

# Maximo Scheduler Overview

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# Speakers



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Feel free to email me any time with  
any questions!

# Topics

- What is Maximo Scheduler?
- Facility Management use cases
- What data do I need to get started?
- Scheduler enhancements in Maximo Application Suite
- Maximo Optimizer
- Demo
- Helpful Links

# What is Maximo Scheduler

Maximo Scheduler is a toolset of applications to help you with **scheduling** (when will the work be completed) and **assigning** work (who will do the work)

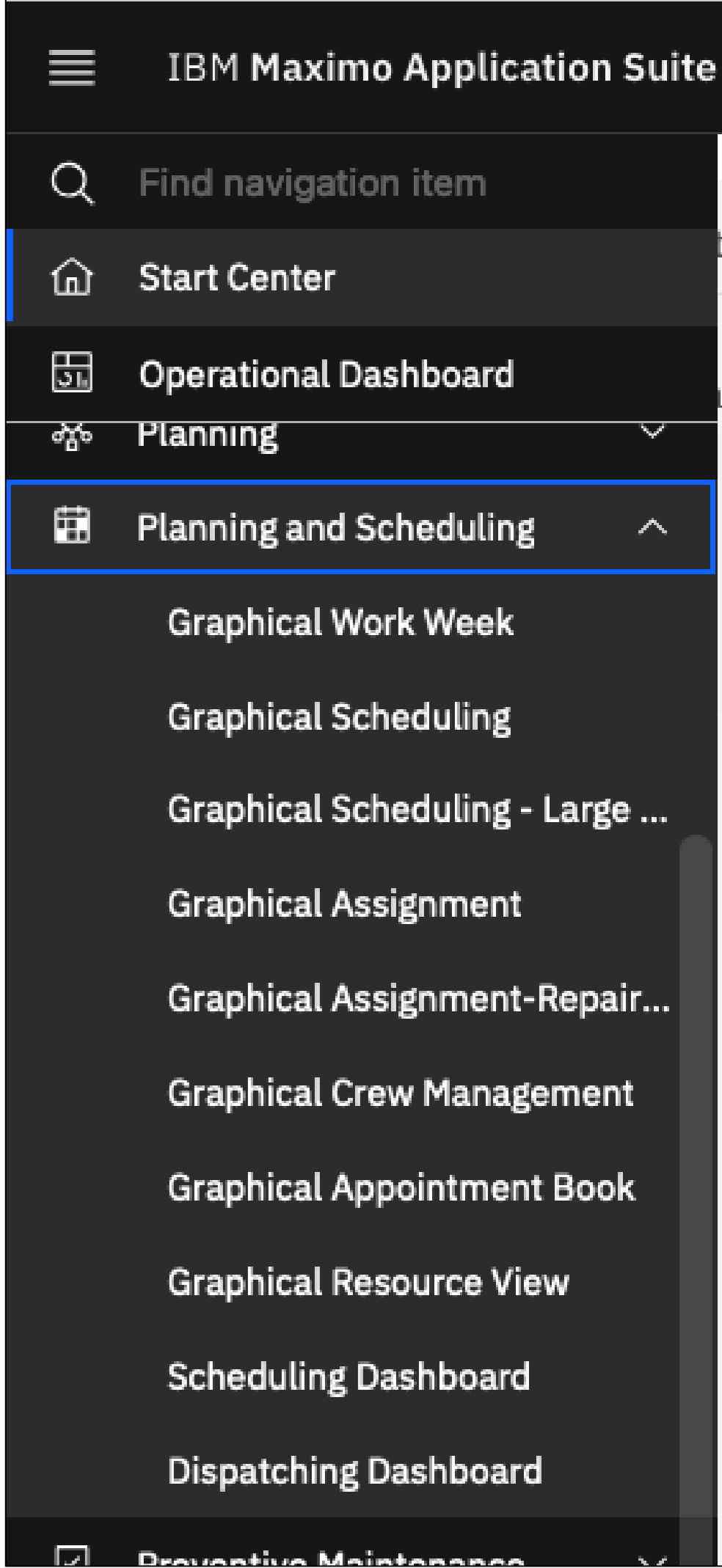
Maximo Scheduler includes multiple applications that are available within Maximo Manage, there is no integration

Not all applications will be used by your company nor need to be used – you use the applications you need based on your processes (see use cases section)

Maximo Optimizer can be used with Maximo Scheduler (Graphical Scheduling, Graphical Scheduling – Large Projects, Graphical Assignment, Scheduling Dashboard, Dispatching Dashboard) to automate scheduling and assigning work

# Maximo Scheduler Applications

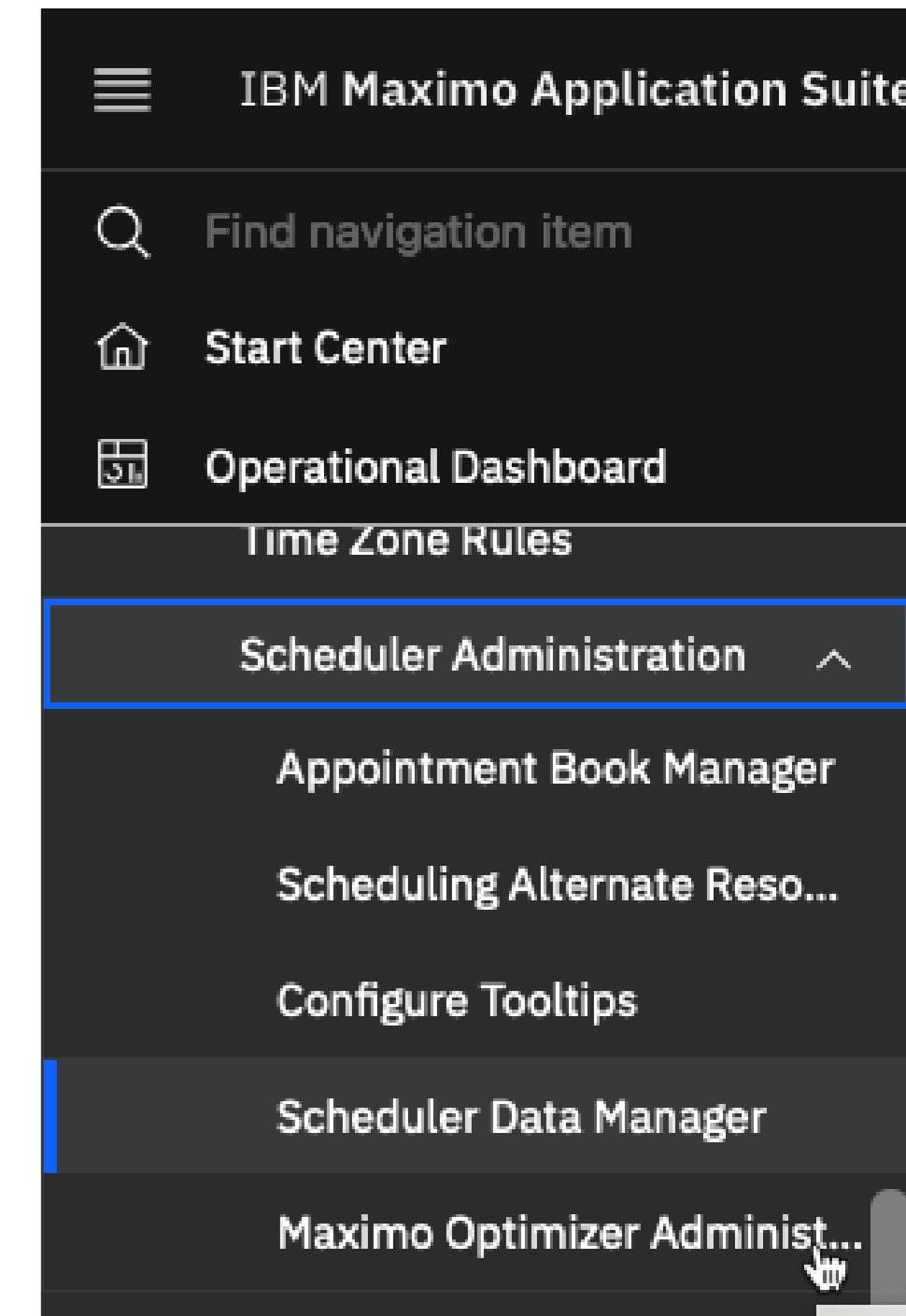
Application	Purpose
Graphical Scheduling	Schedule work orders – great for mid term resource load leveling, short term resource load leveling if you don't assign to labor and small projects (less than 3000 rows). You can also visualize PM Forecasts in a separate schedule or the same schedule as work orders. If PM forecasts aren't locked and not floating, you can also load level forecasts.
Graphical Scheduling - Large Projects	Schedule a very large volume of work orders – great for projects, turnarounds
Scheduling Dashboard	Use optimization to schedule work orders and manage scheduling issues
Graphical Assignment	Dispatch work orders – this application updates the assignment on work orders but is much more focused on exact time of day work will be done
Graphical Work Week	Assign work orders – this application uses the same tables as Assignment Manager. The assignments on work orders are updated. This application is focused on assigning enough work in a day based on how many hours a day a resource has – not as focused on exact time. Great for facilities, plants, etc
Dispatching Dashboard	Use optimization to dispatch work orders and manage emergency work orders – great for field service dispatching
Graphical Resource View	Manage modified availability for your Labor and Crews in a monthly view – add overtime and time off, meetings, etc
Graphical Crew Management	Daily and weekly view of your crew make-up with color coding to show if there is an issue with the assignment for a crew position, e.g. person isn't available, wrong craft skill assigned – you can drag and drop to assign resources to positions on crew in a daily view
Graphical Assignment – Repair Facility	Plan the need for a repair location on your work order and use this application to assign which repair location the work will be completed in, e.g. a bay in a garage. Great for rolling assets like trains, aircraft, buses, etc
Graphical Appointment Book	Schedule appointments on existing work orders or create new work orders and schedule appointments, e.g. a meter install work order requires an appointment window with a customer





# Maximo Scheduler Administration Applications

Application	Purpose
Appointment Book Manager	Use this application to set up your appointment books. This includes the Job Plans, Appointment Windows, number of appointments and exceptions. You must set up a record here first before you can use Graphical Appointment Book.
Scheduling Alternate Resources	Use this application to define how many Craft and Crew Types you have for each shift. You can also define date ranges if number of resources change over the time period of the schedule, e.g. a turnaround. You use this functionality when you don't use true availability of Labor and Crews with Calendars and Shifts in Maximo. This works well for Contractors. You can link to the application by right clicking on the resource in the lower left quadrant in Graphical Scheduling or go this application directly. You must indicate on a schedule setup that you are using alternate availability.
Configure Tooltips	You can configure the content that is displayed in the tool tips that are accessible when you Alt left click on a bar in the Scheduler applications.
Scheduler Data Manager	Use this application to validate that your data is ready to be scheduled and assigned. You can access it using the detailed menu next to the schedule ID directly from the Scheduler applications or you can go to the application separately
Maximo Optimizer Administration	You can navigate directly from the MAS Suite Navigator or by clicking this link. This is the optimizer console that shows you status of jobs, lets you download the data sent and the solution data. It's useful for troubleshooting.



# I generate my PMs monthly and want to assign them to the person who will complete them

Solution: use Graphical Week Week

PMs are generated with a Target Start and Finish Date already

Simply double click in the cell of the Labor record who you want to assign them too if you want to move dates around or just double click on name of the Labor record to assign them on the same date they are targeted

When you assign work in Maximo, the scheduled dates are also updated (set mxe.skd.syncwodates System Property to 1 to keep assignment and scheduled dates in sync)

The screenshot displays the IBM Maximo Application Suite interface for managing work tasks. The main window is titled "Graphical Work Week" and shows a list of tasks with columns for Work, Task, Description, Duration, Resource, Status, Start Date, End Date, Location, Start No Earlier Than, and Finish No Later Than. The tasks listed include "Overhead Door Preventive 2:00" and "Electric Cart/Forklift Inspe 1:00". The status of these tasks is either "ASSIGNED" or "WAITASGN".

Below the task list, there is a resource allocation table with columns for Resource, Description, Allocatio, Skill Level, Shift, Crew Work Gro, Work Locati, and Work Zon. The resources listed include "ELECT" (Electrician), "BCHAPMAN" (Brian Chapman), "PPAN" (Peter Pan), "MECH" (Mechanic), "JGREEN" (Janet Green), "MDOWD" (Matt Dowd), "SABRINA" (Sabrina), "SPATIL" (Santosh Patil), and "TPEARSON" (Todd Pearson).

On the right side of the interface, there is a Gantt chart for the week of October 13-19, 2024. The chart shows the duration of each task on a timeline, with bars representing the work periods. The tasks are color-coded by resource: blue for Electrician, green for Mechanic, and purple for Electrician. The chart also shows the total duration for each day, with some days having a total duration of 0:00:00.

I don't assign work to an individual labor record in Maximo. I know who will complete the work because it's coded with the correct group in the responsibility section. I simply want to resource load level and schedule what week the work will be completed.

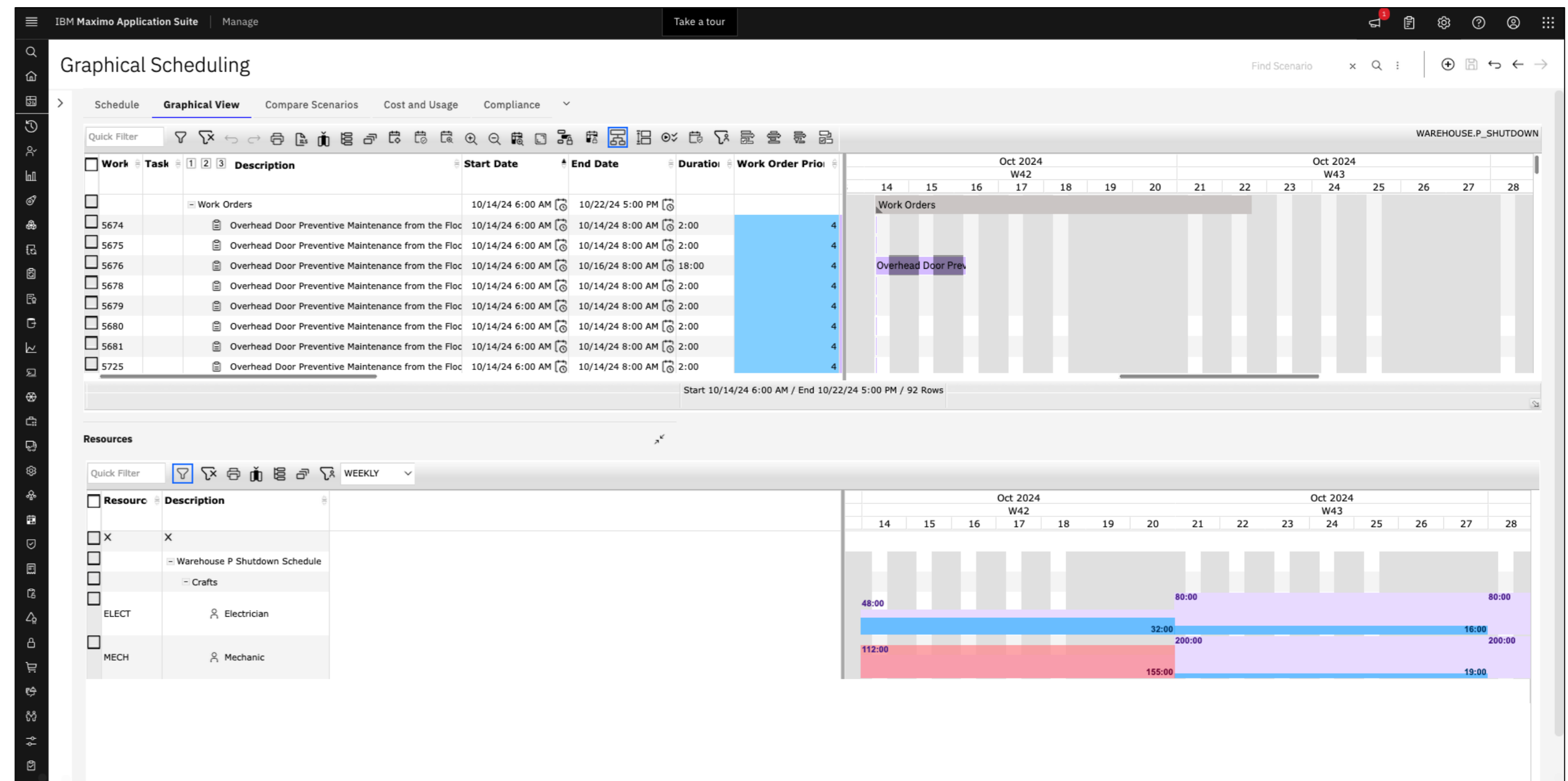
Solution: use the Graphical Scheduling application and define Alternate Resource Availability and when ready use the Scheduling Dashboard with Optimizer

You can move work orders around and commit to update the Scheduled Start Date and Finish Date of the work orders. Use these date fields in saved queries to show all work scheduled in a week.

Resource Load vs Availability is displayed in a shift, daily, weekly or monthly bucket

Alternate availability doesn't require you to maintain labor records with calendar/shift – you can simply define how many of each resource type you have on a shift, e.g. 5 Technicians

When you are comfortable, try using the Scheduling Dashboard with Optimizer to automate scheduling work based on your goals, e.g. complete highest priority work first, schedule work during location maintenance windows only and schedule to 70% of availability. You can review the suggestions, make manual tweaks and Publish.





# Several folks I supervise will be in an all-day training on the last Friday in October and I want to remove availability

Solution: use Graphical Resource View

Standard availability is defined with the Calendar/Shift

Modified availability can include additional working time or non-working time

The modified availability codes are managed in a synonym domain and can be tailored

Full days, full weeks or partial days can be modified quickly for 1 or more resources

The screenshot displays the IBM Maximo Graphical Resource View interface. The main area shows a calendar grid for October 2024, organized by weeks (W40 to W44). The grid columns represent days of the month (1-31), and rows represent resources. The resources listed are: Electrician (Brian Chapman, Peter Pan), Mechanic (Janet Green, Matt Dowd, Sabrina, Santosh Patil, Todd Pearson), and Service Technician (Lacey Lurges). The grid cells contain availability codes: '16' for Electricians, '40' for Mechanics, and '8' for Service Technicians. A 'Partial Day' is indicated for Janet Green on October 18th. The interface includes a sidebar with navigation and action buttons, a top navigation bar with search and filter options, and a 'Quick Filter' section with 'EXTRA TIME' and 'Partial Day' dropdowns.

# I want to manage my construction project schedule

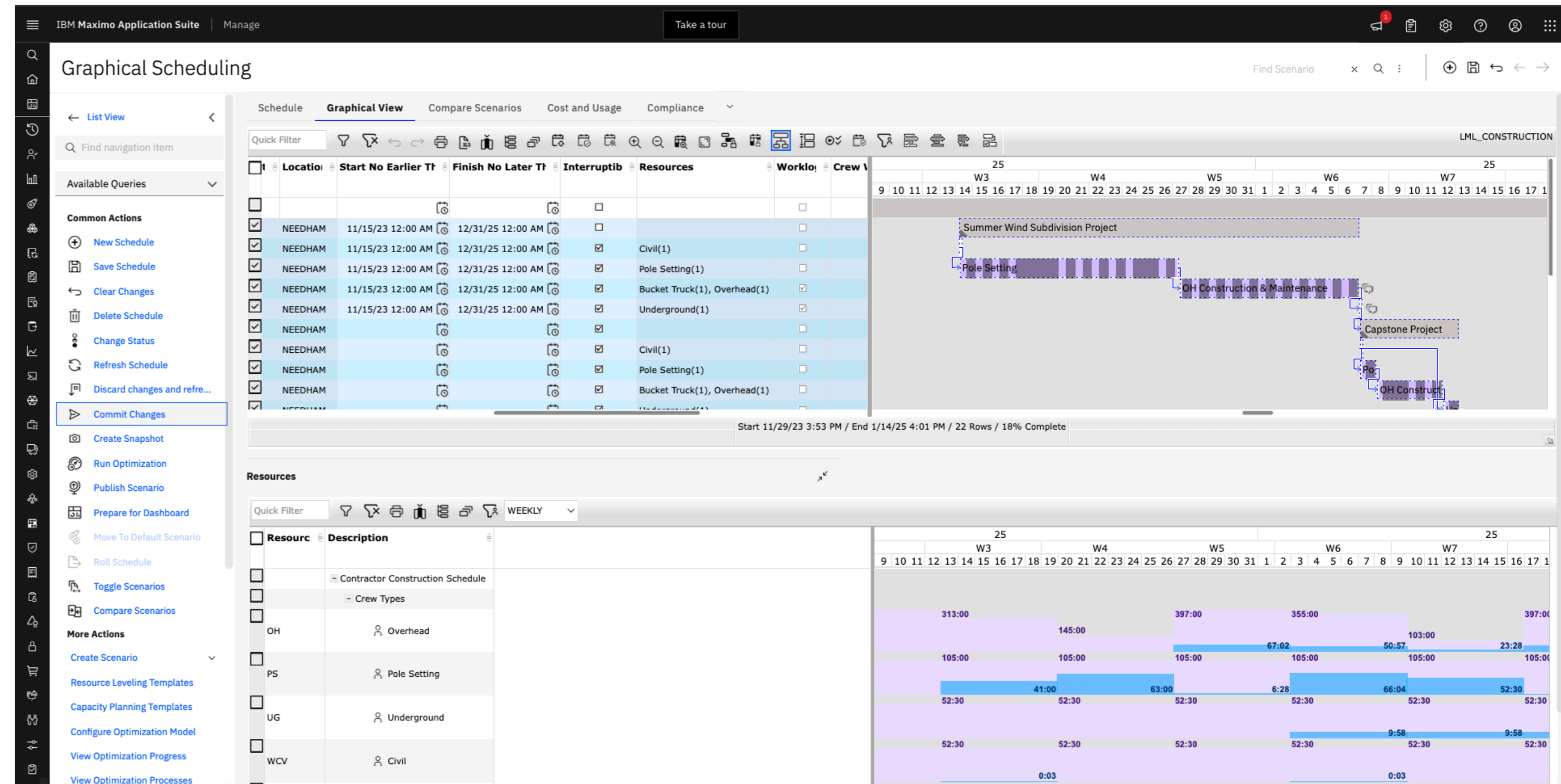
Solution: use Graphical Scheduling (or Graphical Scheduling Large Projects if 10s of thousands of records)

Manage predecessors /successors with lead and lag

Run CPM with forward and backward pass

Run optimization

Manage percent complete



I am a dispatcher and am responsible for dispatching work across an entire region of stores. I need to manage emergencies as well.

Solution: use the Dispatching Dashboard and Graphical Assignment

The screenshot shows the 'Graphical Assignment' interface in IBM Maximo. The main view is a grid for scenario 'NAP\_DEMOS (SS1010)'. The grid has columns for days 6 through 17, with each day having a 0-30 minute scale. Resources are listed on the left, including 'Crafts' (MTRTECH), 'Field Service Represent' (FSR), and 'Distribution Line Crew' (DLINE). Tasks are represented by colored bars: green for 'CIS, Meter Removal(MTRTECH)', 'CIS, Meter Test(M)', and 'CIS, Smart meter Install, Change, In'; purple for 'CIS, Turn-Off of S' and 'CIS, Transfer of S'. A 'Quick Filter' bar is at the top of the grid.

The screenshot shows the 'Dispatching Dashboard' for 'NAP\_DEMOS5 schedule'. It includes a 'Gantt chart' and a table of resource utilization. The Gantt chart shows a timeline for Wednesday 16th October 2024 with tasks represented by colored bars. The table lists resources and their utilization percentages.

Resource	Resource type	Shift	Utilization
X	mtrtech	X	X
Lacey Lurges	MTRTECH	DAY	95.31%
Brian Edens	MTRTECH	DAY	92.19%
Dan Green	MTRTECH	DAY	95.31%
Mike Meters	MTRTECH	DAY	96.88%

# Work Order Duration

The screenshot displays the IBM Maximo Application Suite interface for Work Order Tracking. The main content area is divided into two sections: "Scheduling Information" and "Follow-up Work".

**Scheduling Information:**

- Target Start: 8/19/24 7:00 AM
- Actual Start: [Empty]
- Target Finish: [Empty]
- Actual Finish: [Empty]
- Scheduled Start: 10/14/24 7:32 AM
- Duration: 4:00** (highlighted with a red arrow)
- Scheduled Finish: 10/14/24 11:32 AM
- Time Remaining: [Empty]
- Start No Earlier Than: [Empty]
- Predecessors: [Empty]
- Finish No Later Than: [Empty]
- Include Tasks in Schedule?: [Off]
- Requires Asset Downtime?: [Off]
- Requires Asset Maintenance Window?: [Off]
- Requires Location Downtime?: [On]
- Requires Location Maintenance Window?: [Off]

**Follow-up Work:**

- Percent complete by actual hours: [Empty]
- Originating Record: [Empty]
- Percent complete by tasks completed: [Empty]
- Originating Record Class: [Empty]
- Physical percent complete: [Empty]
- Has Follow-up Work?: [Off]
- Qualifications: NONE
- Interruptible?: [On]
- Qualifications Required?: [Off]
- Interruptible shift: [Empty]
- Is Milestone?: [Off]

**Responsibility:**

- Reported By: LLURGES
- Supervisor: [Empty]
- Owner: [Empty]
- Reported Date: [Empty]
- Crew: [Empty]
- Owner Group: [Empty]

A notification banner at the top right states: "BMXAA4205I - Record has been saved." The interface includes a top navigation bar with "IBM Maximo Application Suite" and "Manage" options, and a left sidebar with various tool icons.



# Planned Labor Hours

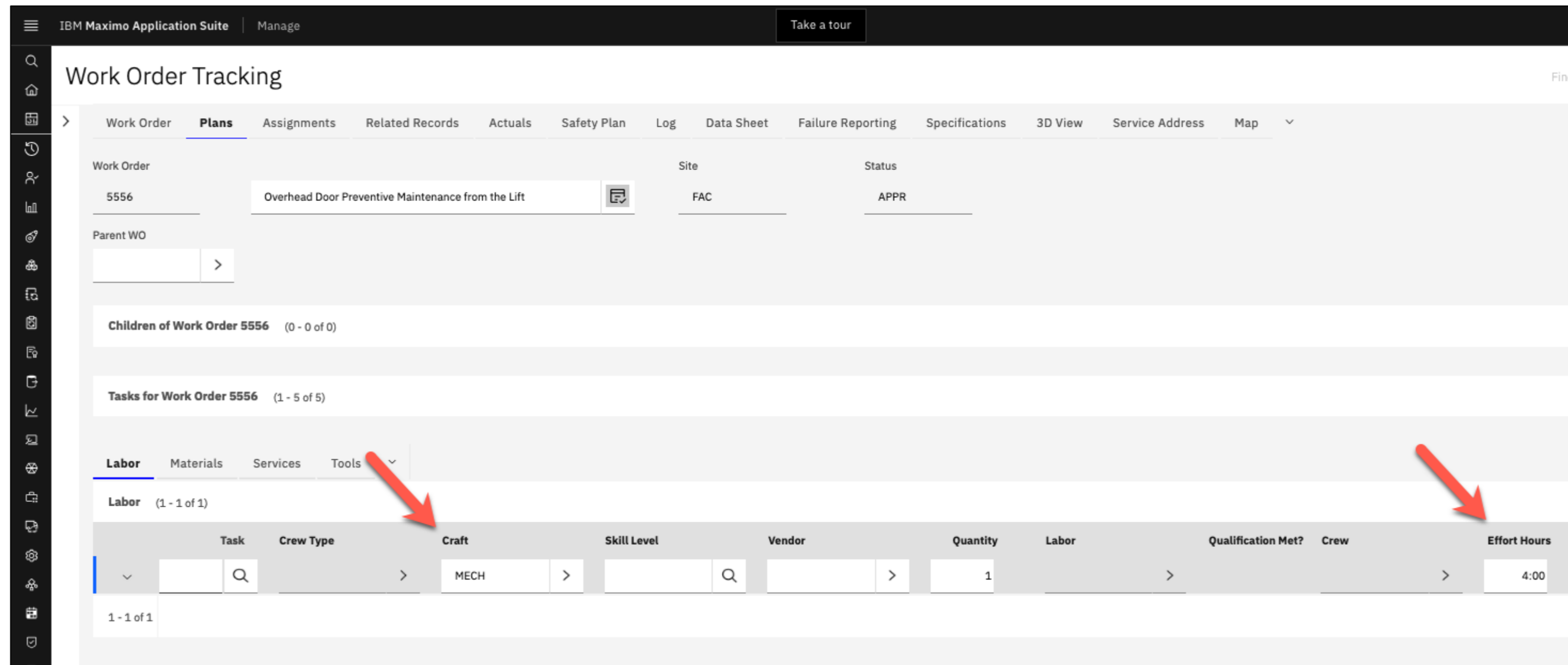
Plan Craft or Crew Type hours on the Work Order Plans tab on the Labor Sub tab

You need to create your Crafts in the the Crafts application and Crew Types in the Crew Types application first

Labor plans can be templated on a Job Plan

Effort Hours is NOT the same thing as the Duration field on the work order although frequently the value is the same. You need to populate both.

When you plan Labor hours, a row is added to the Assignments table that is in WAITASSN status. This is where you assign Labor or Crews.



# Labor Records

- If you want to see Resource Availability data and assign work orders using Graphical Assignment or Graphical Work Week, you need to create Labor records in the Labor application that include:
  - Craft
  - Calendar/Shift (create first in the Calendars application)
- You can populate an additional field on the Labor record like Crew Work Group as an additional filter field that can be used to narrow down the list of Labor records available in the Scheduler applications

The screenshot displays the IBM Maximo Application Suite interface for the Labor application. The main header shows 'IBM Maximo Application Suite | Manage' and a 'Take a tour' button. The page title is 'Labor'. Below the title, there are tabs for 'Labor', 'Crafts', 'Qualifications', 'Work Zones', and 'Map'. The 'Labor' tab is active, showing a record for 'Peter Pan' with the organization 'EAGLENA'. Below this, there is a table for 'Crafts' with one entry: 'ELECT' (Electrician) with a rate of 17.00. The interface includes a sidebar with navigation icons and a top navigation bar.

Craft	Description	Skill Level	Vendor	Contract	Rate	Default?	Inherit?
ELECT	Electrician				17.00	<input checked="" type="checkbox"/>	<input type="checkbox"/>

# Other Work Order fields to understand

- Target Start / Target Finish
- Scheduled Start / Scheduled Finish
- Start No Earlier Than / Finish No Later Than
- Include Tasks in Schedule
- Requires Asset Downtime / Requires Location Downtime / Requires Asset Maintenance Window / Requires Location Maintenance Window
- Duration
- Predecessors
- Include Tasks in Schedule
- Percent complete by actual hours/ Percent complete by tasks completed / Physical percent complete
- Qualifications / Qualifications Required (new in 9.0)
- Interruptible / Interruptible Shift
- Is Milestone

# Other Task fields to understand

Task can be informational only or can be schedulable – this is controlled by the Include in Schedule checkbox - the other fields are only applicable if you are treating tasks as schedulable

- Target Start / Target Finish
- Scheduled Start / Scheduled Finish
- Start No Earlier Than / Finish No Later Than
- Requires Asset Downtime / Requires Location Downtime / Requires Asset Maintenance Window / Requires Location Maintenance Window
- Duration
- Predecessors
- Include Tasks in Schedule
- Percent complete by actual hours/ Percent complete by tasks completed / Physical percent complete
- Qualifications (new in 9.0)
- Interruptible / Interruptible Shift
- Is Milestone



# Other Assignment fields to understand

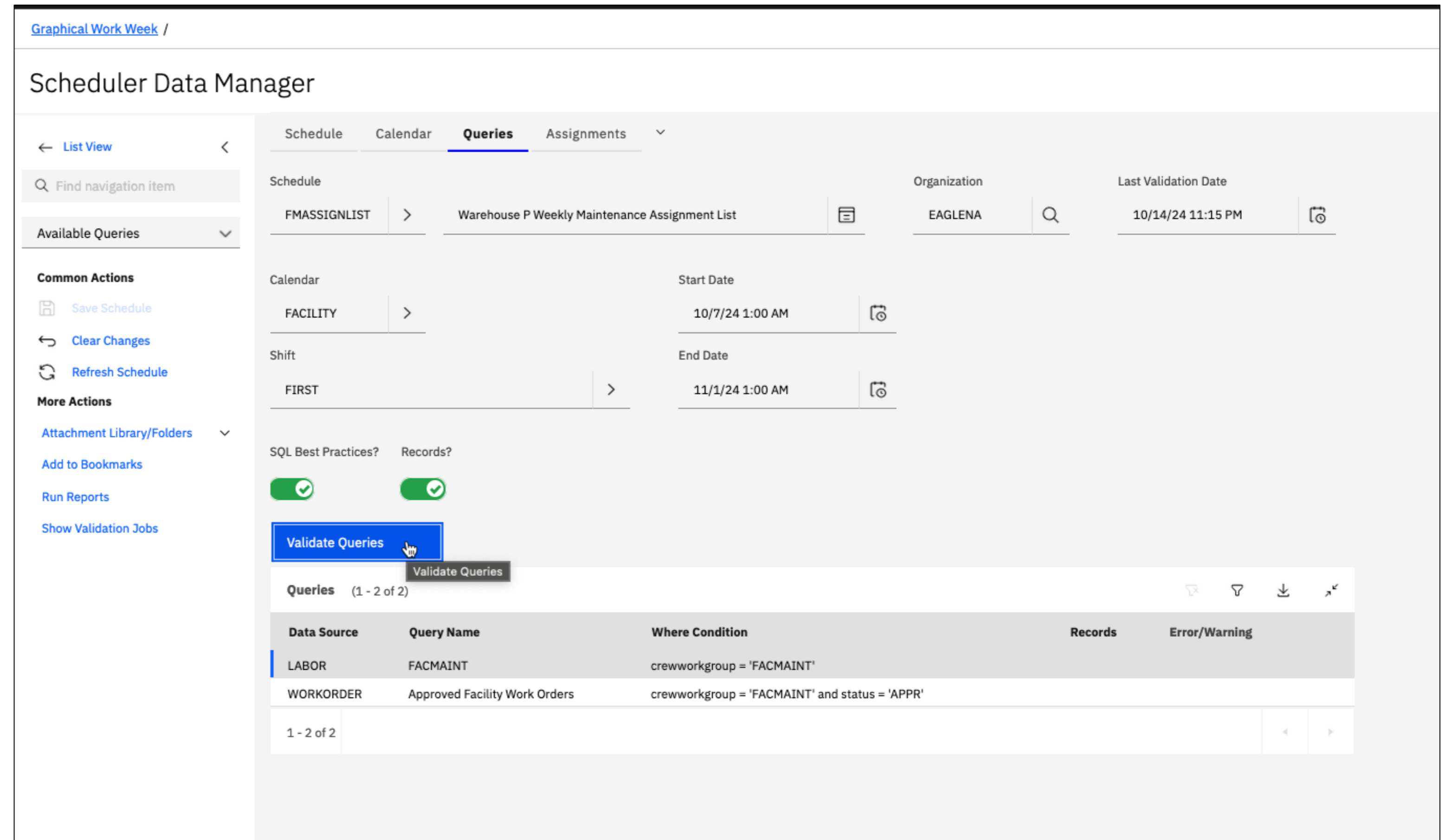
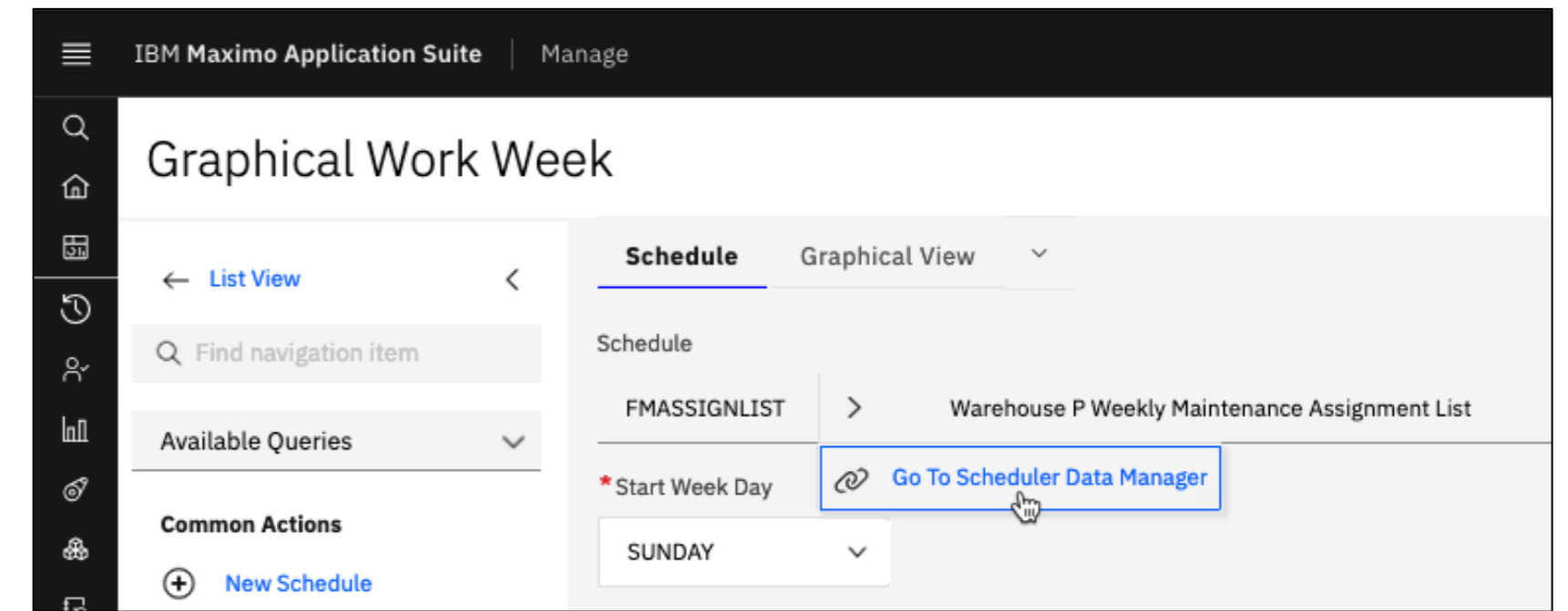
These fields are important if you will assign/dispatch work to a Labor or Crew using Graphical Work Week or Graphical Assignment with the Dispatching Dashboard

- Craft / Skill Level
- Crew Type
- Labor
- Crew
- Scheduled Start / Scheduled Finish
- Hours
- Status
- Appointment Required
- Schedule Lock
- Resource Lock
- Work Zone

# Scheduler Data Manager

Validate the readiness of your data to schedule and assign using Scheduler Data Manager

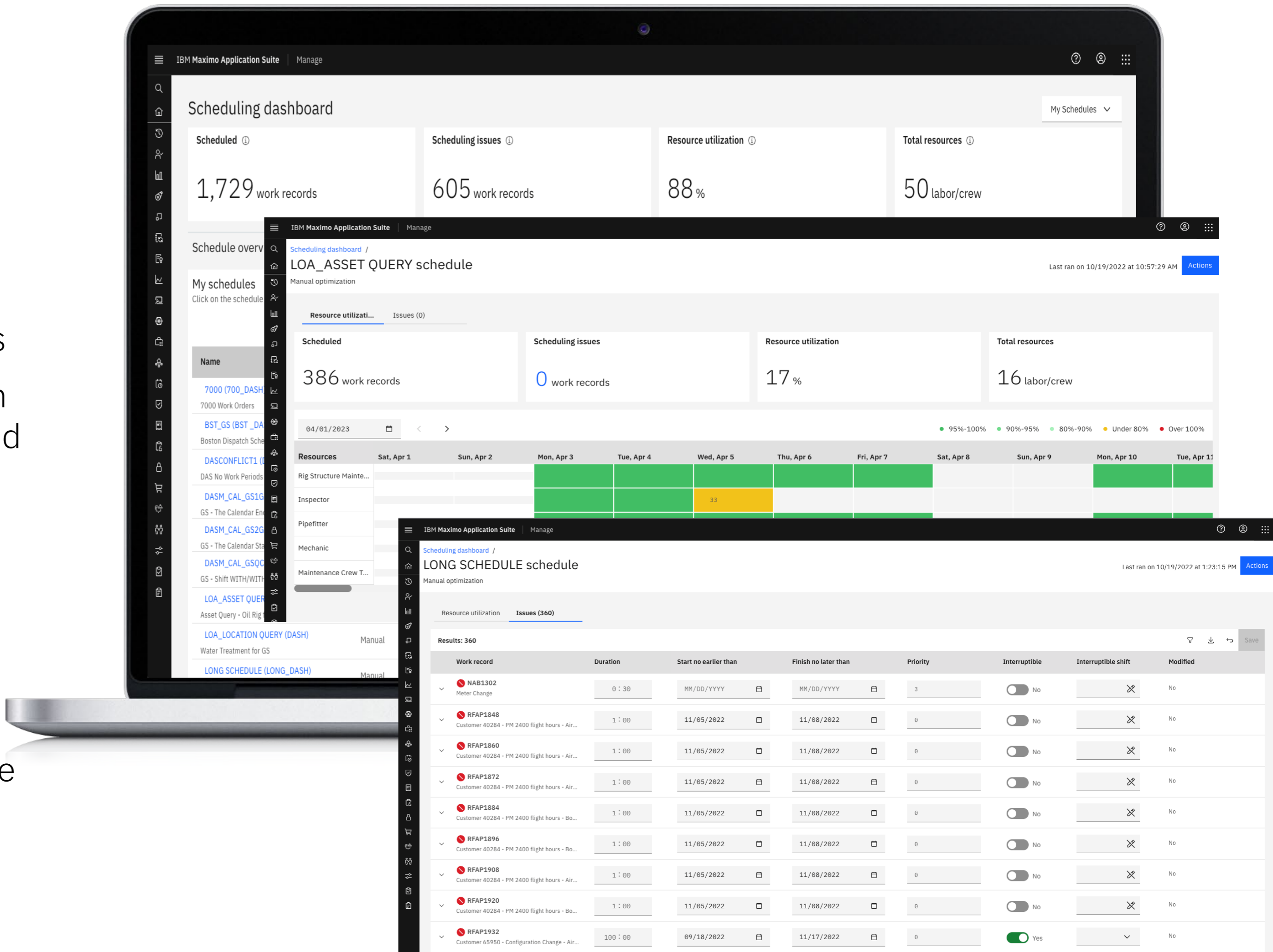
Different tabs appear (conditional UI) depending on which application you are validating data for, e.g Graphical Scheduling vs Graphical Work Week



# Modernized Experience: Scheduling Dashboard (8.10 / 8.11)

The dashboard is a holistic view of schedules, based on Optimization KPI's, indicating areas requiring scheduler's attention with navigation to detailed records.

- Auto Optimization or Optimization initiated by the scheduler using configurable parameters. The results of the optimized schedules are shown by numerous KPI's that can be configured.
- Resource load and availability is presented as a heat map, indicate areas of concern and drive attention where user needs
- Schedule issues list work records with the errors or warnings in a table that allows the user to fix inline and run optimization and check new results
- Ability to Refresh at scenario level and bring new work into schedule from a backlog
- Leverages existing objects and methods of core applications. Ability to navigate to classic applications for details and additional modifications when necessary
- Based on the same Maximo Application Framework and flexible to configure using Configuration Tool, same experience as Mobile applications

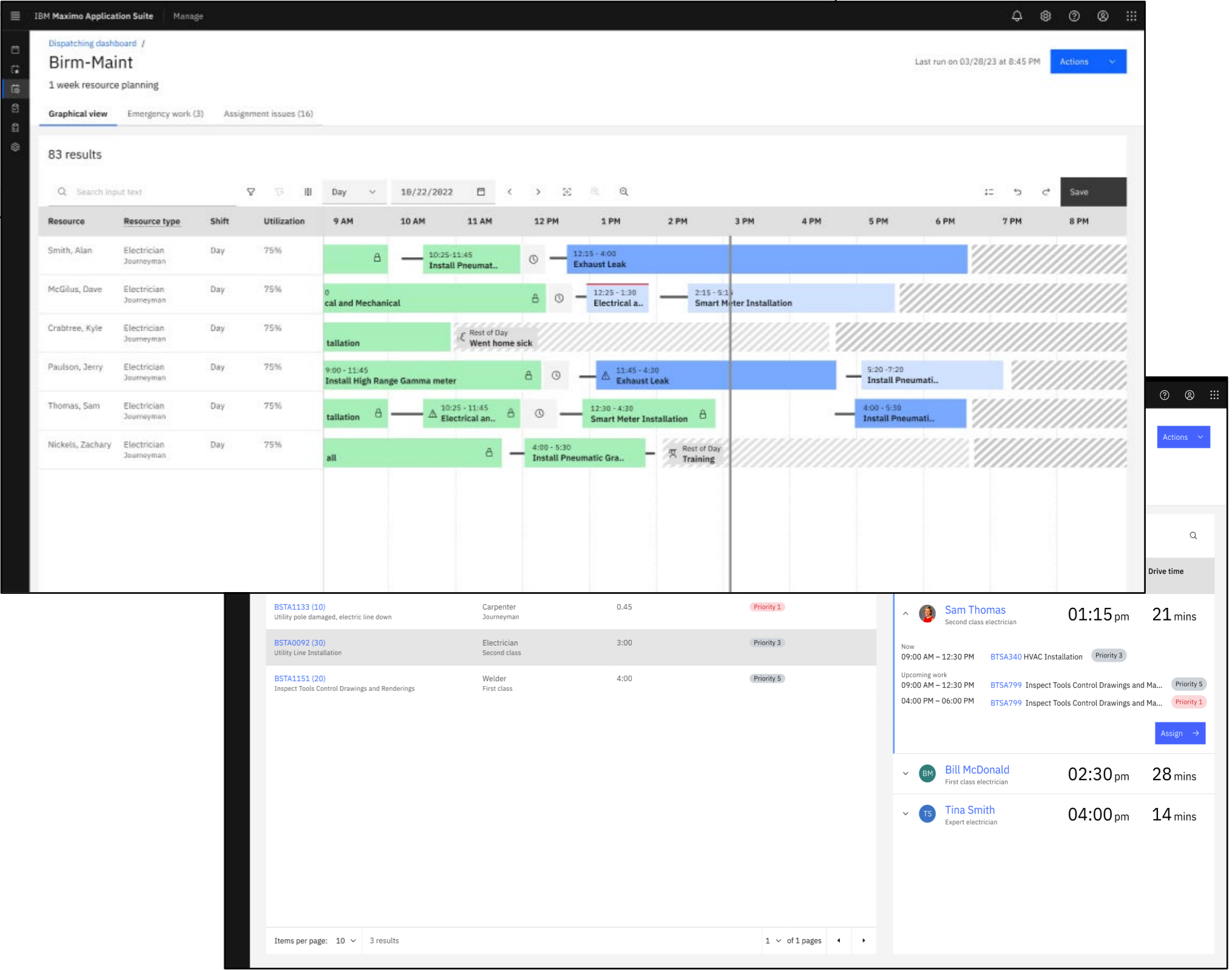
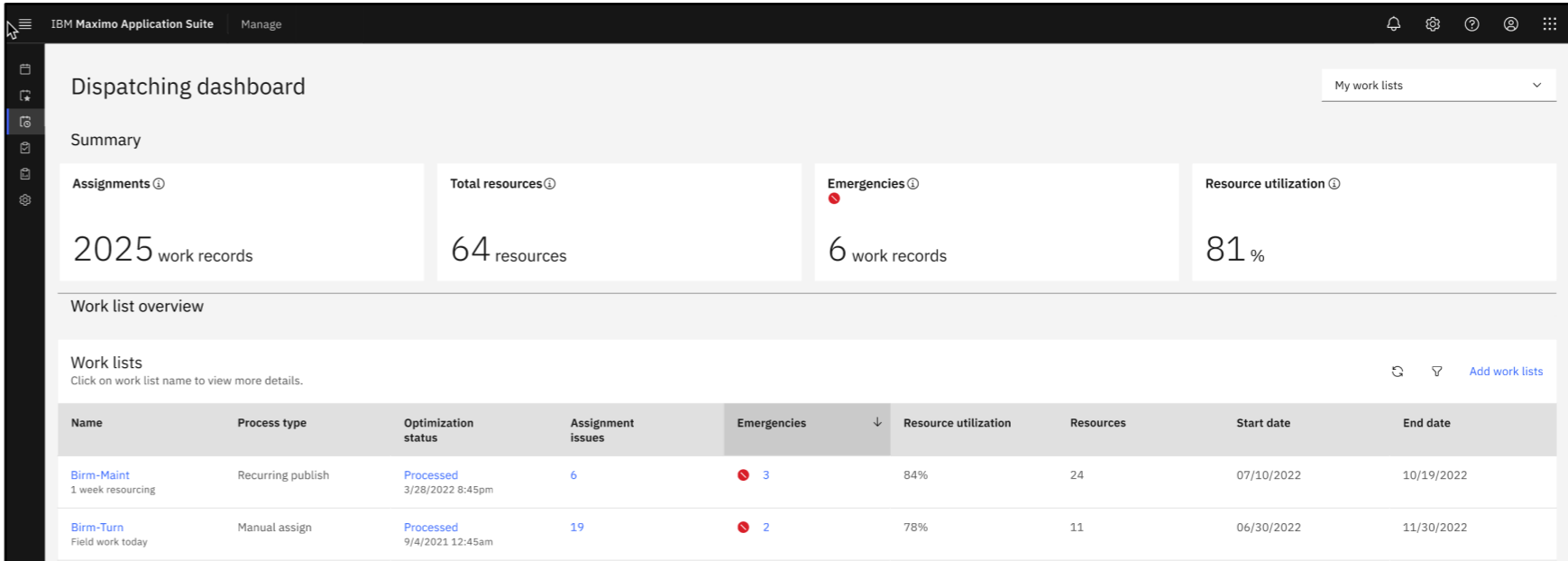




# Modernized Experience: Dispatching Dashboard (9.0)

The dashboard is a holistic view indicating areas requiring attention with navigation to schedule

- Rule based optimization can be initiated by the user or scheduled as specific times using configurable parameters. The results of the optimized assignments are presented as KPIs in graphical timeline or map.
- Emergency work top recommendations presented to the user to make informed decisions to assign on the right person considering various factors such as skill, travel time and current assignments.
- Timeline interactive view allows the dispatcher to monitor work status as the day progresses and indicates areas requiring attention.
- Integration with Maximo Mobile to support capture of real time updates from Technicians in the field.



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# Key workflow: Emergency Recommendation

Customer defined emergencies are identified and can be intelligently assigned to the best resource at the correct time through a simple workflow

## Steps:

- Dispatcher can see unassigned emergencies for each schedule / dispatch from the Dispatching dashboard
- Dispatcher enters Emergency Workflow directly from dashboard
- For each emergency, Dispatcher is provided list of capable Resources sorted by the resource that can arrive the earliest to perform the emergency work
- Dispatcher chooses the best resource and clicks the Assign button

The screenshot displays the IBM Maximo Application Suite interface for 'Birm-Maint' with '1 week resource planning'. The 'Emergency work (3)' tab is active, showing a table of unassigned work items. The first item, BSTA1133 (10), is selected, and a dropdown menu is open showing 'Assigned (11)'. The table columns are Resource type, Duration, Priority, Asset, and Location. To the right, the 'Resources for BSTA1133 (10)' panel shows a list of recommended resources: Sam Thomas (Second class electrician) at 1:15 PM (00:21), Bill McDonald (First class electrician) at 2:30 PM (00:28), and Tina Smith (Expert electrician) at 4:00 PM (00:14). The interface also shows today's assignments and an 'Assign' button.

Resource type	Duration	Priority	Asset	Location
Electician	0:45	1	11210	CONF400
Carpenter Journeyman	3:00	2	61001	
OHL Crew	4:00	2	A6001	OFF301

Resource	Time	Duration
Sam Thomas Second class electrician	1:15 PM	00:21
Bill McDonald First class electrician	2:30 PM	00:28
Tina Smith Expert electrician	4:00 PM	00:14

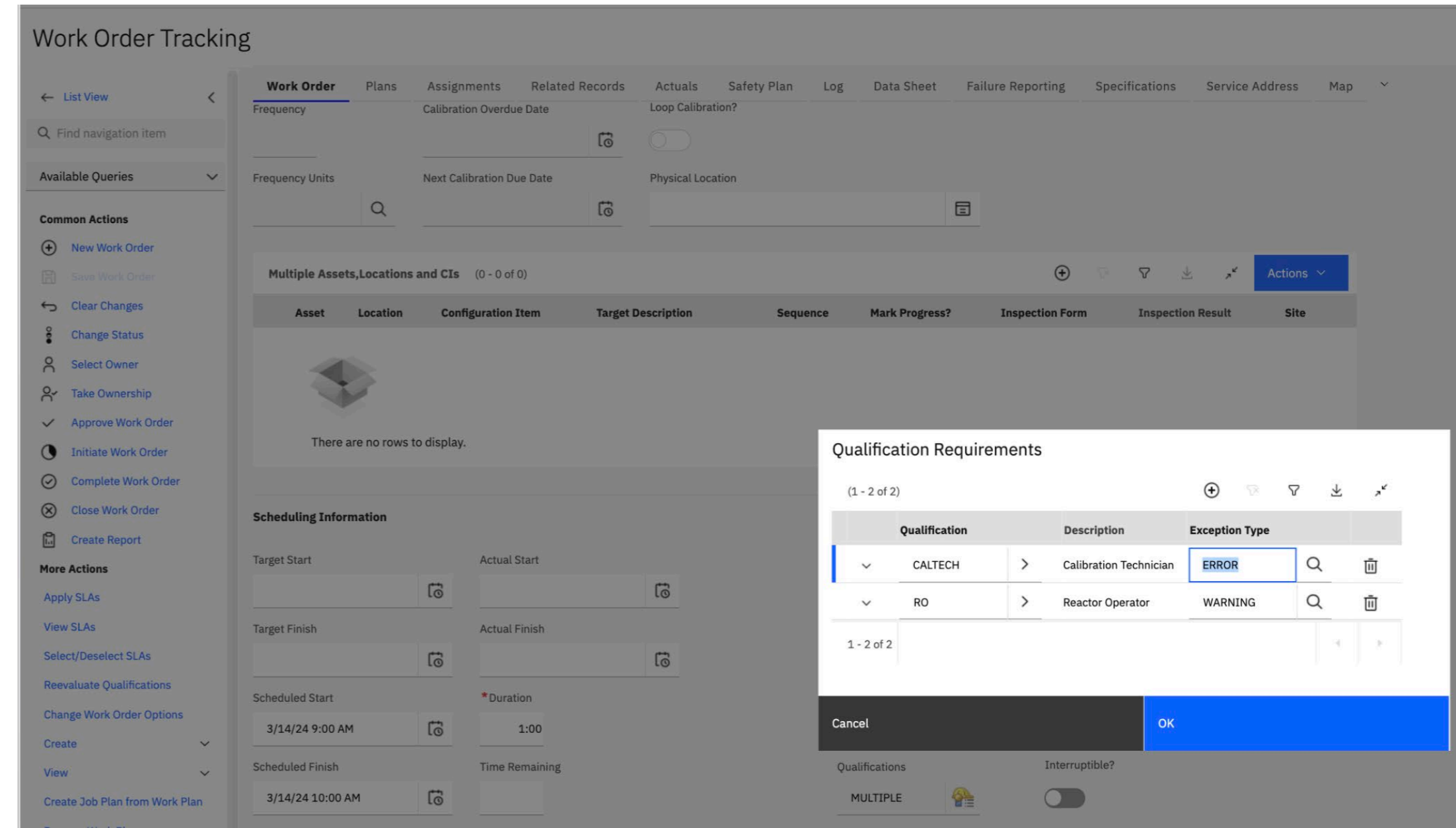
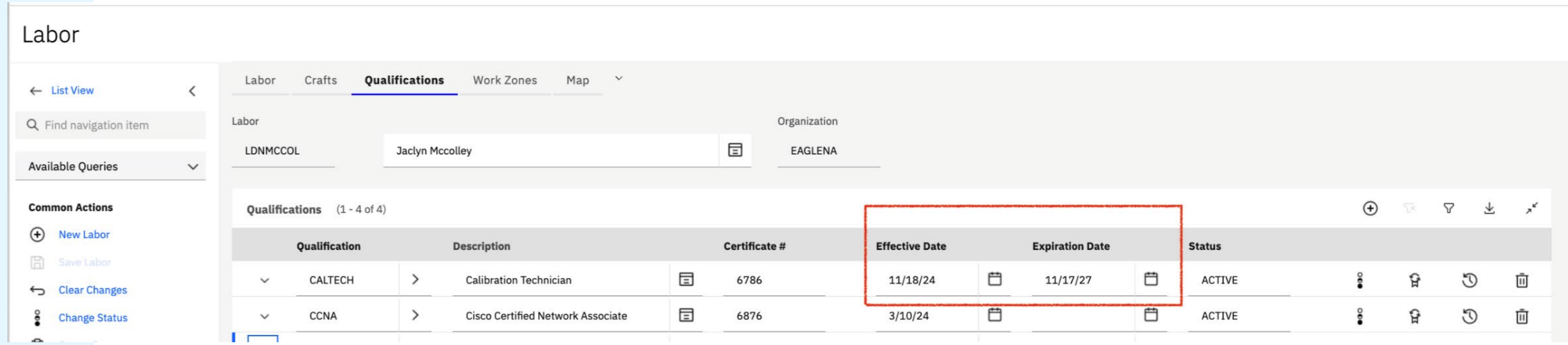
# Qualifications

Qualifications can now be considered during Assignment and Dispatching

- Part of JobPlan and WorkOrder

Maximo Optimizer considers:

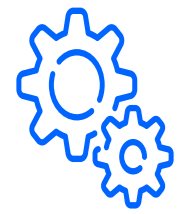
- Labor qualifications with effective and expiration dates
- Qualification requests at workorder / task level with a type of ERROR, WARNING, SILENT
- Hard constraint or preference
- MO report alerts for incompatibilities or violations



Severity	Alert type	Message
Error	woIssue-SCHEDWINDOW-FNL-LCK	Operation ASSIGNMENT LDNA1184(CARP) has an incompatible schedule locked end date 2023/11/14 10:15 that occurs before the start date for the schedule.
Error	NoCompatibleResourceForTask	No compatible resources for ASSIGNMENT LDNE1162(MECH) level 1 causes: Qualification CALTECH/POWER+Qualification POWER
Warning	ConsiderAllNonInterruptibleAvoidOvernight	All assignments are considered non-interruptible, reject any overnight split (to allow it, set MODEL parameter avoidSpatialOvernightSplit=false).
Info	UnScheduledTaskNumber	Total unscheduled task number is: 1
Warning	MissingQualification	Qualification request RO not met for ASSIGNMENT LDNA1223(MECH) on LABOR_LDNMCCOL - WARNING

# Maximo Optimizer Overview

Maximo Optimizer helps enterprises automate planning, scheduling & dispatching



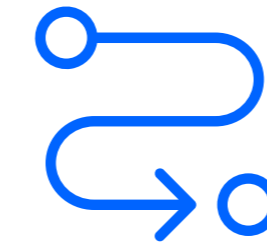
## Speed up decisions at scale

- Service to manage the deployment of optimization models and engine to execute optimization jobs on RedHat OpenShift
- Embeds market leading ILOG® CPLEX®/CPO optimization libraries
- Quickly get a feasible solution (meeting business constraints), improve further based on KPIs
- Automate schedule generation, intra-day rescheduling, repair



## Improved quality of decisions

- Optimization models available out-of-the-box (Planning, Scheduling, assignments..)
- Considers numerous business rules & constraints
- Manage trade-offs between competing objectives
- Allow what-if analysis



## Collaboration and Extensibility across the enterprise

- Add-on to MAS (Maximo Application Suite)
- Pre-integrated with Maximo Manage and Health, Predict-Utilities
- Allows multiple planners, supervisors to collaborate on optimization scenarios and re-optimize
- Model configuration/parametrization and customizations, incorporate new business constraints, objectives, pre/post processes...
- Accept new optimization models in Java, OPL, Python



# Maximo Optimizer Model Considerations

Calendars, shifts, breaks

Task interruptible or not

Qualifications

Labor, crew availabilities

Schedule time window

Labor crew start/end address

Work order dependencies (SS, SF, FS, FF, in sequence, in parallel, lead/lag...)

Labor crafts and skills

Actuals, locked/existing assignments

Rotating tools

## Business rules

- Availability
- Cost
- Safety
- SLA
- Preferences

Work order priorities

Minimize turn around time

Work zones

Maximize sheduled work

Location/Asset maintenance schedule

High priority first

Minimize plan changes

Minimize travel time

Minimize resource overuse (Capacity planning)

Minimize lateness/earliness on preferred dates

Minimize overskill, secondary work zones, secondary crafts...

**Can be extended**



Demo

# Helpful Links

Maximo Community (Library tab then navigate the tree to Main > Maximo Application Suite > Manage (EAM) > Scheduler)

[Maximo Community](#)

Documentation Center

<https://www.ibm.com/docs/en/mas-cd/maximo-manage/continuous-delivery?topic=managing-planning-scheduling-work>

YouTube Demos

[https://youtube.com/playlist?list=PLhD8h33GzoevAdjp\\_sc5TxYSS0ENKQe3d&si=nmjUYYqgCG22w5AJ](https://youtube.com/playlist?list=PLhD8h33GzoevAdjp_sc5TxYSS0ENKQe3d&si=nmjUYYqgCG22w5AJ)

# Request for Enhancement migration to AHA



## **AI Applications - Ideas Portal**

*Welcome to the idea portal for IBM AI Applications Customers*

*IBM Employees:*

*The correct URL for entering your ideas is: <https://ibm-ai-apps-internal.ideas.aha.io/>*

*Clients:*

**Shape the future of IBM!**

We invite you to shape the future of IBM, including product roadmaps, by submitting ideas that matter to you the most. Here's how it works:

**Post your ideas**

Start by posting ideas and requests to enhance a product or service. Take a look at ideas others have posted and upvote them if they matter to you,

1. Post an idea
2. Upvote ideas that matter most to you
3. Get feedback from the IBM team to refine your idea

**Help IBM prioritize your ideas and requests**

The IBM team may need your help to refine the ideas so they may ask for more information or feedback. The offering manager team will then decide if they can begin working on your idea. If they can start during the next development cycle, they will put the idea on the priority list. Each team at IBM works on a different schedule, where some ideas can be implemented right away, others may be placed on a different schedule.

**Receive notification on the decision**

Some ideas can be implemented at IBM, while others may not fit within the development plans for the product. In either case, the team will let you know as soon as possible. In some cases, we may be able to find alternatives for ideas which cannot be implemented in a reasonable time.

<https://ibm-ai-apps.ideas.ibm.com/>

Thank you



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