQ

0

1

0

0

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

Review Supporting Data
Production Order Maintenance

The screenshot displays the 'Production Order Maintenance' window in QAD. The top section shows a 'Schedule' grid with columns for Resource ID, Item Number, Nettable QOH, Past Due, and a series of dates from 09/17 to 09/25. Below this is a 'Supply/Demand' section. The main area contains a table with columns: ID, Status, Quantity Ordered, Release, Due, and Component Status. The table lists several production orders, some with 'Projected Shortage' status. To the right of the table is a 'Details' panel with fields for Quantity Ordered, Production Rate, Primary Line, Quantity Open, Run Crew Size, Scheduled Line, Yield, Run Crew Productivity, Line Productivity, Run Time (Hrs), Duration Buffer (Hrs), Setup Time (Hrs), Duration Hours, Projected Duration Days, and Required Capacity (Hrs). The QAD logo is at the bottom left.

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

The screenshot displays the QAD Planning and Scheduling workbench. The main window is titled 'Planning and Scheduling work...' and contains a 'Schedule' grid. The grid has columns for dates from 09/17 to 09/26. Rows list items with their Resource ID, Item Number, Nettable QOH, Past Due, and various dates. A context menu is open for 'F-bws101', showing options like 'Item Master', 'Item Planning Data', 'Item Master Maintenance', 'Item Inventory Data Maintenance', 'Item Planning Maintenance', 'Item Cost Maintenance', and 'Item Data Maintenance'. The bottom panel shows 'Supply/Demand' data for 'F-bws101'.

Resource ID	Item Number	Nettable QOH	Past Due	09/17	09/18	09/19	09/20	09/21	09/22	09/23	09/24	09/25	09/26
pl-asm	F-bws102	81	10	30	15	5	50	15	15	15	15	15	15
pl-asm	F-bws103	11	24	150	90		240	20	20	20	20	20	20
pl-asm	F-bws101	61		80	10		90	10	10	30	30	30	30
pl-asm	F-bws106	610					0	15					
pl-asm	F-bws104	1	16	55		75	130						
pl-asm	F-bws105	205		62			62						
pl-asm	F-bws107	6	40				0						
pl-asm	F-bws108			550			550	5	7				2

The bottom panel shows 'Supply/Demand' data for 'F-bws101'.

Item Number	Safety Stock	Minimum Order	Order Multiple	Yield Percent	Order Policy	Manufacturing Lead Time	Order Period	Time Fence	Safety Time	Cumulative
F-bws101	0	0	100.00%	POQ	0	1	0	0	0	0

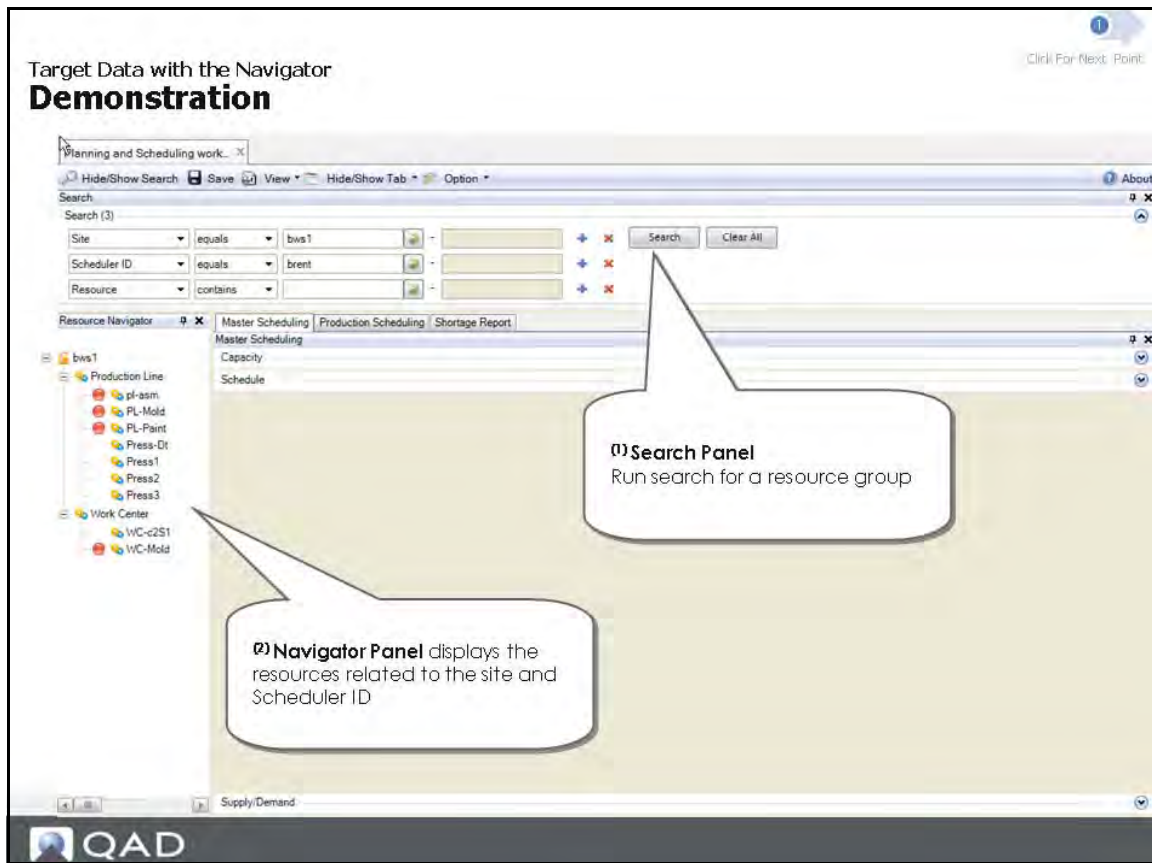
The system provides visual indicators of items with issues. You can select the items with issues, then drill down to the supporting panels to find data to resolve the issue.

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



Demonstration 1



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 (3)
Site equals bws1
Scheduler ID equals brent
Resource contains

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

Resource Navigator
Production Line
PL-Mold
PL-Paint
Press-Dt
Press1
Press2
Press3
Work Center
WC-c2S1
WC-Mold

Master Scheduling
Capacity
Schedule

Resource	Item Number	Nettable QOH	Past Due	09/17	09/18	09/19	09/17 - 09/19	09/20	09/21	09/22	09/23	09/24
pl-asm	F-bws101	61		5	10		15	10	10	30	30	
pl-asm	F-bws102	81	10		15	5	20	15	15	15	15	
pl-asm	F-bws103	11	24		50		90	20	20	20	20	
pl-asm	F-bws104	1	16	13		75	88					
pl-asm	F-bws108						0	5	7			
PL-Mold	S2-bws101x	290					0			73	72	
PL-Paint	S1-bws104	39	15				0					
PL-Paint	S1-bws107	40	2				0			10		
WC-Mold	S2-bws101x	290		108	222	50	380	262	57	73	72	
pl-asm	F-bws106	610					0	5				
pl-asm	F-bws105	205		62			62					
pl-asm	F-bws107	6	40				0					
PL-Paint	S1-bws101	36								10	30	30
PL-Paint	S1-bws102									15	15	15
PL-Paint	S1-bws103									20	20	20
PL-Paint	S1-bws106	35										
PL-Paint	S1-bws106	40										
PL-Paint	S1-bws108	40								5		

Schedule Grid displays all items across all my resources

Supply/Demand

QAD

Demonstration (Continued)

Target Data with the Navigator
Demonstration

Click For Next

Planning and Scheduling work...

Hide/Show Search Save View Hide/Show Tab

Search (3)

Site equals bws1

Scheduler ID equals brent

Resource contains

1) Navigator Frame
Select to view a single resource

Resource Navigator

Master Scheduling

Production Line

Capacity

Schedule

Production Lin Item Number Nettable QOH Past Due 09/17 09/18 09/19 09/17 - 09/19 09/20 09/21 09/22 09/23 09/24

pl-asm	F-bws101	61		5	10		15	10	10	30	30	30
pl-asm	F-bws102	81	10		15	5	20	15	15	15	15	15
pl-asm	F-bws103	11	24		90		90	20	20	20	20	20
pl-asm	F-bws104	1	16		13	75	88					
pl-asm	F-bws106	610					0	5	7			
pl-asm	F-bws105	205					0	35				
pl-asm	F-bws107	6	40		62		62					
							0					

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

Supply/Demand

QAD

Filter and Sort Data Section



Sort on the Schedule Grid

Filter and Sort Data
Sort on the Schedule Grid

Click For Next Point

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

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

Resource	Item Number	Nettable QOH	Past Due	09/17	09/18	09/19	09/17 - 09/19	09/20	09/21	09/22	09/23	09/24
Press-Dt	C1-S1-bws103	20	55	55	20	20	95	20	20	20	20	2
PL-Print	S1-bws102	39	51	20	15	15	50	15	15	15	15	1
Press-Dt	C1-S1-bws108	20	53				0				5	
Press-Dt	C1-S1-bws102	20	50	25	15	15	55	15	15	15	15	
pl-asm	F-bws107	6	40				0					
Press-Dt	C1-S1-bws105	20	30	100			100					
PL-Print	S1-bws103	79	25	5	110	20	135	20	20	20	20	2
pl-asm	F-bws103	11	24				90	20	20	20	20	2
pl-asm	F-bws104	1	16	13		75	88					
PL-Print	S1-bws104	39	15				0					
Press-Dt	C1-S1-bws104	20	15	20			20					
pl-asm	F-bws102	81	10		15	5	20	15	15	15	15	1
PL-Print	S1-bws101	38	10	11	20	20	51	10	10	30	30	2
Press-Dt	C1-S1-bws101	20	10	30	10	25	65		13	30	30	1
Press-Dt	C1-S1-bws106	20	10	25		90	115					
PL-Print	S1-bws107	40	2				0			10		
Press-Dt	C1-S1-bws107	20	2				0			10		
pl-asm	F-bws101	61		5	10		15	10	10	30	30	1
pl-asm	F-bws108						0	5	7			
PL-Mold	S2-bws101x	290										
WC-Mold	S2-bws101x	290		108								
pl-asm	F-bws106	610										
pl-asm	F-bws105	205		62								
PL-Print	S1-bws105	35		30								
PL-Print	S1-bws106	40		26								

Supply/Demand

QAD

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.

Filter and Sort Data

Sort on the Schedule Grid

[Click For Next Page](#)

1) Schedule columns
Click on a date for all orders due "today" 09/17

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

Sort on the Schedule Grid (Continued)

Filter and Sort Data
Sort on Item Attributes

Click For Next Point

1) Nettable QOH column
Click on column to sort

2) Identify items with exceptionally high or low inventory balances – then take immediate corrective action.

Resource	Item Number	Nettable QOH	Past Due	09/17	09/18	09/19	09/20	09/21	09/22	09/23	09/24
pl-asm	F-bws106	610									
PL-Mold	S2-bws101x	290									
WC-Mold	S2-bws101x	290									
pl-asm	F-bws105	205									
pl-asm	F-bws102	81									
PL-Print	S1-bws103	79									
pl-asm	F-bws101	61									
PL-Print	S1-bws107	40									
PL-Print	S1-bws106	40									
PL-Print	S1-bws108	40									
PL-Print	S1-bws104	39									
PL-Print	S1-bws102	39									
PL-Print	S1-bws101	38									
PL-Print	S1-bws105	35									
Press-Dt	C1-S1-bws101	20									
Press-Dt	C1-S1-bws102	20									
Press-Dt	C1-S1-bws103	20									
Press-Dt	C1-S1-bws104	20									
Press-Dt	C1-S1-bws105	20									
Press-Dt	C1-S1-bws106	20									
Press-Dt	C1-S1-bws107	20									
Press-Dt	C1-S1-bws108	20									
Press1	C1-S1-bws101	20									
Press1	C1-S1-bws102	20									
Press1	C1-S1-bws103	20									

Supply/Demand

QAD

Sort on Item Attributes

Filter and Sort Data

Sort on Item Attributes

Click For Next Point

Planning and Scheduling work...

Hide/Show Search Save View Hide/Show Tab Option

Resource Navigator Master Scheduling Production Scheduling Shortage Report

Production Line

- pl-asm
- PL-Mold
- PL-Press
- Press-Dt
- Press1
- Press2
- Press3

Work Center

- WC-c2S1
- WC-Mold

Capacity

Schedule

Resource Item Number Nettable QOH Past Due

Resource	Item Number	Nettable QOH	Past Due	09/17	09/18	09/19	09/20	09/21	09/22	09/23	09/24
pl-asm	F-bws106	610									
PL-Mold	S2-bws101x	290									
WC-Mold	S2-bws101x	290		108	222	50	380	262	57	73	72
pl-asm	F-bws105	205		62			62				
pl-asm	F-bws102	81		10	15	5	20	15	15	15	15
PL-Press	S1-bws103	79		25	5	110	20	135	20	20	20
pl-asm	F-bws101	61		5	10		15	10	10	30	30
PL-Press	S1-bws107	40		2			0			10	
PL-Press	S1-bws106	40		25			25	120			
PL-Press	S1-bws108	40					0			5	
PL-Press	S1-bws104	39		15			0				
PL-Press	S1-bws102	39		60	20	15	15	50	15	15	15
PL-Press	S1-bws101	38		10	11	20	20	51	10	10	30
PL-Press	S1-bws105	35		30			30				
Press-Dt	C1-S1-bws101	20		10	30	10	25	65		13	30
Press-Dt	C1-S1-bws102	20		50	25	15	15	55	15	15	15
Press-Dt	C1-S1-bws103	20		65	55	20	20	95	20	20	20
Press-Dt	C1-S1-bws104	20		15			20				
Press-Dt	C1-S1-bws105	20		30							
Press-Dt	C1-S1-bws106	20		10							
Press-Dt	C1-S1-bws107	20		2							
Press-Dt	C1-S1-bws108	20		35							
Press1	C1-S1-bws101	20									
Press1	C1-S1-bws102	20									
Press1	C1-S1-bws103	20									

Supply/Demand

QAD

1) Nettable QOH column
Click on column to sort

2) Identify items with exceptionally high or low inventory balances – then take immediate corrective action.

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

Filter and Sort Data
Filter on the Schedule Grid

Click For Next

Planning and Scheduling work...

Hide/Show Search Save View Hide/Show Tab Option

Resource Navigator Master Scheduling Production Scheduling Shortage Report

Production Line

- pl-asm
- PL-Mold
- PL-Plant
- Press-Dt
- Press1
- Press2
- Press3

Work Center

- WC-c251
- WC-Mold

Capacity

Schedule

Resource Item Number Description Nettable QOH Past Due 09/17 09/18 09/19 09/17-09/19 09/20 09/21

PL-Mold	S2-bws101x	Housing Form	290							
WC-Mold	S2-bws101x	Housing Form	290	108	222	50	380	252	5	
pl-asm	F-bws106	Pax 20.5 Cross Tube	610							

Enter filter criteria for Description

And conditions

Or conditions

Add a condition

Delete Condition

OK

Cancel

Operand

Operand

((DBNull))

= Equals

≠ Does not equal

< Less than

≤ Less than or equal to

> Greater than

≥ Greater than or equal to

* Like

→ Matches Regular Expression

QAD

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.

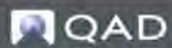
You can specify an operand, like you can when you set up selection criteria to pull records. You can also add or delete conditions.

Once you set up the filter criteria, select OK.

Hands On Lesson Section

Getting Familiar with MSW

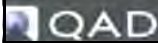
Hands On Lesson



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.

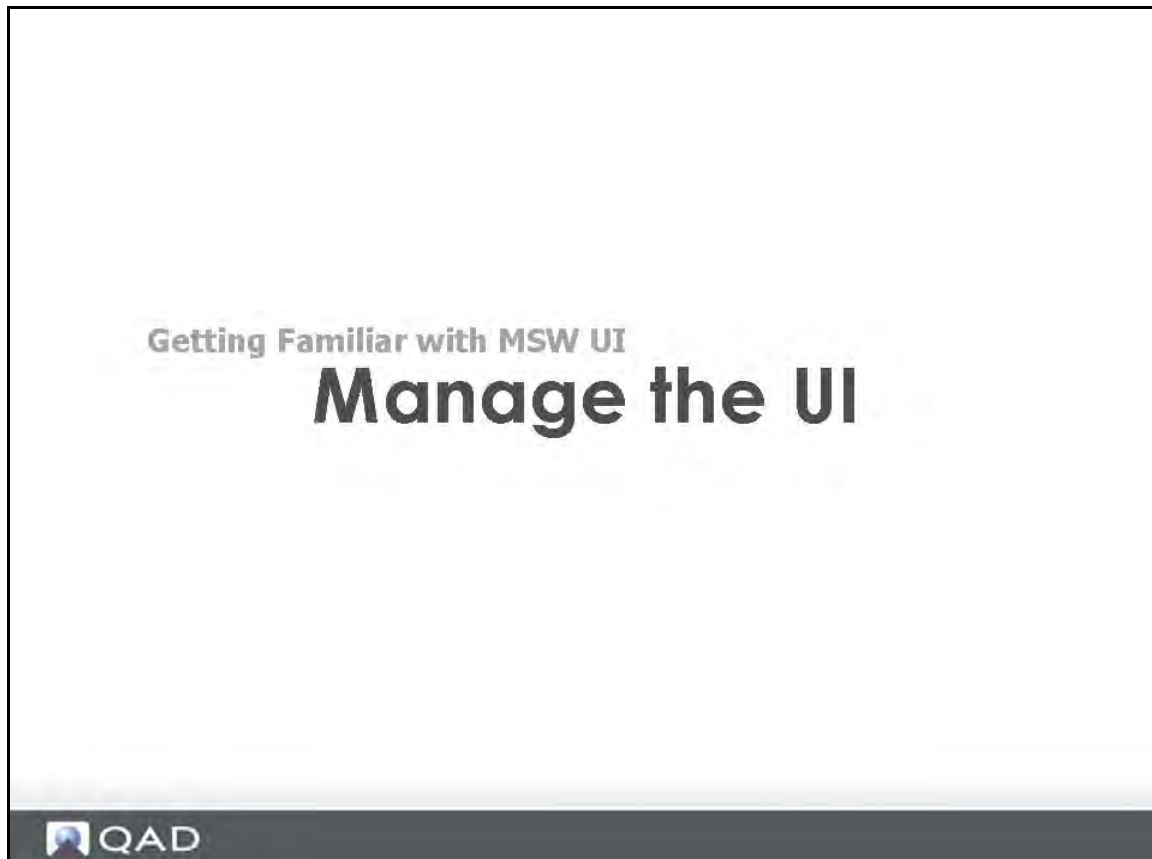
Questions

- 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.

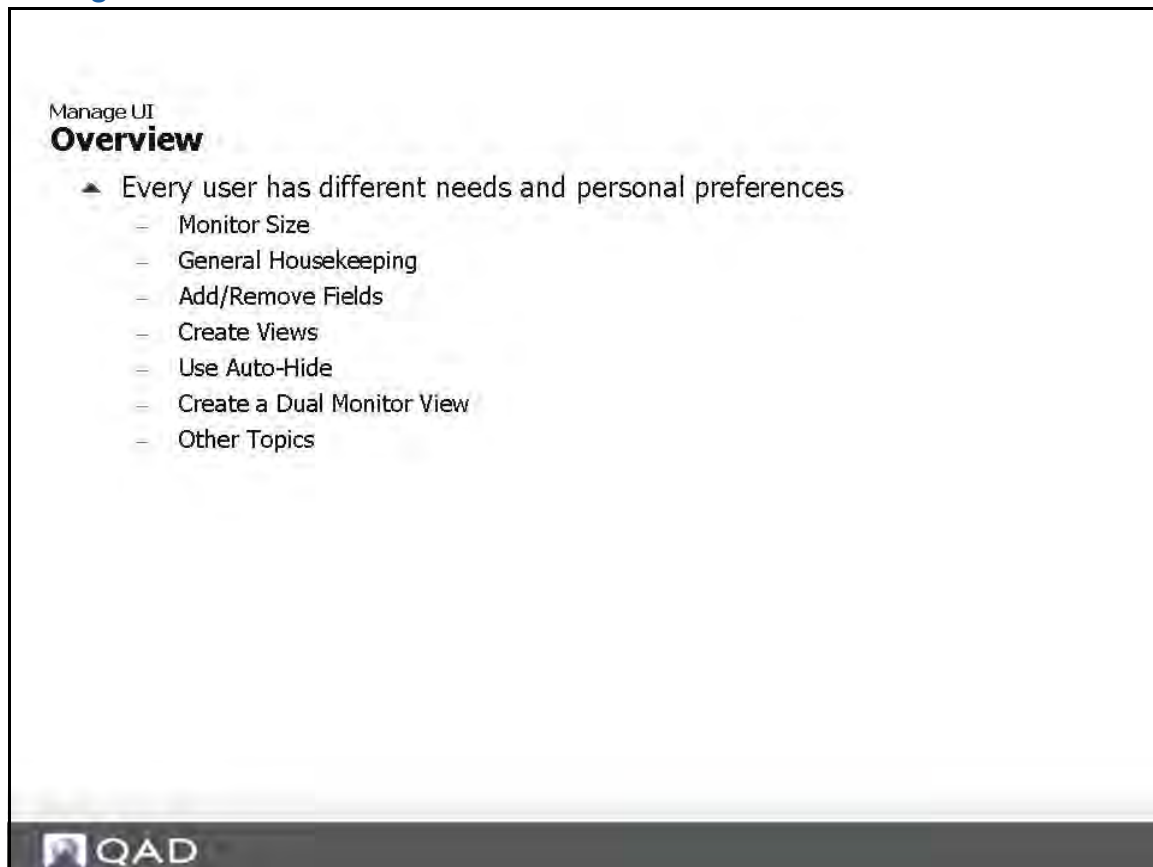
Answers

- 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

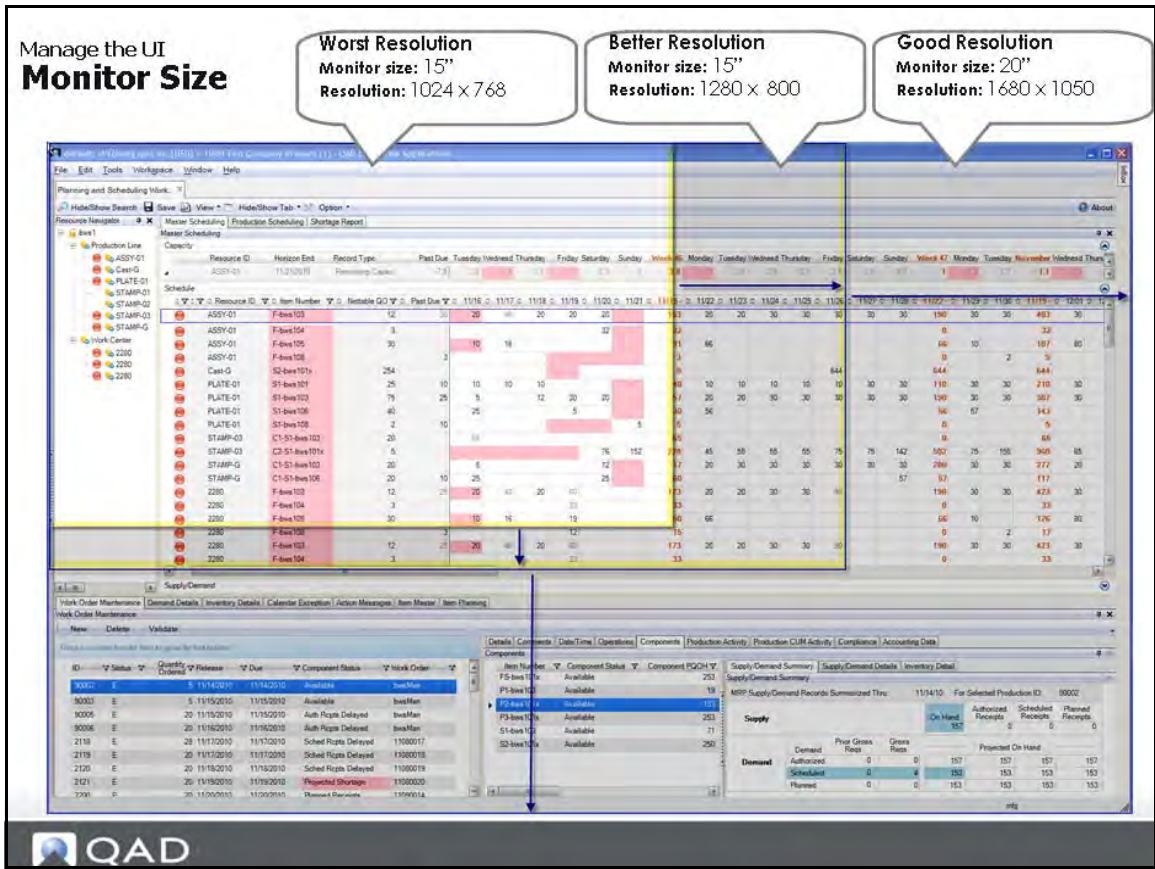


The following topics discuss various aspects of the UI that can improve the way you view the workbench.

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

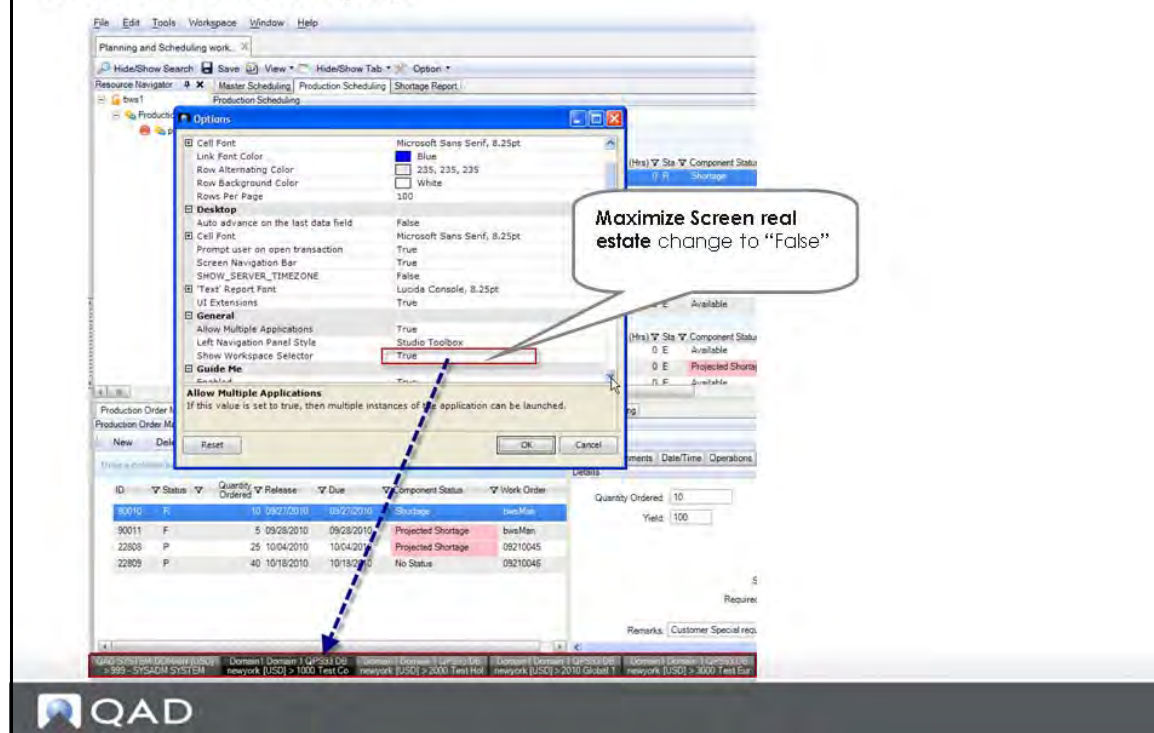
General Housekeeping Section



General Housekeeping

Manage the UI

General Housekeeping



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

- 3 In .NET UI, select Tools from the top menu bar.
- 4 Select Options.
- 5 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 bws1 Production Line pl-asm

Master Scheduling Production Scheduling Shortage Report

Capacity

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

Schedule

Resource ID	Item Number	Mettable QOH	Past Due	Description	09/27	09/28
pl-asm	F-bws103			DEM HighV Customer C		25
pl-asm	F-bws104			Service Item - Discrete		
pl-asm	F-bws107			Make To Order A	10	5
pl-asm	F-bws108			Make To Order B		3
pl-asm	F-bws109			DEM HighV Customer A		9
pl-asm	F-bws110			DEM HighV Customer B		14
l-asm	F-bws111			Make To Stock A		5
l-asm	F-bws112			Make To Stock B		

(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

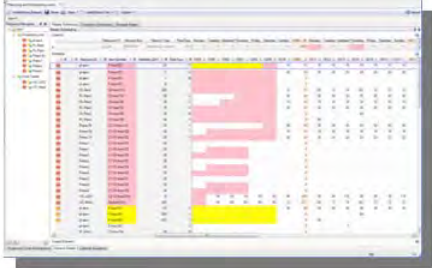


Create Views

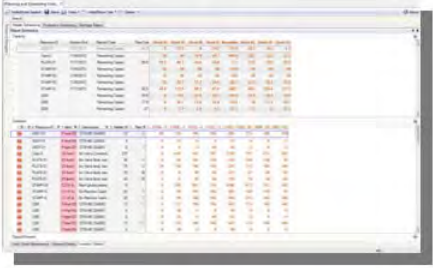
Manage the UI

Views

Item Max View



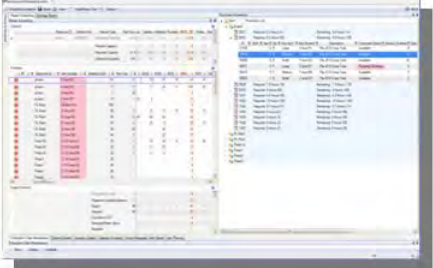
Optimized View

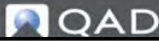


Full View



Side-by-Side View





Create Views Example

Create Views Example

Click For Next Point

(1) Applied Auto-Hide to Search and Resource Navigator panels to maximize vertical and horizontal real estate

(2) Resized the Resource, Nettable and Past Due columns to increase horizontal real estate

(3) Added the description column

(4) Adjusted the vertical height of the supporting panels

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

Create Views

Auto-Hide to Maximize Screen Real Estate

The screenshot displays the QAD Planning and Scheduling Workbench interface. The 'Resource Navigator' panel on the left is open, showing a tree view of resources. A right-click context menu is visible over the 'bws1' resource, with the 'Auto Hide' option highlighted. The main window shows a search bar with 'bws1' entered, and a table of resource capacity data. The table includes columns for Resource ID, Horizon End, Record Type, Past Due, and a weekly schedule from Friday to Thursday. The 'Supply/Demand' section at the bottom shows projected on-hand and available balance.

Resource ID	Horizon End	Record Type	Past Due	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
pl-asm	10/05/2010	Remaining Capacity	-47.4	0	0	0	0	0	0	0
		Planned Capacity		0	0	0	0	0	0	0
		Required Capacity	47.4	0	0	0	0.4	5.5	7.9	8

Supply/Demand

	Projected On Hand	Projected Available Balance
	-1	0
	-1	0

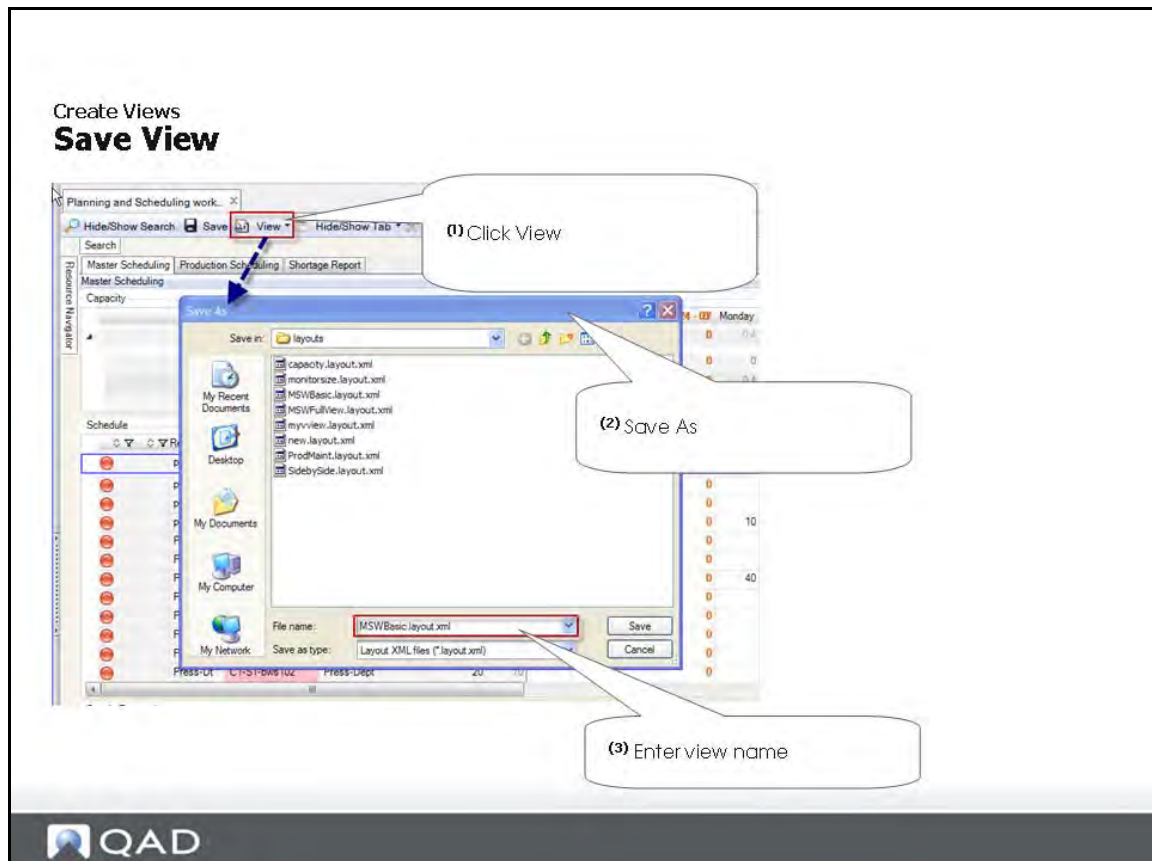
QAD

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:

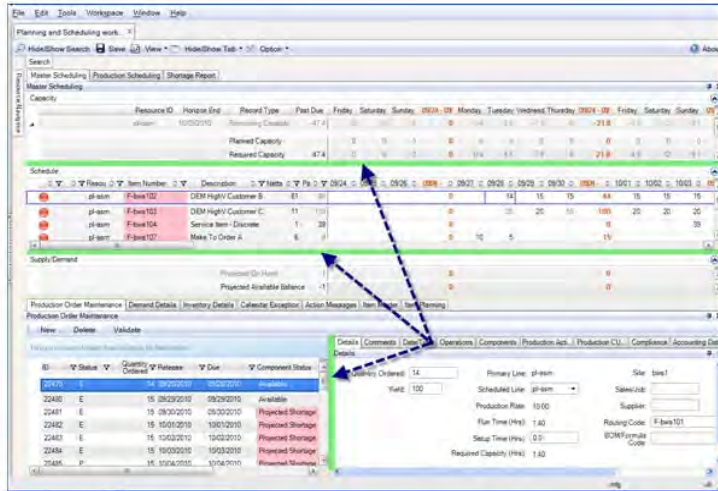
- Spaces
- Special characters (*&^%)
- Numbers

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

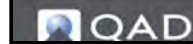
Current Limitations

Create Views

Current Limitations



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



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

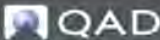
Hands On Lesson Section



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

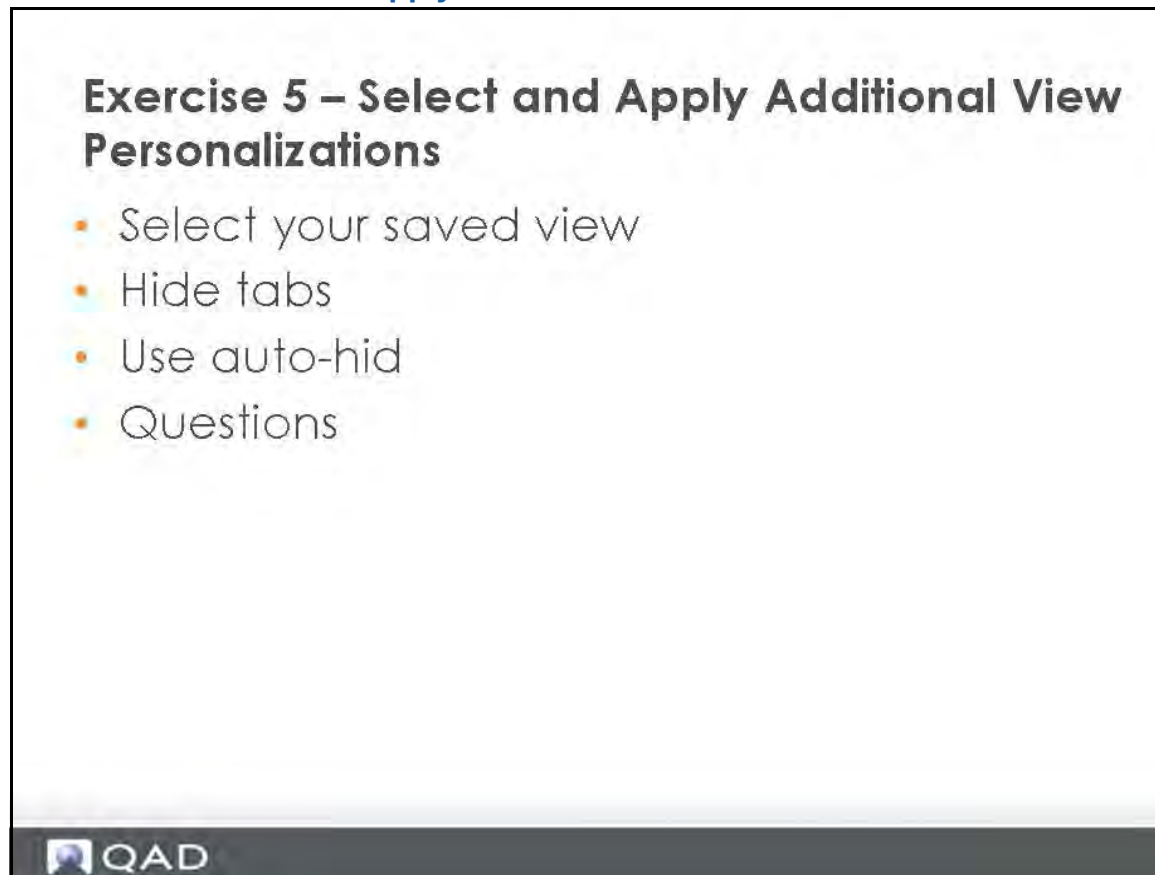
- 1 What is the best situation for your monitor and resolution to improve usability?
 - Larger monitor
 - Smaller monitor but higher resolution
 - Larger monitor with higher resolution
 - Two monitors
- 2 Which selection in .NET UI options increases display room?
- 3 True or False. Every user can add 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



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

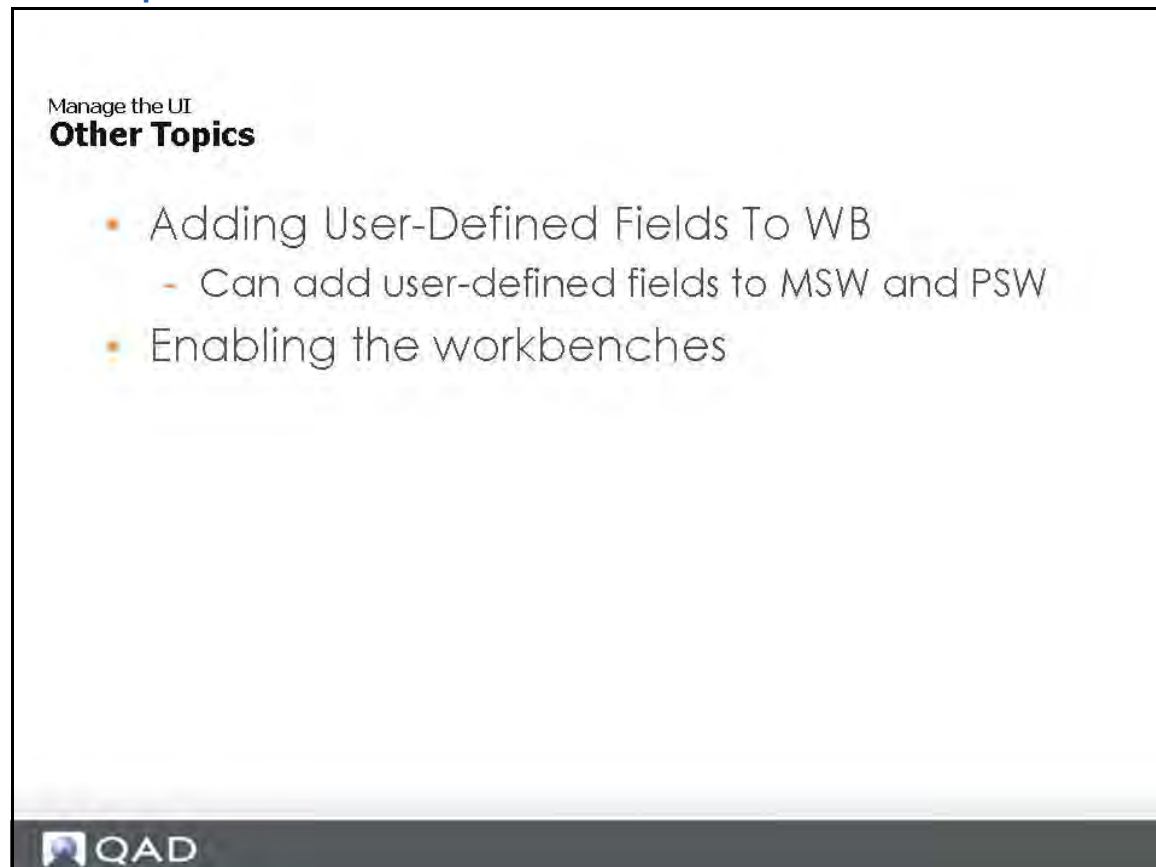
The Search Panel consumes valuable real estate, the Auto-Hide feature lets you automatically hide panels that you do not view constantly.

- 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

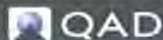
- Workbenches let you create a master production schedule at the production line/order, not work center/operational level
- After a production plan is adopted, Create a Master Schedule is the first step in the planning and scheduling process

- 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

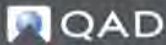
- Audience

- 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

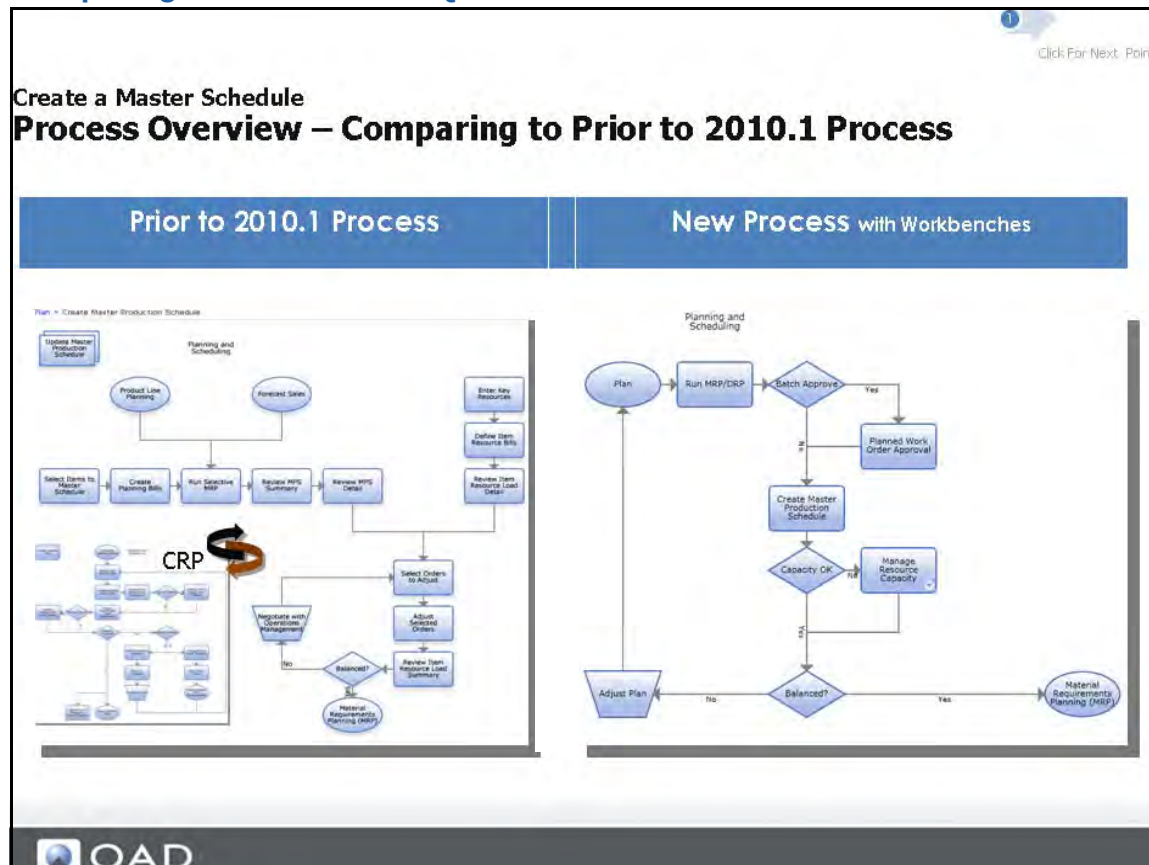
Business Objective	Business Need/Approach
Deliver to customer demand with shortest lead-times possible	Balance demand / supply / capacity to drive a leveled and feasible plan
Maximize use of resources	
Reduce costly expedites	Create leveled master schedule to drive MRP for mid-term planning to support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

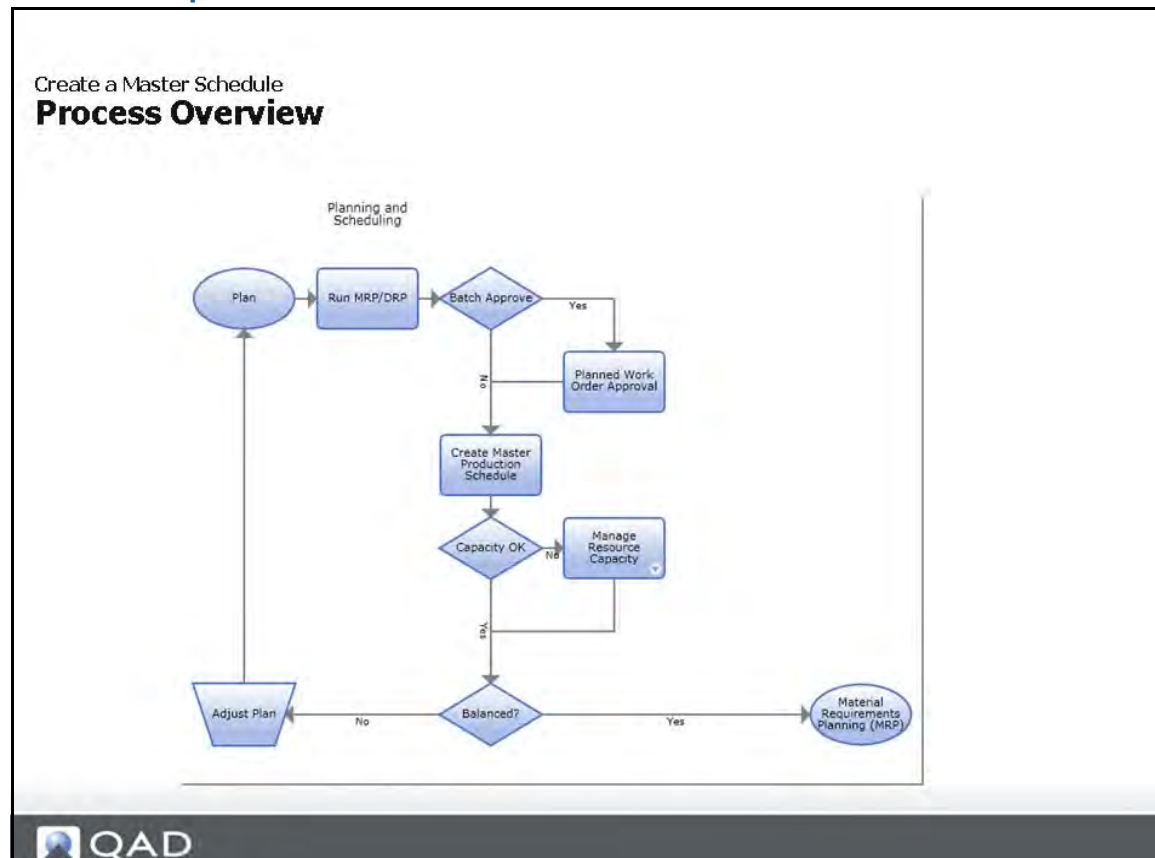
Comparing New to 2010.1 Process (Continued)

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.

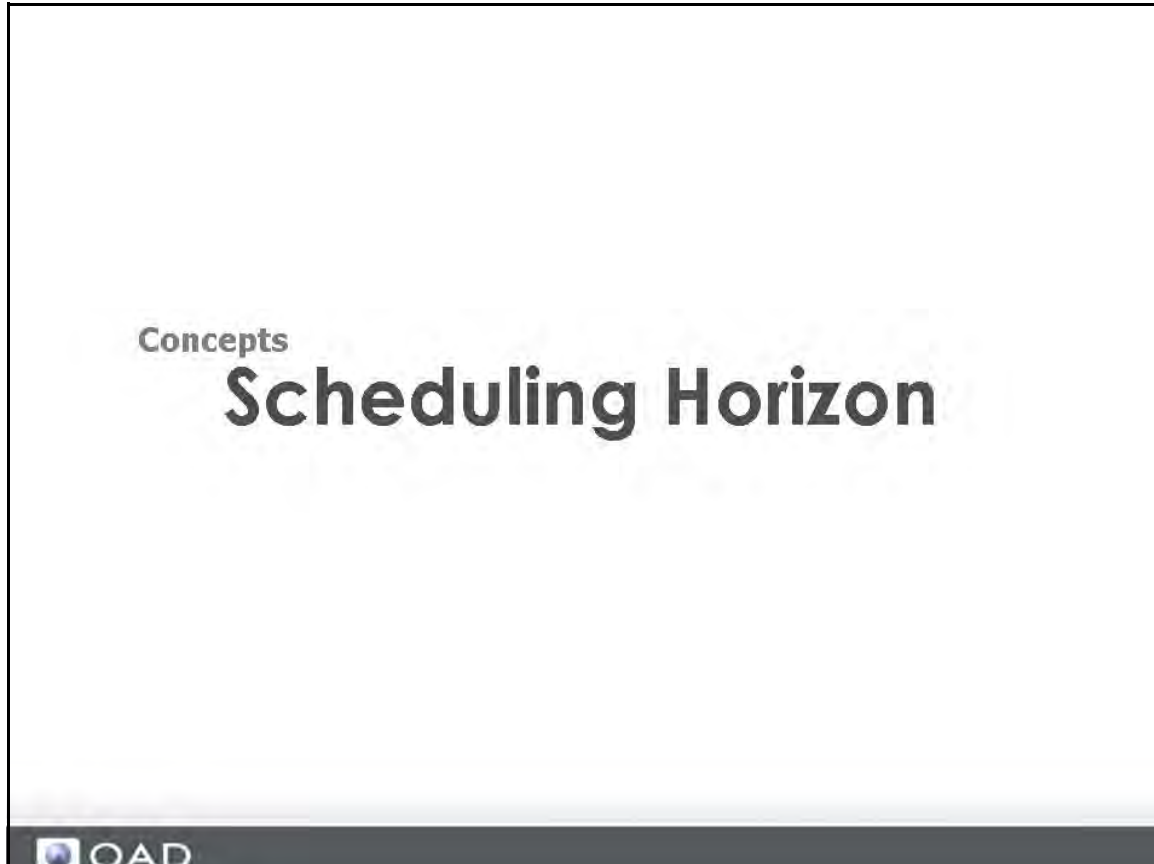
Process Map



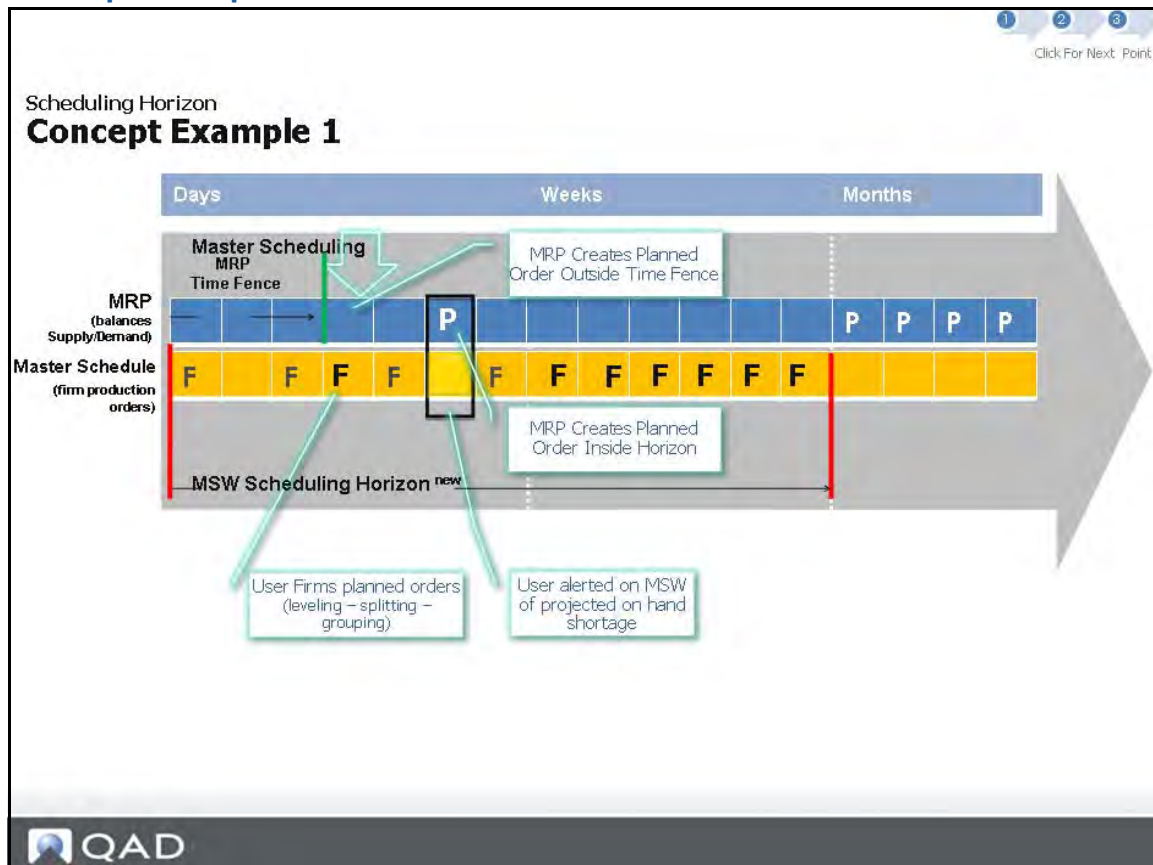
MSW Process

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



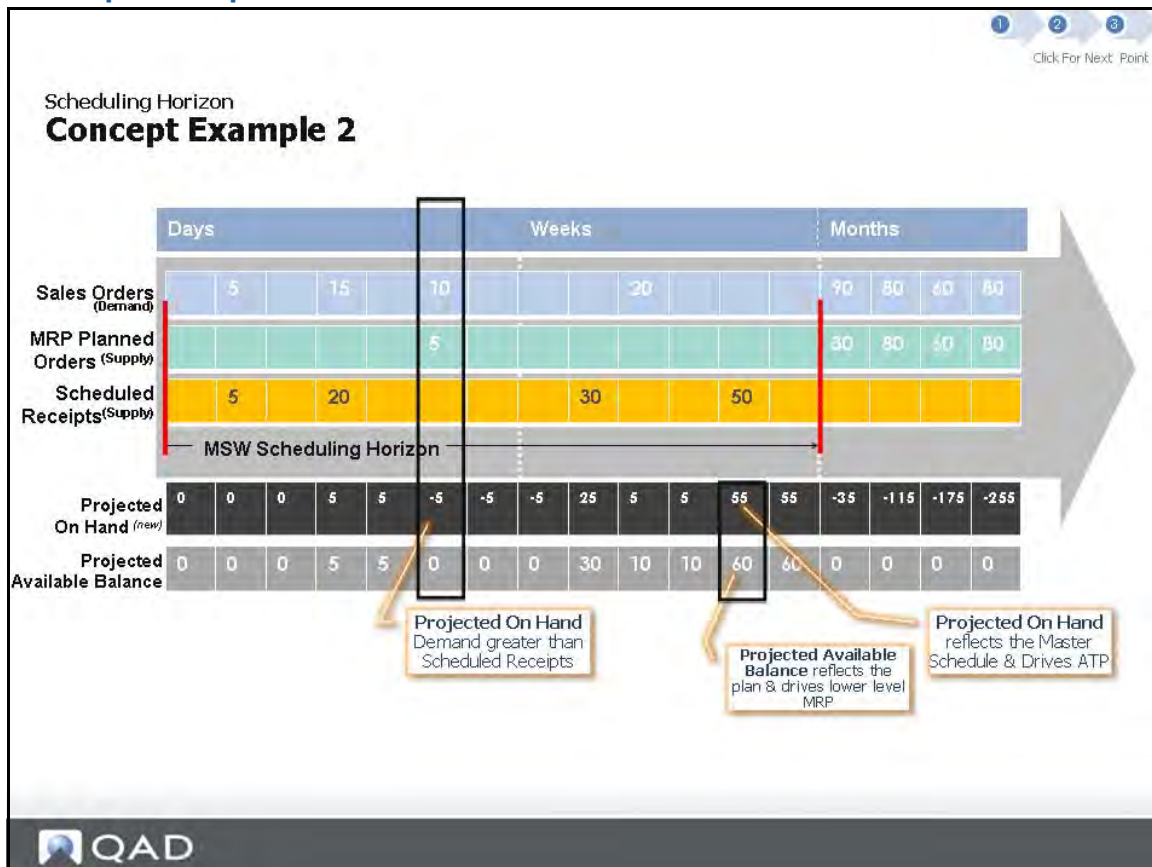
Concept Example 1



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.

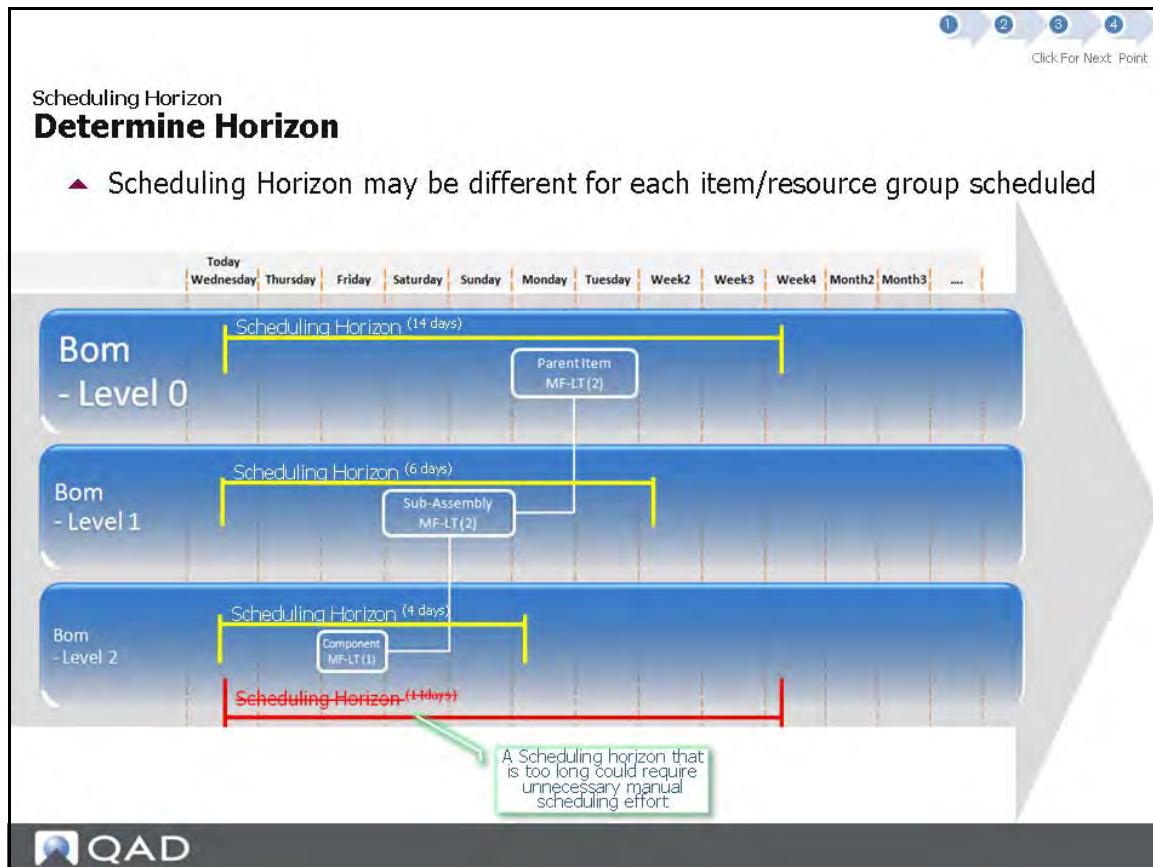
ATP data is based on only, firm scheduled orders.

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

Scheduling Horizon Setup

Production Line Maintenance

Go To Actions Copy Print Preview Attach

Production Line: 1001

Production Line: 1001
Site: 12000

Description: Production Line 1001
Units/Hour: 100.00

Enable Run Size: ☒

Number of Lines: 1.0

Duration Buffer (D H:M:S): 0 00:00:00

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

Scheduler ID:

Time Period: Period Number: Calculate Date: 3/8/2011

Work Center Maintenance

Go To Actions Copy Print Preview Attach

Work Center: 200-02 Machine: 2000

Description: Inspection

Department: 200 Testing Dept

Auto Firm:

Last Auto Firm:

Scheduler ID:

Queue Time: 3.0

Wait Time: 1.0

Mach/Op: 1

Setup Crew: 2.00 Setup Rate: 15.00

Run Crew: 3.000 Labor Rate: 12.00

Machines: 1.000 Labor Burden Rate: 5.00

Mach Bdn Rate: 2.00 Labor Bdn %: 3.00%

Time Period: Period Number: Calculate Date: 3/8/2011

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

(A) Item no longer highlighted in red – but still below safety stock

(B) Demand total row does not include the forecast demand

QAD

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.

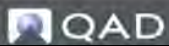
Identify Production Items that Require Intervention Section



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 Next: Point

(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

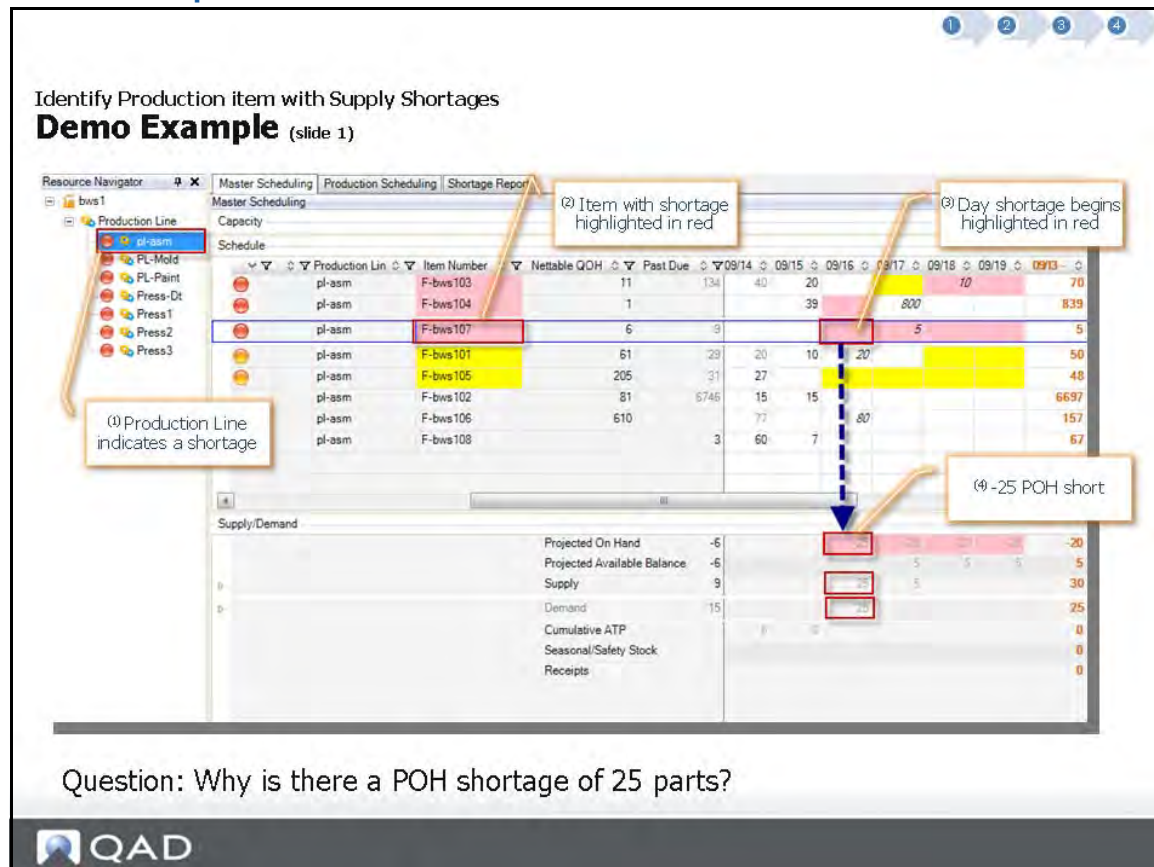
(3) Schedule Grid highlights dates where problem (negative POH) begins and ends

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)

Demand Details drill down to view the demand details of the selected item.

(1) Displays the demand record of 25 for this item

Production Line	Item Number	Nettable QOH	Past Due	09/14	09/15	09/16	09/17	09/18	09/19	09/20
pl-asm	F-bws103	11	134	40	20					
pl-asm	F-bws104	1		39		807				839
pl-asm	F-bws107	6	9				5			5
pl-asm	F-bws101	61	29	20	10	20				50
pl-asm	F-bws105	205	31	27						48
pl-asm	F-bws102	81	5746	15	15					6697
pl-asm	F-bws106	610	77			807				157
pl-asm	F-bws108	3	60	7						67

Item Number	Quantity	Due Date	Source	Reference
bws1 F-bws107	10.0	9/9/2010	Order Customer: ABC Company	Order: SOBws104 Line: 24
bws1 F-bws107	5.0	9/9/2010	Order Customer: ABC Company	Order: SOBws104 Line: 25
bws1 F-bws107	25.0	9/15/2010	Order Customer: ABC Company	Order: SOBws104 Line: 31
bws1 F-bws107	40.0	9/30/2010	Order Customer: ABC Company	Order: SOBws104 Line: 45

Projected On Hand: -6
 Projected Available Balance: -6
 Supply: 9
 Demand: 15
 Cumulative ATP: 0
 Seasonal/Safety Stock: 0

Supply/Demand Panel Section



Supply/Demand Panel

Identify Items requiring Scheduling Intervention

Supply/Demand Panel

[illegible]

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



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?



Overview

Read the Supply/Demand Panel

Overview

		09/14	09/15	09/16	09/17	09/18	09/19	09/13 -
Projected On Hand	-26	206	206	180	180	180	180	176
Projected Available Balance	-26	206	206	180	180	180	180	180
Supply	31	27						52
Manufactured	31	27						48
Purchased								0
Intersite								0
Planned								4
Demand	57							57
Cumulative ATP		206	206	206	206	206	206	206
Seasonal/Safety Stock		180	180	180	180	180	180	180
Receipts								0

Supply/Demand panel provides context to the item you are scheduling: projected available balance, POH, and supply.

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.

Sources of demand can include forecasts, safety stock requirements, sales orders, customer scheduled orders, component requirements from manufacturing, and so on. Sources of demand include nettable QOH, production orders, production/purchase orders, supplier scheduled orders, and so on.

Overview (Continued)

Read the Supply/Demand Panel

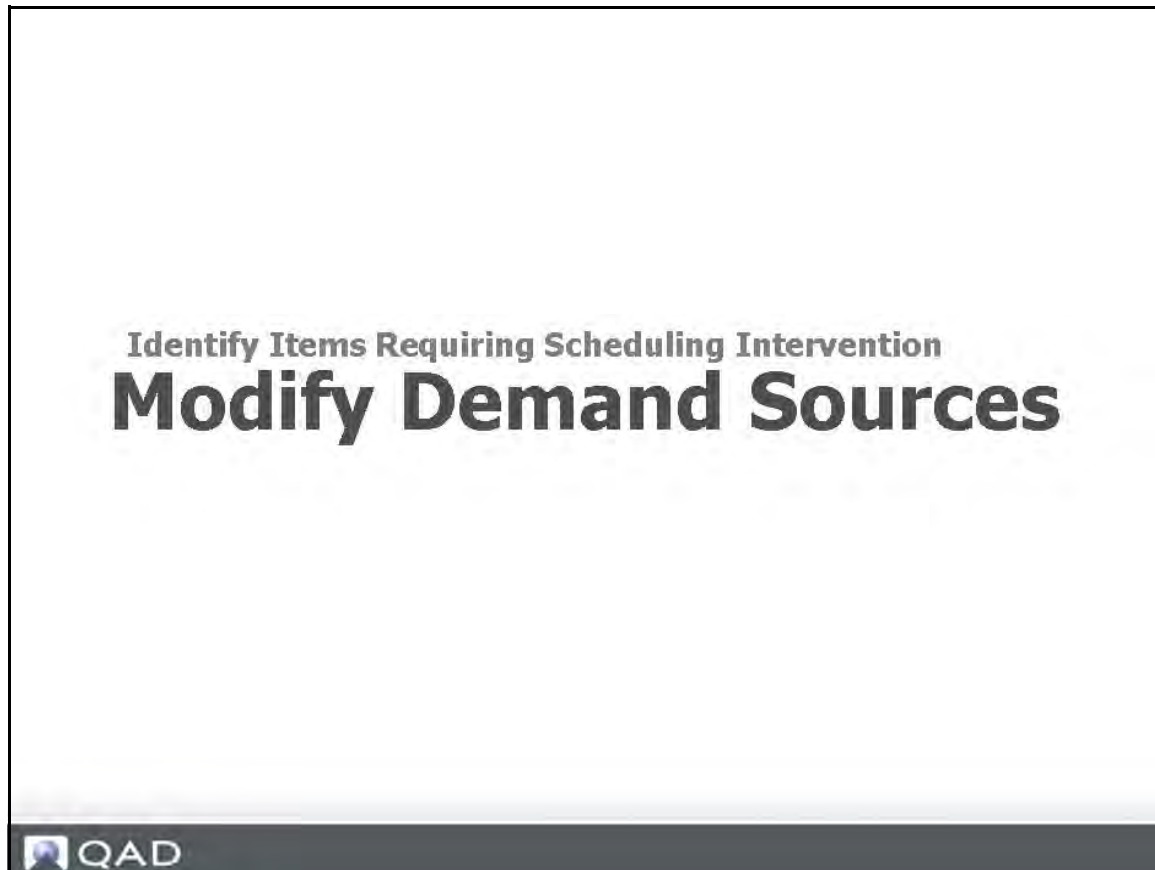
Overview

Master Scheduling Production Scheduling Shortage Report										
Master Scheduling										
Capacity										
Schedule										
Resource ID: pl-asm Item Number: F-bws105 Nettable QOH: 205 Past Due: 31 09/14: 27 09/15: 09/16: 09/17: 09/18: 09/19: 09/13: 48										
Supply/Demand										
Projected On Hand	-25	205	205	176	176	176	176	176	176	176
Projected Available Balance	-25	205	205	180	180	180	180	180	180	180
Supply	31	27	4							52
Demand	57									57
Customer/Intersite	30									30
Dependent										0
Forecast	27									27
Production Forecast										0
Planned Scrap										0
Cumulative ATP		180	180	180	180	180	180	180	180	206
Seasonal/Safety Stock										180
Receipts										0

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.

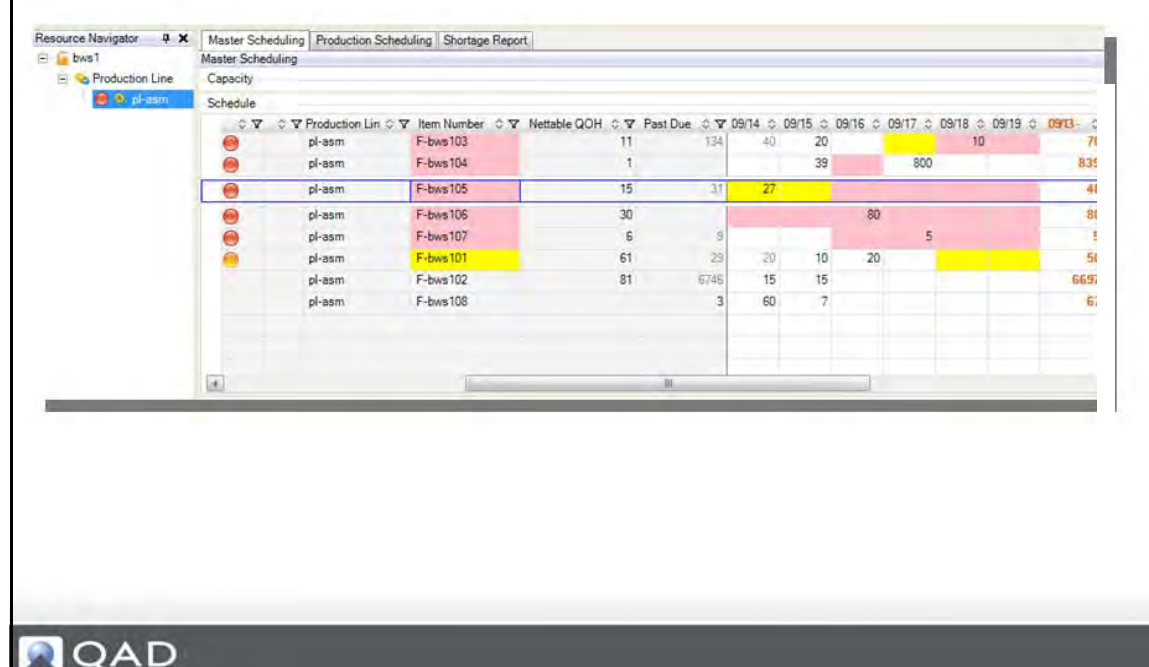
Modify Demand Sources Section



Modify Demand Sources

Identify Items requiring scheduling intervention

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”.

Modify Demand Sources

Identify Items requiring scheduling intervention

Modify Demand Sources

	09/14	09/15	09/16	09/17	09/18	09/19	09/20
Projected On Hand	-26	15	15	15	15	15	15
Projected Available Balance	-26	15	15	15	15	15	15
Supply	31	27	0	0	0	0	0
Demand	57	27	0	0	0	0	0
Customer/Intersite	30	0	0	0	0	0	0
Dependent	0	0	0	0	0	0	0
Forecast	27	0	0	0	0	0	0
Production Forecast	0	0	0	0	0	0	0
Planned Scrap	0	0	0	0	0	0	0
Cumulative ATP	16	15	15	15	15	15	15
Seasonal/Safety Stock	180	180	180	180	180	180	180
Receipts	-190	0	0	0	0	0	0

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

(A) Item no longer highlighted in red – but still below safety stock

(B) Demand total row does not include the forecast demand

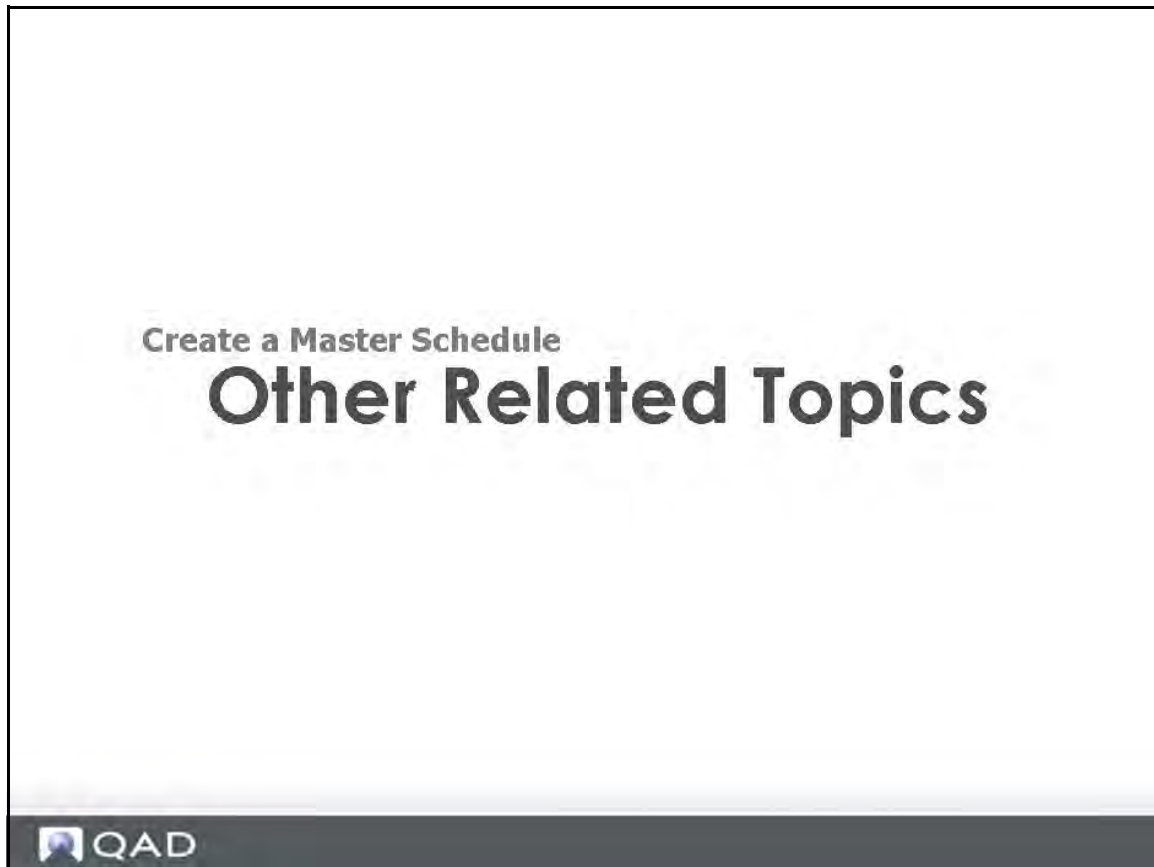
Supply/Demand	Projected On Hand	Projected Available Balance	Supply	Demand	Customer/Intersite	Dependent	Forecast	Production Forecast	Planned Scrap	Cumulative ATP	Seasonal/Safety Stock	Receipts
Projected On Hand	1											
Projected Available Balance	1	43	43	17	17	17	17	17	17	17		
Supply	31	27	4	52								
Demand	30			30								
Customer/Intersite	30			30								
Dependent												
Forecast	27											
Production Forecast												
Planned Scrap												
Cumulative ATP	1	17	17	17	17	17	17	17	17	17		
Seasonal/Safety Stock		180	180	180	180	180	180	180	180	180		
Receipts		-190										

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

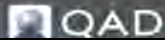


Other Related Topics

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

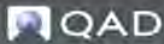


Hands On Lesson Section



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 Re-check 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

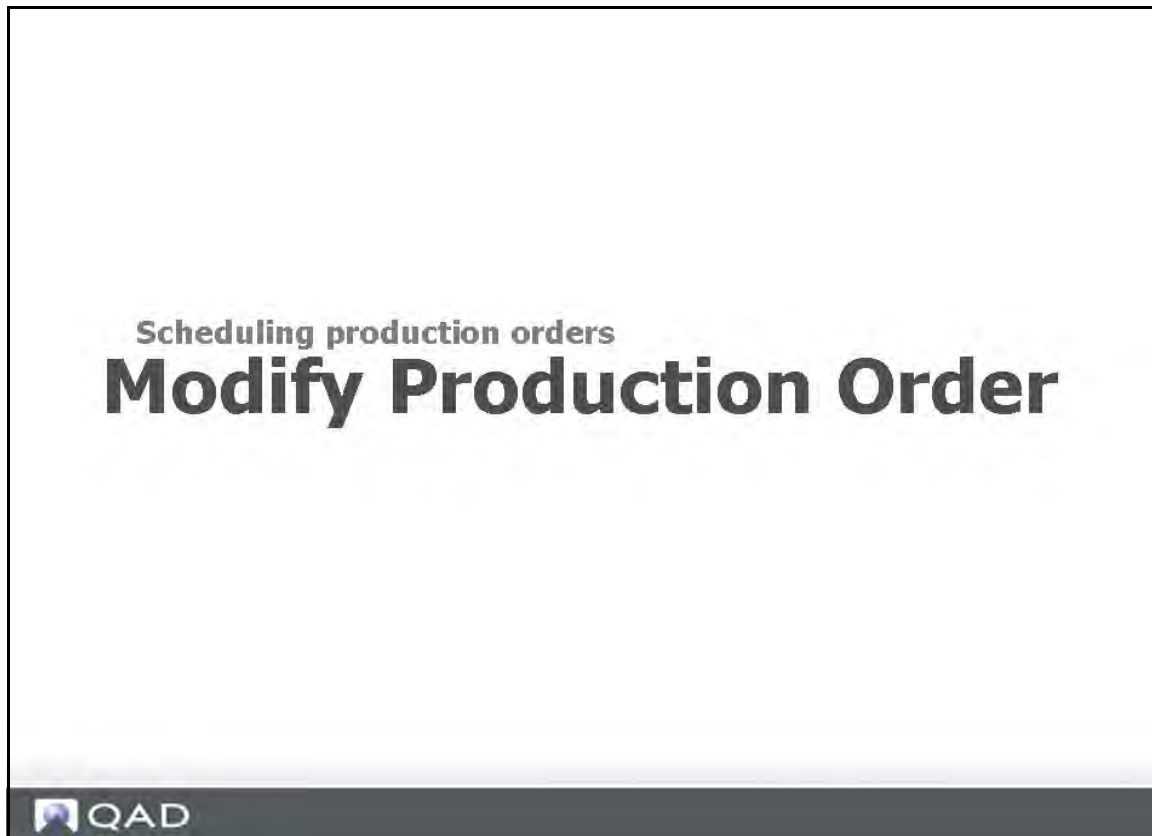
Schedule Production Orders

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



Firm a Production Order

Modify a Production Order
Firm a Production Order

The screenshot displays the QAD software interface. The top navigation bar includes 'Master Scheduling', 'Production Scheduling', and 'Shortage Report'. The 'Production Scheduling' tab is active, showing a 'Schedule' grid. The grid lists production lines (pl-asm) and item numbers (F-bws 103, 104, 107, 101, 105, 102, 106, 108). The 'Nettable QOH' column shows values like 11, 1, 6, 61, 205, 81, 610, and 3. The 'Past Due' column shows values like 134, 39, 8, 29, 31, 5745, 77, and 60. The grid is color-coded: red for shortages and yellow for planned receipts. Annotations include: (1) Production Line indicates a shortage (pointing to pl-asm); (2) Item with shortage highlighted in red (pointing to F-bws 107); (3) Day shortage begins highlighted in red (pointing to 09/16); and (4) -25 POH short (pointing to the -25 in the Supply/Demand grid).

Supply/Demand

	09/14	09/15	09/16	09/17	09/18	09/19	09/20
Projected On Hand	-5	-5	-20	-20	-20	-20	-20
Projected Available Balance	-6	-6	-20	-20	-20	-20	-20
Supply	9	9	5	5	5	5	5
Demand	15	15	25	25	25	25	25
Cumulative ATP	5	5	5	5	5	5	5
Seasonal/Safety Stock							
Receipts							

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

When cells are highlighted red, you can see that the projected on-hand quantity is negative within a firm scheduling period.

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

Answer: You have a demand of 25, but even though you have a planned receipt, planned orders do not display in the Schedule Grid.

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 'Planning and Scheduling work.' interface. The 'Production Line' is set to 'pl-asm'. The 'Schedule' table shows the following data:

Production Lin	Item Number	Nettable QOH	Past Due	09/14	09/15	09/16	09/17	09/18	09/19	09/20
pl-asm	F-bws103	11	134	40	20					
pl-asm	F-bws104	1			39		800			
pl-asm	F-bws107	6	9			25	5			
pl-asm	F-bws101	61	29	20	10	20				
pl-asm	F-bws105	205	31	27						
pl-asm	F-bws102	81	5746	15	15					
pl-asm	F-bws106	610	77			80				
pl-asm	F-bws108	3	60	7						

Annotations on the screenshot:

- (A) Item no longer highlighted in red (pointing to F-bws103)
- (B) I entered the shortage qty of 25 parts (pointing to the value 25 in the 09/16 column for F-bws107)
- (C) Projected On Hand is now (0) = balanced (pointing to the Projected On Hand value of -6 in the Supply/Demand summary)
- (D) Supply record of 25 is now a firm scheduled order (pointing to the value 25 in the 09/16 column for F-bws107)

Supply/Demand Summary:

Supply/Demand	Projected On Hand	Projected Available Balance	Supply	Demand	Cumulative ATP	Seasonal/Safety Stock
	-6	-6	9	15		

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

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

Create a Master Schedule

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.

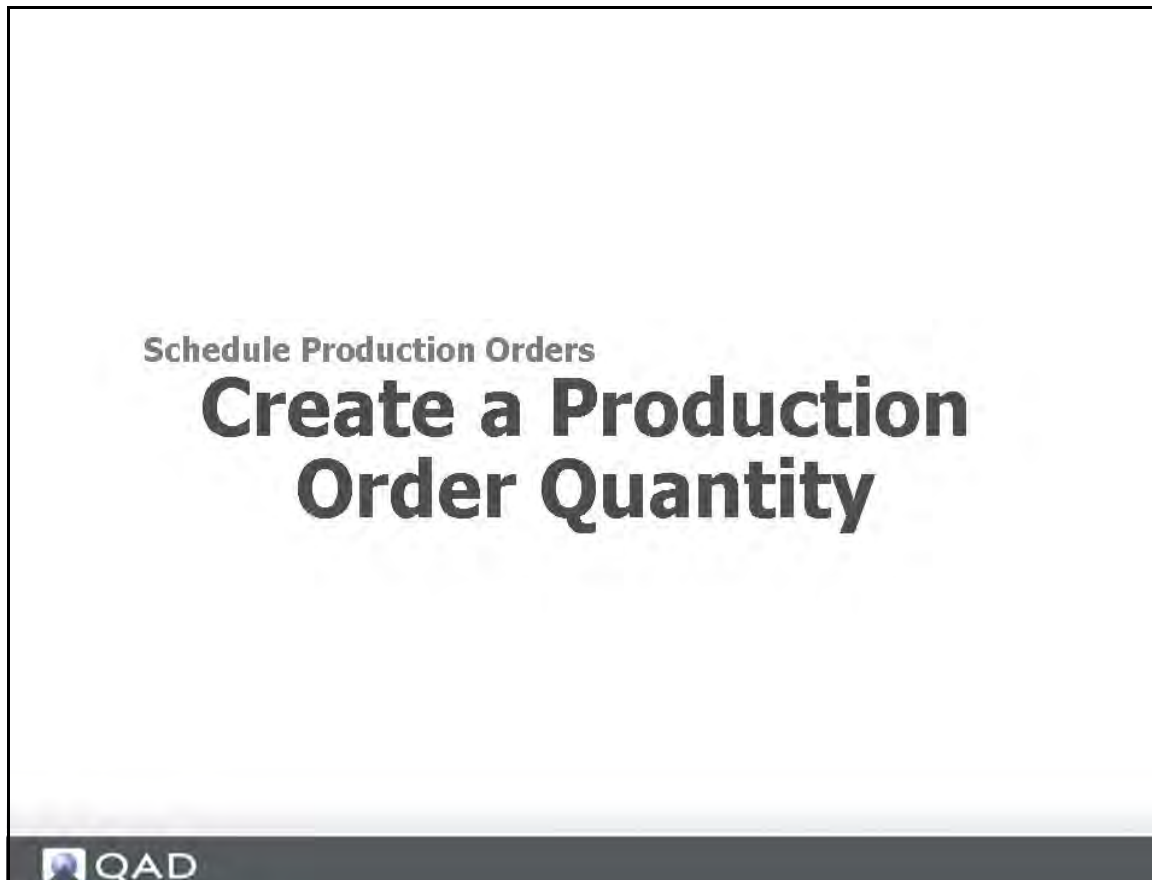
When you make a quantity change against a production order, the quantity change applies to the entire order, not just a specific operation. For example, if you change the quantity on work center A for operation 10, MSW applies the quantity change to the order and, subsequently, all operations.

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.

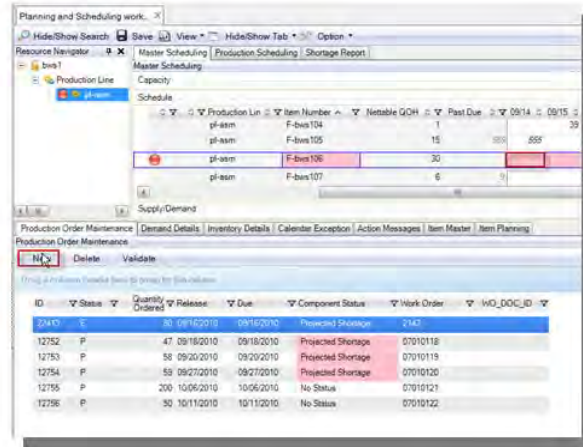
Create Production Order Quantity Section



Create a Production Order Quantity

Create a Master Schedule

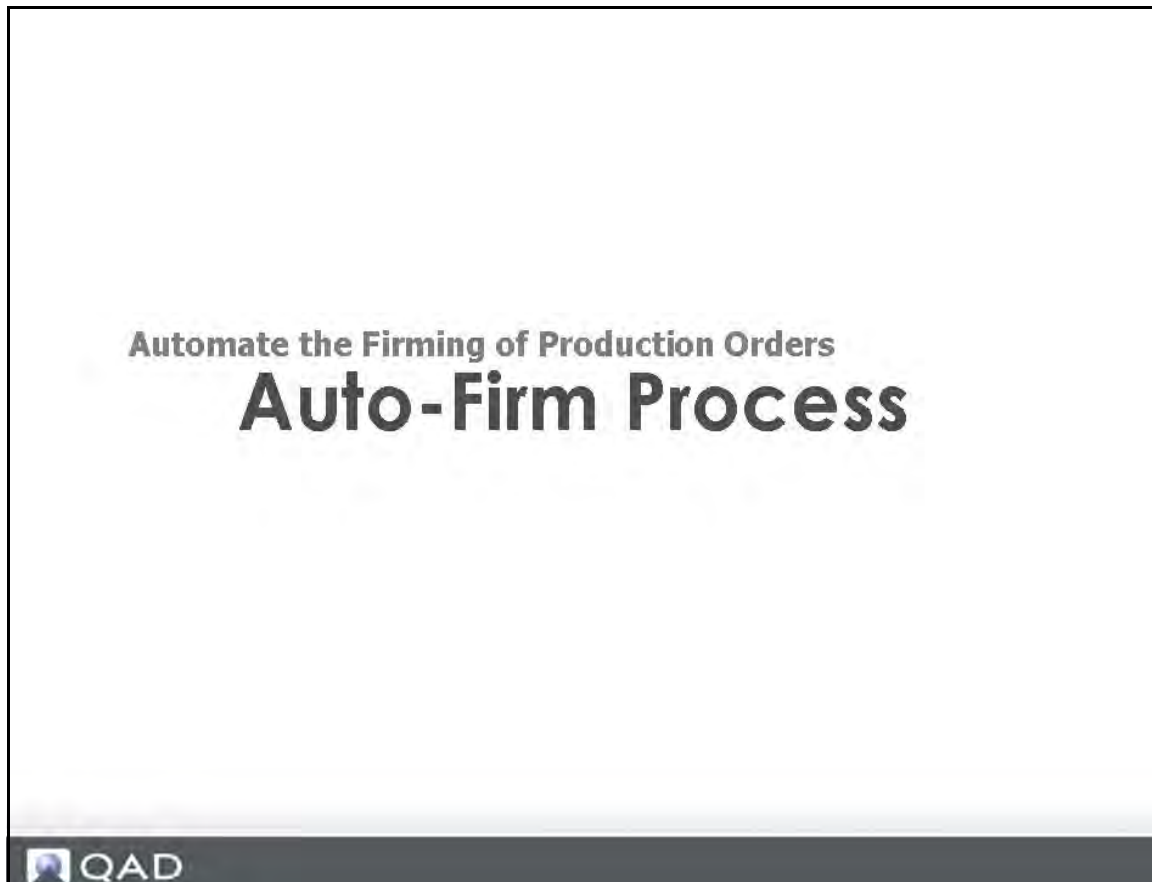
Create Production Order Quantity



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

Auto-Firm Process
Overview

- ▲ **Business need**
 - Reduce manual effort to create a master & production schedule
- ▲ **Legacy solutions**

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.

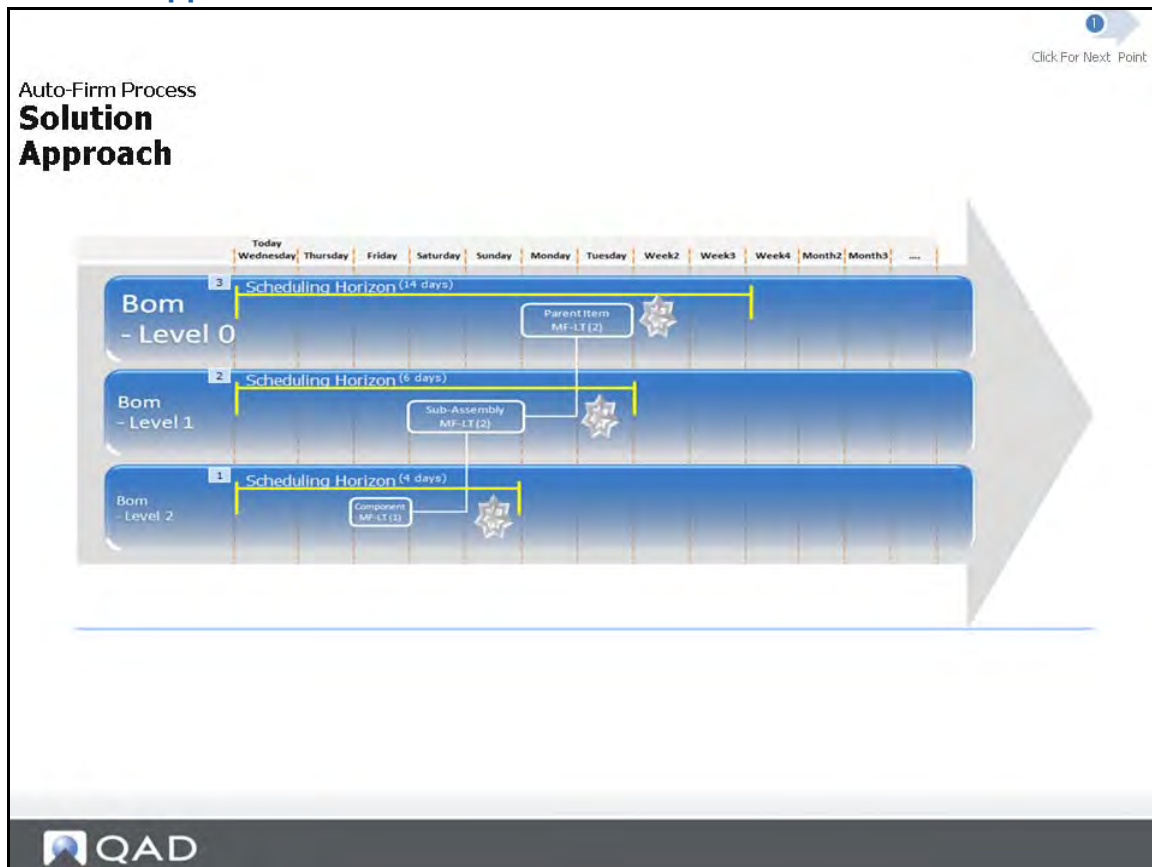
You cannot auto-firm these item types:

- 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?

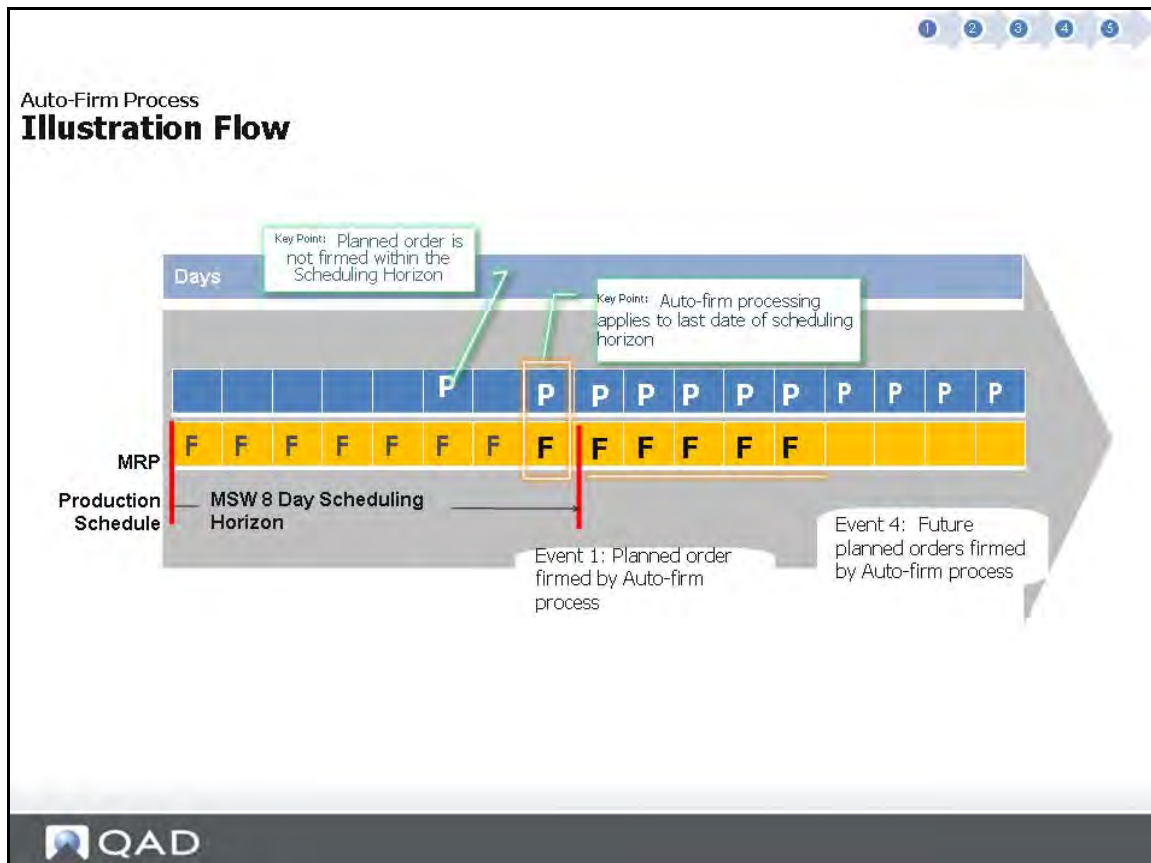
- When MRP is generating accurate planned orders.
- When a high percentage of the orders (95% or greater) are MRP planned orders.

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

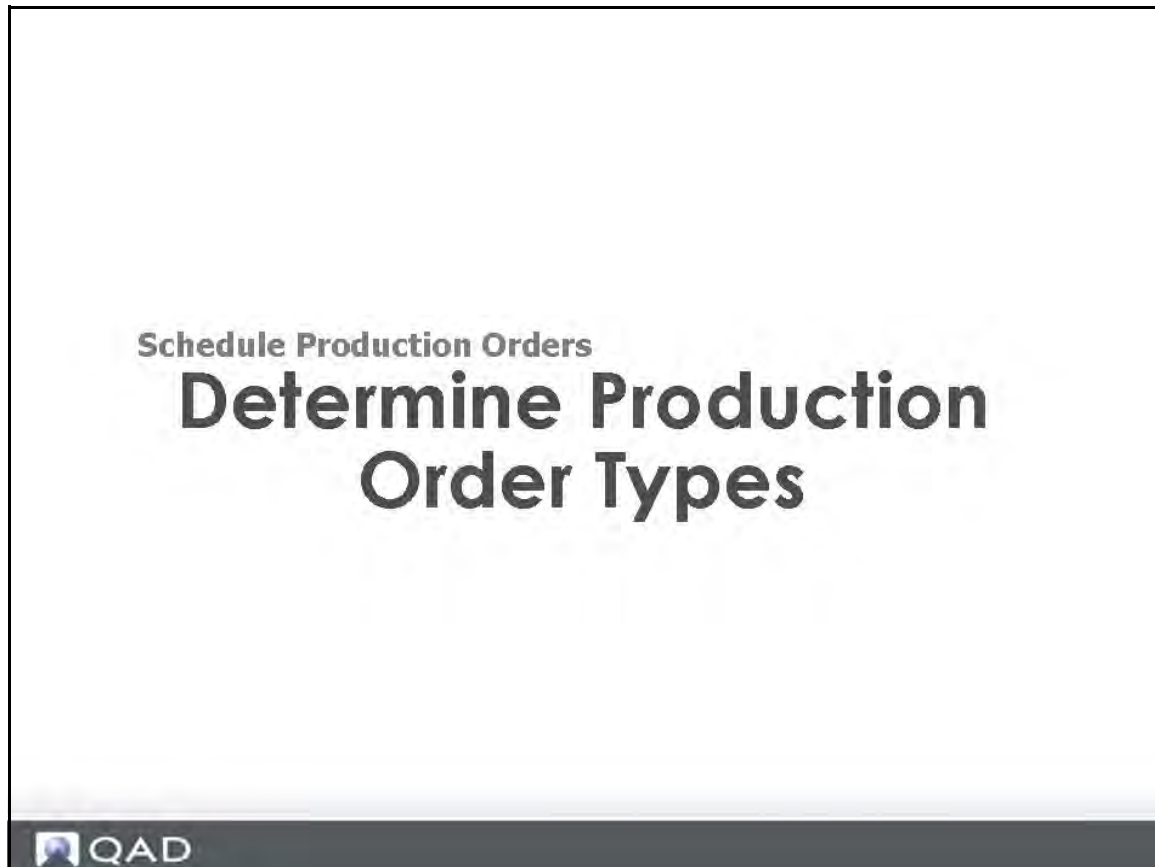
2. Run Auto-firm

3. Results

Auto-firm will firm ONLY this planned order

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

The screenshot shows the 'Item Planning Maintenance' window for Item Number F-bws105. The 'Purchase/Manufacture' dropdown is highlighted with a red box and set to 'L'. The 'Replenishment Method' dropdown is also highlighted with a red box and set to 'Orders'. Other visible fields include 'Item Number', 'Description', 'Unit of Measure', 'Buyer/Planner', 'Supplier', 'PO Site', 'Configuration Type', 'Inspect', 'ATP Enforcement', 'Family ATP', 'ATP Horizon', 'Run Seq 1', 'Network Code', 'Routing Code', and 'BOM Formula'.

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 Point

The screenshot displays the QAD Master Scheduling interface. The top navigation bar includes 'Master Scheduling', 'Production Scheduling', and 'Shortage Report'. The 'Master Scheduling' section is active, showing a capacity table with columns for Resource ID, Horizon End, Record Type, Past Due, and days of the week. Below this is a 'Schedule' section with a table showing Resource ID, Item Number, Nettable GQH, Past Due, and dates. The 'Production Order Maintenance' section is also visible, with tabs for 'New', 'Delete', 'Validate', and 'Details'. The 'Details' tab is selected, showing a list of production orders with columns for ID, Status, and Quantity. A specific order is highlighted, and its details are shown in a form. The form includes fields for 'Order Type', 'Primary Line', 'Scheduled Line', 'Number of Lines', 'Duration Buffer', 'Run Time', 'Setup Time', 'Projected Duration', 'Required Capacity', 'Supplier', 'Routing Code', 'BOM Formula Code', 'Cum ID', 'Order Sheet Printed', and 'Release Print'. Annotations are present: a green box points to the 'Order Type' field with the text 'The item is typically managed with Order Type = Repetitive'; another green box points to the 'Status' field with the text 'I changed the order status to (R) released'; and a third green box points to the 'Order Type' field with the text 'System changed the Order Type = Discrete'.

Master Scheduling | Production Scheduling | Shortage Report

Master Scheduling

Capacity

Resource ID	Horizon End	Record Type	Past Due	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	09/13 - 09	Monday
pl-asm	08/20/2010	Remaining Capacity	-717.4	26.4	1574.8	1574.8	2.9	2.9			739.6	

Schedule

Resource ID	Item Number	Nettable GQH	Past Due	09/13	09/14	09/15	09/16	09/17	09/18	09/19	09/20
pl-asm	F-bus105	15	59	15	27	27					48

Supply/Demand

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

Production Order Maintenance

New | Delete | Validate

Details

ID | Status | Quantity

90000	E	
12703	E	
12704	E	
12705	P	
12706	P	
12707	P	
12708	P	
12709	P	

Details

Primary Line: asn
Scheduled Line: 1
Number of Lines: 1.0
Duration Buffer (Hrs): 48.0
Run Time (Hrs): 0.09
Duration Hours: 48.59
Setup Time (Hrs): 0.5
Projected Duration Days: 6.07
Required Capacity (Hrs): 0.59

Order Type: S

Cum ID
Order Sheet Printed
Release Print

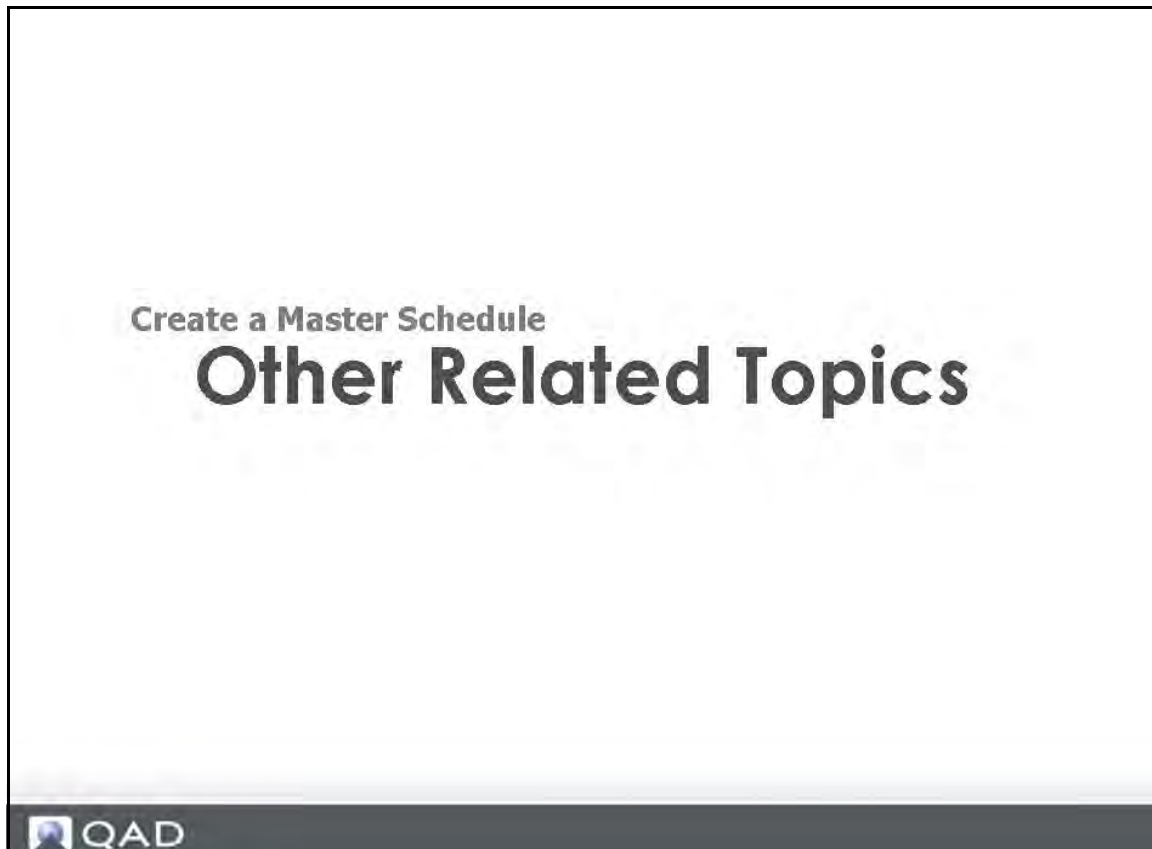
Remarks: I changed the order status to (R) released

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

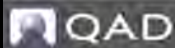


Other Topics

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



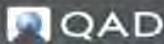
Hands On Lesson Section



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

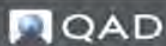


Topics

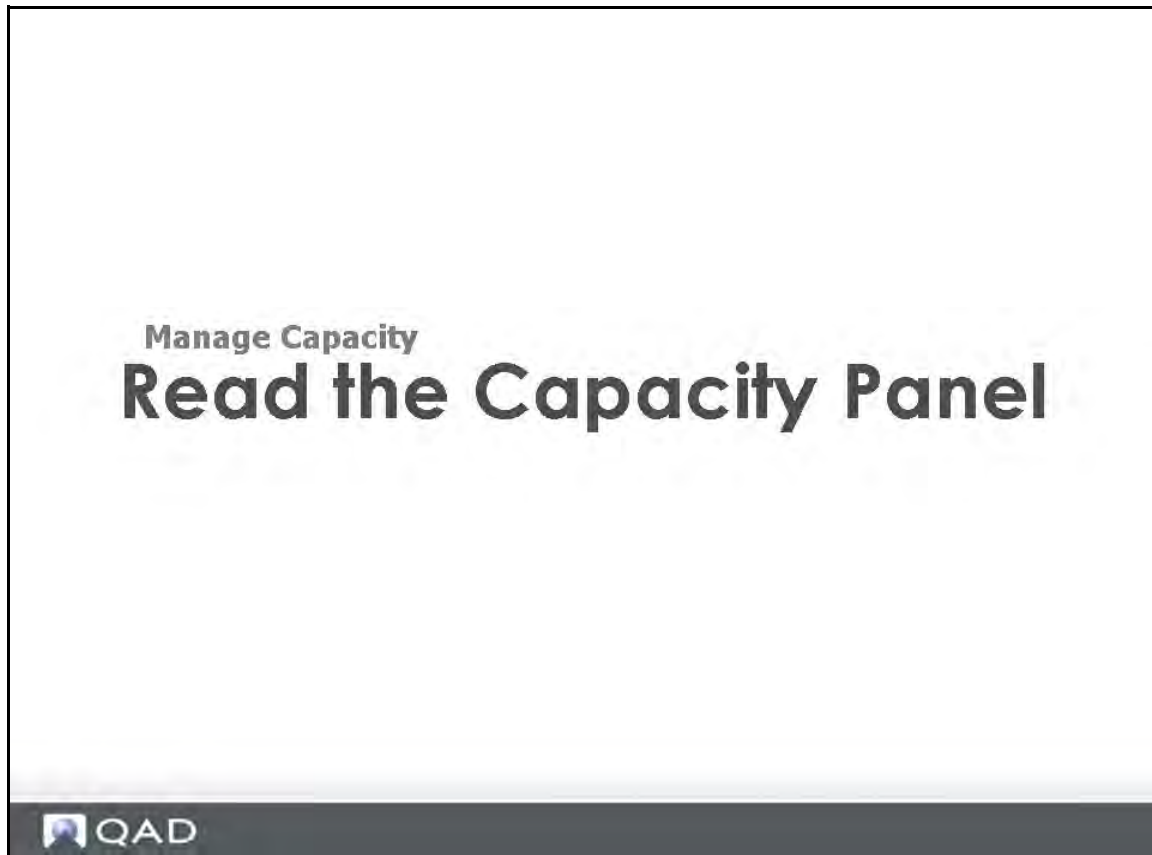
Manage Resource Capacity

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

Manage Resource Capacity

Read the Capacity Panel

Click For Next Point

Resource Navigator: bws1 Production Line pl-asm

Master Scheduling | Production Scheduling | Shortage Report

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	2.5	2.5	1.5	1.5	1.5	5.5	5.5	8.6
		Planned Capacity		7	8	8	8	8	12	12	63
		Required Capacity	1	8.5	5.2	6.5	6.5	6.5	6.7	14.5	54.4
		Scheduled Quantity	10	8.5	5.2	5.5	6.5	6.5	6.7	14.5	54.4

Schedule

Production Lin	Item Number	Past Due	09/20	09/21	09/22	09/23	09/24	09/25	09/26	09/20 - 09/26
pl-asm	F-bws103		20	20	20	20	20	20	20	140
pl-asm	F-bws104									0
pl-asm	F-bws108		5	7				2		14
pl-asm	F-bws102		15	15	15	15	15	15	15	105
pl-asm	F-bws105								80	80
pl-asm	F-bws106		35							35
pl-asm	F-bws107	10								0

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

QAD

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

Manage Resource Capacity

Read the Capacity Panel

Master Scheduling Production Scheduling Shortage Report										
Master Scheduling										
Capacity										
Resource ID	Horizon End	Record Type	Past Due	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
pl-asm	09/21/2010	Remaining Capacity	-1	0	0	0	0	0	0	0
		Planned Capacity		7	8	8	8	8	12	12
		Required Capacity	1	8.5	5.2	6.5	6.5	6.5	6.7	14.5
		Scheduled Quantity	10	85	52	65	65	65	67	145
Schedule										
Resource ID	Item Number	Past Due	09/20	09/21	09/22	09/23	09/24	09/25	09/26	09/20 - 09/26
pl-asm	F-bws103		20	20	20	20	20	20	20	140
pl-asm	F-bws104									0
pl-asm	F-bws108		5	7				2		14
pl-asm	F-bws105								80	80
pl-asm	F-bws106		35							35
pl-asm	F-bws101		10	10	30	30	30	30	30	170
pl-asm	F-bws102		15	15	15	15	15	15	15	105
pl-asm	F-bws107	10								0

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

Manage Resource Capacity
Read the Capacity Panel

The screenshot displays the 'Master Scheduling' interface with the 'Capacity' panel active. The 'Capacity' table shows data for Resource ID 'pl-asm' and Horizon End '09/21/2010'. The 'Required Capacity' row is highlighted, showing a value of 6.58 for Thursday, 09/24. A dashed blue arrow points from this value to the 'Required Capacity (Hrs)' field in the details section below. The 'Schedule' table shows a production order for Item Number 'F-bwa103' with a quantity of 20, scheduled for 09/20 through 09/26. The details section includes fields for Quantity Ordered (5.00), Production Rate (55.00), Run Crew Size (1), Run Crew Productivity (100.00), Line Productivity (100.00), Run Time (Hrs) (0.29), Setup Time (Hrs) (0.5), and Required Capacity (Hrs) (6.58). Other fields include Primary Line (asm), Scheduled Line (lsm), Number of Lines (1.0), Duration Buffer (Hrs) (48.0), Duration Hours (48.58), Projected Duration Days (6.07), Site (asm), Sales/Job, Supplier, Routing Code, BOM Formula Code, Order Type, Cum ID, Order Sheet Printed, and Release Print.

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

The screenshot shows the 'Capacity' panel in the QAD software. The panel displays a table with columns for Production Lin, Horizon End, Record Type, Past Due, and days of the week (Monday through Sunday). The data is for production line 'pl-asm' with a horizon end of '09/21/2010'. The table shows 'Remaining Capacity' (Past Due: -1, Sunday: 8.6), 'Planned Capacity' (Monday: 7, Sunday: 12), 'Required Capacity' (Past Due: 1, Sunday: 14.5), and 'Scheduled Quantity' (Past Due: 10, Sunday: 145). The 'Sunday' column is highlighted with a red box. Below the table, a 'Settings' window is open, showing the 'Production Scheduling User Interface' tab. The 'Consume Prior Days Remaining Capacity' checkbox is checked and highlighted with a red box.

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	8.6	2.8	1.5	1.5	1.5	5.3	8.6	8.6
		Planned Capacity		7	8	8	8	8	12	12	63
		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

Settings - Production Scheduling User Interface

Sequencing Days: 2 ☐ Display Shift

Columns Visible:

- ☒ Daily
- ☒ Weekly
- ☒ Monthly
- ☒ Consume Prior Days Remaining Capacity
- ☒ Include Forecast Demand

Changes require a search to take effect.

Buttons: 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)

Manage Resource Capacity
Read the Capacity Panel

Click For Next Point

(E) .5hrs Remaining Capacity consumed of Wednesday by Friday Required Capacity

(D) 3hrs Remaining Capacity consumed of Thursday by Friday Required Capacity

(C) Yellow indicates Remaining Capacity from a prior day(s) has been consumed

(B) Required Capacity 3.5hrs > Planned Capacity

(A) 2 hours of past due required capacity is applied to "today" Remaining Capacity

Resource ID	Horizon End	Record Type	Past Due	Monday	Tuesday	Wednesday	Thursday	Friday
ASSY-01	11/13/2010	Remaining Capacity	-2	-1.5	8	1.5	0	0
		Planned Capacity		8	8	8	8	8
		Required Capacity	2	6.5	8	6	5	11.5
		Scheduled Quantity	20	65	80	60	50	115

Set Range: 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

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

Manage Resource Capacity
Read the Capacity Panel

1 2 3

(A) Monday, **Prior Consumption** method indicates capacity shortage, **Daily Net** method does not include past due required capacity

(B) Friday, **Prior Consumption** method indicates plan is achievable, **Daily Net** method indicates capacity shortage

(C) Week 45, **Prior Consumption** method indicates overall shortage while **Daily Net** method does not

Master Scheduling Production Scheduling Shortage Report		Master Scheduling									
Capacity		Past Due	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Week 45	Monday
Resource ID	Horizon End	Record Type									
ASSY-D1	11/13/2010	Remaining Capacity	-0.5	8	8	8	8	15	8	-0.5	8
		Planned Capacity	2	8.5	8	8	11.5	8	10.5	55.5	15.8
		Required Capacity	20	65	80	60	115	80	100	555	188
		Scheduled Quantity									

Consume Prior Remaining Capacity "method"

Daily Net "method"

Question: When is each method most applicable to your situation?

QAD

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

Resource ID	Horizon End	Record Type	Past Due	Thursday	Friday	Saturday	Sunday	09/16 - 09/19
pl-asm	09/21/2010	Remaining Capacity	-1	0	0	0	0	0.5
		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

After Changes

Resource ID	Horizon End	Record Type	Past Due	Thursday	Friday	Saturday	Sunday	09/16 - 09/19
pl-asm	09/21/2010	Remaining Capacity	-1	0	0	0	0	0
		Planned Capacity		8	0	11.5	8	35.5
		Required Capacity	1	8	0	11.5	8	35.5
		Scheduled Quantity	10	80	80	115	80	355

Calendar Exception Maintenance

Reference	Date	Shift1	Shift2	Shift3	Shift4	Planned Capacity	Weighted Prod
PM	09/16/2010	-4.00	100.0%	0.00	100.0%	0.00	100.0%
OT	09/18/2010	3.50	100.0%	0.00	100.0%	0.00	100.0%

QAD

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

Viewing Capacity Trends

Introduction

1 2 Click For Next Point

DCM1QPS9 DB NY : newyork
mfmnu 21. Resource Plan

1. Resource Maintenance	13.
2. Resource Inquiry	14.
3. Resource Report	15.
4.	16.
5. PL Resource Bill Maintenance	17. Item Resource Bill Maintenance
6. PL Resource Bill Inquiry	18. Item Resource Bill Inquiry
7. PL Resource Bill Report	19. Item Resource Bill Report
8.	20.
9. PL Resource Load Summary Inquiry	21. Item Resource Load Summary Inq
10. PL Resource Load Summary Report	22. Item Resource Load Summary Rept
11. PL Resource Load Detail Inquiry	23. Item Resource Load Detail Inq
12. PL Resource Load Detail Report	24. Item Resource Load Detail Report

DCM1QPS9 DB NY : newyork
mfmnu 24. Capacity Rqmts Plan

1. Recalculate Capacity Plan	13. Work Center Load Summary Inquiry
2.	14. Work Center Load Summary Report
3.	15.
4. Input/Output Inquiry	16. Work Center Load Detail Inquiry
5. Input/Output Report	17. Work Center Load Detail Report
6.	18.
7.	19. Department Load Summary Inquiry
8.	20. Department Load Summary Report
9.	21.
10.	22. Department Load Detail Inquiry
11.	23. Department Load Detail Report
12.	24.

QAD

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	0/04 - 10/10	10/11 - 10/17	10/18 - 10/24	10/25 - 10/31	10/01 - 10/31
pl-asm	10/04/2010	Remaining Capacity	-5.9	27	-2.7	-25.6	-13.9	-12.8
PL-Mold	10/04/2010	Remaining Capacity		46.9	30.4	17.7	24.2	146.1
PL-Print	10/04/2010	Remaining Capacity	-30.1	67.3	-8.1	-60.5	-34.9	8.7
Press-Dt	10/04/2010	Remaining Capacity	-11.9	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-c2S1		Remaining Capacity		30.2	26.5	21.7	28.3	109.6
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

Resource Navigator

Master Scheduling

Production Scheduling

Shortage Report

Master Scheduling

Capacity

Production Line

pl-asm

PL-Mold

PL-Paint

Press-Dt

Press1

Press2

Press3

Work Center

WC-c2S1

WC-Mold

Resource	Horizon End	Record Type	Past Due	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	10/11 - 10/17
pl-asm	10/04/2010	Remaining Capacity	-5.9	-5.9	1.5	1.5	1.5	1.5	1.5	1.5	-2.7
PL-Mold	10/04/2010	Remaining Capacity		2.5	2.5	2.5	2.5	2.5	2.5	2.5	30.4
PL-Paint	10/04/2010	Remaining Capacity	-30.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	-8.1
Press-Dt	10/04/2010	Remaining Capacity	-11.9	20.5	20.5	20.5	20.5	20.5	20.5	19.9	142.4
Press1	10/02/2010	Remaining Capacity		0	0	0	0	0	0	0	56
Press2	10/02/2010	Remaining Capacity		0	0	0	0	0	0	0	56
Press3	10/02/2010	Remaining Capacity		0	0	0	0	0	0	0	56
WC-c2S1		Remaining Capacity		6.8	6.8	4.2	16.8	6.8	6.8	6.8	26.5
WC-Mold		Remaining Capacity		1.1	1.1	1.1	1.1	1.1	1.1	1.1	3.9

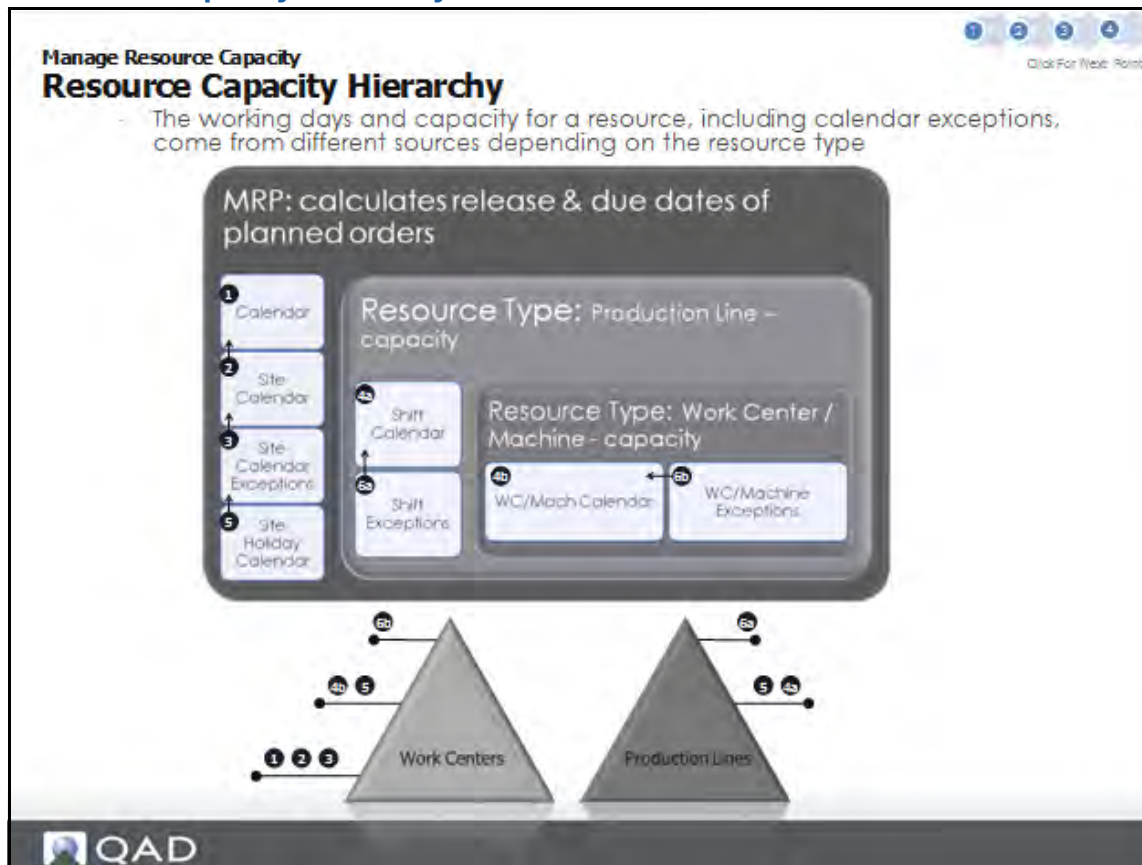
Question: What decisions can be made from this summary view?



Capacity Setup Section



Resource Capacity Hierarchy



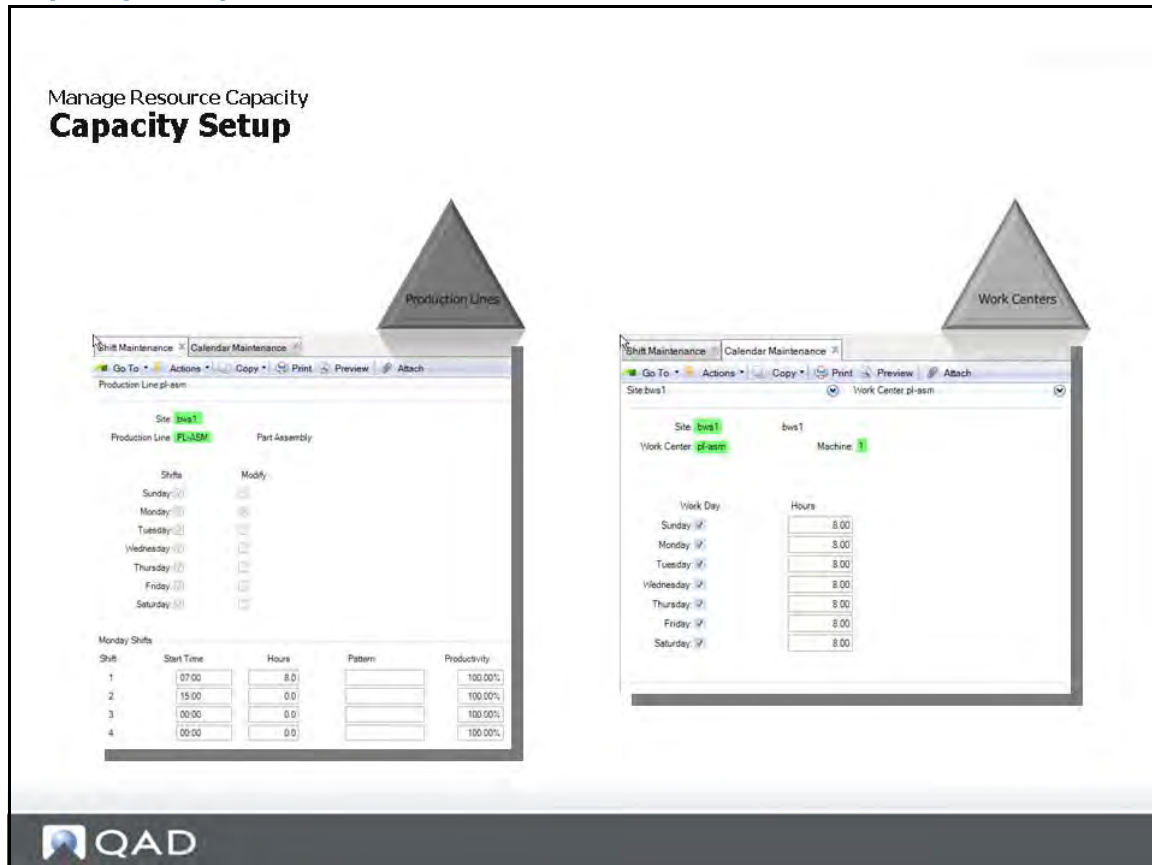
The working days and capacity for a resource, including calendar exceptions, come from different sources depending on the resource type.

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:

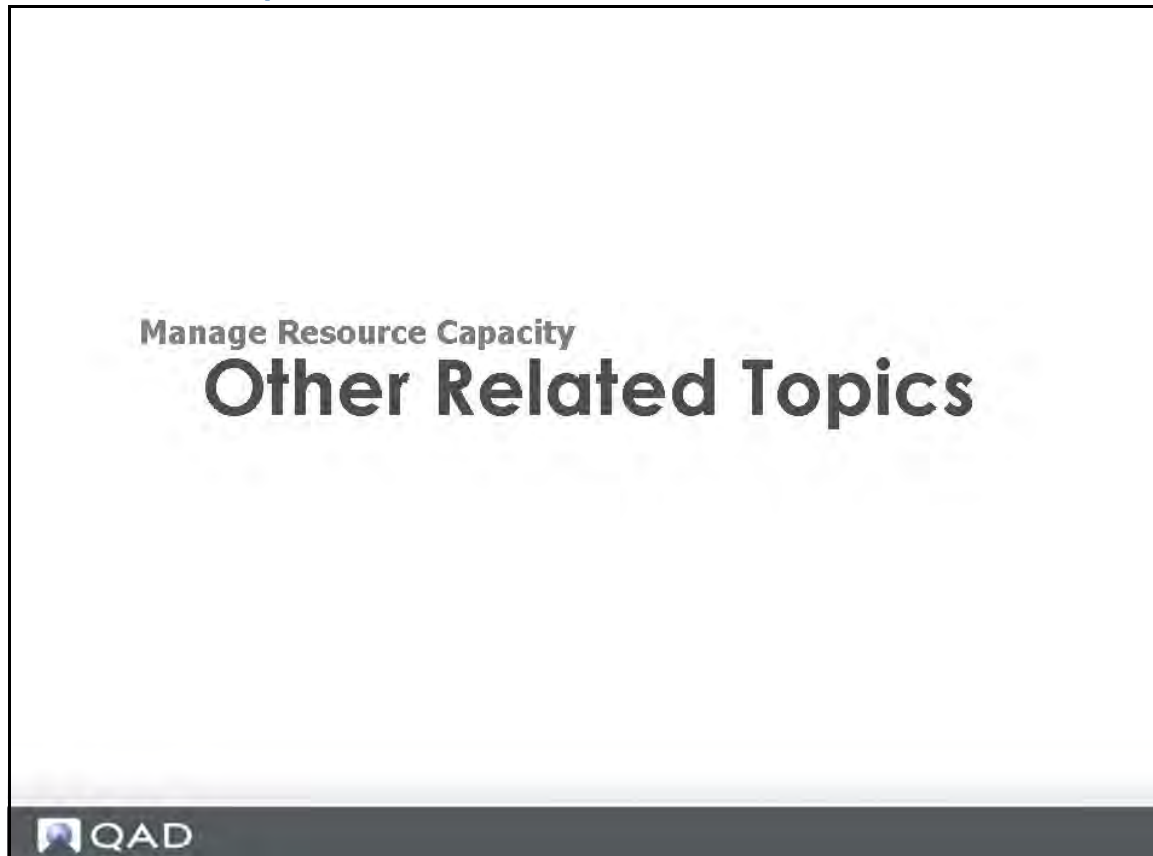
- For the specific site, work center, and machine combination
- For site and work center with a blank machine
- For site with both work center and machine blank

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

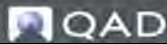
Hands On Lesson Section



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?

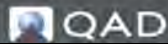
Answers

- 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														33
ASSY-01	02305	20														55
ASSY-01	02307	8	4	5												23
ASSY-01	02308			3												12

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		32	1					33
ASSY-01	02305	20		29	10			39	35		20					55
ASSY-01	02307	8	4	5				5				23				23
				3				3	12							12

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

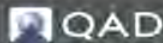
- MSW UI for 2010.1 and 2011 QAD EE release
- New features plus consolidation of 50 + legacy applications, reports, and scheduling steps into a single application
- Flexible UI, but navigational design and amount of data available can be overwhelming at first
- Primary workbench value is visibility to 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



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

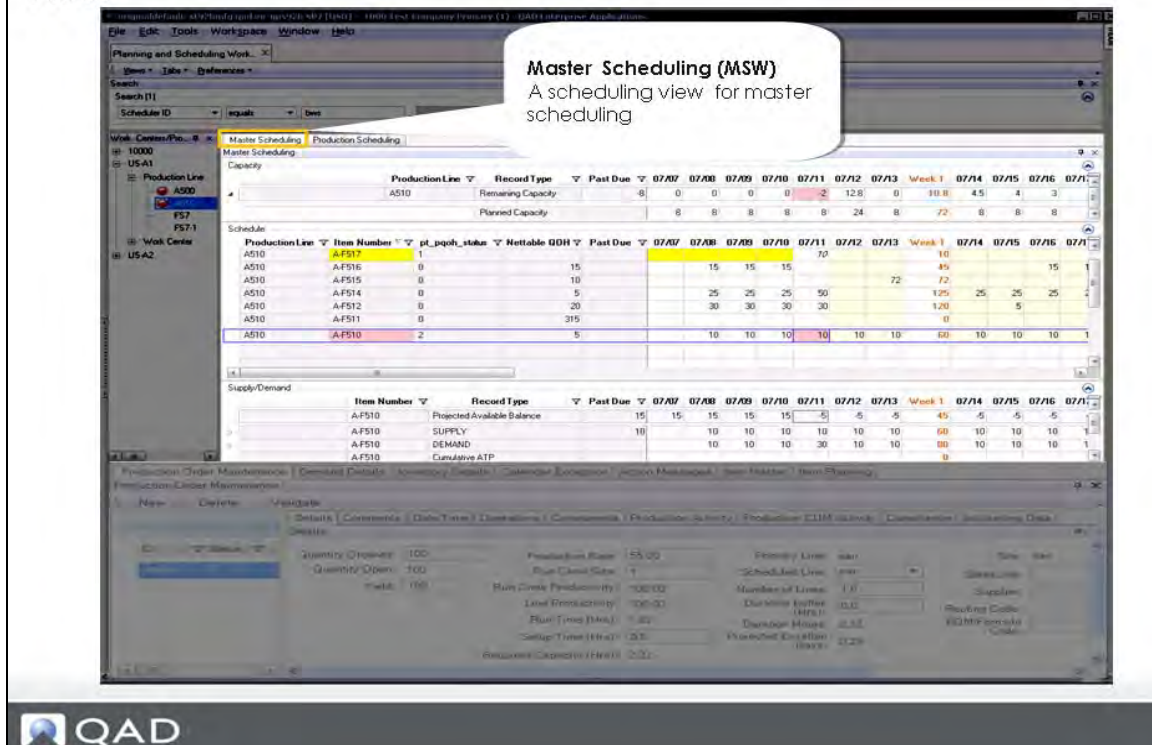
Framework Introduction Section



Framework Introduction

Workbench Framework Introduction

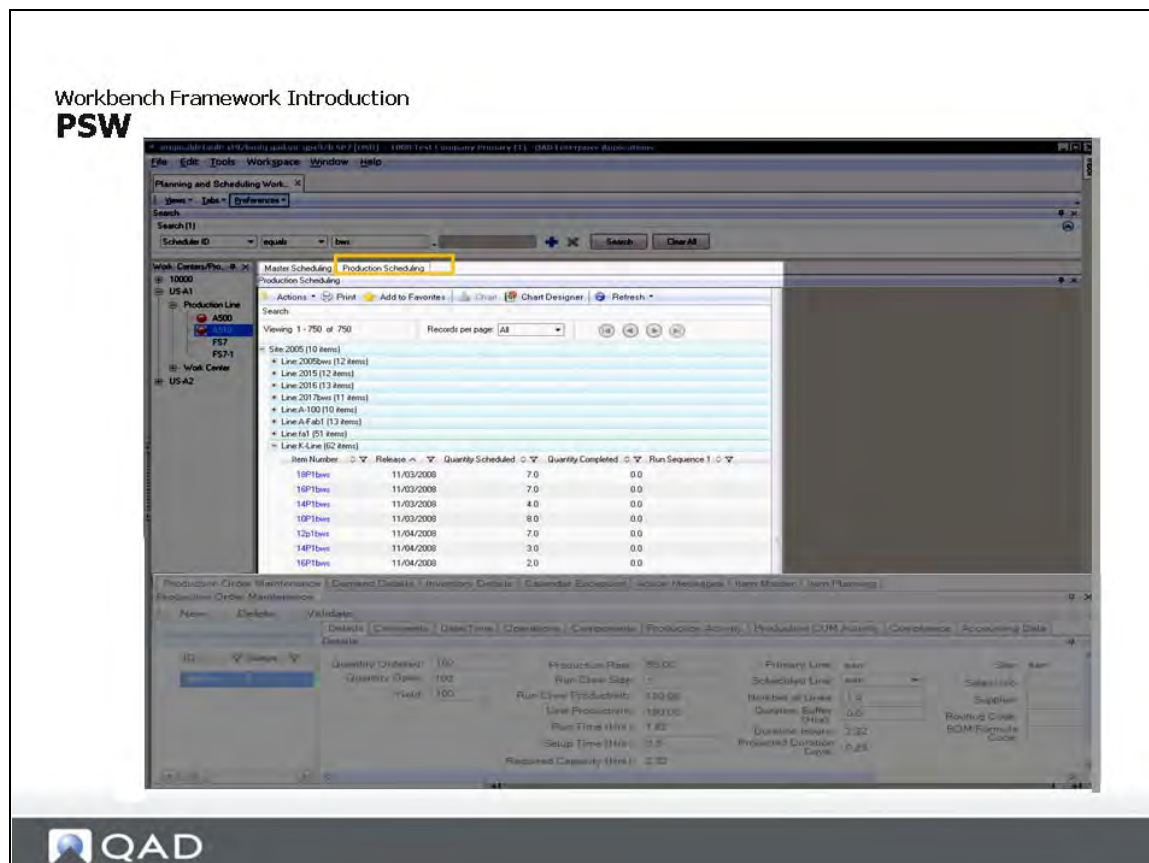
MSW



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)

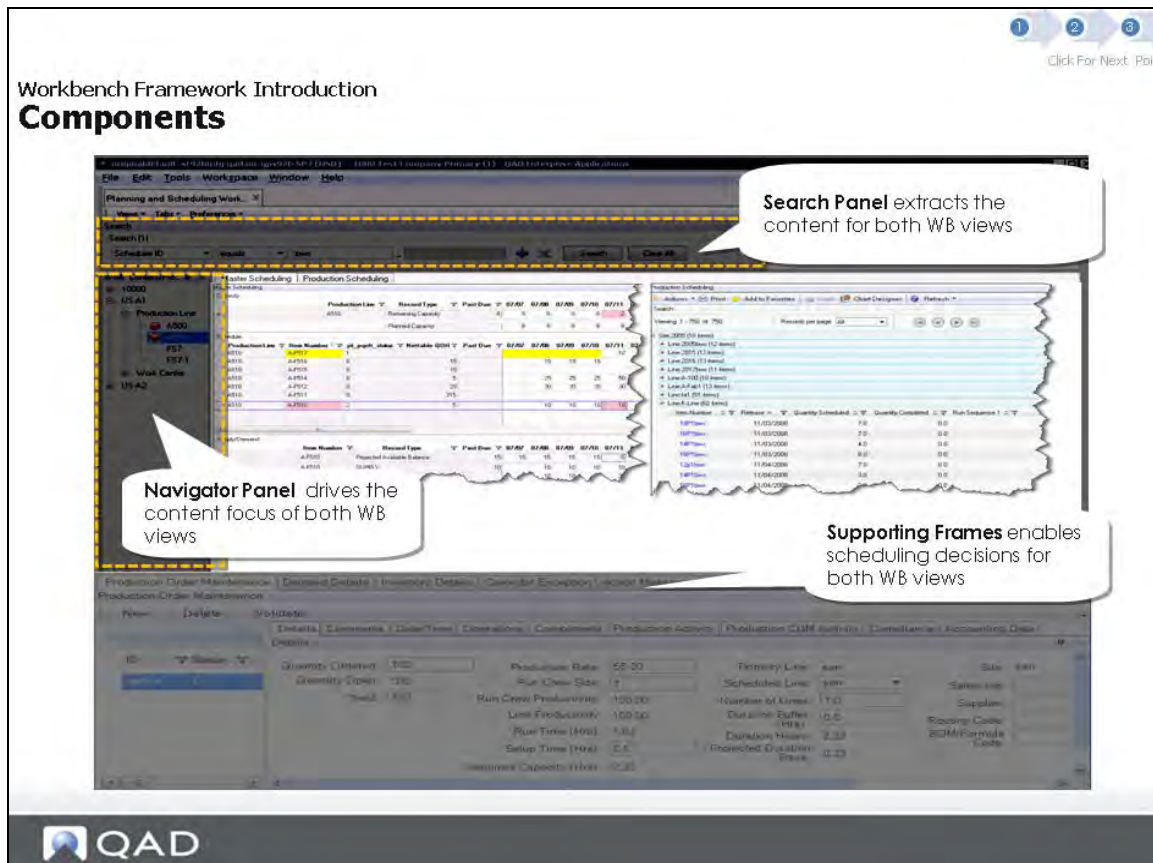
Supporting Frames

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

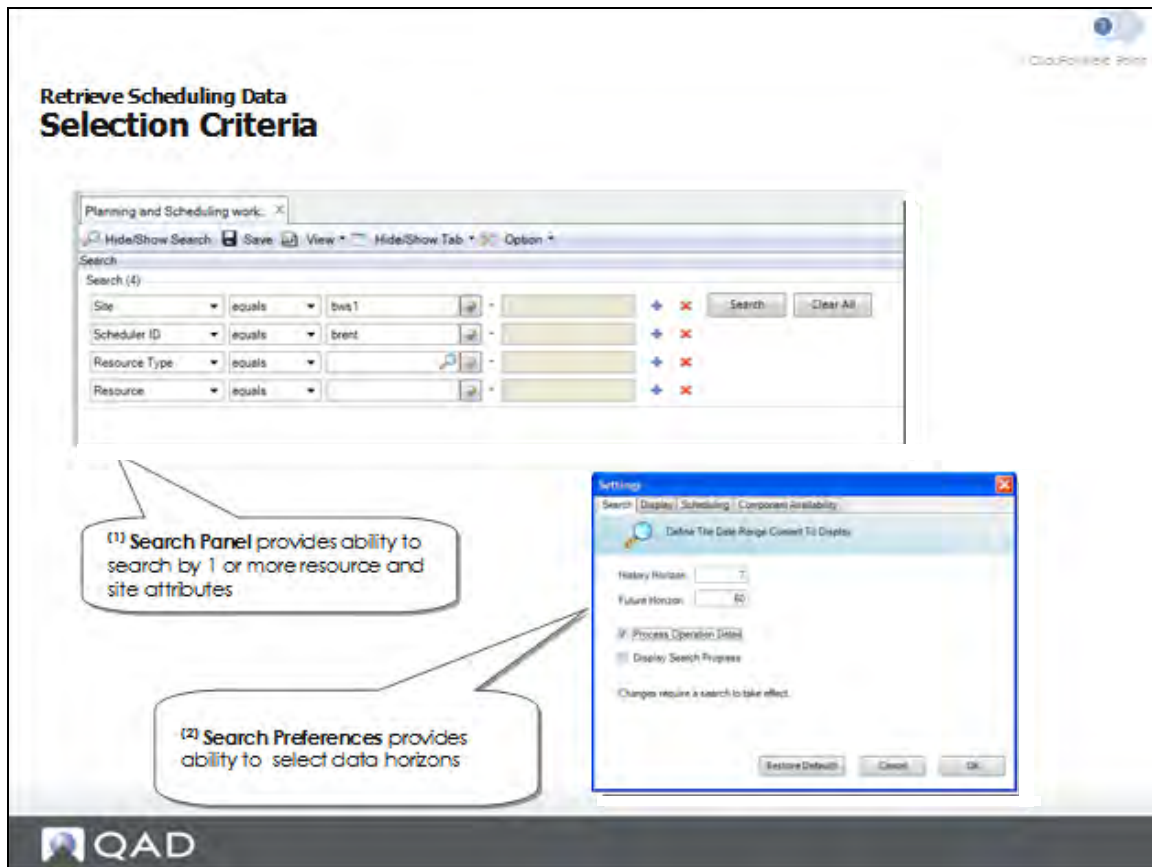
Components



Retrieve Scheduling Data Section



Retrieve Scheduling Data - Selection Criteria



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

Retrieve Scheduling Data

Click For Next Point

Basic Rules

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Item A Scheduled Receipt Supply Order 1	2	Item B Open SO Requirement 3	4	Item C Closed Supply Order 5	Item D Production Receipt 6	7
8	Item E Closed Supply Order 9	10	TODAY 11	Item F Open Supply Order 12	Item G Forecast Requirement 13	Item H Closed Supply Order 14
15	Item I Closed SO Requirement 16	17	18	19	Item J Forecast Requirement 20	Item K Scheduled Receipt Supply Order 21
22	23	24	25	26	27	28
29	30					

 Search History Horizon
 Search Future Horizon



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

Retrieve Scheduling Data

System Setup Considerations

Search (3)

Site	equals	bwa9							
Scheduler ID	equals	Group1							
Resource	contains								

Click For Next: Point

Bom - Level 0

- Resource Group 1: Large Item Assembly
 - Resource 1A
 - Resource 2A
 - Resource 3A
- Resource Group 2: Small Item Assembly
 - Resource 1B
 - Resource 2B
 - Resource 3B
- Resource C
- Resource D
- Resource E

Bom - Level 1

- Resource Group 3: Enamel Coating Processing
 - Resource 1F
 - Resource 2F
 - Resource 3F
- Resource Group 4: Vinal Coating Processing
 - Resource 1G
 - Resource 2G

Bom - Level 2

- Resource Group 5: Large Die Press
 - Resource 1H
 - Resource 2H
 - Resource 3H
- Resource I
- Resource Group 6: Small Die Press
 - Resource 1I
 - Resource 2I
- Resource K

QAD

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 Considerations (Continued)

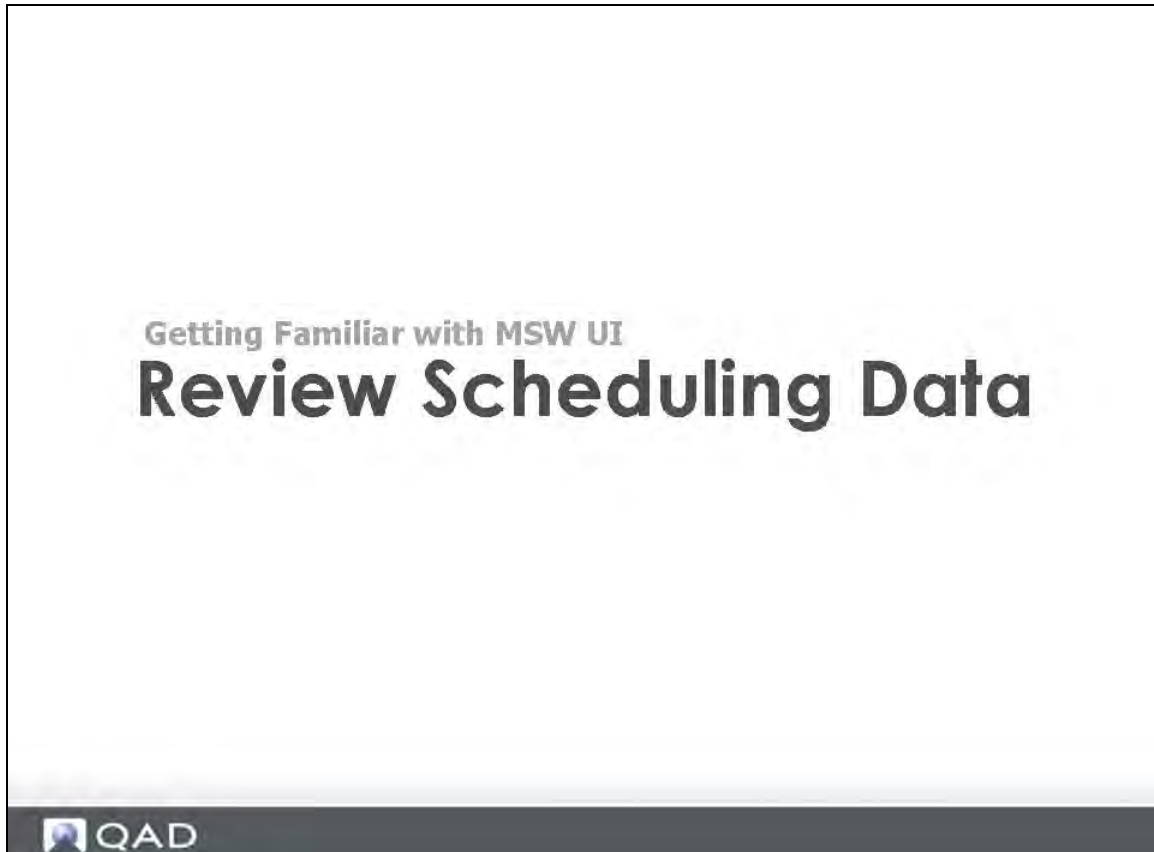
Retrieve Scheduling Data

System Setup Considerations

The screenshot displays two overlapping software windows from the QAD system. The 'Production Line Maintenance' window (left) is for 'Production Line: 1001' and shows fields for 'Description', 'Units/Hour', 'Number of Lines', 'Duration Buffer', 'Setup Time', 'Auto Firm', and 'Scheduler ID'. The 'Work Center Maintenance' window (right) is for 'Work Center: 200-02' and shows fields for 'Machine', 'Description', 'Department', 'Auto Firm', 'Scheduler ID', 'Queue Time', 'Wait Time', 'MachOp', 'Setup Crew', 'Run Crew', 'Machines', 'Mach Bdr Rate', 'Setup Rate', 'Labor Rate', 'Labor Burden Rate', and 'Labor Bdr %'. Red rectangular boxes are drawn around the 'Scheduler ID' input field in both windows, indicating where to enter a Scheduler ID to group resources.

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



Review Scheduling Data - Sequence Grid

Review Scheduling Data
Sequencing Grid

ID	Sh	Seq	Run Seq	Style	Item Number	Sta	Component Status	Quantity Ordered	Open Quantity	Setup Tim	Release	Due	Resource
1954	0	Large	7276/W	F-bws101	E	Available	14	14	0	11/12/2010	11/12/2010	ASSY-01	
2017	0	Medium	7276/W	F-bws105	E	Scheduled Receipts	14	14	0	11/12/2010	11/12/2010	ASSY-01	
2252	0	Medium	7276/W	F-bws102	E	Available	14	14	0	11/12/2010	11/12/2010	ASSY-01	
90001	0	Medium	7276/W	F-bws105	E	Available	5	5	0	11/12/2010	11/12/2010	ASSY-01	
90005	0	Small	7276/W	F-bws103	E	Authorized Receipts	20	20	0	11/12/2010	11/12/2010	ASSY-01	
90003	1	Small	7276/W	F-bws103	E	Available	5	5	0	11/12/2010	11/12/2010	ASSY-01	
90011	0	Large	7276/W	F-bws107	F	Projected Shortage	5	5	0	11/12/2010	11/12/2010	ASSY-01	
90015	0	Medium	7276/W	F-bws108	F	Sched Rcpts Delayed	3	3	0	11/12/2010	11/12/2010	ASSY-01	

Sequence Grid

The Sequence Grid lets you concurrently view, both a list of sequenced and non-sequenced jobs (production orders).

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.

PSW shows capacity in hours and units. Units is the total quantity of parts scheduled. Hours is the required capacity for each production order, and required capacity is the run time plus the setup time.

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

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

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 Point

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

ID	Style	Run Seq 1	Item Number	Status	Quantity
1954	0 Large	7276/H	F-bwa101	Available	14
2017	0 Medium	7276/H	F-bwa105	Scheduled Receipts	14
2252	0 Medium	7276/H	F-bwa102	Available	14
90001	0 Medium	7276/H	F-bwa105	Available	5
90005	0 Small	7276/H	F-bwa103	Authorized Receipts	20
90003	1 Small	7276/H	F-bwa103	Available	5
90011	0 Large	7276/H	F-bwa107	Projected Shortage	5
90015	0 Medium	7276/H	F-bwa108	Sched Rcpts Delayed	3

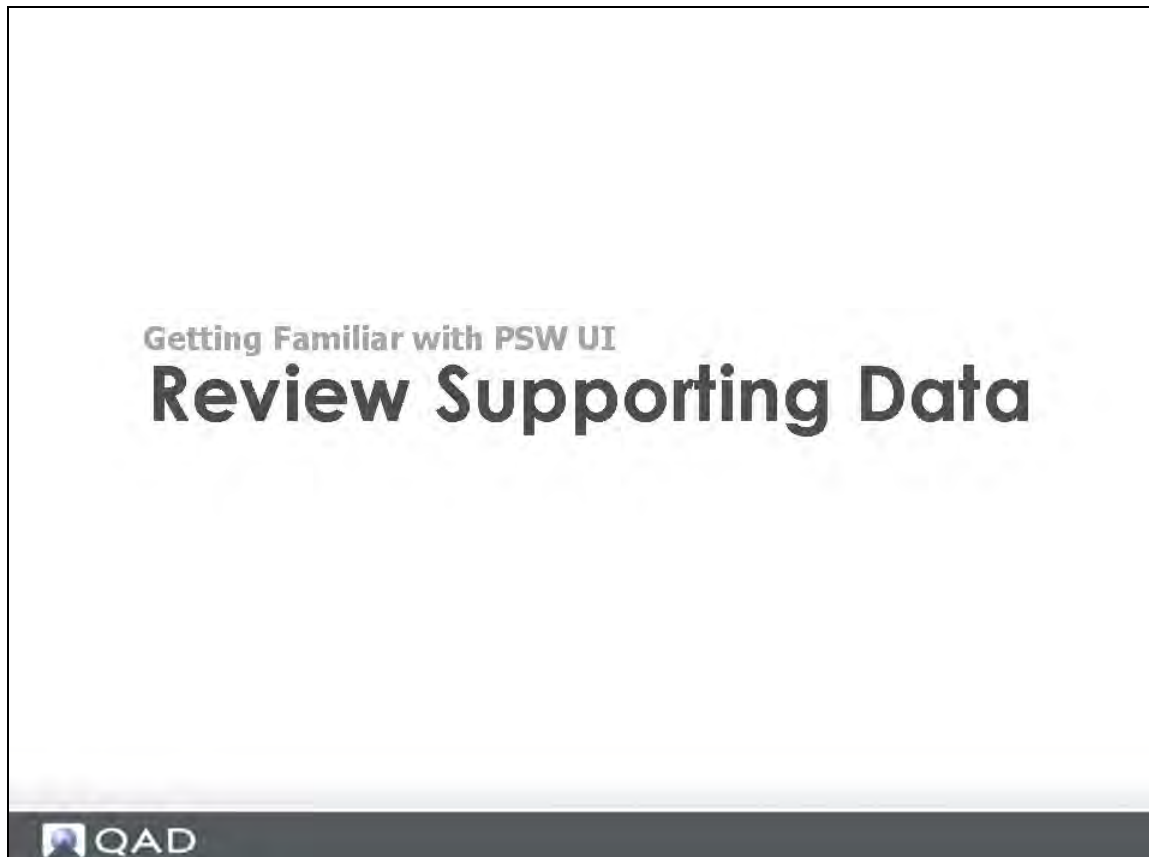
Use Production Order Browse to create dynamic queries. You can find those production orders that pertain to your scheduling issues. The system displays browse data by the Run Seq 1 field.

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

The screenshot shows the 'Review Supporting Data - Item Details' window in the QAD Planning and Scheduling Workbench. The window displays a table of item details for a selected item, including columns for ID, Style, Item Number, Status, Component Status, Quantity Ordered, Open Quantity, Setup Time, and Release. A red box highlights the 'Production Order Maintenance' tab in the bottom navigation bar.

ID	Shi	Seq	Run Seq	Style	Item Number	Sta	Component Status	Quantity Ordered	Open Quantity	Setup Tim	Release
1354	0	Large	7276W	F-bws101	E	Available		14	14	0	11/12/2010
2017	0	Medium	7276W	F-bws105	E	Scheduled Receipts		14	14	0	11/12/2010
2252	0	Medium	7276W	F-bws102	E	Available		14	14	0	11/12/2010
90001	0	Medium	7276W	F-bws105	E	Available		5	5	0	11/12/2010
90005	0	Small	7276W	F-bws103	E	Authorized Receipts		20	20	0	11/12/2010
90003	1	Small	7276W	F-bws103	E	Available		5	5	0	11/12/2010
90011	0	Large	7276W	F-bws107	F	Projected Shortage		5	5	0	11/12/2010
90015	0	Medium	7276W	F-bws108	F	Sched Rcpts Delayed		3	3	0	11/12/2010

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

New Delete Validate

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

Review Supporting Data
Production Order Maintenance

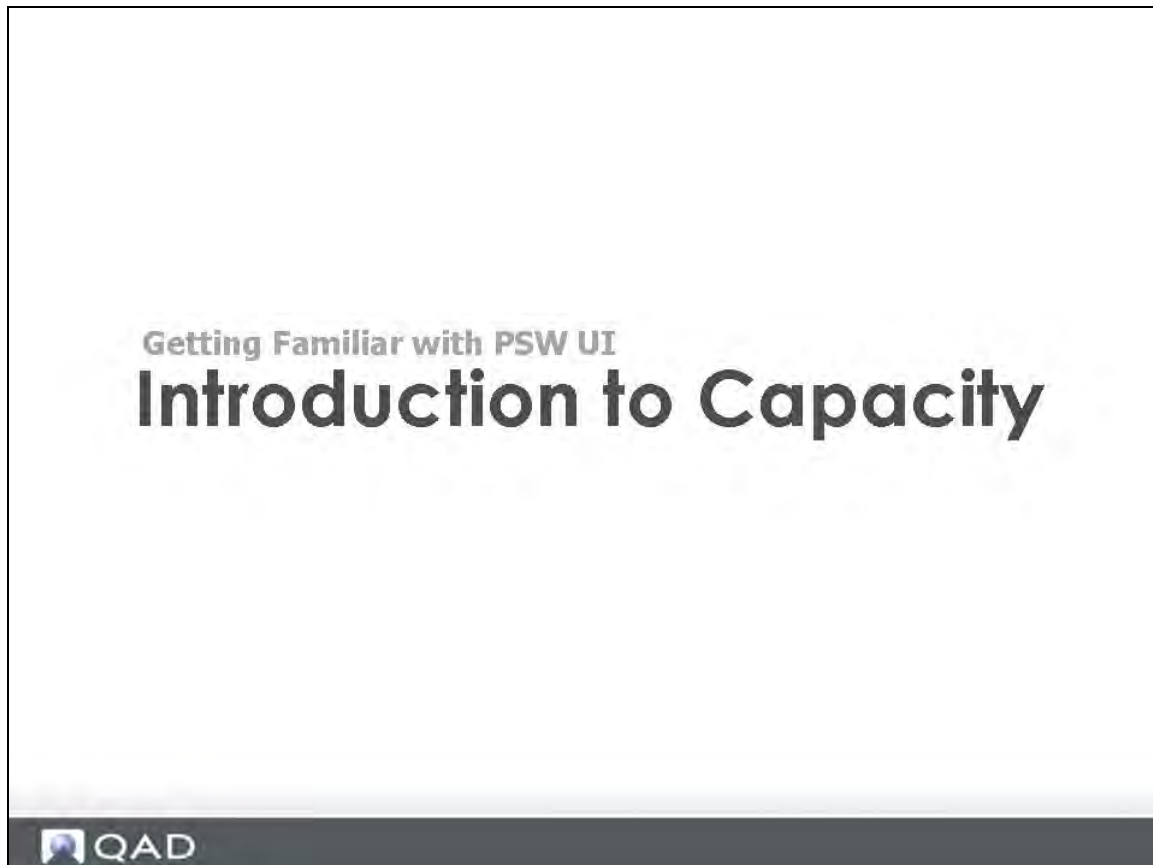
The screenshot displays the 'Production Order Maintenance' window in the QAD PSW. The window has a 'Production Scheduling' tab selected, showing a table of production orders. The table columns include ID, Status, Quantity Ordered, Release Date, Due Date, and Work Order. A red box highlights the 'Details' tab, which contains various fields for production order maintenance, including Quantity Ordered, Release Date, Due Date, and Work Order. The QAD logo is visible in the bottom left corner.

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

The screenshot shows the PSW UI with the following data:

Date	Required Capacity	Remaining Capacity
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

Capacity Introduction (Continued)

Getting Familiar with PSW UI
Introduction to Capacity

Click For Next Point

Production Scheduling | Master Scheduling | Shortage Report

Production Line

ID	Site	Seq	Run Seq	Run Crea	Item Number	Setup Time (Hrs)	Site	Component Status	Open Quantity	Quantity Ordered	Release	Due
0823												
0825												
0827												
0828												
0829												

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

New | Delete | Validate

Details | Comments | Date/Time | Operations | Components | Production Activity | Production CUM Activity | Compliance | Accounting Data

Quantity Ordered: 10
Yield: 100
Production Rate: 10.00
Run Time (Hrs): 1.00
Setup Time (Hrs): 0.00
Required Capacity (Hrs): 1.00

Remarks:

QAD

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:

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

Capacity (Continued)

Getting Familiar with PSW UI
Introduction to Capacity

Click For Next Point

Open Quantity – is the value used to compute the required capacity of an order

ID	Sh	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

QAD

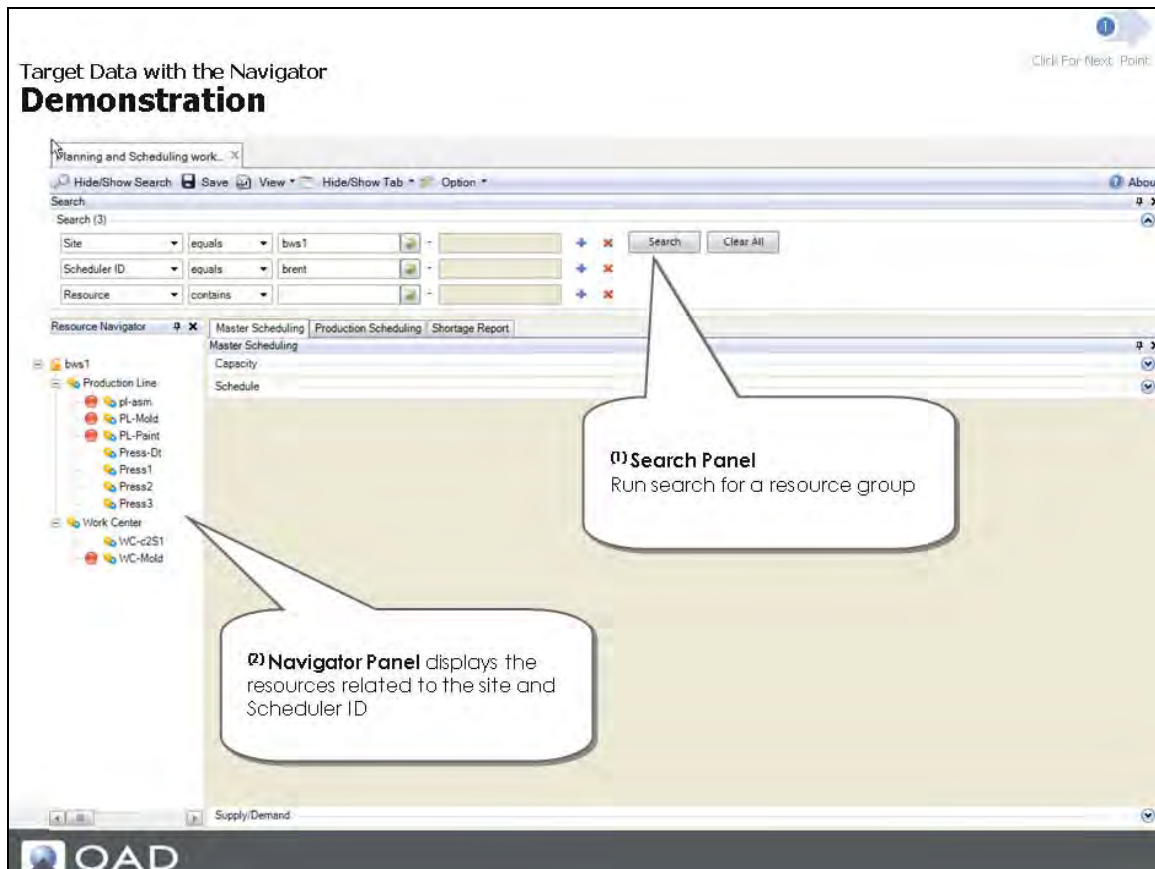
The Open Quantity column displays the value that the system uses to compute the required capacity of the order.

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)

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

2) **Schedule Grid** displays all Items across all my resources

The screenshot displays the QAD Planning and Scheduling workbench. The 'Resource Navigator' on the left shows a tree view of resources. The main area is a 'Schedule Grid' showing a Gantt chart for various resources. The grid has columns for dates from 09/17 to 09/24. The resources listed include pl-asm, PL-Mold, PL-Point, and YVC-Mold. The grid shows the availability of these resources over time, with some cells highlighted in red and yellow. The callouts indicate that the 'Navigator Frame' is used to select resources and the 'Schedule Grid' displays all items across all resources.

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.

Demonstration (Continued)

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

The screenshot displays the QAD PSW interface. At the top, a search bar is visible with filters for Site, Scheduler ID, and Resource. Below this, the Resource Navigator shows a tree view of resources. The main area is the Schedule Grid, which displays a timeline of active items for the selected resource. Two callouts provide additional information:

- 1) Navigator Frame**: Select to view a single resource
- 2) Schedule Grid**: displays all active items for the selected resource

Production Line	Item Number	Nettable QOH	Past Due	09/17	09/18	09/19	09/20	09/21	09/22	09/23	09/24
pl-asm	F-bws101	61		5	10		15	10	10	30	30
pl-asm	F-bws102	81	10	15	5	20	15	15	15	15	15
pl-asm	F-bws103	11	24	30		90	20	20	20	20	20
pl-asm	F-bws104	1	16	13	75	88					
pl-asm	F-bws108						0	5	7		
pl-asm	F-bws106	610					0	35			
pl-asm	F-bws105	205		62			62				
pl-asm	F-bws107	6	40				0				

QAD

Target Data with Navigator - PSW

Target Data with the Navigator
Demonstration PSW

Click for Next Point

1) Navigator Frame
Select to view all resources

2) Sequence Grid displays all resources

Note: 2010 product release, work centers don't display on the PSW

QAD

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 PSW software interface with three main components highlighted by callouts:

- Navigator Frame:** Located on the left, it shows a tree view of resources. The 'Production Line' section is expanded, showing 'ASSY-01' selected. Below it, a table lists resources with columns for ID, Shi, Seq, Run Seq, Style, and Item Number.
- Production Order Browse:** Located on the right, it shows a table of production orders. The 'Resource' column is highlighted, showing 'ASSY-01' selected.
- Sequence Grid:** Located in the center, it displays a grid of sequence data for the selected resource. The grid has columns for ID, Run Seq, Shi, Seq, Resource, Run Seq 2, and Run Crew.

The QAD logo is visible in the bottom left corner.

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 PSW interface. On the left, the 'Sequence Grid' view is active, displaying a table of production orders. The table has columns: ID, Seq, Run Seq 1, Style, Item Number, Sta, Quant, and Component Status. The data is filtered by 'Run Seq 1' and 'Style'. On the right, the 'Production Order Browse' view is active, displaying a table of production orders. The table has columns: ID, Seq, Run Seq 1, Run Seq 2, Run Crew, Item Number, Setup Time (Hrs), and Sta. A filter is applied to the 'Run Seq 1' column to display only un-sequenced production orders.

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"

QAD

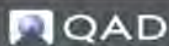
- (1) Focus on Resource ASSY -01. The Sequence Grid only displays resource ASSY-01.
- (2) Production Order Browse: The record content is not changed by the Resource Navigator
- (3) Production Order Browse: Applied a filter to display only production orders currently assigned to the resource ASSY-01.

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.

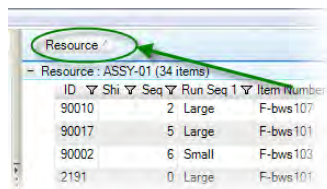
Become Familiar with the Sequence Grid

- 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

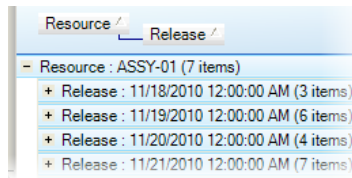
You are ready to review data in Production Order Browse. You can structure the Production Order Browse view to look similar to the Sequence Grid view, which is structured by resource and release date.

- 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:



ID	Shi	Seq	Run	Seq 1	Item Number
90010		2	Large		F-bws107
90017		5	Large		F-bws101
90002		6	Small		F-bws103
2191		0	Large		F-bws101

- 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:



- 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?

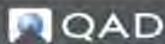
Answers

- 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

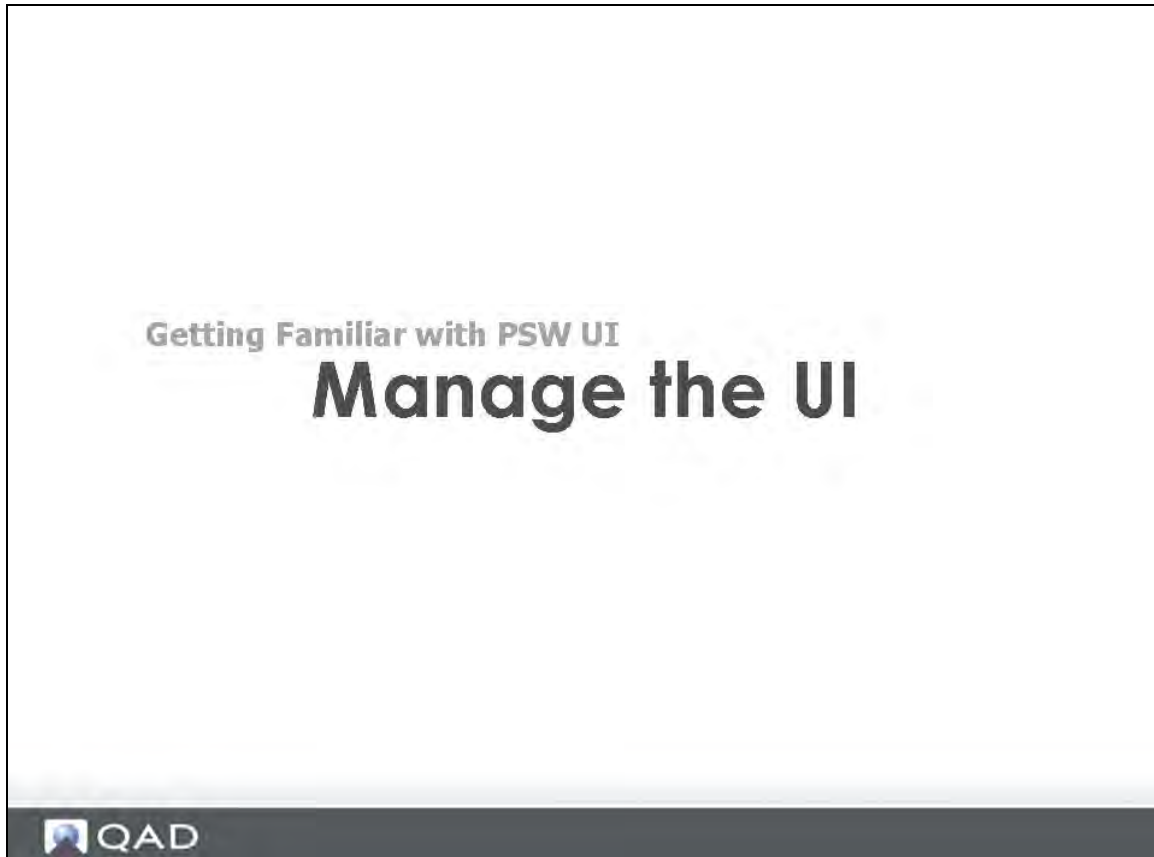
- 1 Is required capacity calculated by order release date or due date?
- 2 Based on your selection criteria, the Navigator Panel displays the sites and resources and defaults to what?
- 3 True or False. The PSW lets you schedule both work centers and production lines.
- 4 On the Sequence Grid, resources 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

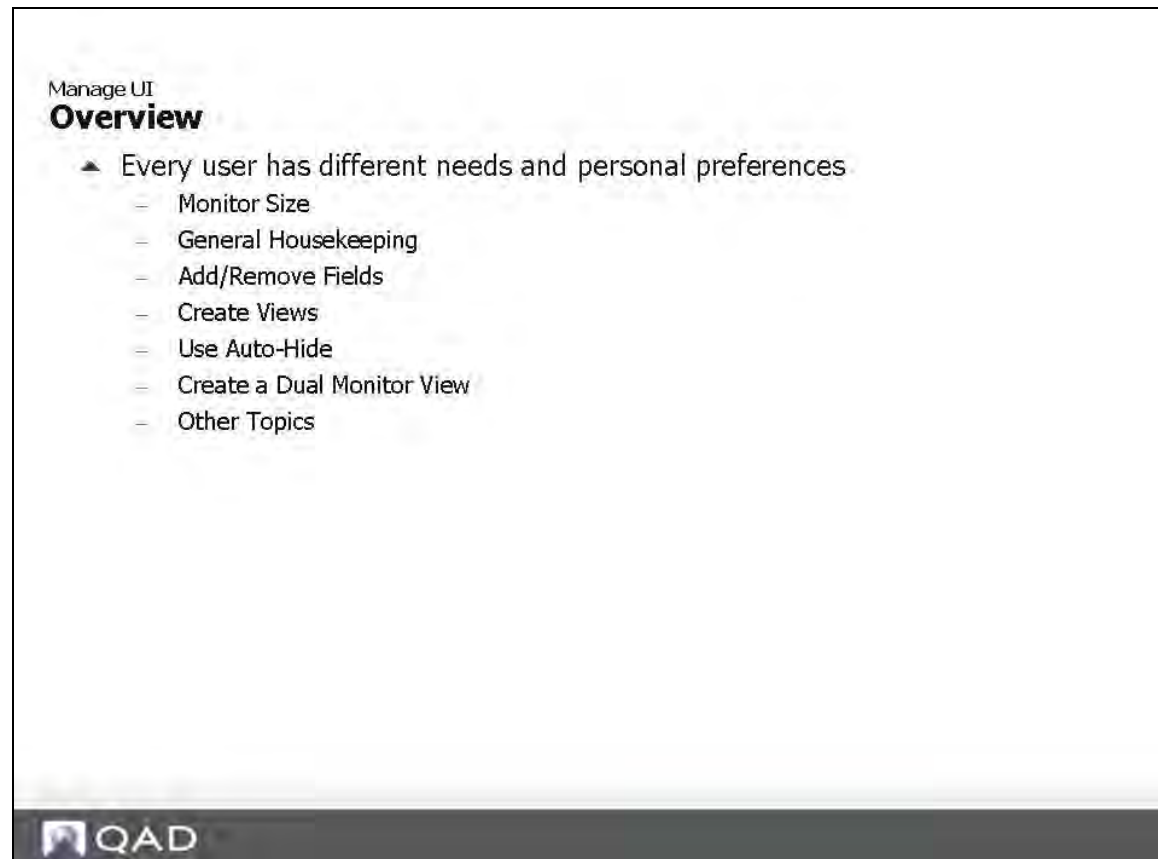
- 1 Required capacity is calculated by Release date.
- 2 Resources default to the first record.
- 3 False. The PSW lets you schedule only production lines.

- 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



The image is a screenshot of a presentation slide. The slide has a light gray background with a faint grid pattern. In the top left corner, the text 'Manage UI' is displayed in a small, dark font. Below it, the word 'Overview' is written in a larger, bold, dark font. The main content of the slide is a bulleted list. The first bullet point is preceded by a dark triangle icon and reads 'Every user has different needs and personal preferences'. This is followed by seven sub-bullet points, each preceded by a horizontal line: 'Monitor Size', 'General Housekeeping', 'Add/Remove Fields', 'Create Views', 'Use Auto-Hide', 'Create a Dual Monitor View', and 'Other Topics'. At the bottom of the slide, there is a dark gray horizontal bar. On the left side of this bar is the QAD logo, which consists of a stylized 'Q' icon followed by the letters 'QAD' in a white, sans-serif font.

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

Manage the UI
Monitor Size

Worst Resolution
Monitor size: 15"
Resolution: 1024 x 768

Better Resolution
Monitor size: 15"
Resolution: 1280 x 800

Good Resolution
Monitor size: 20"
Resolution: 1680 x 1050

The image displays three side-by-side screenshots of the QAD software interface, illustrating how monitor size and resolution affect the user interface (UI) experience. Each screenshot shows the same data, but the layout and readability vary significantly based on the monitor specifications. The 'Worst Resolution' (15" monitor, 1024x768) shows a very small, cramped view of the data. The 'Better Resolution' (15" monitor, 1280x800) shows a slightly larger and clearer view. The 'Good Resolution' (20" monitor, 1680x1050) shows the largest and most legible view of the data, with more detail visible in the tables and charts.

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.

Planning and Scheduling Work...

Hide/Show Search Save View Hide/Show Tab...

Master Scheduling Production Scheduling Shortage Report

Production Scheduling

ASSY-01

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

11/12 Required: 6.5 Hours (65) Remaining: 1.4 Hours (14)

11/13 Required: 7.3 Remaining: 0.7 Hours (7) Carry Forward: 0.4

ID Sh Seq Run Seq 1 Seq 2 Item Number Status Quantity Component Status Open Quantity

90003 1 Small vs103 E 5 Available 20

90005 2 Small vs103 E 20 Authorized Receipts 20

90001 3 Medium vs105 E 5 Available 5

2252 4 Medium vs102 E 14 Available 14

1954 5 Large vs101 E 14 Available 14

90011 6 Large vs107 R 5 Projected Shortage 5

90015 7 Med vs108 R 3 Sched Rcpts Delayed 3

ID Run Seq 1 Seq 2 PL

90047 Blue 0 PL

90052 White 0 PL

90057 Blue 0 PL

90049 Blue 0 PL

90080 Large 0 ST

90084 Large 0 ST

90085 Medium 0 ST

90086 Medium 0 ST

90091 Large 0 ST

90093 Medium 0 ST

90095 Small 0 ST

90097 Large 0 ST

90099 Medium 0 ST

90100 Medium 0 ST

1955 Large 0 AS

2253 Medium 0 AS

90006 Small 0 AS

90008 Medium 0 AS

90041 White 0 AS

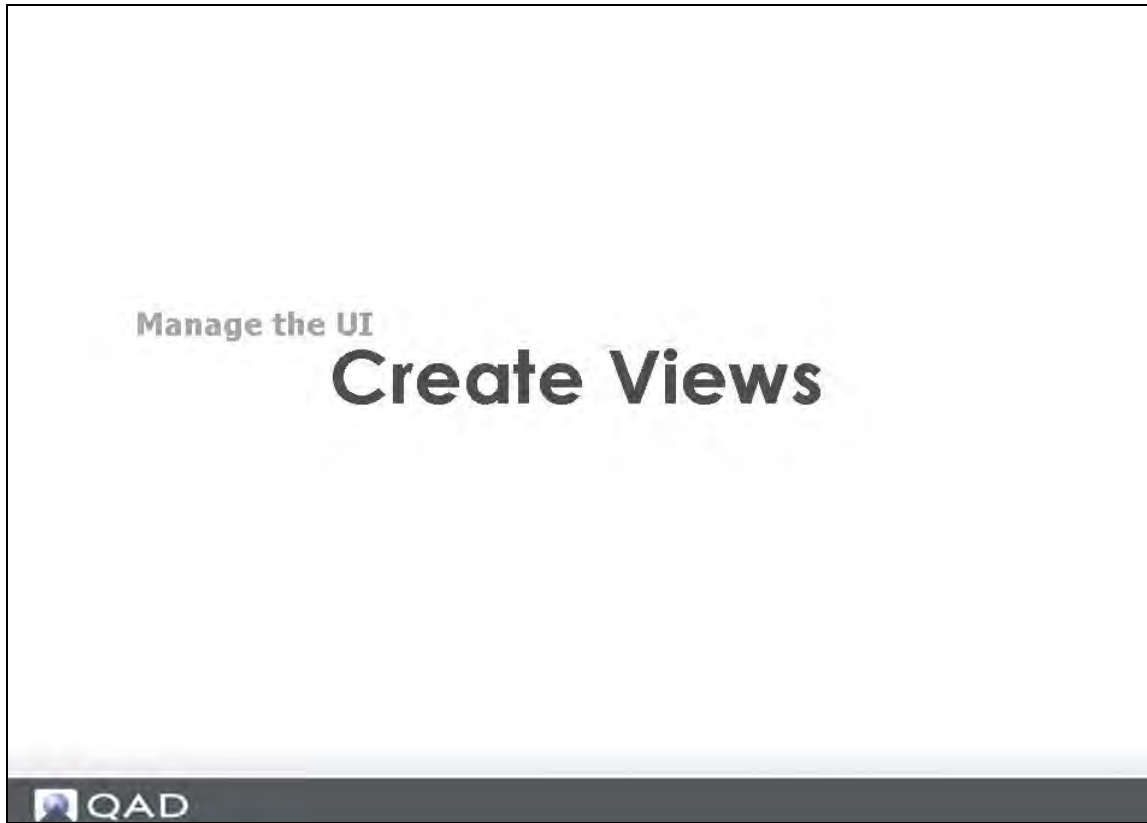
Status Release/Print Resequence Split Group By Selector Columns

C1-S1-bws1 C1-S1-bws1 C1-S1-bws1 C1-S1-bws1 C1-S1-bws1 C1-S1-bws1 C1-S1-bws1 C1-S1-bws1 F-bws101 F-bws102 F-bws103 F-bws105

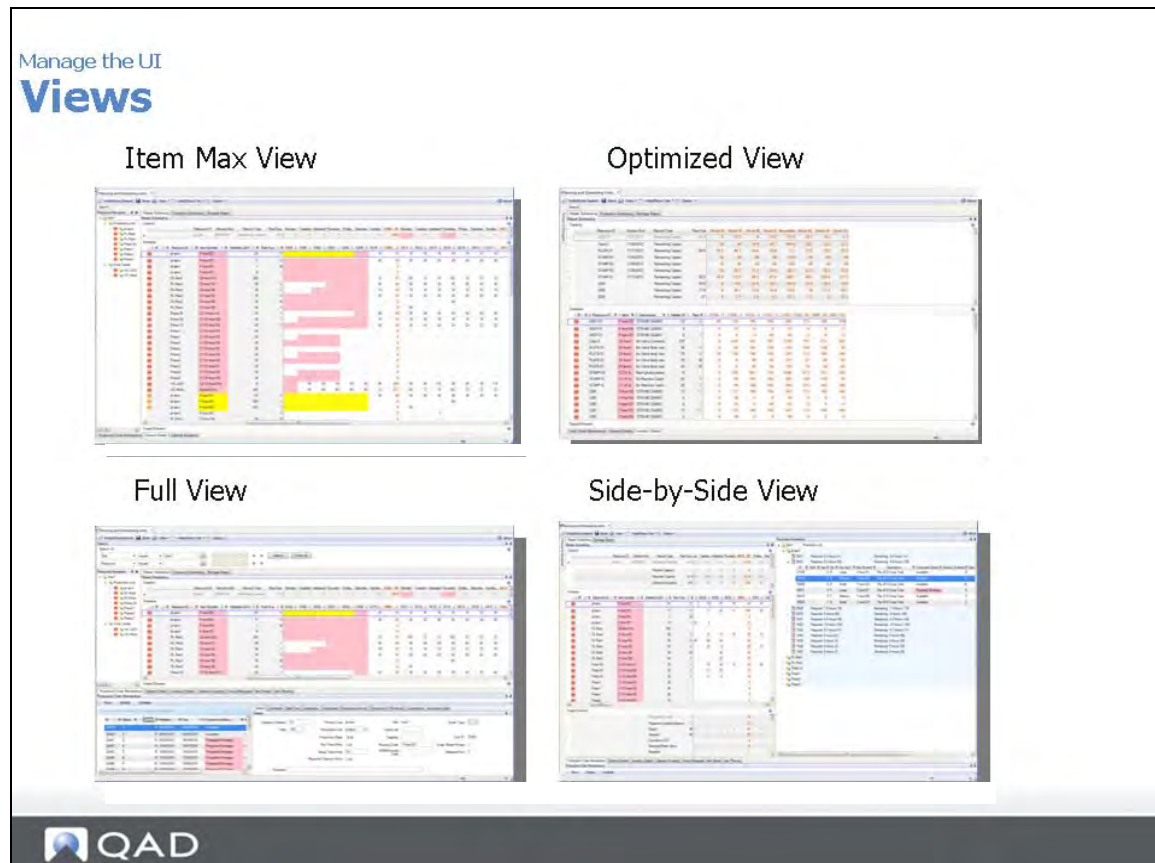
QAD

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 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

You can easily create your own view by:

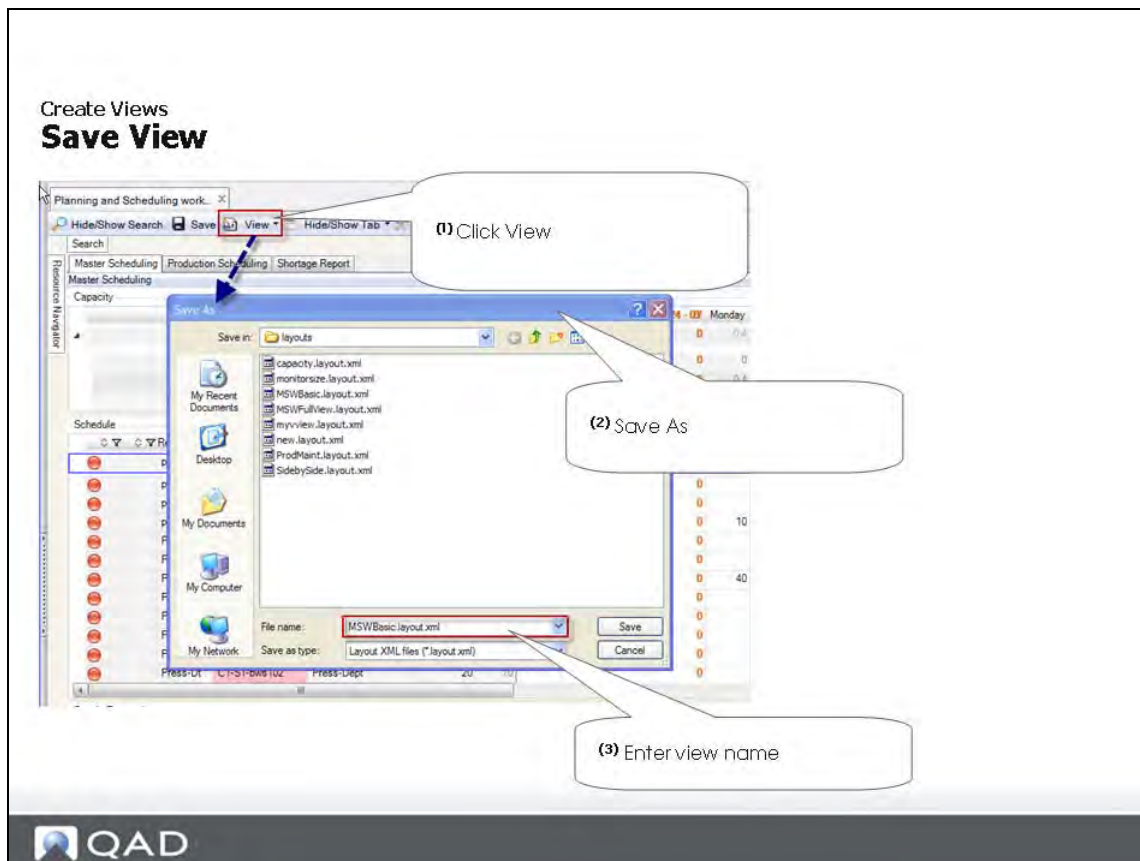
Personalizing the field list: You can add fields or user-definable fields.

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

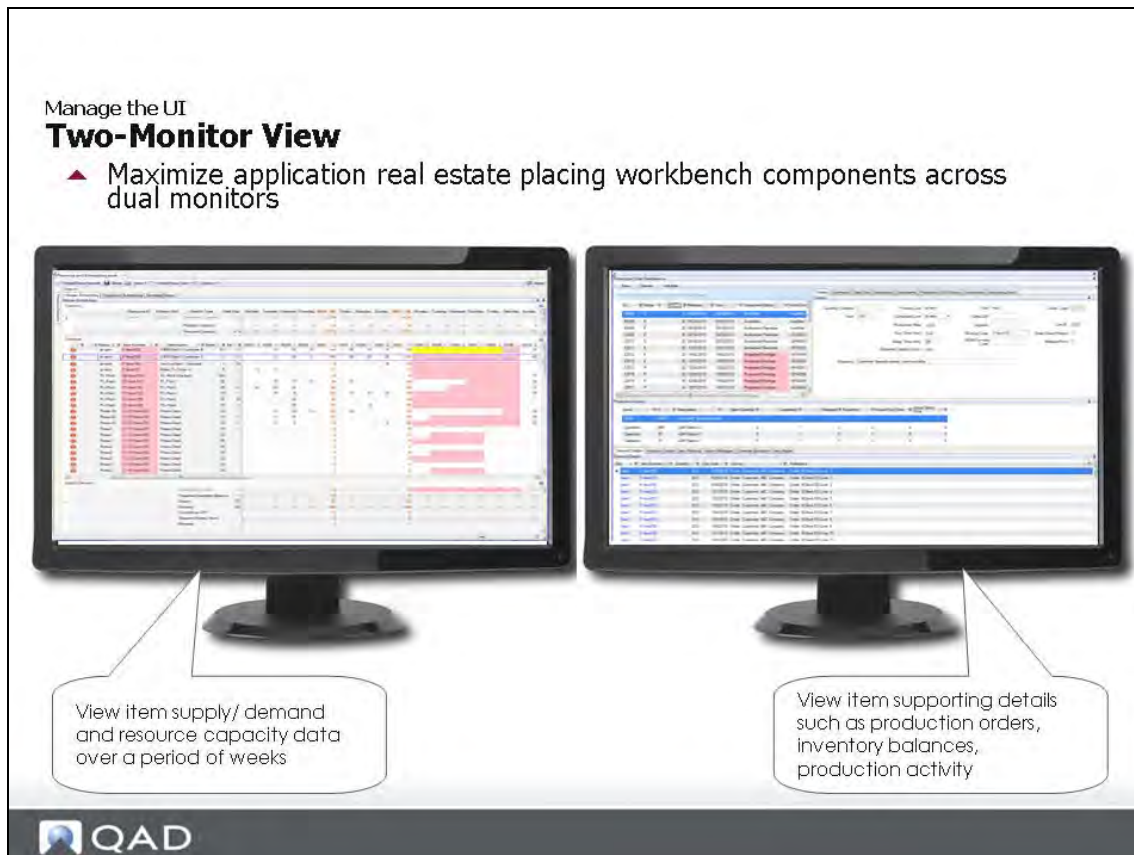


From the Views pull-down menu, select Save or Save As to save the view. If you select Save As, name your view, then save the view.

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.

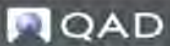
Note If you start two separate session of the Planning and Scheduling Workbenches, data you manipulate in the one MSW session does not display in a separate session of the PSW, and vice versa.

Other Topics

Manage the UI

Other Topics

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



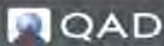
Hands On Lesson Section



Exercise 3- Personalize Your PSW

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 4.1.
The Production Order Browse displays data grouped by Run Seq1. You should have similar results to the following:

Fig. 4.1
Production Order Browse Results

ID	Status	Quantity Ordered	Release	Due	Component Status	Work Order	Run Seq 1
90010	R	10	01/06/2011	01/06/2011	Shortage	bwsMan	Large
90011	F	5	01/07/2011	01/07/2011	Projected Shortage	bwsMan	Large
2295491	P	23	01/14/2011	01/14/2011	Projected Shortage	10130028	Large

Run Seq 1
+ Run Seq 1 : (1 item)
+ Run Seq 1 : Blue (8 items)
+ Run Seq 1 : Large (19 items)
+ Run Seq 1 : Medium (18 items)
+ Run Seq 1 : Red (7 items)
+ Run Seq 1 : Small (18 items)
+ Run Seq 1 : White (5 items)

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:

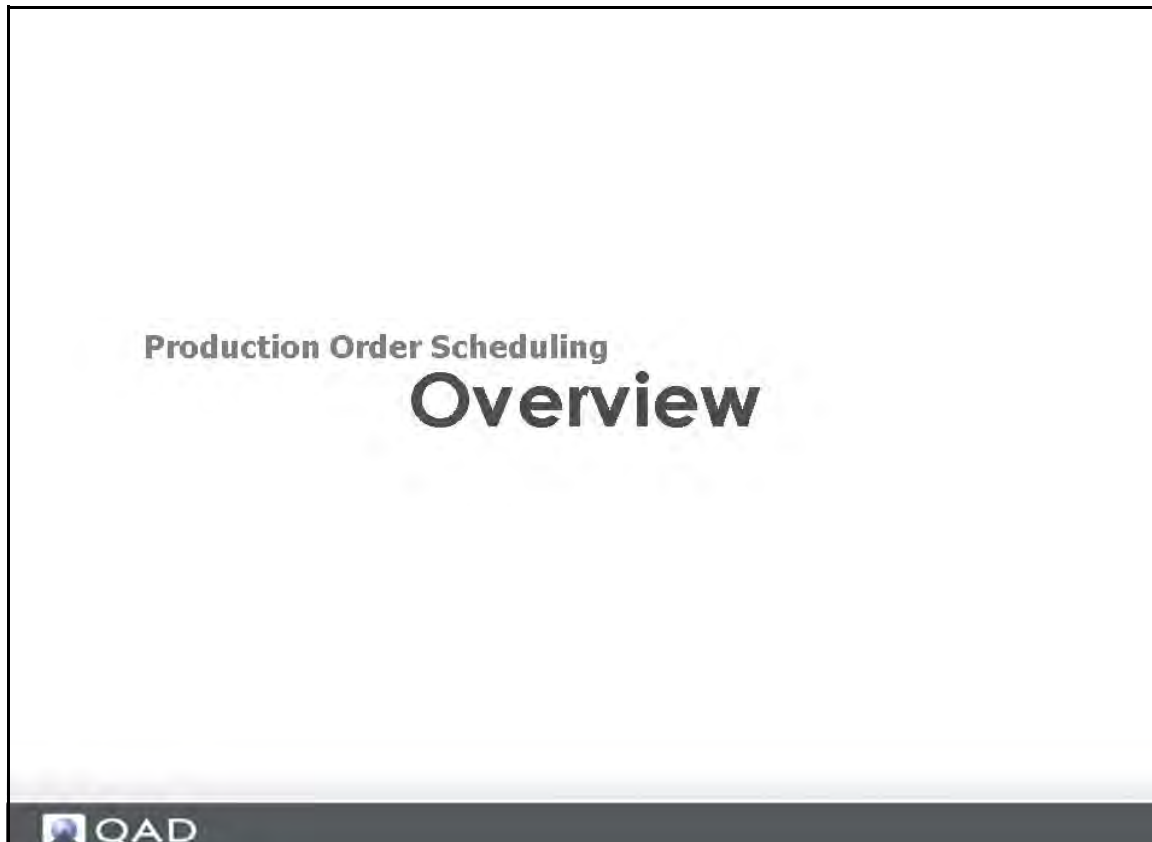
- Determine production order status and whether they are sequenced or unsequenced.
- Determine production progress.
- Define the sequence horizon and configure the display.
- Modify orders and order quantities.
- Create, delete, copy, and split production orders.
- Modify production order status or duration.
- 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

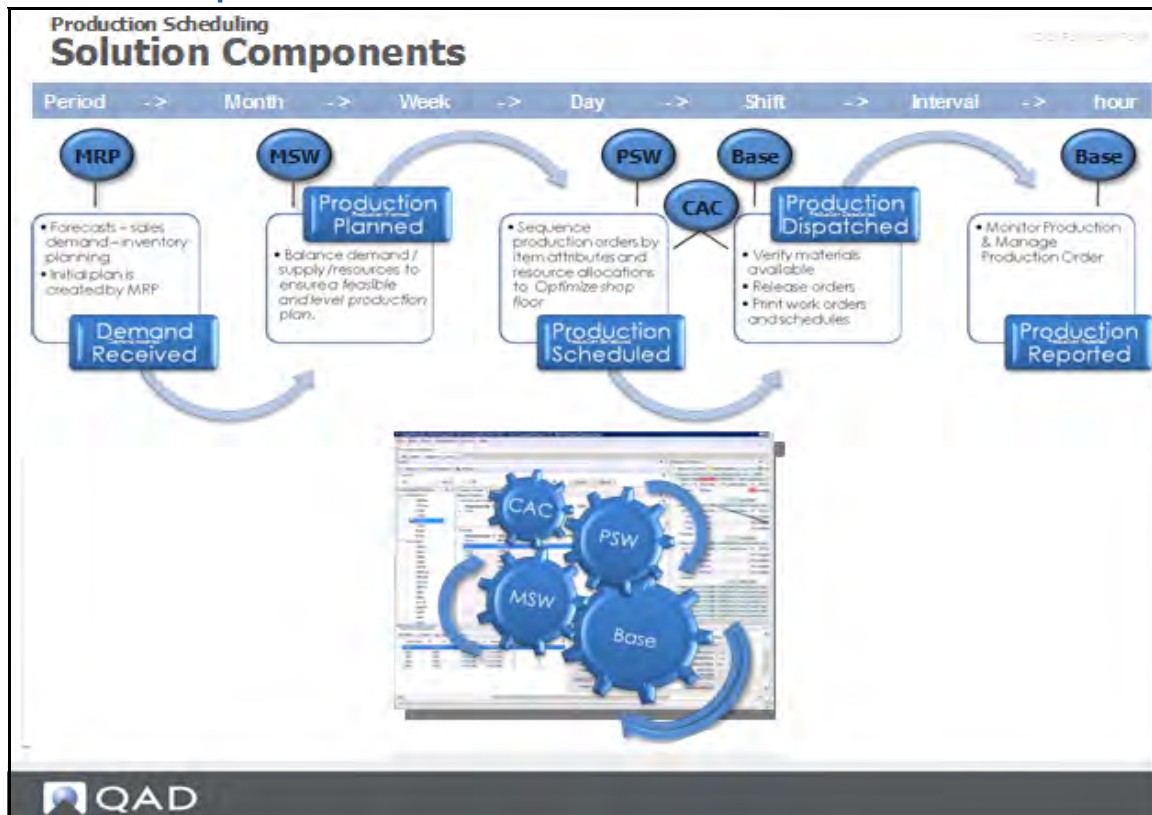
Topics Covered

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

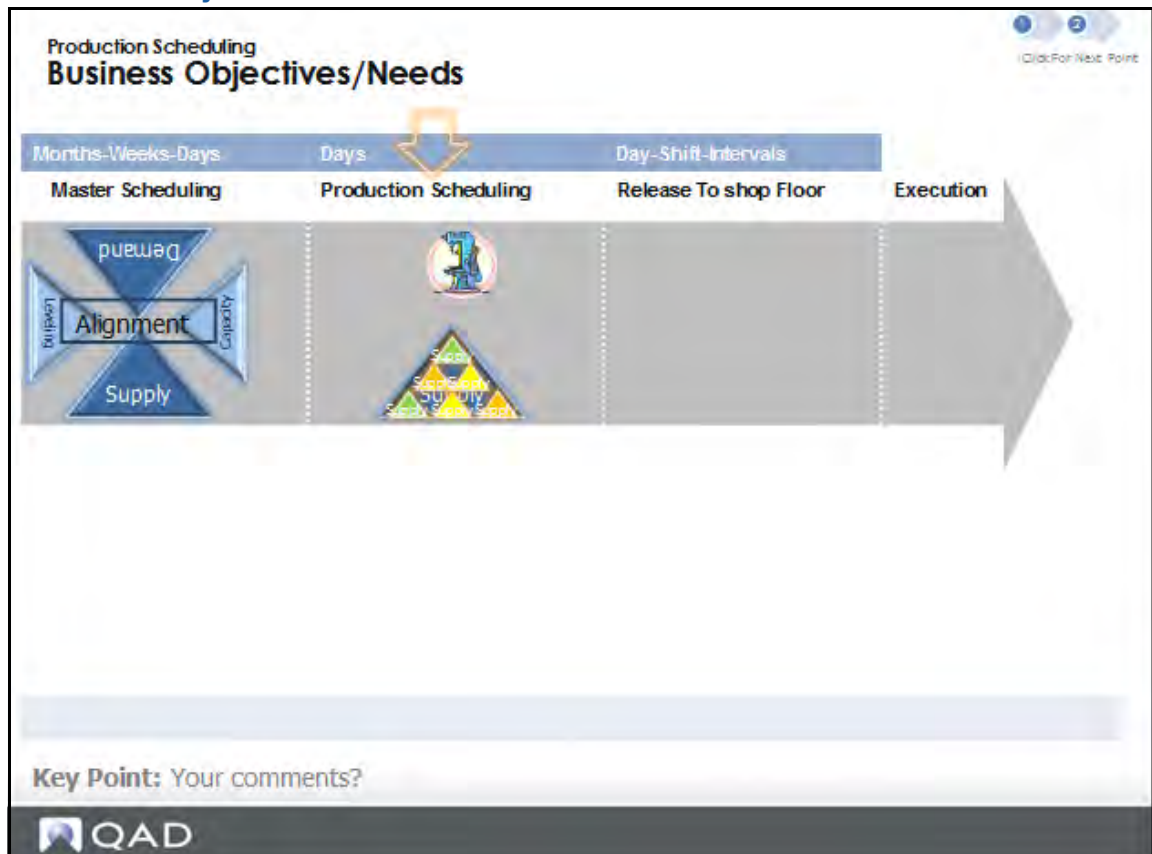


Solution Components



There are many different ways to access resource and scheduling data within PSW, and many different functions that you can perform using the data when creating or modifying a production schedule. The graphic in this topic explains the components involved in creating a production order. It includes elements from the scheduling business cycle.

Business Objectives and Needs

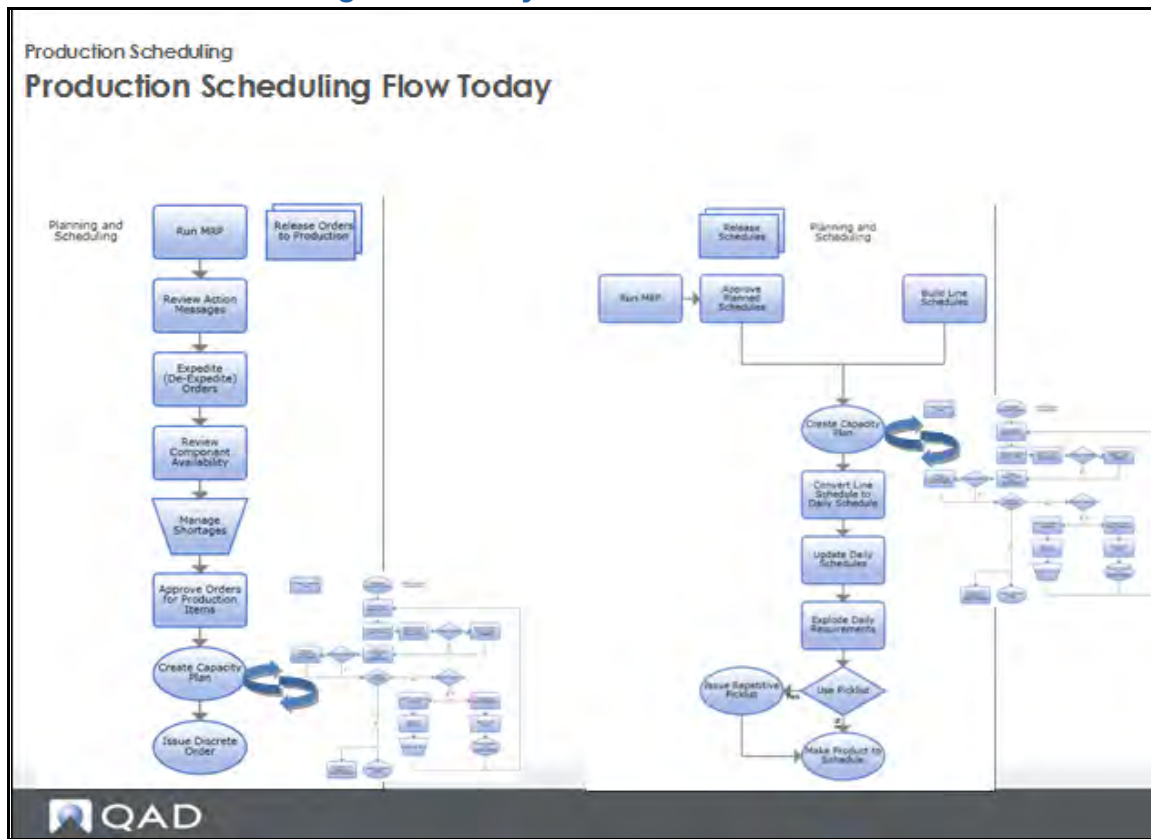


The following describes the business objectives, need, and approach:

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

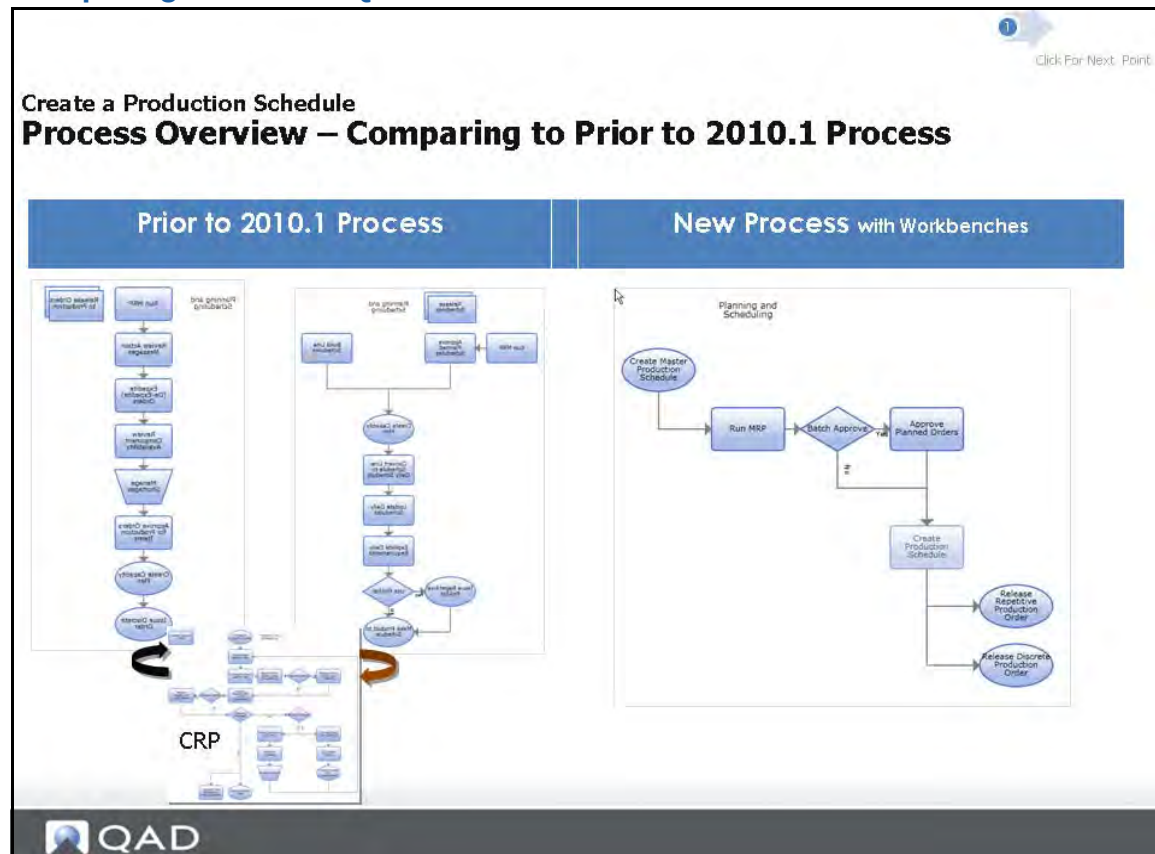


- 1 Run MRP to release orders to production.
- 2 Review action messages.
- 3 Expedite/de-expedite orders.
- 4 Review component availability
- 5 Manage shortages.
- 6 Approve production orders for items.
- 7 Create capacity plan.
- 8 Issue discrete order.

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:

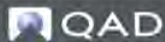
- 1 Create a master production schedule.
- 2 Run MRP.
- 3 Approve planned orders, if needed.
- 4 Create a production schedule.
- 5 Release repetitive production orders.
- 6 Release discrete production orders.

Process Overview

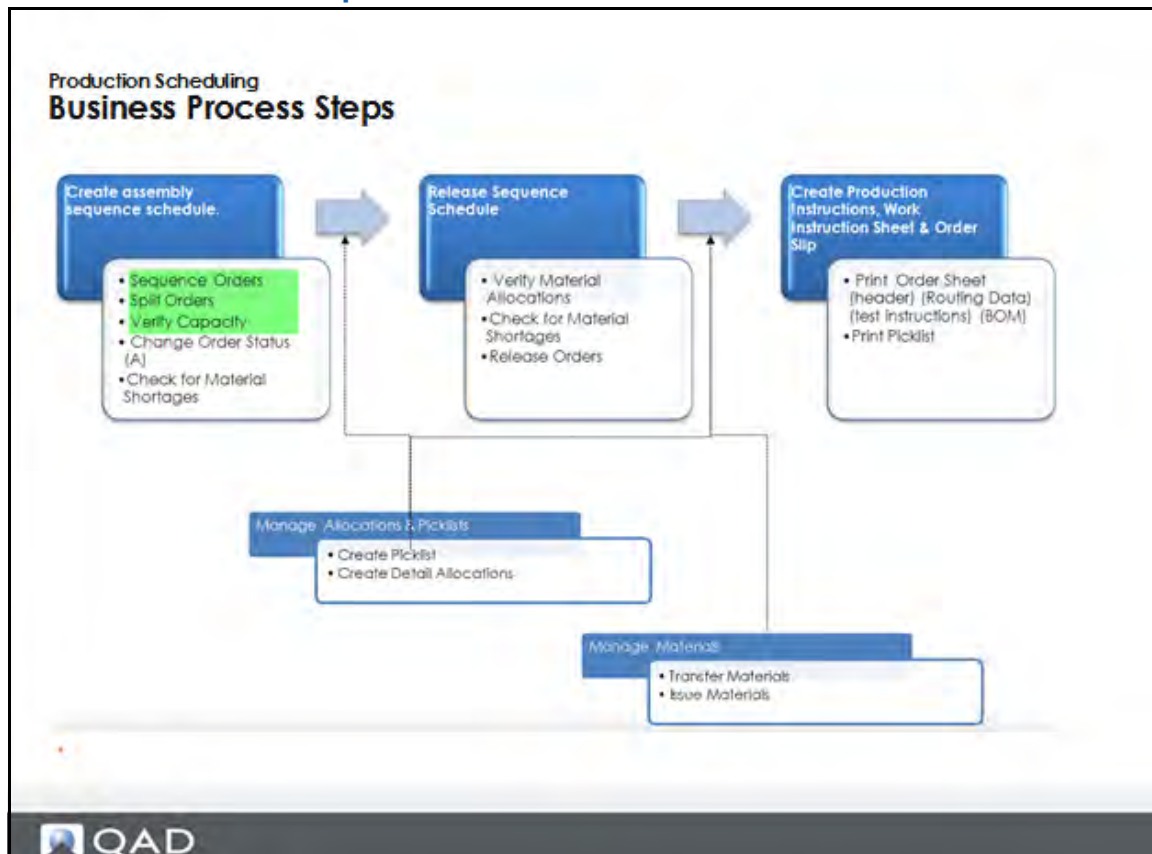
Create a Master Schedule

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 • Capacity planning performed in a separate process map/flow/solution • Over 12 core steps/programs to create a production schedule for <i>Discrete</i> / Repetitive scheduling	• Unified master scheduling solution for repetitive and discrete orders • Capacity planning and master scheduling are integrated in a single solution • 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.

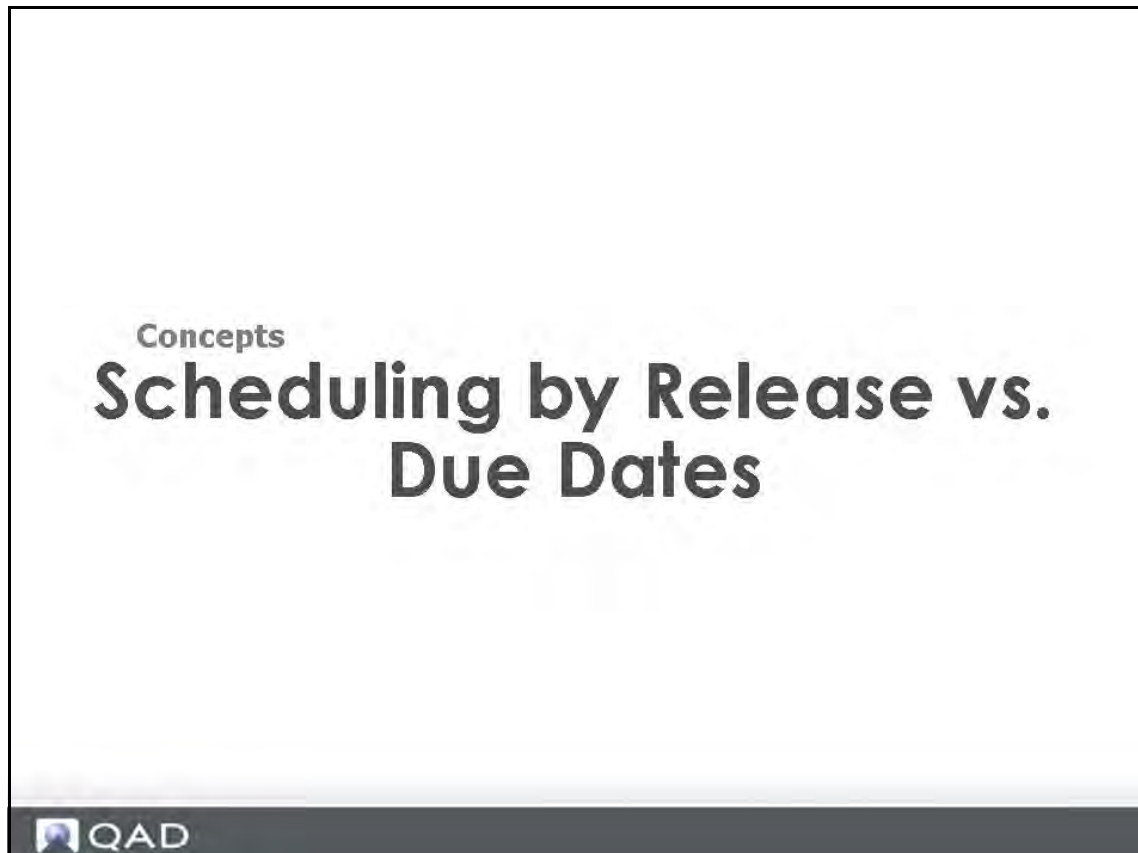
Manage allocations and picklists:

Create picklists, create detailed allocations.

Manage materials:

Transfer materials, issue materials.

Scheduling by Release Versus Due Date Section

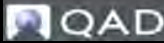


Approaches to Production Scheduling

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?



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.

col45.qad.com - PuTTYtel

terpmt.p 99 18.22.2.1 Schedule Maintenance 03/17/09

Item Number: A-F514		Finished Product	
Site: us-a1	Production Line: A510	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 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.

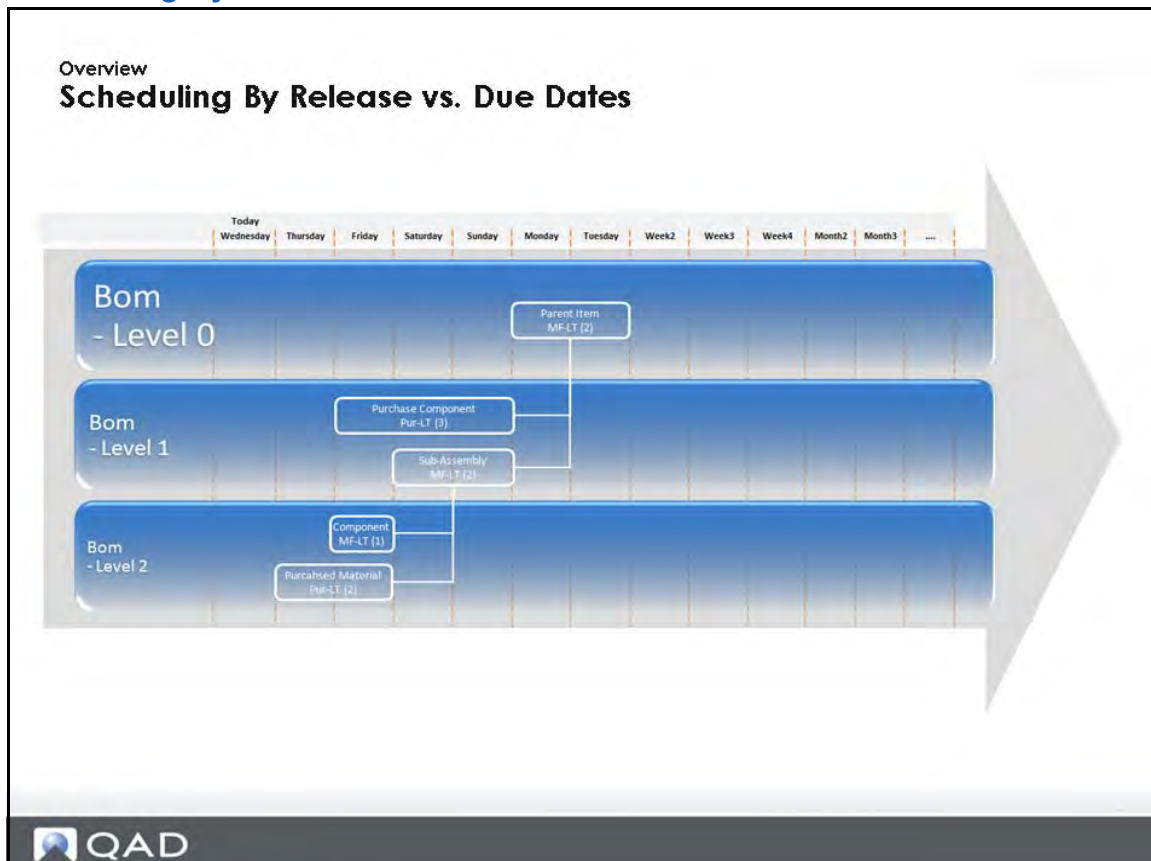
Knowing the Difference in Dates

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

Overview
Scheduling By Release vs. Due Dates

1. MSW view displays orders by due date

2. PSW view displays orders by release date

3. In this case, order release & due dates align

MSW View Table:

Resource ID	Item Number	Nettable GOH	Past Due	Saturday	Sunday
p-asm	F-bus105	255	10	08/28	08/29

PSW View Table:

Date	Required	Remaining
08/17	Required: 0.4 Hours (4)	Remaining: -0.4 Hours (-4)
08/18	Required: 5.6 Hours (56)	Remaining: -5.6 Hours (-56)
08/19	Required: 5.5 Hours	
08/20	Required: 8 Hours (8)	
08/21	Required: 4.5 Hours	
08/22	Required: 12 Hours (12)	
08/23	Required: 3.5 Hours (35)	Remaining: -9.5 Hours (-95)
08/24	Required: 2.4 Hours (24)	Remaining: -6.6 Hours (-66)
08/25	Required: 0 Hours (0)	Remaining: 8 Hours (80)
08/26	Required: 0 Hours (0)	Remaining: 0 Hours (0)
08/27	Required: 8 Hours (80)	Remaining: 0 Hours (0)
08/28	Required: 0 Hours (0)	Remaining: 8 Hours (80)
08/29	Required: 0 Hours (0)	Remaining: 8 Hours (80)

MSW View Table (Bottom):

ID	Status	Quantity Ordered	Release	Due	Component Status	Work Order
12700		80	08/28/2018	08/28/2018	Projected Shortage	67510066

- 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 24hrs.

Scheduling by Release Versus Due Dates - Calculations

Overview
Scheduling By Release vs. Due Dates

Click For Next Point

ID	Level	ID	Description	Resource	Release	Due	Duration	Shift	Seq	Due Time
90017	Order	2106		ASSY-01	11/15/2010	11/16/2010				00:00
2106	Operatio	999	Backflush	2280	11/16/2010	11/16/2010				
2107	Operatio	30	Testing	2280/3	11/16/2010	11/16/2010				
2108	Operatio	20	General Assembly	2280/2	11/16/2010	11/16/2010				
2188	Operatio	10	SubA Asm / Weld	2280/1	11/16/2010	11/16/2010				
2189										
2190										
2191										
2192										
2193										

Why are the order release and due dates not equal?

QAD

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

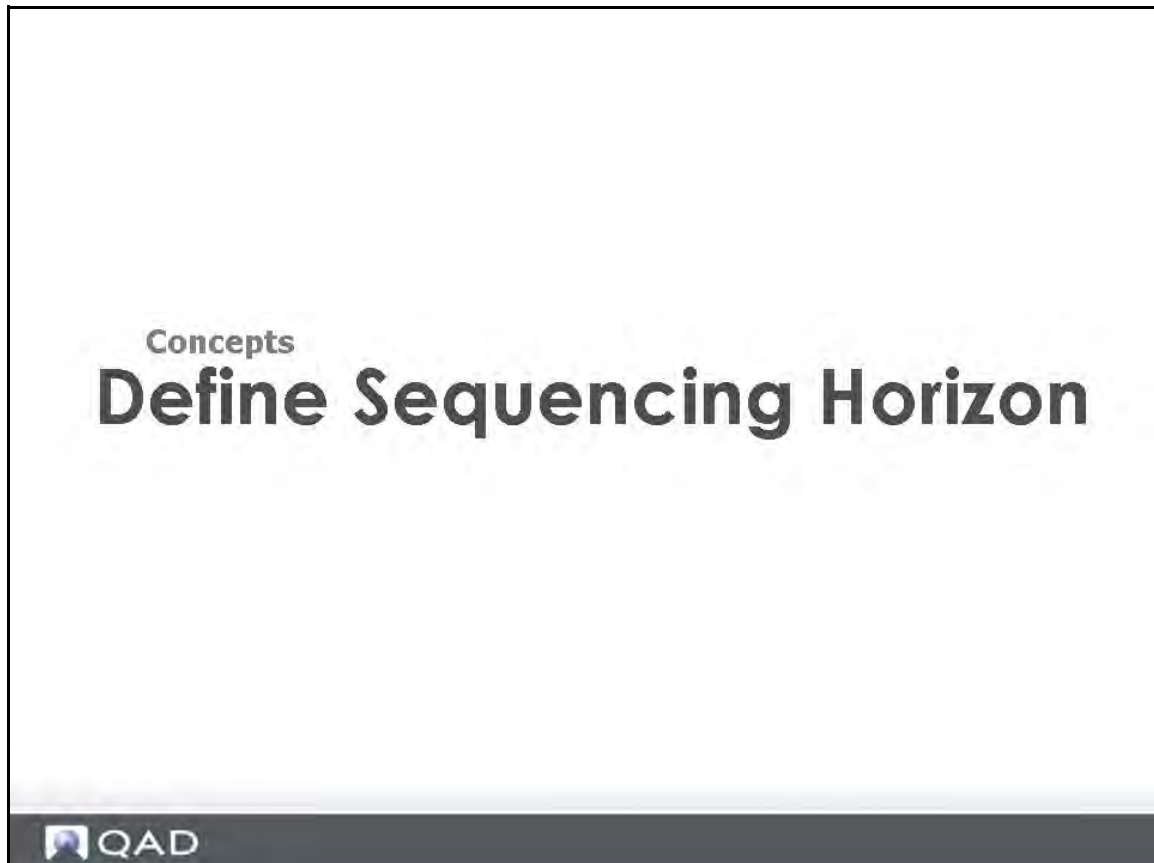
Question: Where does order duration come from? It:

- Defaults from item MF-LT
- Is manually adjusted by user
- Is a calculated value (available in 2011 release)

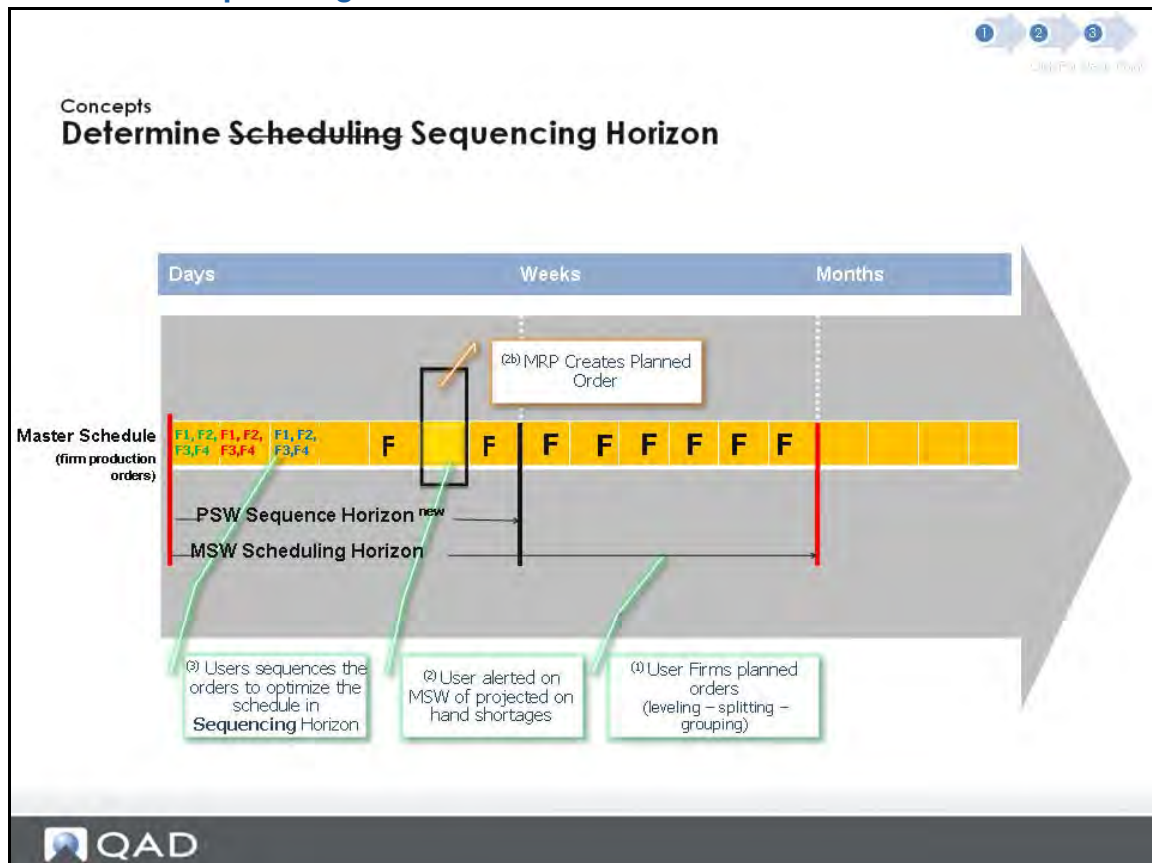
The duration of a specific operation—the time between its start date and due date—is determined by the setup, run, and subcontract times for the operation.

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

Today is the 27th

- Notice there are a few past due release date buckets
- Notice 8/29 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?

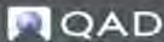
Try it for yourself!

Production Order Scheduling

Create Production Schedule

Production Order Scheduling

- Schedule by Release Date
- Schedule by Shift
- Schedule by Multi-Resource

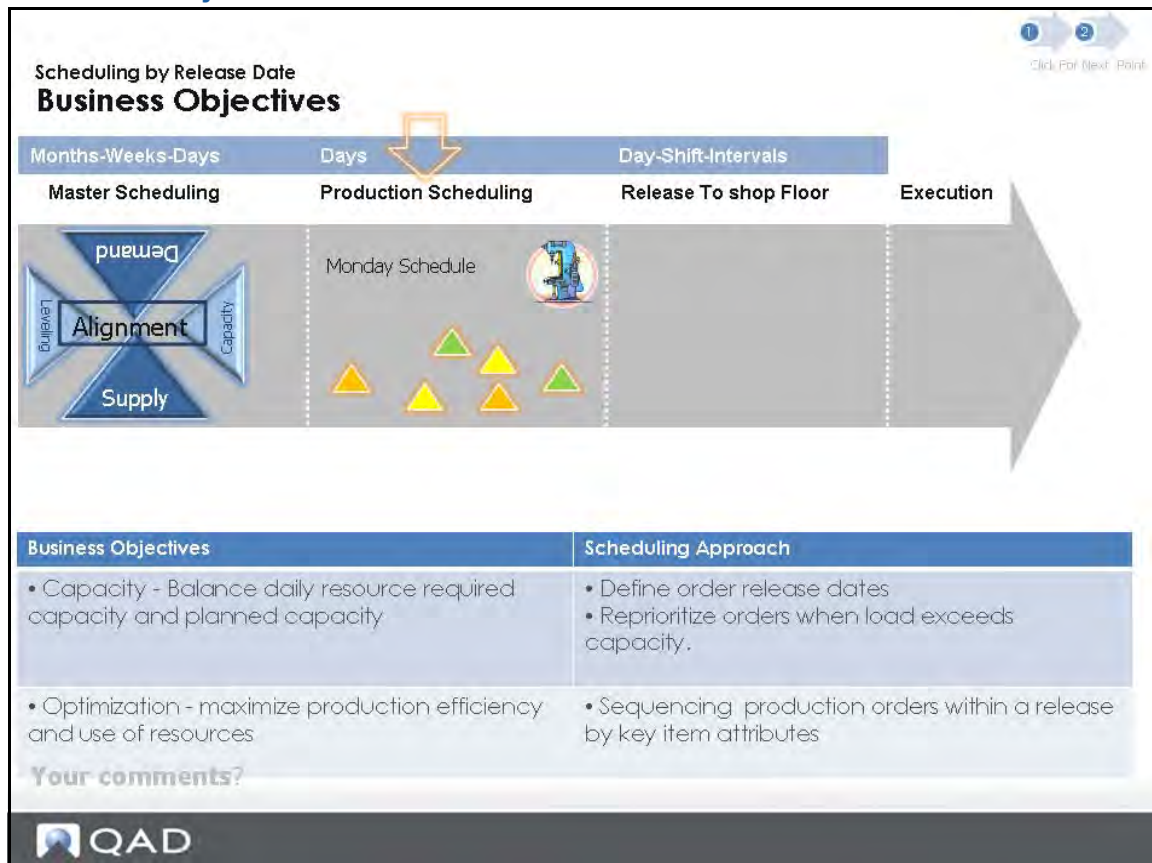


The subjects listed above are discussed in the following topics.

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, 'Production Scheduling', shows a 'Sequence Grid' with columns for 'Run Seq', 'Run', 'Item Number', 'Quantity Sch', 'Status', 'Due', and 'Description'. A red box highlights a row for 'A-P512' with a due date of '03/16/2009'. A green arrow points from this row to a target date of '03/17/2009' in the 'Due' column. The bottom window, 'Work Order Maintenance', shows a 'Work Order' for 'A-P512' with a 'Release' date of '03/15/2009'. A calendar is open, showing the date '03/17/2009' selected.

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)?

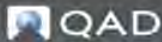
As you work with this application, keep this in mind, what did you notice?

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

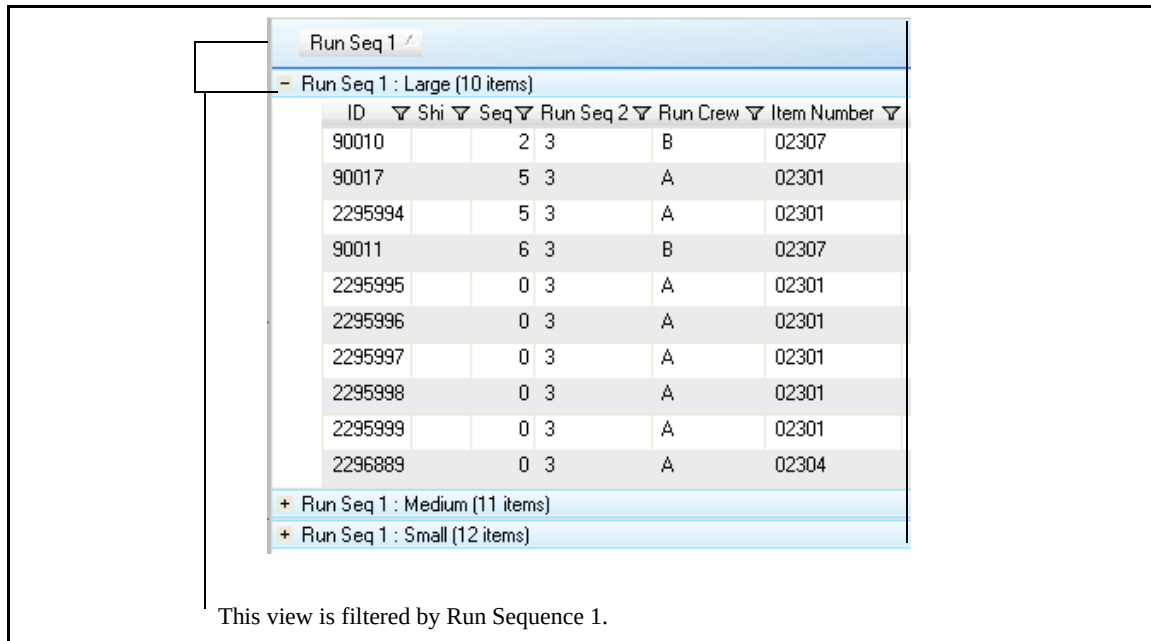


Important For the following exercises:

- 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	Sta	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?

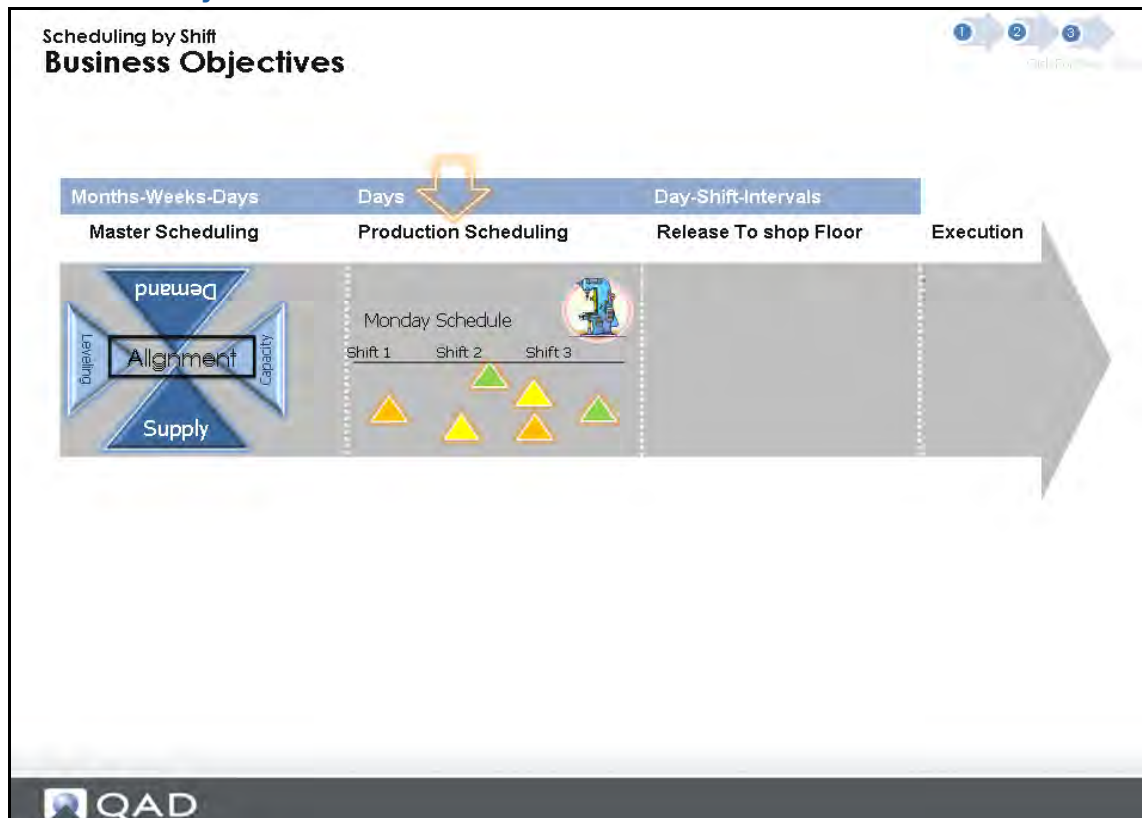
Answers

- 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

Scheduling by Shift
PSW Shift Structure

The screenshot displays the 'PSW Shift Structure' window in QAD. The window has tabs for 'Master Scheduling', 'Production Scheduling', and 'Shortage Report'. The 'Production Scheduling' tab is active, showing a tree view of production lines. The 'bws1' production line is expanded, showing a hierarchy of shifts. The shifts are listed in a table with columns for 'Shift', 'Required', and 'Remaining'. The shifts are displayed in order of start time, with shift 4 (00:00) appearing first, followed by shift 1 (05:00), shift 2 (15:00), and shift 3 (23:00). A callout box points to the 'Shifts' section, stating 'Shifts displayed in order of start time'. Another callout box points to the 'Release Date Total' row, stating 'Release Date Total - summary of Required & Remaining Capacity across all shifts per release date'.

Shift	Required	Remaining
00:00	Required: 9.93 Hours (21)	Remaining: -9.93 Hours (-49.66)
05:00	Required: 3 Hours (5)	Remaining: 3.25 Hours (16.25)
15:00	Required: 7 Hours (25)	Remaining: 0.25 Hours (1.25)
23:00	Required: 0 Hours (0)	Remaining: 7.25 Hours (36.25)
08/29	Required: 64.63 Hours (212)	Remaining: -42.88 Hours (-214.4)

Shifts
Shifts displayed in order of start time

Release Date Total - summary of Required & Remaining Capacity across all shifts per release date

QAD

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

Master Scheduling | Production Scheduling | Shortage Report

Production Scheduling

Resource Navigator

bws1 Production Line

PL-Paint

08/26 Required: 0 Hours (0)

08/27 Required: 19.93 Hours (51)

08/28 Required: 64.63 Hours (212)

00:00 Required: 9.93 Hours (21)

04:00 Required: 3 Hours (5)

01:00 Required: 7 Hours (25)

02:15:00 Required: 0 Hours (0)

03:23:00 Required: 0 Hours (0)

Shift Maintenance x Planning and Scheduling work...

Go To Actions Copy Print Preview Attach

Production Line: pl-paint

Site: bws1

Production Line: PL-Paint Paint Line

Shifts Modify

Sunday [x] [x]

Monday [x] [x]

Tuesday [x] [x]

Wednesday [x] [x]

Thursday [x] [x]

Friday [x] [x]

Saturday [x] [x]

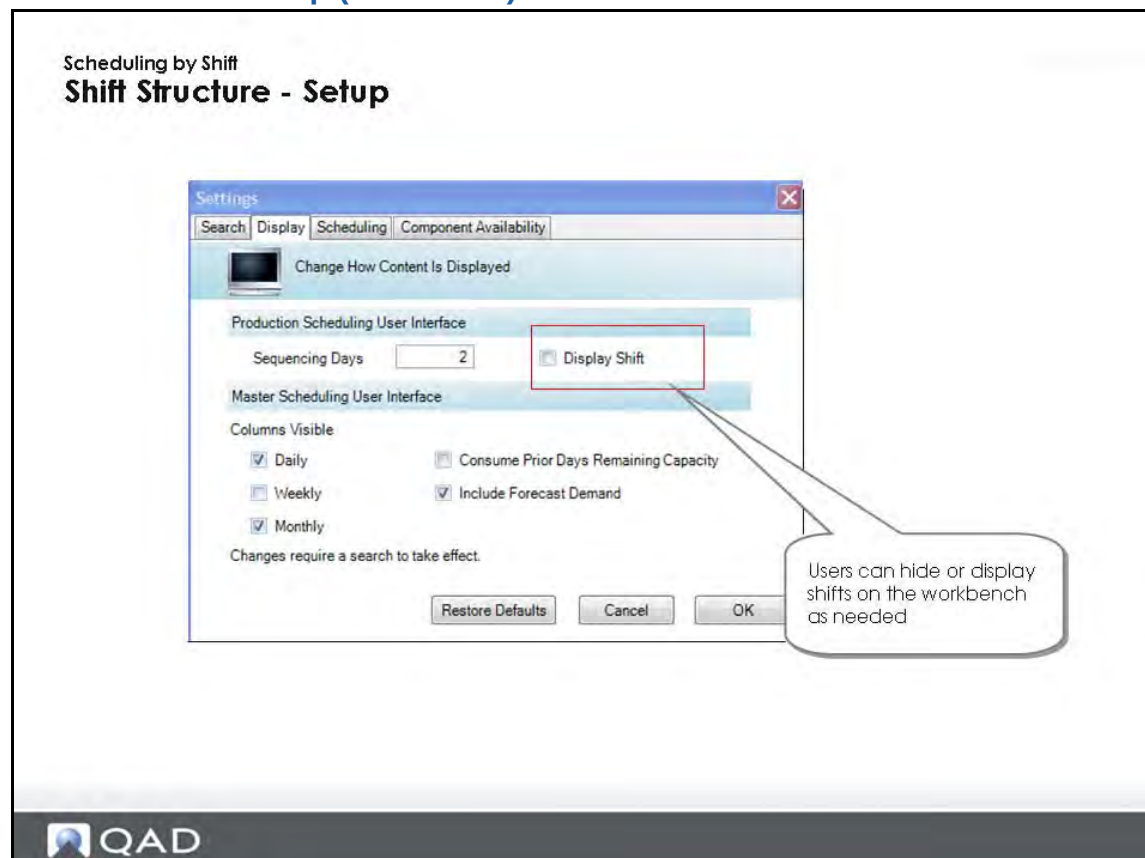
Sunday Shifts

1	05:00	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

The screenshot displays the 'Shift Structure - Display' window in QAD. The window shows a production line for 'PL-Print' with a list of production orders and their assigned shifts. The orders are listed with their dates, required hours, and remaining hours. The shifts are listed with their start and end times, and the remaining capacity for each shift.

Callouts provide additional information:

- Callout 1:** I have production orders I need to move from default shift (0) to the specified shifts
- Callout 2:** I can select the desired order and drag/drop it to the target Shift on the Sequence Grid.
- Callout 3:** I have additional remaining capacity to schedule additional orders on Shift 2 & 3

The QAD logo is visible in the bottom left corner.

Questions: What if I did not assign all production orders to a shift? How could this be interpreted? Is there a negative impact?

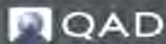
Hands On Lesson Section



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

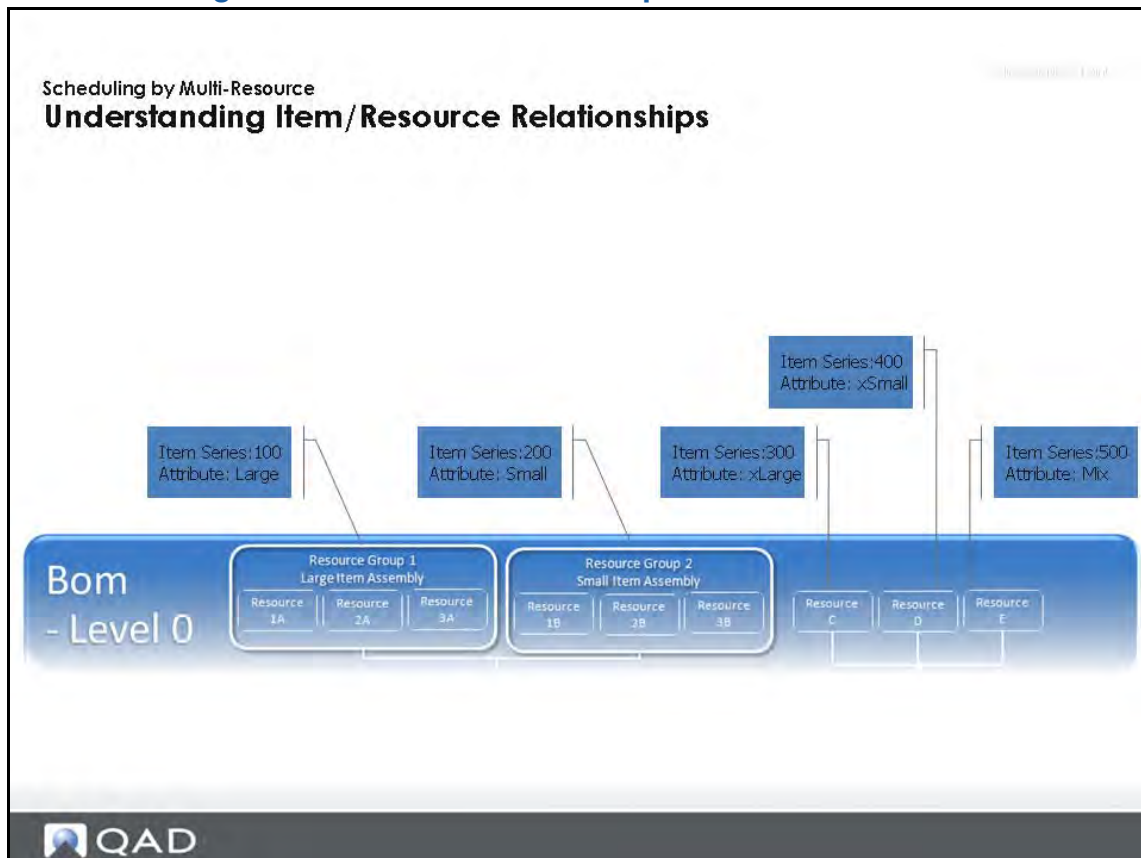
The approach is to assign production orders to a specific machine.

Business Considerations

Does each item have a primary resource?

Do you need to define a resource group?

Understanding Item/Resource Relationships

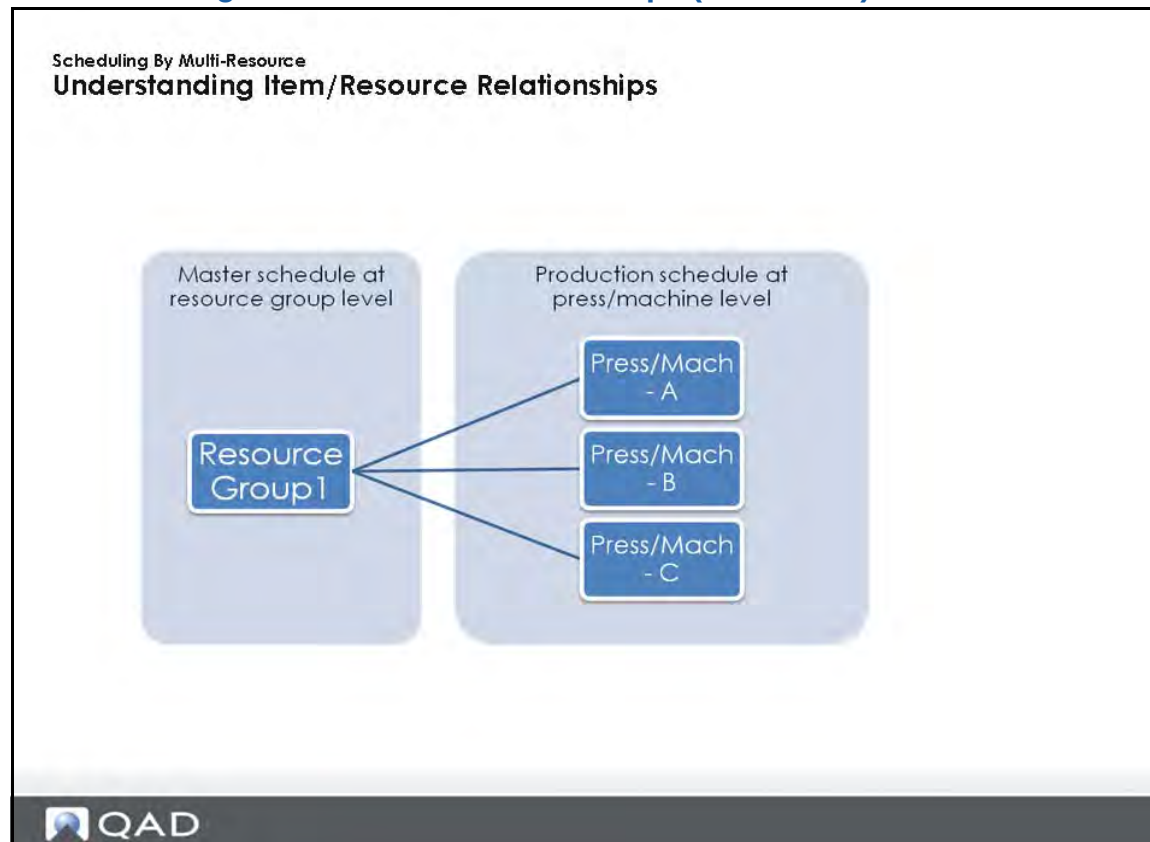


A Resource group represents a group of resources which process items with similar or identical attributes.

Associate each item produced to both a Resource Group and each resource (alternate resource) it can be produced on.

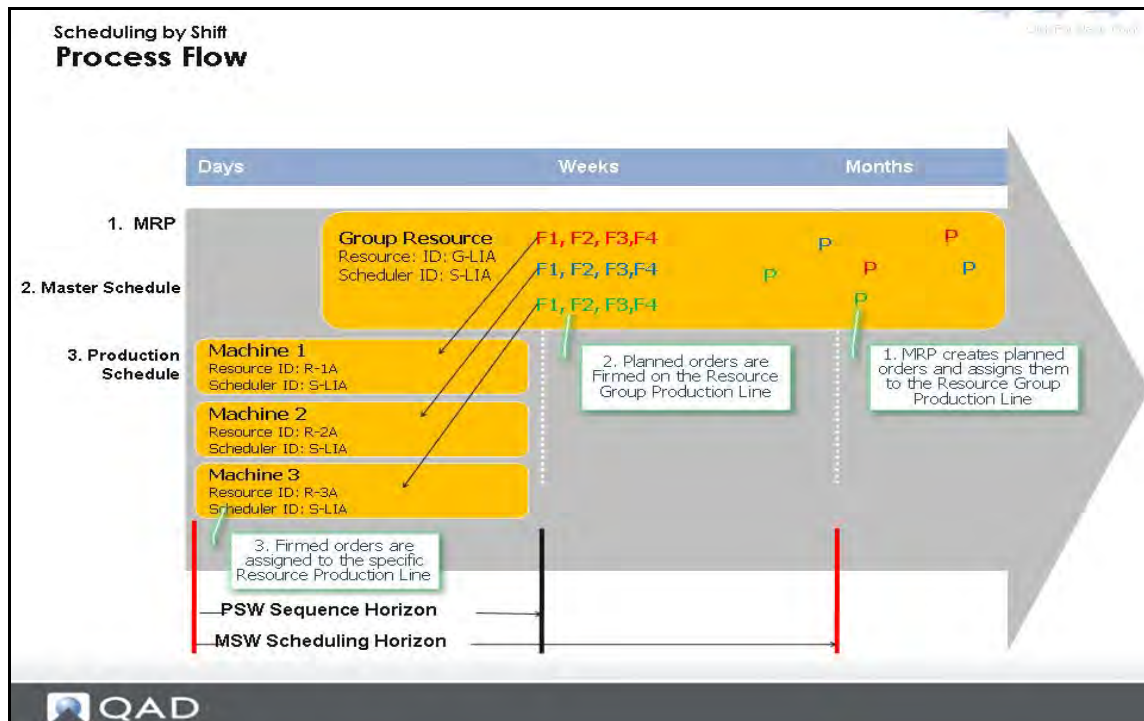
Question: What should the primary resource be assigned for each item?

Understanding Item/Resource Relationships (Continued)



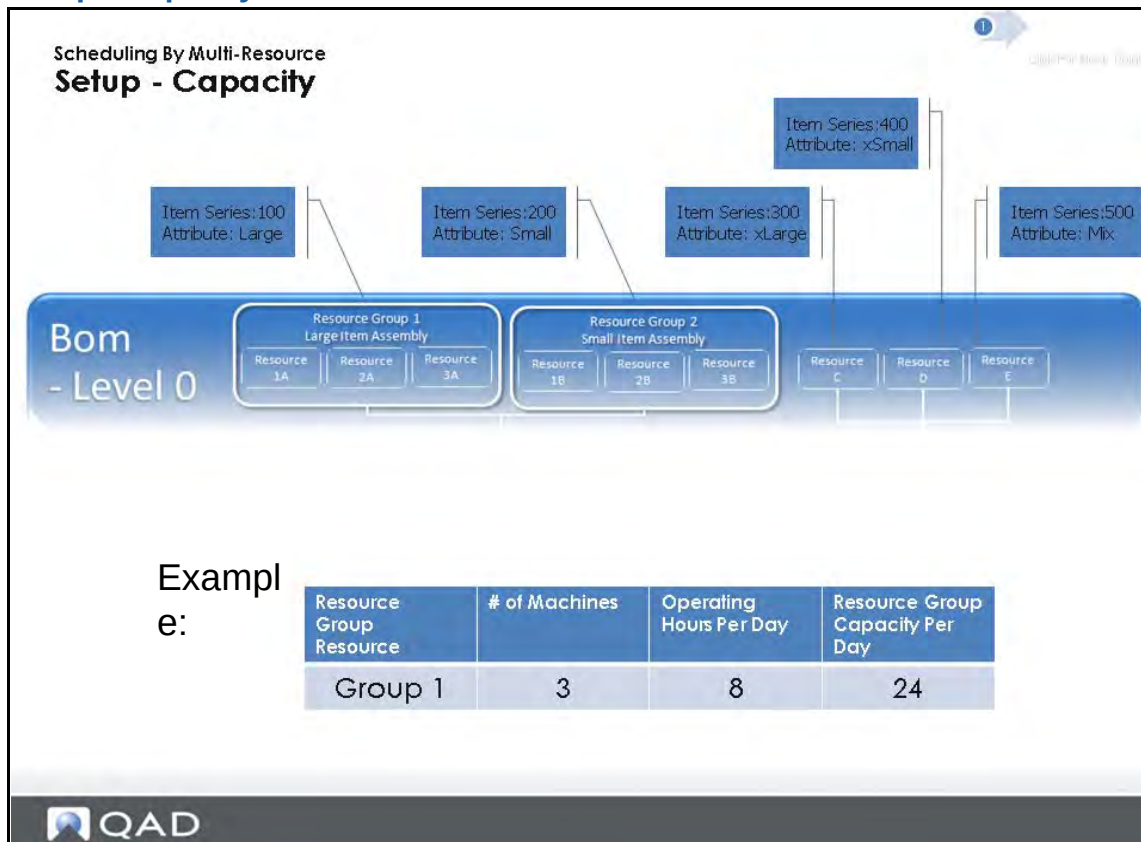
Business Scenario: You master schedule at the Resource Group level over the mid-term horizon, and assign production orders to the target resource in the short-term horizon.

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

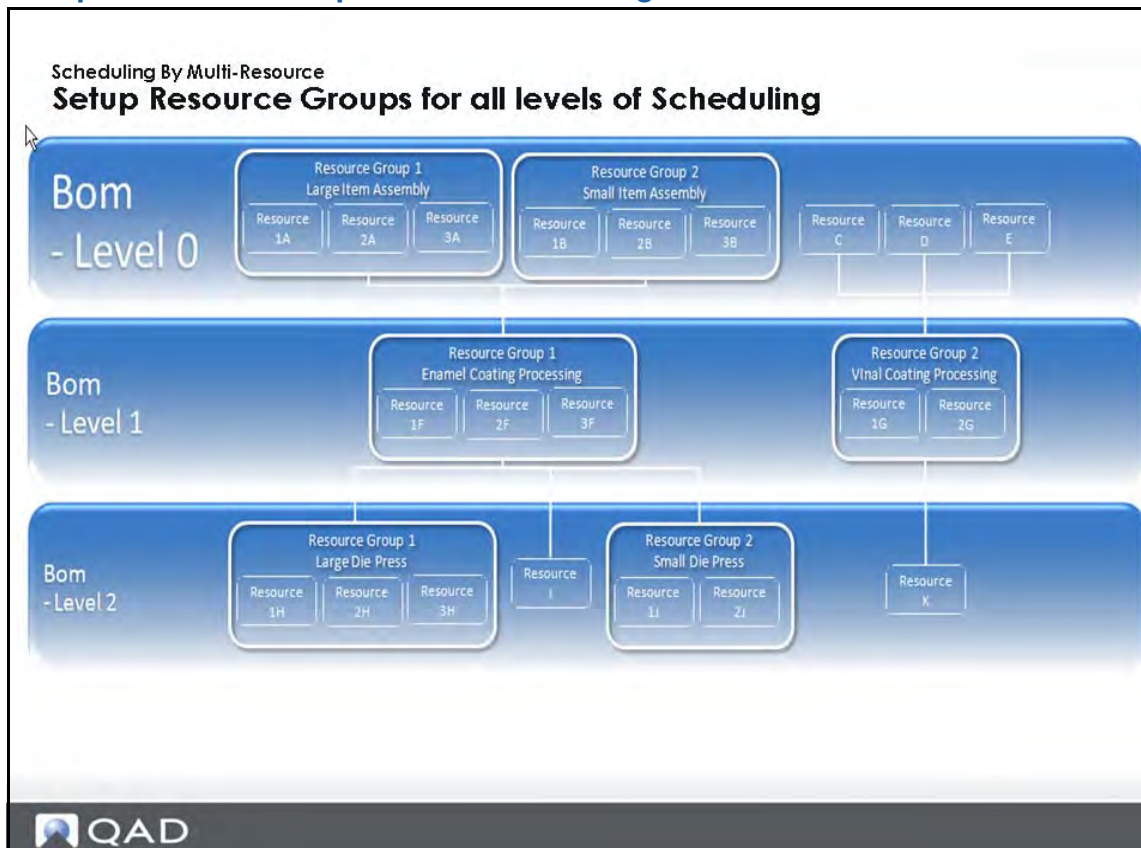
Stamp-02 8 hrs

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

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 Crew	Item Number	Run Seq 2	Sh	Se
90004	11/15/2010	Stamp-G	A	C1-S1-bwa101			
90091	11/16/2010	Stamp-G	A	C1-S1-bwa104			
90092	11/16/2010	Stamp-G	B	C1-S1-bwa107			
90081	11/17/2010	Stamp-G	A	C1-S1-bwa101			
90092	11/17/2010	Stamp-G	A	C1-S1-bwa104			
90092	11/18/2010	Stamp-G	A	C1-S1-bwa101			
90083	11/19/2010	Stamp-G	A	C1-S1-bwa101			
90098	11/22/2010	Stamp-G	B	C1-S1-bwa107			

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 Point

1 Multi-Resource view for selected item - Applied a filter to display all resources which can schedule the item "C1-S1-bws101"

The screenshot shows the QAD Planning and Scheduling Workbench (MSW) interface. The search criteria are set to Site: bws1, Resource: contains Stamp. The Resource Navigator shows a tree structure with bws1 and its sub-items: STAMP-01, STAMP-02, STAMP-03, and STAMP-G. The main window displays a table with columns: Production Line, Horizon End, Record Type, Past Due, and a grid for dates 11/17, 11/18, and 11/19. The table shows the following data:

Production Line	Horizon End	Record Type	Past Due	11/17	11/18	11/19
STAMP-01	11/20/2010	Remaining Capacity				
STAMP-01						
STAMP-02						
STAMP-03						
STAMP-G						

The QAD logo is visible in the bottom left corner.

Solution Approach: Define your Search criteria and create a view to support multi-resource scheduling.

Hands On Lesson Section



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 QAD Production Scheduling interface. The 'Production Scheduling' tab is selected. The main window displays a table of production orders for 'ASSY-01'. The table has columns for ID, Shi, Component Status, Quantity Ordered, Open Quantity, Seq, and P. The following table represents the data shown in the screenshot:

ID	Shi	Component Status	Quantity Ordered	Open Quantity	Seq	P
2108		Scheduled Receipts	10	10	0	
2124		Available	5	5	0	
2201		Sched Rcpts Delaye	80	80		
2353		Projected Shortage	15	15		
90018		Projected Shortage	15	15	0	Medium

A callout box points to the 'Quantity Ordered' column for order 2201, which is 80. The callout text reads: "Consider slitting this order & based on the capacity shortage".

QAD

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

Supporting Features & Concepts
Split Production Order

Click For Next Point

The screenshot displays the 'Production Scheduling' window with a table of production orders. A right-click context menu is open over a selected order, with the 'Split' option highlighted. A dialog box for splitting the order is also visible, showing fields for 'Split Quantity' (35), 'Release Date' (11/18/2010), and 'Shift'.

ID	Shi	Component	Status	Quantity	Ordered	Open	Quantity	Seq	Run	Seq
2108		Scheduled Receipts		10	10	0	Large			
2124		Available		5	5	0	Medium			
2201		Sched Rcpts Delaye		10	0	0	Small			
2353		Projected Shortage		5	0	0	Medium			
90018		Projected Shortage		5	0	0	Medium			

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

Work Order Split

Work Order: bwaMan ID: 90010
 Item Number: F-bus107 7275WBC324BXCFL
 Batch:
 Type:
 Quantity Ordered: 10.0
 Quantity Completed: 6.0
 Operator:
 Quantity Ordered:
 Quantity WIP:
 Quantity Completed:
 Split InVO Bill:
 Quantity to Split: 0.0
 New ID:
 Blank for Next Automatic ID:
 New Batch:
 0.0

Production Line

ASSY-01

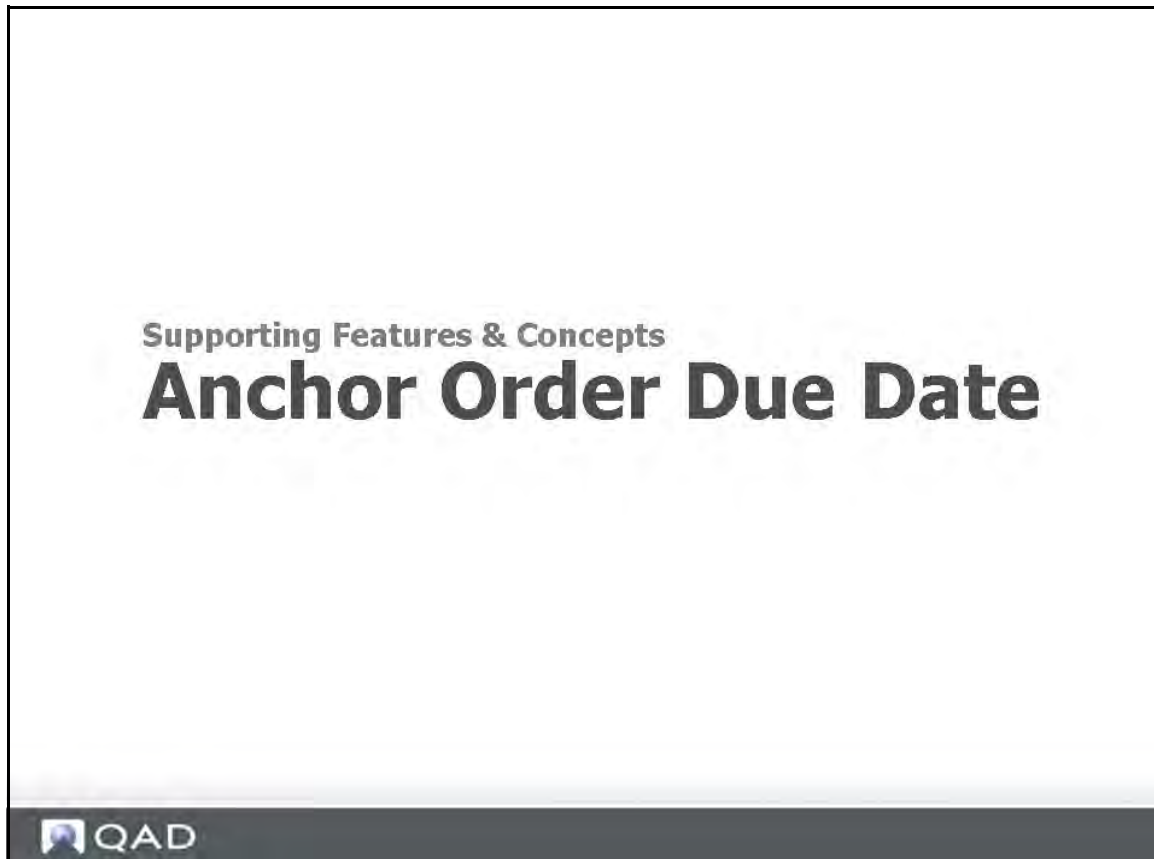
ID	Shi	Component Status	Quantity Ordered	Open Quantity	Seq	Run Sec
90010		Shortage	10	4	2	Large
90017		Issued Complete	10	5	5	Large
90002		Available	10	6	6	Small
11/15		Required: 1.8 Hours (18)				
11/16		Required: 6.2 Hours (62)				
11/17		Required: 8.5 Hours (85)				
11/18		Required: 12.5 Hours (125)				
2108		Scheduled Receipts	10	10	0	Large
2124		Available	5	5	0	Medium
2201		Sched Rcpts Delays	80	80	0	Small
2762		Discontinued Shortage	15	15	0	Medium

Example the selected order has issued materials, the Split function is not available for this order

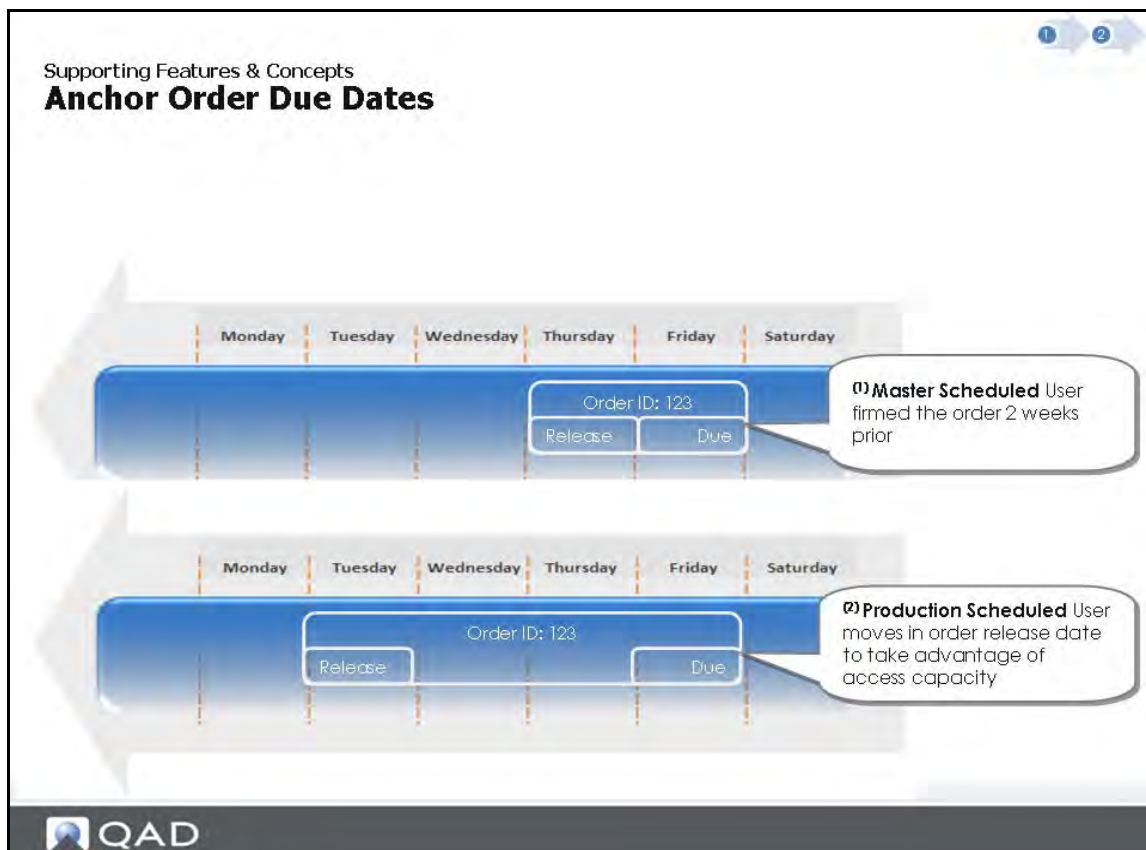
Solution Approach: Use the legacy Work Order Split (16.9) for orders:

- 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

ID	Status	Quantity Ordered	Release	Due	Component Status
90008	E	10	11/17/2010	11/17/2010	Available
2124	E	5	11/18/2010	11/18/2010	Available
90018	E	15	11/23/2010	11/18/2010	Projected Shortage

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.

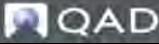
Hands On Lesson Section



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



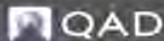
- 1 Start the workbenches, then in the Search Panel, enter selection criteria Site equals 10-202.
- 2 Enter Resource equals ASSY-01.
- 3 Click search.
- 4 In the PSW, select an order to split.
- 5 Split the order by selecting the line, then right-clicking to display the pull-down menu.
- 6 Specify the 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

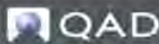
- Users who completed Create a Production Schedule(PSW) training



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

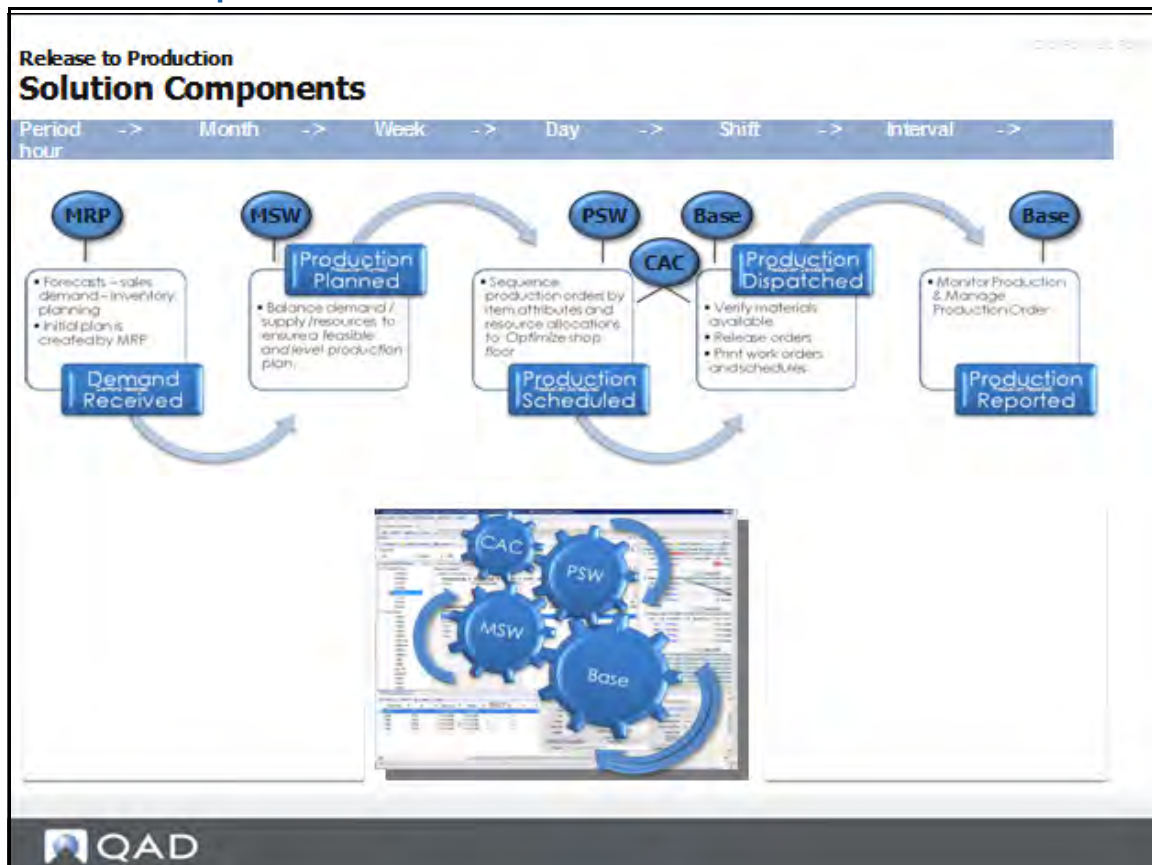
Topics Covered		
Category	Topics	Hands On
Overview	• Process Flow	
	• General considerations	
Discrete Production Orders	• Authorize / Release Orders	
	• Dispatch Orders	Lesson 1
Repetitive Production Orders	• Authorize	
	• Dispatch Orders	Lesson 2



Overview Section

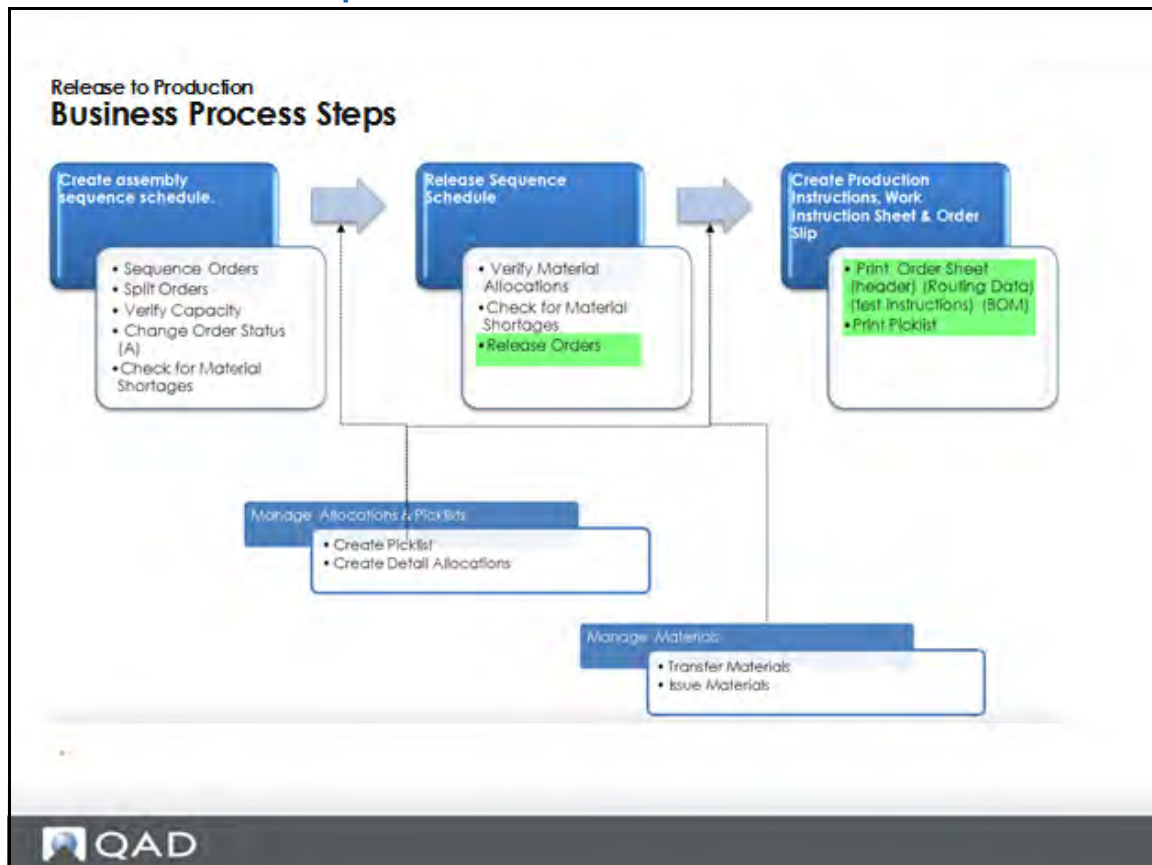


Solution Components



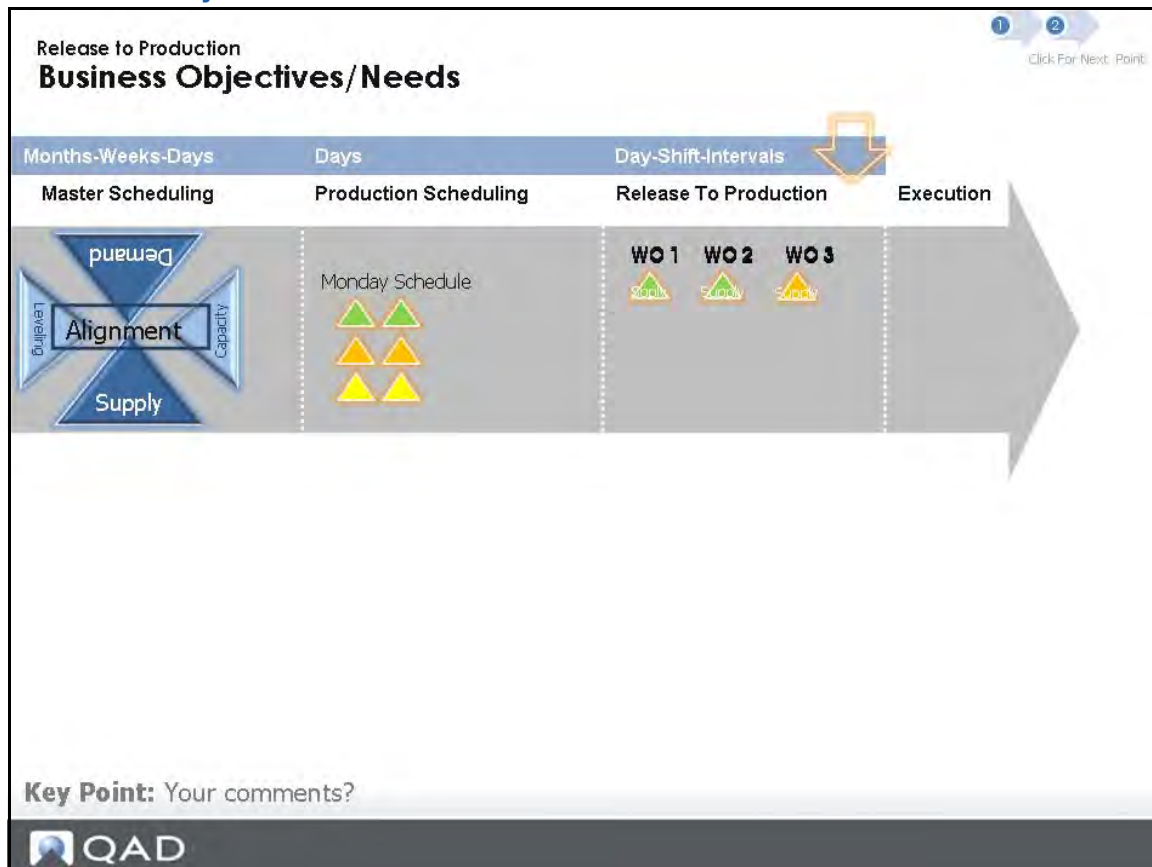
In the production process flow, you must authorize and release orders for discrete and repetitive processes. This chapter focuses on the two authorization processes.

Business Process Steps



- 1 Create assembly sequence schedule:
 - Sequence or split orders
 - Verify capacity
 - Change order status to A(proved)
 - 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



The screenshot shows a presentation slide with a light blue background. At the top left, the word 'Overview' is written in a small font. Below it, the title 'Authorizing & Releasing Production Orders' is displayed in a larger, bold font. The main content is a bulleted list under the heading 'Considerations of approach'. The list includes seven items: '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', and 'Where does material issuing/picking/transfer fit into the process?'. At the bottom left of the slide, the QAD logo is visible.

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



Prior to 2010.1 Process	New Process with Workbenches

SAP Work Order Maintenance

Work Order: 9018
Item Number: P-BWJ105
Type: S
Site: BwJ
Production Line: ASSY-01
Assembly PL Group

Quantity Ordered: 18.0
Quantity Completed: 0.0
Qty Rejected: 0.0
Sequence: 0.0

Order Date: 11/16/10
Release Date: 11/18/10
Due Date: 11/18/10

Work Order Status: F
Site: BwJ
Routing Code: P-BWJ101
Supplier:
BOH/Formula Code:

Yield Percent: 100.004
Remarks:
Comments: No Post variances at SFC: Yes

Identifying discrete orders to authorize was a tedious and error-prone process.

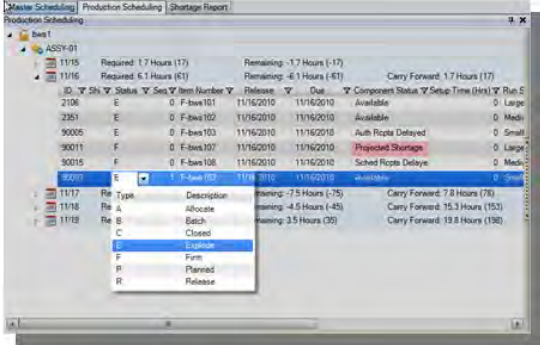
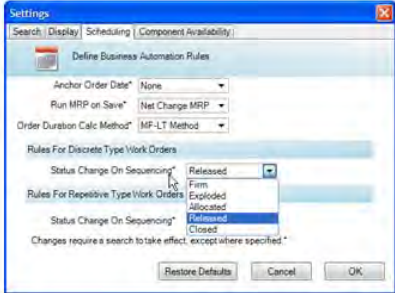
The new process includes orders that are not authorized, released and printed and that can be clearly be seen in the workbenches.

Discrete Production Orders- Authorize Orders

Discrete Production Orders

Authorize Orders

1 2
Click For Next Point



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))

Discrete Production Orders
Authorize Orders

Click For Next Point

The screenshot displays the QAD Production Scheduling workbench. The 'Production Scheduling' tab is active, showing a list of production orders. A context menu is open over the 'Status' column, with the 'Released' option selected. The menu also includes 'Release/Print', 'Resequence', 'Split', 'Columns', 'Calculate Due Date', and 'Calculate Release Date'. The background table shows columns for ID, Status, Seq, Item Number, Release, Due, Component Status, Setup Time (Hrs), and Run S.

ID	Status	Seq	Item Number	Release	Due	Component Status	Setup Time (Hrs)	Run S
2106	E	0	F-bws101	11/16/2010	11/16/2010	Available		0 Large
2351	E	0	F-bws102	11/16/2010	11/16/2010	Available		0 Medium
90005	E	0	F-bws103	11/16/2010	11/16/2010	Available		0 Small
90011	F	0	F-bws107	11/16/2010	11/16/2010	Available		0 Large
90015	F	0	F-bws108	11/16/2010	11/16/2010	Available		0 Medium
90003	E	1	F-bws103	11/16/2010	11/16/2010	Available		0 Small

QAD

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



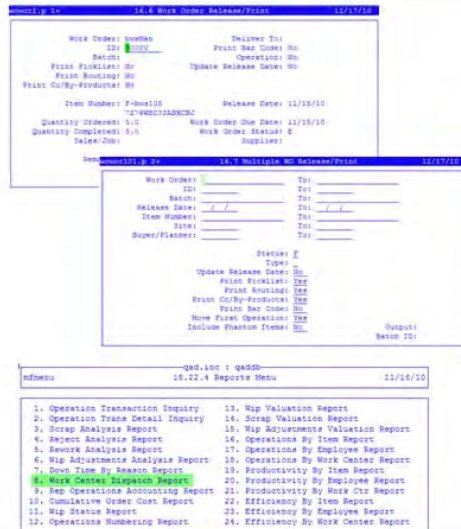
Process Overview- Comparison Overview



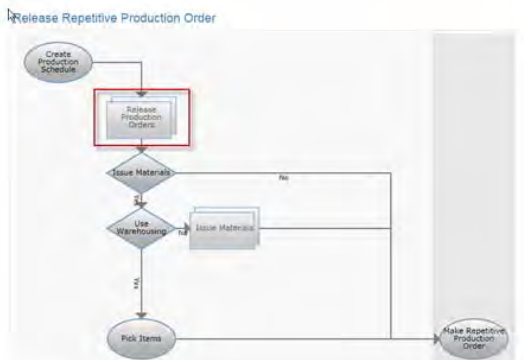
 Click For Next Point

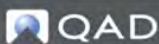
Release Production Process Overview – Comparison

Prior to 2010.1 Process
New Process with Workbench Collections



Release Repetitive Production Order





Process Prior to QAD EA 2010.1

Production order print programs difficult to use, print one at a time – tedious, or print a range - little control of results.

Production relied on the scheduler to provide timely updates and prioritization of production orders.

Process complex to a point relied on the scheduler to perform this work.

New Process with Workbenches

New production order print program simplifies the printing process.

Production floor can now access the most current schedule real-time.

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

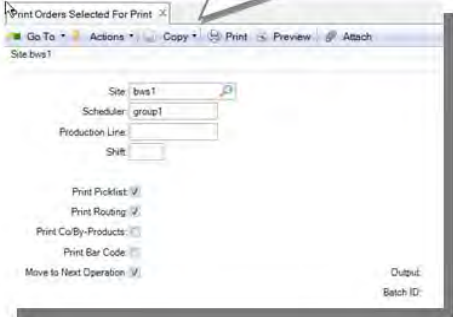
Dispatch Orders

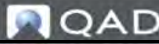
1 2
Click For Next: Print

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





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 & Scheduling Workbench

Dispatch Orders (Continued)

Discrete Production Orders
Dispatch Orders

Click For Next Point

1) Define search criteria – to display orders to release/run at designated work center

2) Release/Print Order – Machine operator views the next order to run – can verify material availability and release / print order from screen

ID	Parent Item	Work Order Status	Component Status	Quantity Open	Work Center	Machine	Due Date
30005	F-bus103	E	Auth Rcpts Delayed	20.0	2280	1	11/16/2010
2751	F-bus103	E	Available	13.0	2280	1	11/16/2010
2706	F-bus101	E	Available	15.0	2280	1	11/16/2010
30003	F-bus103	E	Available	5.0	2280	1	11/16/2010
30011	F-bus107	E	Projected Shortage	5.0	2280	1	11/16/2010

Production Order Component List | Work Order Maintenance | **Work Order Release/Print**

Work Order: 11110029
ID: 2351
Batch:
Print Picklist
Print Routing

Deliver To:
Print Bar Code
Operation
Update Release Date

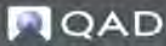
QAD

Solution Approach: Shop floor personnel performs the task (self – service) using Release Production Orders by Work Center Collection

Hands On Lesson Section

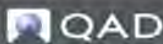
Release to Production - Discrete

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

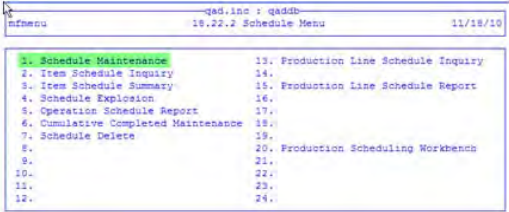
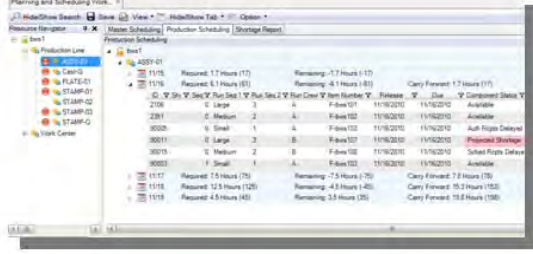
- 1 True. You can change the status to A or R.
- 2 A and C.
- 3 The Release to Production Orders by Work Centers browse collection.
- 4 Shop floor personnel can use Release Production Order by Work Centers browse collection *themselves* to check component availability, then release and print orders.

Authorize Production Section



Authorize Production - Repetitive Process

Authorize Production - Repetitive Process Overview – Comparison

Prior to 2010.1 Process	New Process with Workbenches
	

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

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	S1-bws108		E	Available		
90044	2	Red	Medium	A	S1-bws102		E	Projected Shortage		
90047	1	0	Blue	Small	A	S1-bws103	1	E	Projected Shortage	
90052	1	0	White	Medium	B	S1-bws105	1	E	Projected Shortage	

QAD

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

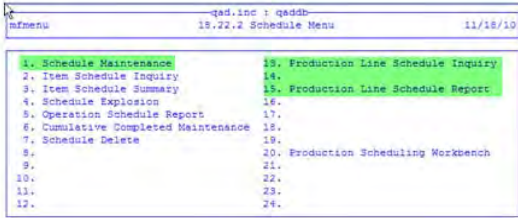
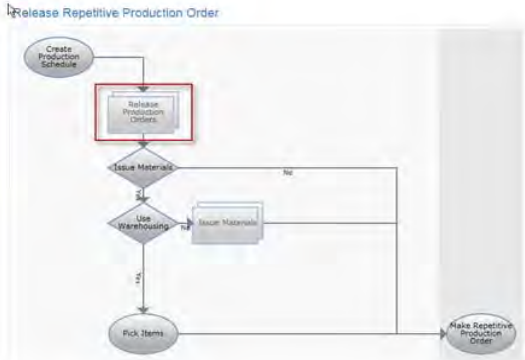
Dispatch Orders Section



Process Overview - Comparison

1
2
Click For Next Point

Release Production Process Overview – Comparison

Prior to 2010.1 Process	New Process with <i>Workbench</i> Collections
 The screenshot shows a menu titled 'qad.inc : qaddb- 19.22.2 Schedule Menu 11/18/10'. It lists 24 items, with the first 12 items highlighted in green. The items are: 1. Schedule Maintenance 2. Item Schedule Inquiry 3. Item Schedule Summary 4. Schedule Explosion 5. Operation Schedule Report 6. Cumulative Completed Maintenance 7. Schedule Delete 8. 9. 10. 11. 12. 13. Production Line Schedule Inquiry 14. 15. Production Line Schedule Report 16. 17. 18. 19. 20. Production Scheduling Workbench 21. 22. 23. 24.	 The flowchart titled 'Release Repetitive Production Order' shows the following steps: - Create Production Schedule - Release Production Order (highlighted with a red box) - Issue Materials (decision diamond) - If 'Issue Materials' is 'Yes', it leads to 'Pick Items'. - If 'Issue Materials' is 'No', it leads to 'Make Repetitive Production Order'. 'Pick Items' leads to 'Make Repetitive Production Order'. 'Issue Materials' also leads to 'Issue Materials' (a box labeled 'Issue Materials' is shown).



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

Master Scheduling | Production Scheduling | Shortage Report

Production Scheduling

ID	Shift	Seq	Run Seq 1	Run Seq 2	Run Crew	Item Number	Setup Time (Hrs)	Sta	Component Status	Quantity Ordered	Open
90057	1	Blue	Medium	B	S1-bws108	1	E	Available	10		
90044	2	Red	Medium	A	S1-bws102	1	E	Projected Shortage	40		

Work Order Maintenance

New Delete Validate

Details **Comments** Date/Time Operations Components Production Activity Production CUM Activity Compliance Accounting Data

ID: 90057 St: E

Quantity Ordered: 10.00 Production Rate: 55.00 Primary Line: san Site: san Order Ty: Cum

Quantity Open: 10 Run Crew Size: 1 Scheduled Line: san Sales/Job: Supplier: Cum

Yield: 100 Run Crew Productivity: 100.00 Number of Lines: 1.0 Routing Code: F-bws-101 Order Sheet Print: ReleasePr

Line Productivity: 100.00 Duration Buffer (Hrs): 0.0 BOM Formula Code: Code

Run Time (Hrs): 0.18 Duration Hours: 0.68 Projected Duration Days: 0.09

Setup Time (Hrs): 0.5 Required Capacity (Hrs): 0.68

Remarks: customer special request - premiumship

QAD

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

Master Scheduling | Production Scheduling | Shortage Report

Production Scheduling

bws1 Production Line

ASSY-01

11/15 Required: 1.7 Hours (17) Remaining: -1.7 Hours (-17)

11/16 Required: 5.1 Hours (61) Remaining: -5.1 Hours (-61) Carry Forward: 1.7 Hours (17)

ID	Shi	Seq	Run Seq 1	Run Seq 2	Run Crew	Comp	Auth	Sched
90003		1	Small	1	A	Available		
90005		2	Small	1	A	Available		
2351		3	Medium	2	A	Available		
90015		4	Medium	2	B	F-bws108	R	Sched
2106		5	Large	3	A	F-bws101	E	Available

Expand All
Collapse All
Export
Resequence

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

1 2
 Click For Next Point

Repetitive Production Orders
Dispatch Orders

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

ID	Parent Item	Work Order Status	Component Status	Quantity Open	Quantity Order	Release Date
90002	F-bws103	E	Available	5.0	5.0	11/15/2010
90010	F-bws107	R	Shortage	4.0	10.0	11/15/2010
90017	F-bws101	E	Issued Complete	8.0	10.0	11/15/2010
90015	F-bws108	F	Sched Rcpts Delayed	3.0	3.0	
90003	F-bws103	E	Available	5.0	5.0	
90011	F-bws107	F	Projected Shortage	5.0	5.0	
2106	F-bws101	E	Available	15.0	15.0	
2351	F-bws102	E	Available	13.0	15.0	
90005	F-bws103	E	Auth Rcpts Delayed	20.0	20.0	

Solution Approach Continued: Shop floor personnel (self – service) using Release Production Orders by Production Line collection

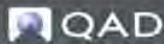
Hands On Lesson Section



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 of 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.

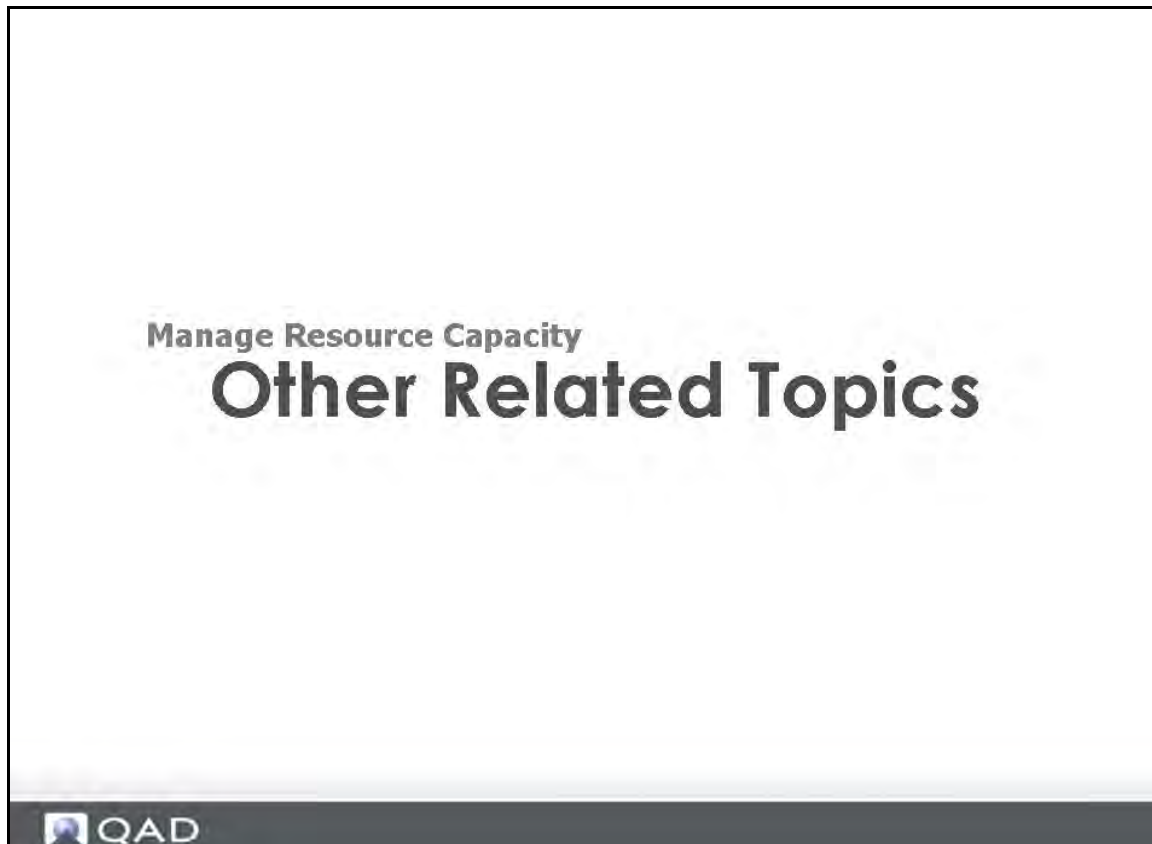
Questions

- 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

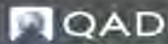


Other Related Topics

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

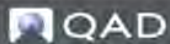
- Workbenches let you monitor production activity against the schedule
- After schedule/orders are dispatched to production, production activity can be monitored within the workbenches

▲ 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.

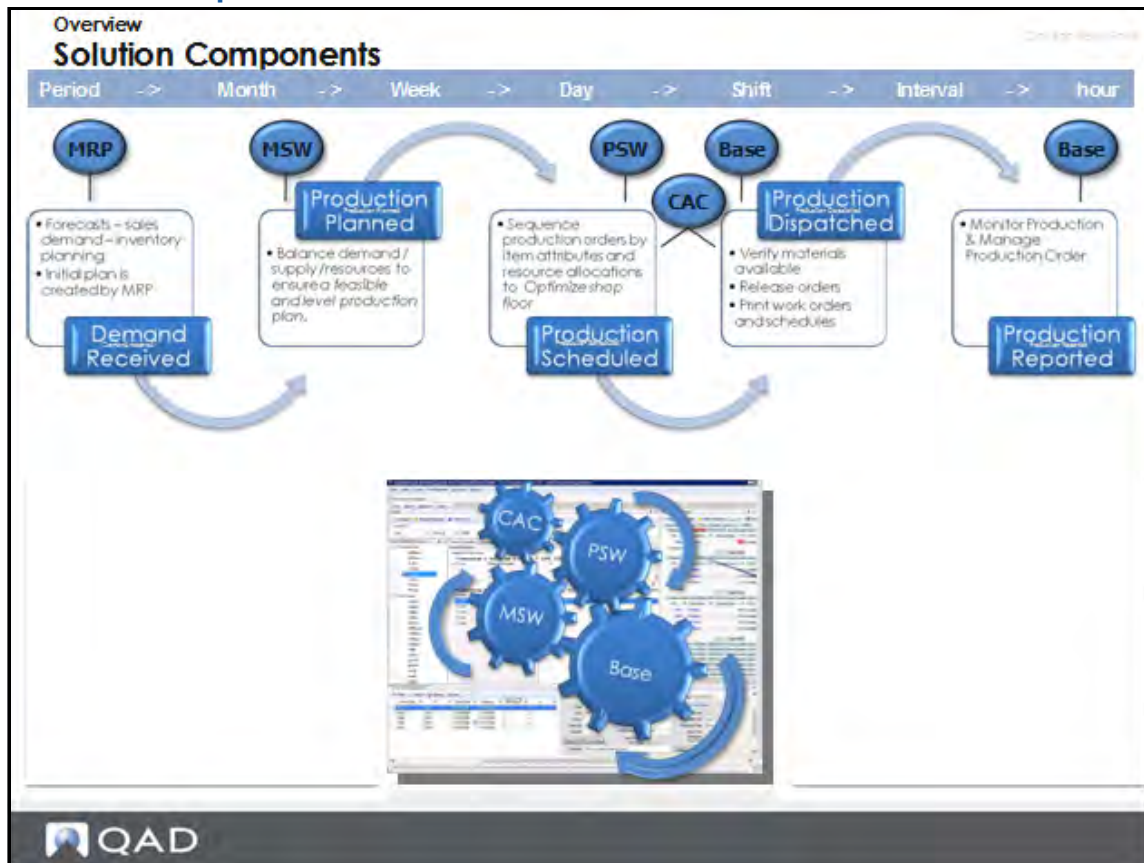
Topics Covered

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	

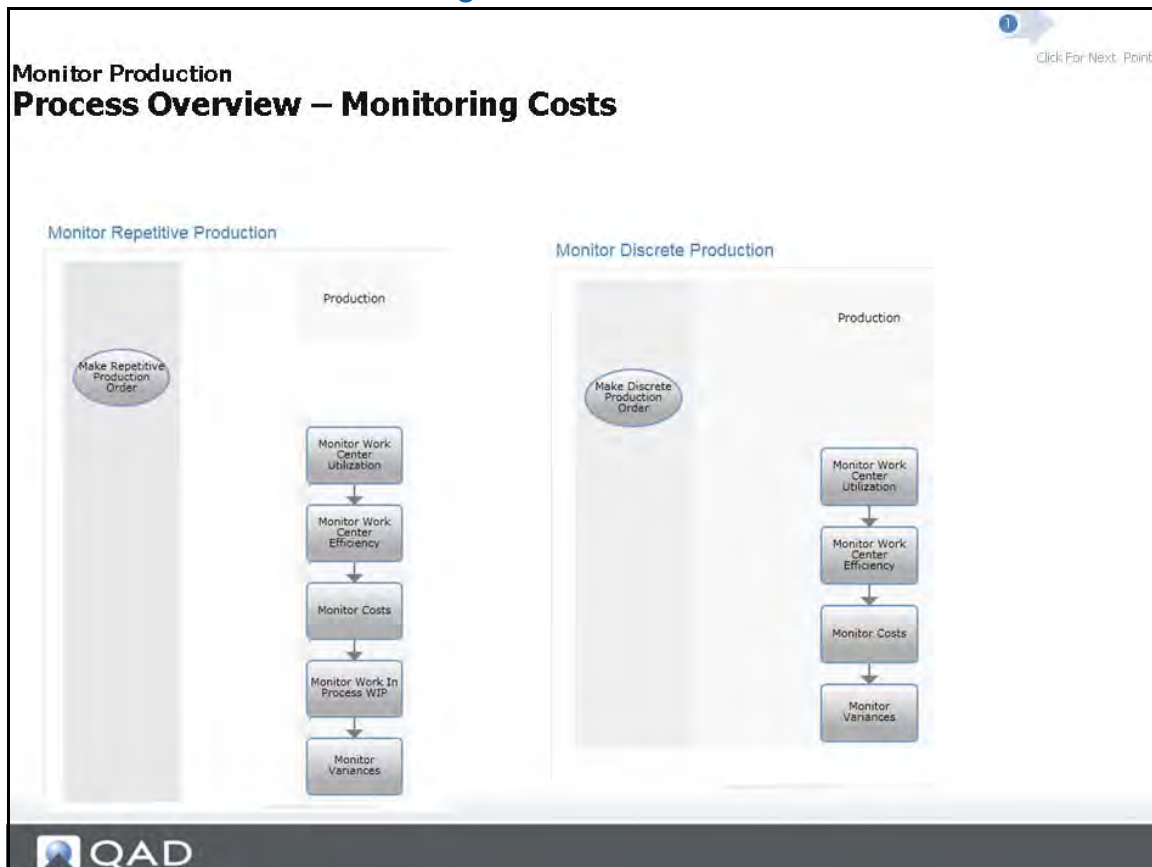
Overview Section



Solution Components



Process Overview - Monitoring Costs



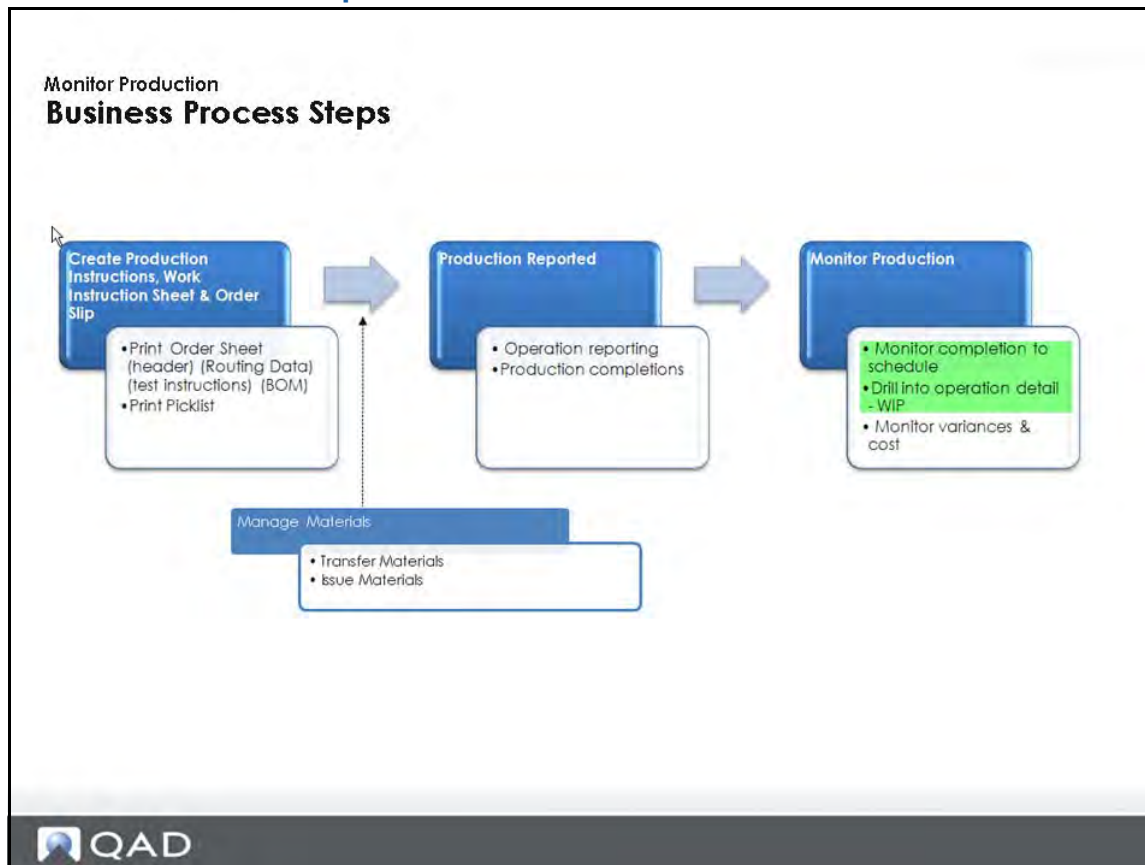
To make a repetitive production order, you must monitor:

- 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

Retrieve Scheduling Data

Basic Rules

Click For Next Point

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Item A Scheduled Receipt Supply Order	1	Item B Open SO Requirement	2	Item C Closed Supply Order	Item D Production Receipt	7
8	Item E Closed Supply Order	10	TODAY	Item F Open Supply Order	Item G Forecast Requirement	Item H Closed Supply Order
15	Item I Closed SO Requirement	16	17	18	19	Item J Forecast Requirement
22	23	24	25	26	27	28
29	30					

Search History Horizon

Search Future Horizon



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

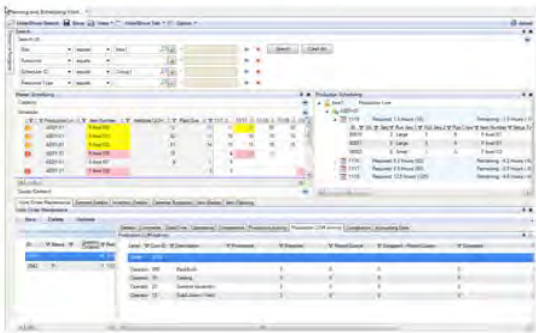
- Active supply/demand records
 - Within the future horizon
 - Prior to today
- Item activity within the history/future horizon
- Item receipts
- Item association with resource

Question: Which items would not appear on workbench?

Process Overview - Comparison

Visualize Completions to Schedule Process Overview – Comparison

1 Click For Next Point

Prior to 2010.1 Process	New Process with Workbenches				
qad.inc : qaddb mfmnu 16.3 Work Order Reports Menu 11/17/10 <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> 1. Work Order by Order Report 2. Work Order by Item Report 3. Work Order Status Report 4. Work Order Cost Report 5. Work Order WIP Cost Report 6. Work Order History Report 7. 8. 9. 10. 11. 12. </td> <td style="width: 50%; vertical-align: top;"> 13. Co/By-Product Work Order Inquiry 14. 15. 16. 17. 18. Work Order Component Check 19. WO Component Check Report 20. 21. 22. 23. 24. </td> </tr> </table> qad.inc : qaddb mfmnu 19.22.2 Schedule Menu 11/17/10 <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> 1. Schedule Maintenance 2. Item Schedule Inquiry 3. Item Schedule Summary 4. Schedule Explosion 5. Operation Schedule Report 6. Cumulative Completed Maintenance 7. Schedule Delete 8. 9. 10. 11. 12. </td> <td style="width: 50%; vertical-align: top;"> 13. Production Line Schedule Inquiry 14. 15. Production Line Schedule Report 16. 17. 18. 19. 20. Production Scheduling Workbench 21. 22. 23. 24. </td> </tr> </table>	1. Work Order by Order Report 2. Work Order by Item Report 3. Work Order Status Report 4. Work Order Cost Report 5. Work Order WIP Cost Report 6. Work Order History Report 7. 8. 9. 10. 11. 12.	13. Co/By-Product Work Order Inquiry 14. 15. 16. 17. 18. Work Order Component Check 19. WO Component Check Report 20. 21. 22. 23. 24.	1. Schedule Maintenance 2. Item Schedule Inquiry 3. Item Schedule Summary 4. Schedule Explosion 5. Operation Schedule Report 6. Cumulative Completed Maintenance 7. Schedule Delete 8. 9. 10. 11. 12.	13. Production Line Schedule Inquiry 14. 15. Production Line Schedule Report 16. 17. 18. 19. 20. Production Scheduling Workbench 21. 22. 23. 24.	
1. Work Order by Order Report 2. Work Order by Item Report 3. Work Order Status Report 4. Work Order Cost Report 5. Work Order WIP Cost Report 6. Work Order History Report 7. 8. 9. 10. 11. 12.	13. Co/By-Product Work Order Inquiry 14. 15. 16. 17. 18. Work Order Component Check 19. WO Component Check Report 20. 21. 22. 23. 24.				
1. Schedule Maintenance 2. Item Schedule Inquiry 3. Item Schedule Summary 4. Schedule Explosion 5. Operation Schedule Report 6. Cumulative Completed Maintenance 7. Schedule Delete 8. 9. 10. 11. 12.	13. Production Line Schedule Inquiry 14. 15. Production Line Schedule Report 16. 17. 18. 19. 20. Production Scheduling Workbench 21. 22. 23. 24.				



Process Overview - Comparison (Continued)

Monitor Production Process Overview – Comparison	
Prior to 2010.1 Process	New Process with Workbenches
• Several reports to access production progress • Low visibility to performance to schedule – especially in discrete env's	• Workbenches provide high-level summary and detail views of schedule attainment

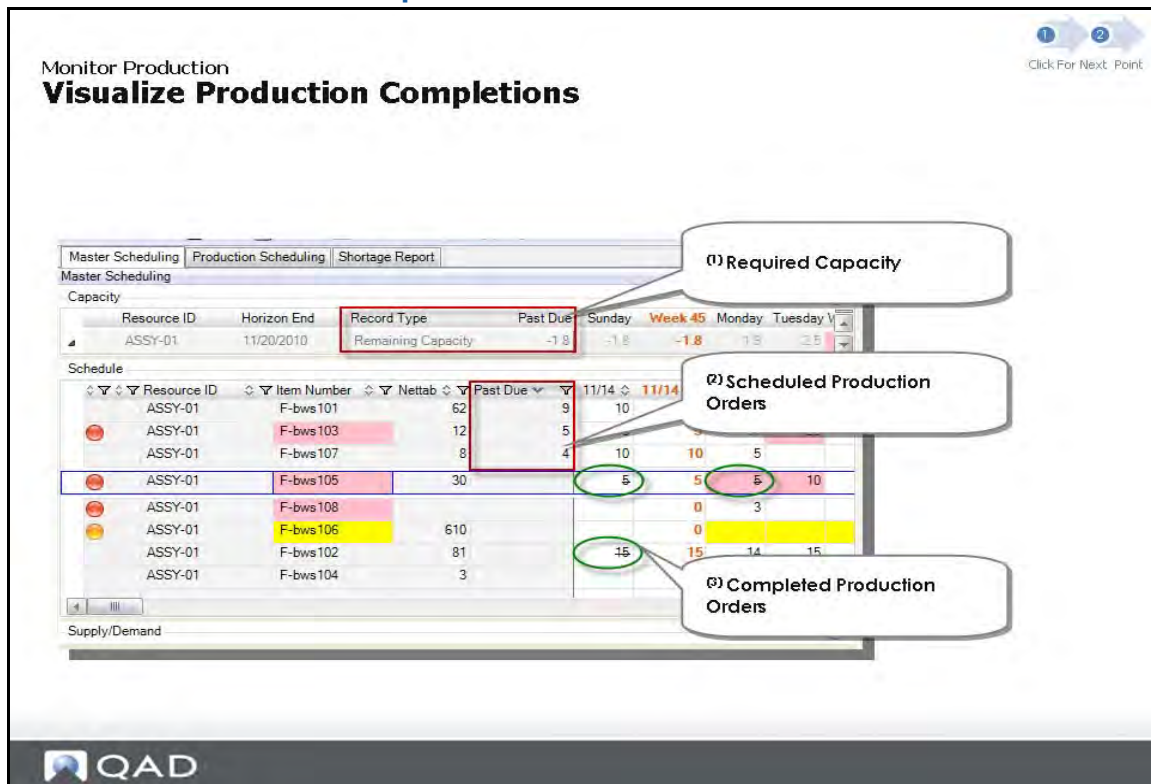
Process Prior to 2010.1

- 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

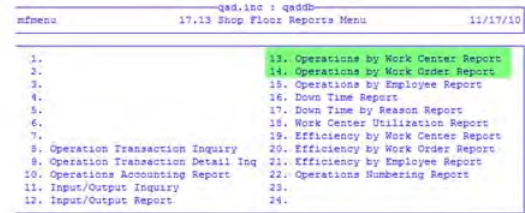
Discrete Section



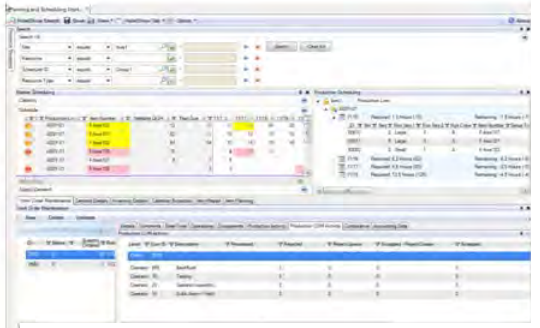
Process Overview - Comparison

Visualize Completions to Schedule Process Overview – Comparison

Prior to 2010.1 Process



New Process with Workbenches



- Extra effort to access legacy reports & information

- WIP details a click away on workbenches



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

ID	St	Level	ID	Description	Open Quantity	Completed	Rejected	Reworked	Actual Run Time	WIP
90010	R	Order	90010	Customer Special request	4	5	1			
90011	F	Operatio	999	Backflush	4	6	0	0	3	2
937	P	Operatio	30	Testing	10	0	0	0	0	0
938	P	Operatio	20	General Assembly	4	6	0	0	5	2
		Operatio	10	SubA Asm / Weld	0.0	10	0	0	7	2

Solution Approach: Production Order Maintenance / Production Activity Tab displays Production Activity of discrete orders

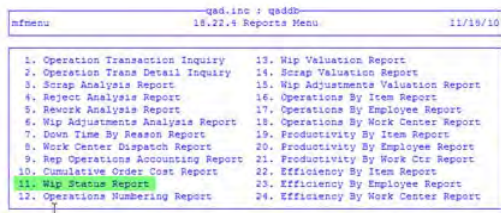
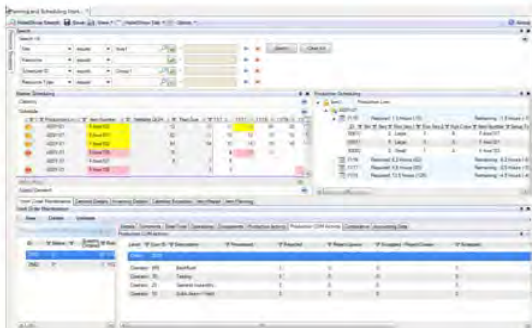
Repetitive Section



Process Overview Comparison



Visualize Completions to Schedule
Process Overview – Comparison

Prior to 2010.1 Process	New Process with Workbenches
	



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 Point

The screenshot displays the QAD Production Activity window. The top section shows the 'Production Scheduling' tab with a tree view of the production line (ASSY-01) and a table of production activity. The bottom section shows the 'Production Activity' tab with a table of production activity details. Two callouts provide context:

- Order Summary** – summarizes order level information concerning completed, reworked and labor hours
- Operation Details** – Review the production activity details at the operation level

ID	Level	ID	Description	Open Quantity	Completed	Rejected	Reworked	Actual Run Time
90017	Order	90017		8	2	0		
2106	Operatio	399	Backflush	6	4	0	0	0
2107	Operatio	30	Testing	6	4	0	0	0
2108	Operatio	20	General Assembly	0.0	10	0	0	0
2188	Operatio	10	SubA Asm / Weld	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 Point

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

ID	Level	Cum ID	Description	Processed	Rejected	Reject Queue	Scrapped	Scrapped Queue	Reworked	In Queue
90017	Order	2573								
2106	Operat	599	Backflush	8	2	2	0	2	0	0
2107	Operat	30	Testing	8	0	0	0	0	0	16
2108	Operat	20	General Assembly	24	0	0	0	0	0	6
2189	Operat	10	SubA Asm / Weld	30	0	0	0	0	0	0
2190										

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

Manage Orders

Click For Next Point

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



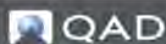
The slide above depicts the difference in the repetitive and discrete order processing when managing orders.

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?

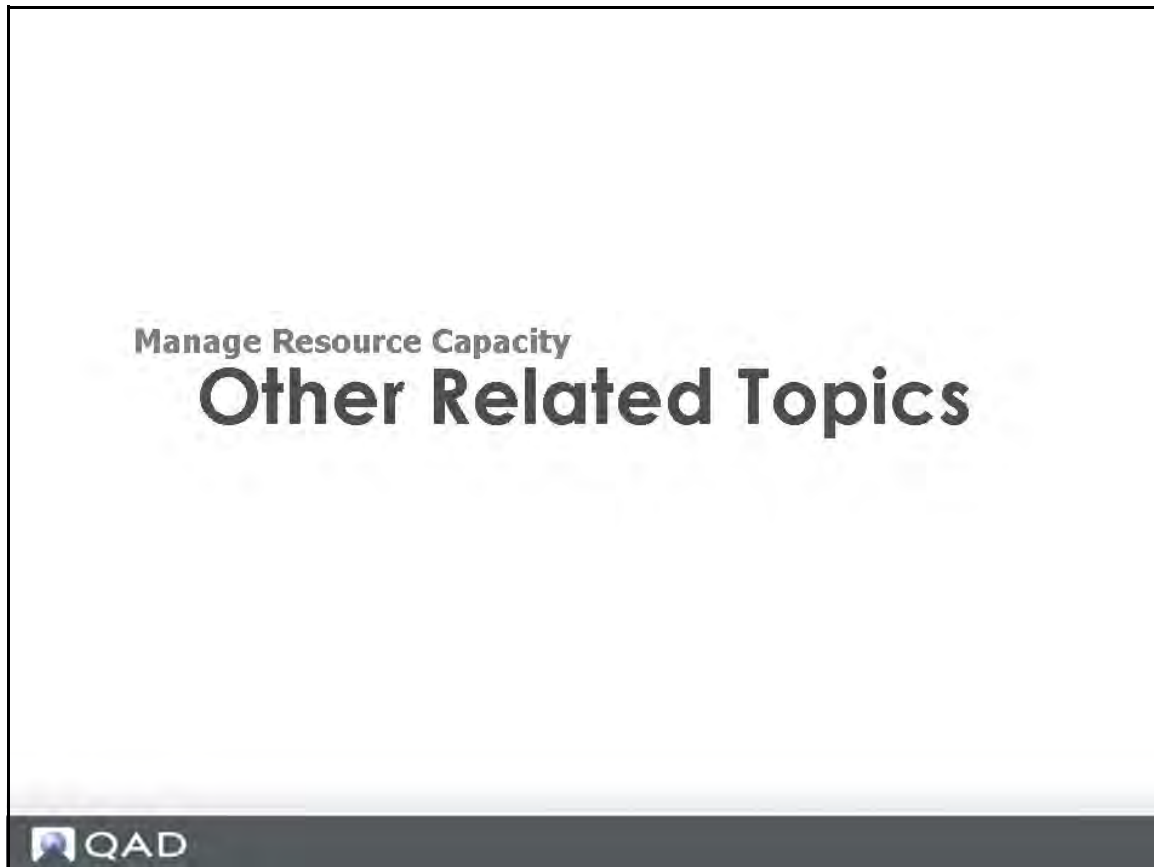
Questions

- 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

