

# Security roles for Connected Field Service

Article • 09/13/2024

Security roles for Connected Field Service allow administrators to give appropriate access to Internet of Things (IoT) tables, including alerts, assets, devices, and commands. Add these security roles to existing Field Service security roles for field service administrators, dispatchers, and resources.

In general, access to IoT tables should mimic access to the customer asset table for field service administrators, dispatchers, and resources.

## Prerequisites

- Dynamics 365 system administrator access
- General knowledge of Field Service security roles. For more information, go to [Set up users and security roles](#).

### Note

We recommend you make copies of the Field Service security roles and assign the copied security roles to users. This prevents product updates from overwriting your custom security configurations. To copy a security role, go to [Copy a security role](#).

## Add IoT security to administrator security role

In the Power Platform admin center, give Field Service administrators full access to all IoT tables. These users need a full view of IoT alerts across all devices and be able to register new IoT devices. They're typically given a copy of the **Field Service - Administrator** security role.

If your organization is using Connected Field Service, these administrators should also be assigned a copy of the **IoT - Administrator** security role.

With fully enabled IoT administrator permissions, Field Service administrators should have access to all IoT tables, allowing them to:

- Create

- Read
- Write
- Delete
- Append
- Append to
- Assign
- Share

The following screenshot provides reference.

Entity	Create	Read	Write	Delete	Append	Append To	Assign	Share
IoT Alert	●	●	●	●	●	●	●	●
IoT Device	●	●	●	●	●	●	●	●
IoT Device Category	●	●	●	●	●	●	●	●
IoT Device Command	●	●	●	●	●	●	●	●
IoT Device Command Definition	●	●	●	●	●	●	●	●
IoT Device Data History	●	●	●	●	●	●	●	●
IoT Device Property	●	●	●	●	●	●	●	●
IoT Device Registration History	●	●	●	●	●	●	●	●
IoT Property Definition	●	●	●	●	●	●	●	●
IoT Settings	●	●	●	●	●	●	●	●

The Field Service administrator security role should also be given full access to the **CFS - IoT Alert Process Flow**, which is a business process flow for Connected Field Service.

## Add IoT security to dispatcher role

Field Service dispatchers also need some level of access to IoT tables and records. For example, if a work order is created as a result of an IoT alert, the dispatcher should be aware so that they can communicate with the customer and schedule to the appropriate resources.

In the Power Platform admin center, find the dispatcher security role your organization assigns to dispatchers (typically a copy of the **Field Service - Dispatcher** security role). Assign limited access to IoT tables according to the following screenshot.

Entity	Create	Read	Write	Delete	Append	Append To	Assign	Share
IoT Alert	○	●	●	○	●	●	○	○
IoT Device	○	●	●	○	●	●	●	●
IoT Device Category	○	●	○	○	●	●	○	○
IoT Device Command	●	●	●	○	●	●	○	○
IoT Device Command Definition	○	●	○	○	●	●	○	○
IoT Device Data History	●	●	●	○	●	●	○	○
IoT Device Property	○	●	○	○	●	●	○	○
IoT Device Registration History	●	●	●	○	●	●	○	○
IoT Property Definition	○	●	○	○	●	●	○	○
IoT Settings	○	○	○	○	○	○	○	○
Microsoft Teams Collaboration entity								
msdyn_relationshipsinsightsunifiedconfig	○	○	○	○	○	○	○	○
Notes analysis Config	○	○	○	○	○	○	○	○
OData v4 Data Source	○	○	○	○	○	○	○	○
Order Invoicing Date	○	○	○	○	○	○	○	○
Order Invoicing Product	○	○	○	○	○	○	○	○
Order Invoicing Setup	○	○	○	○	○	○	○	○
Order Invoicing Setup Date	○	○	○	○	○	○	○	○

#### Key

○ None Selected

○ User

○ Business Unit

● Parent: Child Business Units

Next, add access to the **CFS - IoT Alert Process Flow** according to the following screenshot. Dispatchers can use the Connected Field Service business process flow to update and track the stages of work orders resulting from IoT alerts.

Security Role: Field Service - Dispatcher									Working on solution: Default Solution	
Entity	Create	Read	Write	Delete	Append	Append To	Assign	Share		
Expired Process	●	●	●	●	●	●	●	●		
Lead To Opportunity Sales Process	●	●	●	●	●	●	●	●		
Purchase Order Business Process	●	●	●	●	●	●	●	●		
CFS - IoT Alert Process Flow	○	●	●	○	●	●	●	●		
Case to Work Order Business Process	●	●	●	●	●	●	●	●		
Agreement Business Process	●	●	●	●	●	●	●	●		

## Add IoT security to resource security role

Finally, resources also need access to IoT tables and records related to the work they're responsible for.

Find the resource security role your organization assigns to resources or technicians (typically a copy of the **Field Service - Resource** security role), and manually assign limited access to IoT tables according to the following screenshot.

Entity	Create	Read	Write	Delete	Append	Append To	Assign	Share
IoT Alert	○	○	○	○	○	○	○	○
IoT Device	○	○	○	○	○	○	○	○
IoT Device Category	○	○	○	○	○	○	○	○
IoT Device Command	○	○	○	○	○	○	○	○
IoT Device Command Definition	○	○	○	○	○	○	○	○
IoT Device Data History	○	○	○	○	○	○	○	○
IoT Device Property	○	○	○	○	○	○	○	○
IoT Device Registration History	○	○	○	○	○	○	○	○
IoT Property Definition	○	○	○	○	○	○	○	○
IoT Settings	○	○	○	○	○	○	○	○
Microsoft Teams Collaboration entity								
msdyn_relationshipinsightsunifiedconfig	○	○	○	○	○	○	○	○
Notes analysis Config	○	○	○	○	○	○	○	○
OData v4 Data Source	○	○	○	○	○	○	○	○

**Key**

- None Selected
- User
- Business Unit
- Parent: Child Business Units

Because business process flows aren't displayed on the Field Service mobile app, resources don't need access to the **CFS - IoT Alert Process Flow**.

Any user who needs to work with device registration and device data pulls (IoT Hub operations) should be given the **IoT Administrator** and **IoT Endpoint User** security roles.

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback](#) 

# Use device categories in Connected Field Service

Article • 09/13/2024

Device categories help you organize Internet of Things (IoT) devices. For example, you can categorize devices by the commands they support, the type of device, or by devices that break down more often.

## Create a new IoT device category

1. In Dynamics Field Service, go to the **Settings** area.
2. Under **IoT**, select **Device Categories**. Then, select **New**.
3. Enter a **Name** for the device category and select **Save**.
4. Open the IoT device category record that you created.
5. In the **Devices** section, select **New IoT Device**.
6. Enter the name of the device and use the tooltips to help you fill in your information. Then, select **Save & Close**.
7. Continue to add devices for this device category.

## Add devices to an existing category

1. In Dynamics Field Service, go to the **Service** area.
2. Under **Assets**, select **IoT Devices**.
3. Open an IoT device record.
4. In the **Category** field, search for and select the device category. Then, select **Save & Close**.

## View device readings

Once a device is registered, you can open the record to view the readings sent by the device. For example, if you're monitoring a thermostat, your reading shows the thermostat temperature.

By default, you can view the last 20 readings. You can change the default setting in the Power BI report by using Power BI Desktop.

1. To view a device reading, from the main menu, go to **Field Service > Customer Asset**.
2. From the list of assets, choose an asset and open the record.
3. Refer to the [Connect Device Readings](#) section to view the device readings.

## Remotely send commands to a registered device

When a device isn't working properly, the system receives an alert. To troubleshoot the issue remotely, you can send a command by choosing a registered device or by using an existing IoT alert.

### Note

When you receive multiple alerts from the same device, the alerts are listed in hierarchical order. You can change the grouping by changing the IoT - Parent IoT Alerts workflow.

## View a device's registration history

1. In Dynamics Field Service, go to the **Service** area.
2. Under **Assets**, select **IoT Devices**.
3. Open an IoT device record.
4. Select the **Registration History** tab.

---

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback !\[\]\(ab4e2b3fc7e7887b7a72f548aa6f5e60\_img.jpg\)](#)

# Privacy notice for Connected Field Service

Article • 11/01/2024

By installing Connected Field Service for Dynamics 365, when you provide your Azure subscription information, the required Azure resources (listed below) will be deployed and your Dynamics 365 for Customer Engagement instance will send data (such as commands and registrations) to Azure to enable IoT-enabled scenarios that register devices and then send and receive commands to the registered devices. An administrator can uninstall Connected Field Service to remove the functionality and then navigate to the Azure portal to manage any related Azure services that are no longer needed.

Azure components and services that are involved with Connected Field Service functionality are detailed in the following sections.

**Note:** For more information about additional Azure service offerings, see the [Microsoft Azure Trust Center](#).

## Service bus queue

This provides a queue for both inbound and outbound messages (commands) flowing between Dynamics 365 for Customer Engagement and Azure. When an IoT alert is sent to Dynamics 365 for Customer Engagement, or a command is sent from Dynamics 365 for Customer Engagement to the IoT hub, it will be queued here.

## Logic Apps

This provides an orchestration service that uses a Dynamics 365 for Customer Engagement connector and a Queue connector. Dynamics 365 for Customer Engagement connectors are used to construct entities that are specific to Dynamics 365 for Customer Engagement and Queue connectors are used for polling the queue.

## Stream analytics

This provides a fully managed, real-time event processing engine that helps to unlock deep insights from data. Stream Analytics makes it easy to set up real-time analytic computations on data streaming from devices, sensors, web sites, social media, applications, infrastructure systems, and more. It is functioning as a funnel to send selective IoT alerts to Dynamics 365 for Customer Engagement.

## IoT Hub

Connected Field Services uses the IoT Hub to manage the state of registered devices and assets. In addition, the IoT Hub sends commands and notifications to connected devices—and tracks message delivery with acknowledgement receipts. Device messages are sent in a durable way to accommodate intermittently connected devices.

## Simulator

This is a test web app to emulate the device that is sending commands or receiving commands from the IoT hub.

### [Azure SQL Database](#) ↗

Connected Field Service uses SQL Azure to store device heartbeat messages for later use by PowerBI to show the status of devices in Dynamics 365 for Customer Engagement.

### [Azure Blob Storage](#) ↗

Queries that Stream Analytics will use are stored to Azure Blob storage.

[Connected Field Service Device Readings](#) uses Azure Time Series Insight to store, process, and query IoT devices measurements from IoT Hub.

---

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback](#) ↗

# Overview of Resource Scheduling Optimization

Article • 07/25/2024

The Resource Scheduling Optimization Add-in for Dynamics 365 Field Service automatically schedules jobs to the resources that are best equipped to complete them. For example, schedule work orders for field technicians or cases for customer service reps. While the [schedule board](#) and the [schedule assistant](#) help schedule a single job, this add-in can schedule multiple jobs at once. It maximizes resource use and minimizes travel time. Resource Scheduling Optimization considers the requirements of the job and the unique attributes of the resources.

Resource Scheduling Optimization is a paid add-in to Dynamics 365 Field Service and is built on top of the entities of the [Universal Resource Scheduling solution](#).

## Get to know the key benefits

Automated scheduling is often required because scheduling a high volume of jobs manually takes time. Resource Scheduling Optimization assists dispatchers with job matching and helps free up their time to focus on other tasks. Benefits of the Resource Scheduling Optimization add-in include:

- **Achieve scale:** Allowing dispatchers to manage more resources enables the business to scale to new territories or service offerings.
- **Improve customer satisfaction:** Improving efficiency drives more predictable arrival and completion times and seamlessly schedules technicians for urgent situations.
- **Increase technician efficiencies:** Fitting more appointments into working hours drives revenue and reduces overtime costs. Matching jobs and technician skills reduces inefficient time allocation.
- **Minimize travel time:** Ensuring your technicians are taking the shortest possible route with turn-by-turn directions reduces fuel consumption and wear and tear on vehicles—savings that can easily surpass the cost of the add-in.
- **Improve customer retention:** Giving preference to higher-priority work orders helps avoid service level agreement penalties and helps you meet customer service commitments.

# Address common scheduling scenarios

You can configure Resource Scheduling Optimization for your business needs based on jobs, resources, and other factors. Scenarios where Resource Scheduling Optimization can help:

- **Overnight scheduling:** Resource Scheduling Optimization runs automatically each night. It schedules new jobs and optimizes existing bookings for the next day.
- **Single resource optimization:** A dispatcher gets the schedule [optimized for a single technician](#) over a couple of days, for example to account for cancellations.
- **Simulation:** A service manager runs a scheduling simulation to understand how many jobs could be completed with a varying number of resources in a specific geographic territory.
- **Intraday scheduling:** Runs optimizations every 30 minutes to schedule and adjust for changing business needs as new jobs are created and others are canceled or rescheduled.
- **Emergency scheduling:** When an urgent job is created, a Resource Scheduling Optimization run schedules the high-priority job as soon as possible before lower priority jobs.

## Understand how it works

Resource Scheduling Optimization helps solve the common *traveling salesperson problem*, a classic optimization challenge to find the shortest possible route that visits a set of cities and returns to the origin city, visiting each city only once. However, the add-in goes beyond finding the shortest routes. It also considers other parameters like skills, territory, promised time windows, and more.

Here's how it works:

1. Create a list of jobs that need to be completed. Jobs are generally work orders for onsite service, cases for remote service, or project tasks.
2. List the required resources for each job and when it needs to be completed. For example, a work order needs someone nearby with repair skills to complete the job by the end of the week.
3. Choose which resources can be considered for the jobs. Each resource has different attributes like location, role, type, and skills.

4. Run Resource Scheduling Optimization on a predefined schedule, or triggered by a workflow. After the system completes the optimization, dispatchers can [use the schedule board](#) to make changes as needed.

## Get periodic updates

Microsoft releases new versions of Resource Scheduling Optimization periodically. The [version history](#) lists changes and updates. Some releases are rolled out to all stations on a set schedule. However, you can [selectively deploy a release](#) in your environment.

## Next steps

- [Get Resource Scheduling Optimization](#)
  - [Deploy Resource Scheduling Optimization](#)
  - [Review the Resource Scheduling Optimization quickstart guide](#)
- 

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback ↗](#)

# Get Resource Scheduling Optimization

Article • 07/25/2024

To purchase access to the Resource Scheduling Optimization Add-in for Dynamics 365 Field Service, you need access to Field Service. If a product bundle your organization owns includes the Field Service license, you don't have to repurchase it. With Field Service already installed, you can skip the first three steps.

1. Purchase Field Service. Go to **Microsoft 365 Admin Center > Billing > Purchase Services**.
2. Find and buy whichever Field Service license works best for you and your organization. Visit the [Field Service pricing page](#) for more information. And for more details, visit the [Dynamics 365 Licensing Guide \(PDF\)](#).
3. After purchasing, install Dynamics 365 Field Service.
  - Go to **Admin Centers > Dynamics 365 > Instances**.
  - Select your instance and choose **Solutions**.
  - Select Field Service and choose **Install**.
4. Purchase Resource Scheduling Optimization. Go to **Microsoft 365 Admin Center > Billing > Purchase services**. The price of Resource Scheduling Optimization is based on the number of resources whose schedules are optimized.

## Note

The add-in license allows for unlimited use of schedule optimization, whether on a regular cadence or ad hoc basis. The license includes one active instance of Resource Scheduling Optimization per tenant.

## Get licenses for multiple instances

Resource Scheduling Optimization is associated with a single Dynamics 365 organization in the tenant. You can change the associated organization through the Resource Scheduling Optimization deployment app's page. If additional Resource Scheduling Optimization instances are needed for development and testing environments and you have an Enterprise Agreement with Microsoft, contact your technical account manager or commercial executive (formerly licensing specialist). Such instances are not yet available to cloud solution providers or retail purchase.

# Next steps

After purchasing Resource Scheduling Optimization, follow the [deployment steps](#).

---

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback ↗](#)

# Get started with the Resource Scheduling Optimization Add-in

Article • 06/05/2024

The Resource Scheduling Optimization Add-in for Dynamics 365 Field Service automatically schedules work orders to the resources that are most available and best qualified. Many field service organizations that perform work orders at their customers' locations benefit from automatic scheduling because it optimizes the routes and travel times of field technicians as they travel from work order to work order.

This article guides you through configuration of Resource Scheduling Optimization to schedule and optimize a group of work orders to a predefined list of resources. You're going to set up a scope, goal, and schedule to assign work orders to resources in a territory to minimize travel time.

<https://www.microsoft.com/en-us/videoplayer/embed/RE4ylx7?postJslIMsg=true>

For more Field Service videos, see [this full playlist](#).

## Prerequisites

- Resource Scheduling Optimization is already [deployed to your Field Service environment](#).
- You need **Field Service-Administrator** and **Resource Scheduling Optimization** security roles and the **Field Service-Administrator** and **Resource Scheduling Optimization-Administrator** field security profiles. For more information, see [Resource Scheduling Optimization configuration](#).
- Resource Scheduling Optimization uses [Universal Resource Scheduling](#) to schedule field service work orders.

## Glossary

You'll need to know the following key terms:

- **Jobs:** Work that needs to be completed like work orders, cases, or projects.
- **Resources:** Anyone or anything that needs to be scheduled to a job including people, equipment, and facilities.
- **Schedules, bookings:** Schedules and bookings are used interchangeably and refer to the appointment time slot when a resource is assigned to a job.

- **Requirements:** The entity related to a job that defines what type of resource is needed to complete the work and gets scheduled.
- **Run:** The process when Resource Scheduling Optimization performs its scheduling and optimization functions.
- **Optimize:** Attempt to find the best schedules to reduce travel time and maximize usage.
- **Scope:** The jobs and resources that Resource Scheduling Optimization considers for optimization.
- **Goal:** Defines the ideal outcome of a run. For example, minimize travel time, maximize usage, handle high-priority jobs, or schedule jobs as soon as possible. Multiple goals are ranked because sometimes there are trade-offs.

## Step 1: Enable Resource Scheduling Optimization

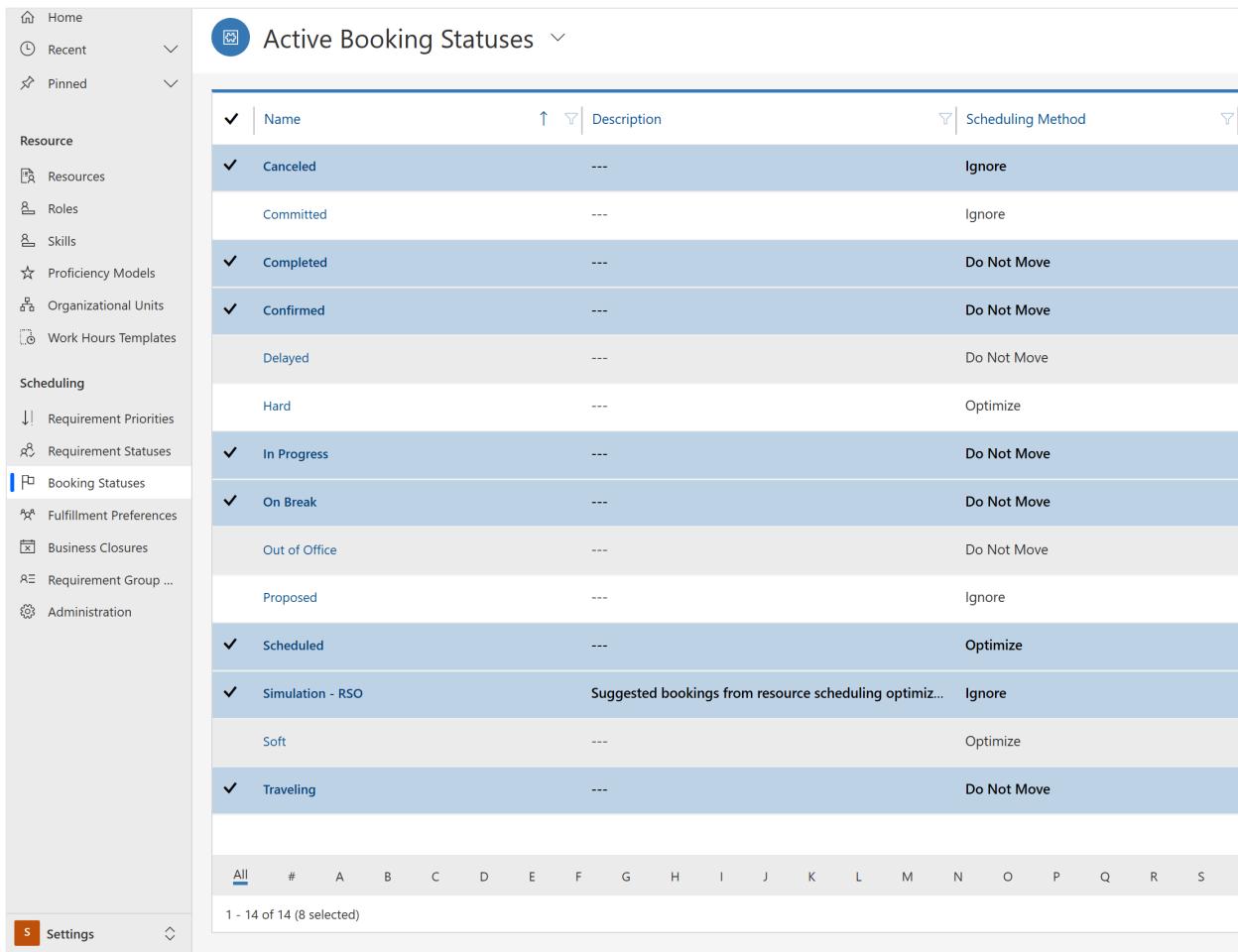
After deploying Resource Scheduling Optimization into your environment, enable the add-in.

1. Open **Resource Scheduling** and change to the **Settings** area.
2. Go to **Administration > Scheduling Parameters > Resource Scheduling Optimization**.
3. Set **Enable Resource Scheduling Optimization** to **Yes**.
4. Select a **Default Goal**.

Among other uses, a default goal tells Resource Scheduling Optimization what to prioritize by default and it's relevant for [single resource optimization](#). If no default goal exists, [create an optimization goal](#).

## Step 2: Verify booking statuses

Field Service uses [booking statuses](#), and Resource Scheduling Optimization adds the scheduling methods **Ignore**, **Do Not Move**, or **Optimize** and maps them to the booking statuses. Make sure the highlighted booking statuses match your system.



✓	Name	Description	Scheduling Method
✓	Canceled	---	Ignore
	Committed	---	Ignore
✓	Completed	---	Do Not Move
✓	Confirmed	---	Do Not Move
	Delayed	---	Do Not Move
	Hard	---	Optimize
✓	In Progress	---	Do Not Move
✓	On Break	---	Do Not Move
	Out of Office	---	Do Not Move
	Proposed	---	Ignore
✓	Scheduled	---	Optimize
✓	Simulation - RSO	Suggested bookings from resource scheduling optimiz...	Ignore
	Soft	---	Optimize
✓	Traveling	---	Do Not Move

All # A B C D E F G H I J K L M N O P Q R S

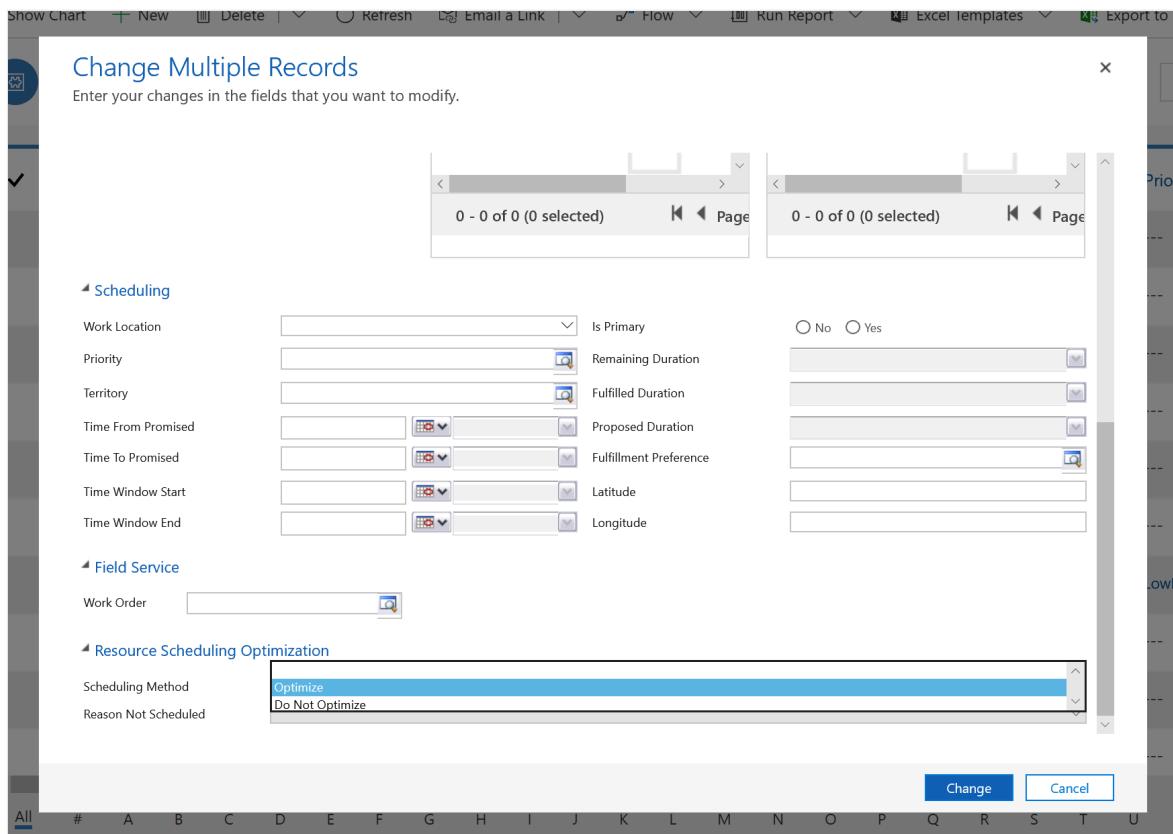
1 - 14 of 14 (8 selected)

If they don't match, go to **Resource Scheduling Optimization > Optimization Schedules >** and select **Reset**.

## Step 3: Set work orders to optimize

In this step, you choose which work orders to optimize.

1. Go to **Resource Scheduling > Resource Requirements** and select the records to optimize. Select **Edit** to change them in bulk.



## 2. Set the **Scheduling Method** to **Optimize**.

### Tip

- The system can automatically set work order requirements to be optimized when you create a work order in the **Booking Setup Metadata** settings.
- You also can change the optimization method individually for a resource requirement record on the **Resource Scheduling Optimization** tab.

## Step 4: Set resources as eligible for optimization

Let's define the resources that are eligible for optimization.

1. In the **Resources** list, choose the resources that you want to enable and select **Edit**.
2. Set the **Optimize Schedule** field to **Yes**.

Similar to requirements, this can be done individually or with a bulk edit.



BOOKABLE RESOURCE  
Abraham McCormick

General Scheduling Field Service **Resource Scheduling Optimization** Related

Optimize Schedule **\*** Yes

## Step 5: Create an optimization scope

In the following steps, we set up a Resource Scheduling Optimization run and start with an [optimization scope](#).

1. In the list of apps, select **Resource Scheduling Optimization**.
2. Go to **Optimization Scopes** and select **New**.
3. Enter a **Name** and choose a **Resource View** and a **Requirement View** for the optimization scope.
4. In the **Bookings for the Optimization** section, select the **Active Bookable Resource Bookings** view or a similar view for bookings.

### Note

By entering a view for unscheduled requirements *and* bookings, we are configuring Resource Scheduling Optimization to optimize both unscheduled and scheduled jobs. If you only select a booking view, then Resource Scheduling Optimization will only optimize existing bookings and you must schedule the unscheduled jobs manually or with the schedule assistant. By only selecting an unscheduled requirement view, Resource Scheduling Optimization will not move existing bookings and simply attempt to schedule the unscheduled jobs to available time slots.

5. For **Optimization Range Settings**, enter the following values:

- **Range Reference:** Job Current Time

- **Range Offset:** This value defines when the first booking after running the optimization can start. Some organizations prefer to schedule jobs starting tomorrow, in which case you'd set it to one day.
- **Range Duration:** This value defines how far into the future the add-in schedules requirements.

**General**   **Related**

**Name** \* Washington Work Orders

**Resources and Unscheduled Requirements for this Optimization**

Resource View \* 0 - WA - Bookable Resources

Requirement View 0 - WA - Work Order Requirements

**Bookings for this Optimization**

Booking View Active Bookable Resource Bookings

On or After ---

**Optimization Range Settings**

Range Reference \* Job Current Time

Range Offset \* 5 minutes

Range Duration \* 2 days

**Booking Statuses**

✓	Name	↑	Description	Schedul...	Created On
Canceled	---		Ignore	2/4/2019 6:21 P...	
Committed	---		Ignore	2/4/2019 6:21 P...	
Completed	---		Do Not Move	2/4/2019 6:21 P...	
Confirmed	---		Do Not Move	5/7/2019 8:53 A...	
Delayed	---		Do Not Move	4/24/2019 4:31 ...	
Hard	---		Optimize	2/8/2019 9:28 A...	

1 - 6 of 14 (0 selected)   **Page 1**

## Step 6: Create a goal

Now we need to create an [optimization goal](#) for the Resource Scheduling Optimization run.

1. Go to [Optimization Goals](#) and select **New**.
2. Set the **Engine Effort Level** for this proof of concept to **Very Light**, which means that the system completes the run quickly in exchange for accuracy.
3. Select constraints, for example:
  - **Schedule Within Working Hours** if you have working hours defined.
  - **Meets Required Characteristics** if your requirements and resources both have characteristics.
  - **Matches Territory** if your requirements and resources both belong to the same service territory.

Start with fewer constraints and add more as you successfully run Resource Scheduling Optimization. This makes it easier to troubleshoot if Resource

Scheduling Optimization produces unexpected results.

4. For objectives, select the following order:
  - a. **Maximize Total Working Hours**
  - b. **Minimize Total Travel Time**
  - c. **Best Matching Skill Level**

## Step 7: Create a schedule

The last configuration step is to combine your scope and goal into a schedule.

1. Go to **Optimization Schedules** and select **New**.
2. Choose the **Scope** and **Goal** you created.
3. Set **Timer** for how often Resource Scheduling Optimization checks if it should run based on the time filter setting.
4. Enter **Valid From** and **Valid To** dates. If you plan to run Resource Scheduling Optimization manually, enter dates in the past.
5. On the **Filter** section, enter the time it should run.
6. **Save and Publish** the schedule.

## Step 8: Run Resource Scheduling Optimization

You can manually run Resource Scheduling Optimization by selecting **Run Now** on the optimization schedule.

Every time Resource Scheduling Optimization runs, successfully or not, an optimization request record is created.

## Step 9: Analyze results

Once the **Optimization Request** status is **Completed**, [go to the schedule board](#) to see the optimized board.

The system creates a new schedule board tab named after your optimization scope.

A simple example of Resource Scheduling Optimization optimizing travel time is when there's no travel time between two bookings. This means there were two work orders at

the same location with the same service account and Resource Scheduling Optimization scheduled them back-to-back.

On the completed scheduling optimization request in the **Bookings** tab, you'll find a list of bookings created or deleted, and a graph of the total travel time and working time of the optimized bookings.

Congratulations! You have successfully run Resource Scheduling Optimization.

---

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback !\[\]\(66568c3ce22862f5aa9927d764d3a113\_img.jpg\)](#)

# Set up a proof of concept for Resource Scheduling Optimization

Article • 10/15/2024

This article guides you through the implementation of a proof of concept (POC) for the Resource Scheduling Optimization Add-in for Dynamics 365 Field Service.

## Define requirements and expectations

During the discovery phase for the POC, you focus on understanding requirements and defining success criteria.

## Understand requirements and business needs

No two organizations run in exactly the same way. Therefore, to ensure a successful POC, it's critical that you understand how the organization uses its data and for what business reasons.

Resource Scheduling Optimization is most applicable to onsite service scenarios where resources perform work at multiple customer locations. (This article is focused on this type of scenario.) A key benefit of the add-in is that it minimizes travel time and maximizes resource utilization. However, Resource Scheduling Optimization can optimize any scheduling-enabled entity, because it builds on Universal Resource Scheduling, a framework that schedules the requirements for resources. Even if you schedule cases or work orders, the eventual result is a requirement record. Learn more in [Universal Resource Scheduling for Field Service](#).

Here are a few questions that can help you gather requirements:

- How many resources are there, and of what types (people, equipment, facilities, and so on)?
- How often are resources scheduled?
- Where do resources start and end their days?
- How many territories do resources work within?
- What types of skills or characteristics are important for resources?
- How does the organization respond to unforeseen high-priority work?
- How are resource priorities defined and managed?

## Define success criteria

Determine what success looks like. Although it can be tempting to declare that improved travel times or decreased overtime are successes, they aren't specific or measurable enough. Define *measurable* success criteria, such as *reduce travel time by 10%* or *schedule no overtime for maintenance work*, and make sure that the system provides a way to gather the related metrics.

You often get a data set from previous periods so that you can retrospectively compare the outcome of the POC with factual data. This approach is difficult because Resource Scheduling Optimization can't schedule before the current time. If you change the dates on historical data, keep in mind that a weekday in September might be a weekend in December. Therefore, adjust the data accordingly.

Organizations often use service level agreements (SLAs) or response times as success metrics. You might encounter examples such as *next day before 12:00 PM* for SLAs. Ensure that you map SLAs to the **Time From Promised** and **Time To Promised** fields on the work order, because these fields populate the start and end dates on a requirement.

## Configure sample data

To configure the sample data and get the POC up and running, create the following records for your scenario.

### Accounts

Account information is helpful when you handle work orders, because **Service Account** is a required field. The account information can typically be derived from the work order data if an address or longitude and latitude values are provided.

### Addresses

[Enable location and map settings](#) to turn addresses into latitude and longitude values.

### Territories

To work, Resource Scheduling Optimization needs at least [one territory](#). Multiple territories allow for more flexibility. You can define more optimization schedules and run them simultaneously.

### Bookable resources

Set up bookable resources for the purposes of this POC. When you work with real data, it's easier to drill into specific use cases. In addition, this approach limits the related data that is required for resources, such as work hours, resource territories, or characteristics.

### 💡 Tip

A location agnostic resource can only have bookings for which the *Resource Requirement* is also set to location agnostic. Resource Scheduling Optimization treats that resource like a remote worker who only gets scheduled for work that doesn't involve travel. Alternatively, you can [Enable a resource to travel outside working hours](#) to work around this constraint.

Relate resources to contacts to ensure that they are separate from the service accounts. Be sure to set the correct time zone on the resource, because the time zone that is set affects the work hours. In the bookable resource record, on the **Resource Scheduling Optimization** tab, set the **Optimize Schedule** option to **Yes** to enable the resource for Resource Scheduling Optimization.

## Characteristics

[Resource skills and characteristics](#) can be used as filter criteria. They can also be used in the setup of goals and objectives.

## Work hours

[Set up work hours](#) to have Resource Scheduling Optimization consider a resource for scheduling.

## Priorities

[Priorities provide filter dimensions](#) to a Resource Scheduling Optimization run. Using high-priority requirements as a constraint provides control over those more urgent requirements.

## Work orders or other transactional data

This data represents what you're trying to schedule, typically in the form of work orders. However, you can also [enable other tables for scheduling](#). Set the **Scheduling Method** field on the related requirement to *Optimize*.

## Time off

You can [create time-off entries](#) to make a resource unavailable for a specific period. Resource Scheduling Optimization treats time off like time outside of work hours. It schedules resources according to the *Schedule within Work Hours* and *Scheduling Windows* constraints.

If your requirements for time off are more complex, you can create a custom time-off entity as a schedulable entity and set the related requirement to optimize. In this way, you can create more robust time-off entries.

## Run simulations

The Resource Scheduling Optimization engine schedules requirements from the current point in time and as far into the future as you specify through the **Range Offset** and the **Range Durations** values that are [defined in the optimization scope](#).

## Accommodate disruptions

To simulate a typical service organization's activity, incorporate unexpected service calls into your POC. Consider creating a separate scope to accommodate quick changes to a schedule.

## Define views and schedules

Create views that Resource Scheduling Optimization uses to filter the [data in the optimization scope](#). For example, a rural area might optimize once a week, whereas a more congested area might optimize on an hourly basis.

## Define goals with specific constraints and objectives

You can define how bookings should be optimized. The goal of the Resource Scheduling Optimization engine is to process a list of resources and a list of resource requirements, together with existing bookings, to create the optimal route and list of bookings for the resources. Learn more about how to set constraints and objectives in [Optimization goals in Resource Scheduling Optimization](#).

## Simulations

Resource Scheduling Optimization enables you to [run simulations and create soft bookings](#). If a simulation meets specific requirements and is deemed the best option, the soft bookings can then be turned into hard bookings.

## Review routes and booking details

A review of specific routes helps you drill into the differences that are achieved through different goals and objectives. Select a couple of resources, optimize them with different goals and constraints, and review the outcome.

---

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback ↗](#)

# Deploy the Resource Scheduling Optimization Add-in for Dynamics 365 Field Service

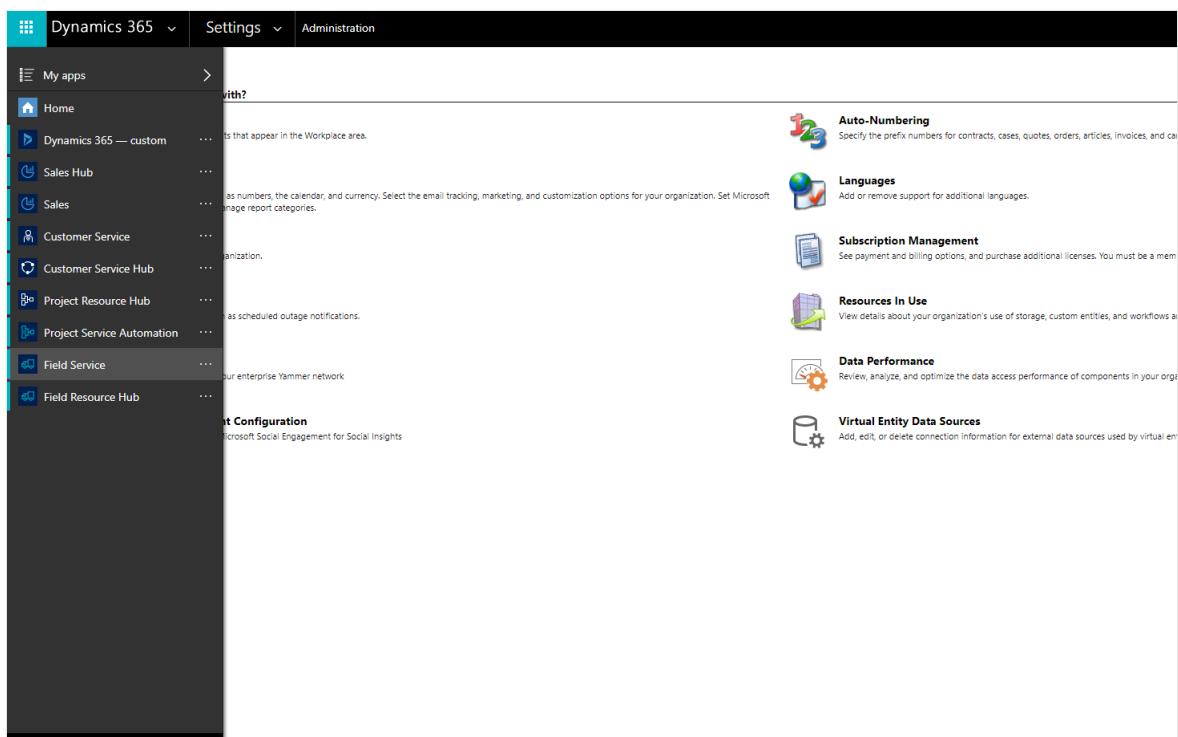
Article • 07/25/2024

After [getting access to Resource Scheduling Optimization](#) either by purchasing a license or through your Microsoft representative, deploy it to your Dynamics 365 Field Service environment.

You can deploy multiple instances of the Resource Scheduling Optimization add-in on the same Microsoft 365 tenant, however, a Resource Scheduling Optimization instance can connect to one Dynamics 365 organization only. If you need to have concurrent instances, for example in production and development organizations, see [Get licenses for multiple instances](#).

## Deployment steps

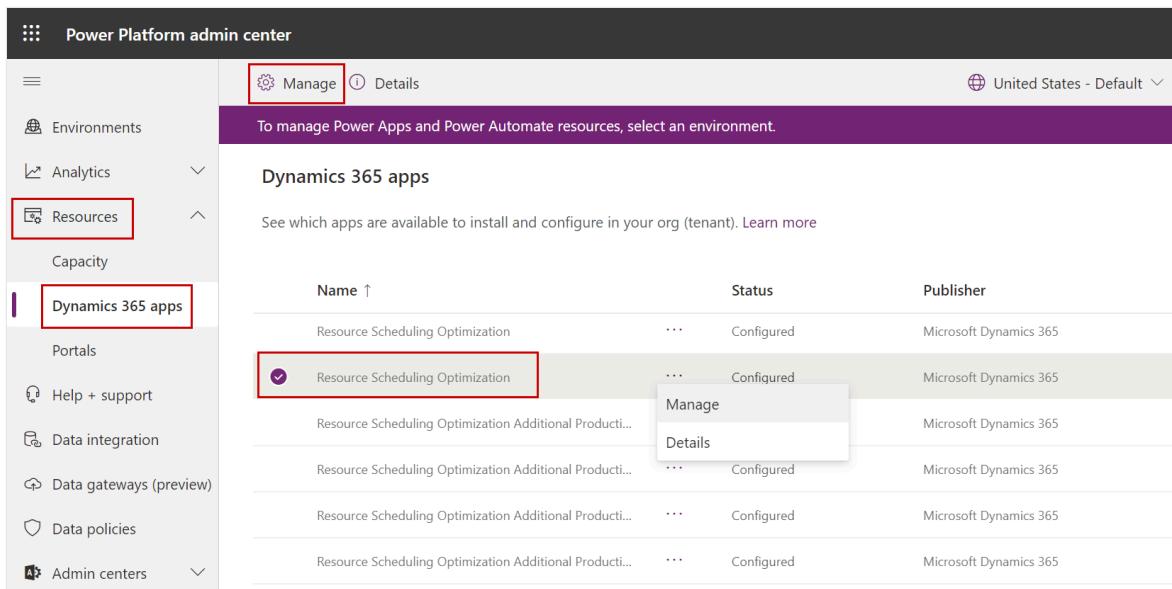
1. Verify Field Service is installed in your environment. The Field Service app appears in the Dynamics 365 main menu when logged in as a system administrator.



2. Go to the Power Platform admin center:

<https://admin.powerplatform.microsoft.com/>. In the left pane, select **Resources** > **Dynamics 365 apps**.

### 3. Find Resource Scheduling Optimization and select Manage.



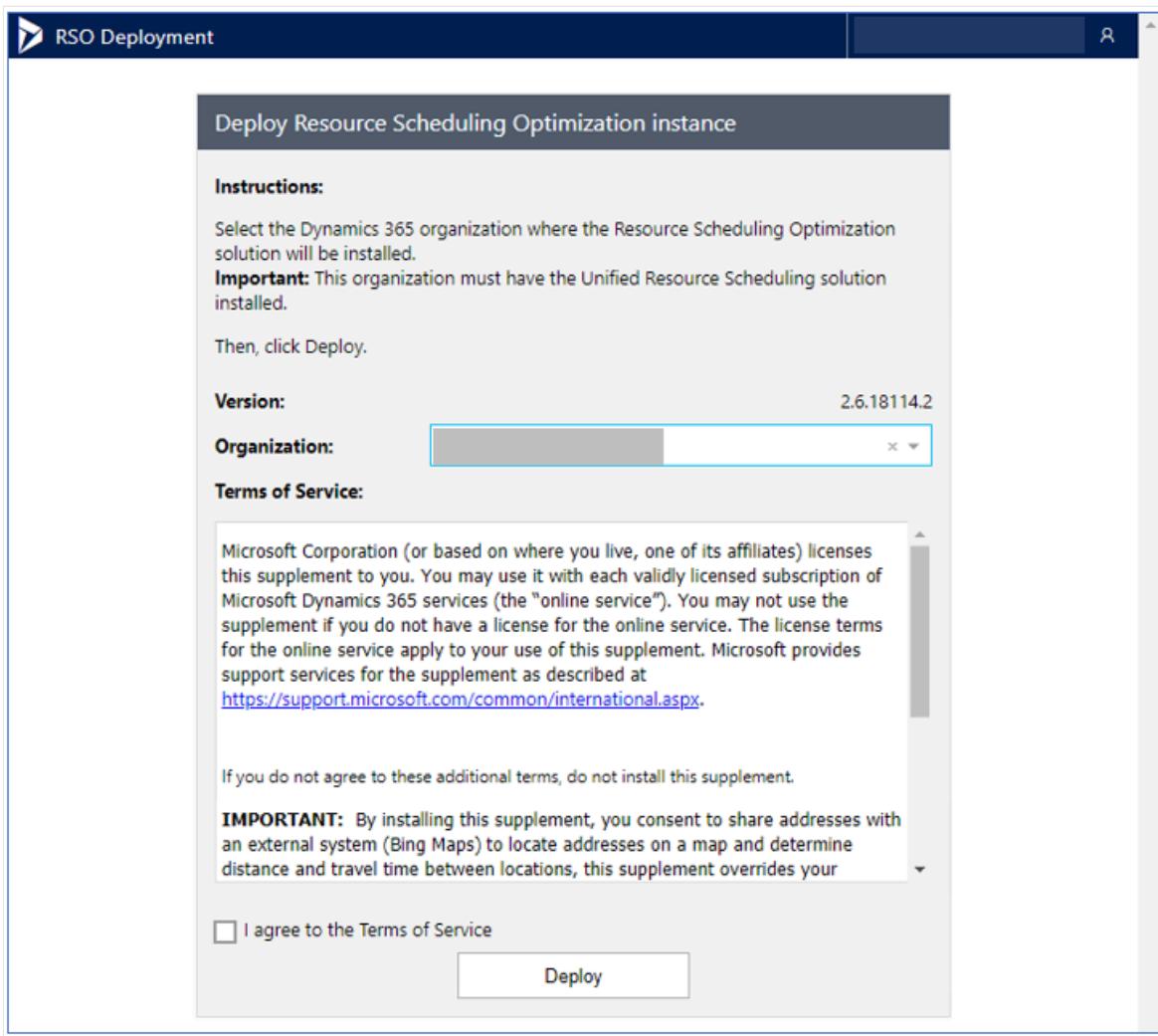
The screenshot shows the Power Platform admin center interface. On the left, a navigation sidebar includes sections like Environments, Analytics, Resources (highlighted with a red box), Capacity, Dynamics 365 apps (highlighted with a red box), Portals, Help + support, Data integration, Data gateways (preview), Data policies, and Admin centers. The main content area is titled 'Dynamics 365 apps' and displays a list of available apps. One app, 'Resource Scheduling Optimization', is selected and highlighted with a red box. A context menu is open over this app, showing options: 'Manage' (highlighted with a red box) and 'Details'. The table below lists several instances of the 'Resource Scheduling Optimization' app, all in a 'Configured' status and published by 'Microsoft Dynamics 365'.

Name ↑	Status	Publisher
Resource Scheduling Optimization	Configured	Microsoft Dynamics 365
Resource Scheduling Optimization	Configured	Microsoft Dynamics 365
Resource Scheduling Optimization Additional Product...	Configured	Microsoft Dynamics 365
Resource Scheduling Optimization Additional Product...	Configured	Microsoft Dynamics 365
Resource Scheduling Optimization Additional Product...	Configured	Microsoft Dynamics 365
Resource Scheduling Optimization Additional Product...	Configured	Microsoft Dynamics 365

### 4. Select the organization where the Resource Scheduling Optimization solution will be installed, review the Terms of Service and select the agreement box, and then select Deploy to start the Resource Scheduling Optimization deployment.

#### (!) Note

It may take several hours between the time the subscription appears in Microsoft 365 Admin Center and Power Platform Admin Center.



## Manage the Resource Scheduling Optimization instance

After the initial deployment, you can manage the deployed instance.

1. Go to the Power Platform admin center:

<https://admin.powerplatform.microsoft.com/>. In the left pane, select **Resources** > **Dynamics 365 apps**.

2. Find Resource Scheduling Optimization and select **Manage**.

The screenshot shows the Power Platform admin center interface. The left sidebar has a tree structure with 'Environments', 'Analytics', 'Resources' (which is selected and highlighted with a red box), 'Capacity', 'Dynamics 365 apps' (which is also highlighted with a red box), 'Portals', 'Help + support', 'Data integration', 'Data gateways (preview)', 'Data policies', and 'Admin centers'. The main content area is titled 'Dynamics 365 apps' and contains a table with columns 'Name ↑', 'Status', and 'Publisher'. The table lists several rows, with the first row 'Resource Scheduling Optimization' being selected and a context menu open over it. The context menu options are 'Manage' (which is highlighted with a red box) and 'Details'.

Name ↑	Status	Publisher
Resource Scheduling Optimization	Configured	Microsoft Dynamics 365
Resource Scheduling Optimization	Configured	Microsoft Dynamics 365
Resource Scheduling Optimization Additional Product...	Configured	Microsoft Dynamics 365
Resource Scheduling Optimization Additional Product...	Configured	Microsoft Dynamics 365
Resource Scheduling Optimization Additional Product...	Configured	Microsoft Dynamics 365
Resource Scheduling Optimization Additional Product...	Configured	Microsoft Dynamics 365

### 3. Choose one of the following options:

- Select **Upgrade to new version** to get the latest version. This option only shows if a newer version is available.
- Select **Change Organization** to change the Resource Scheduling Optimization deployment from a Dynamics 365 organization to another. This action will not delete data inside of the original Dynamics 365 organization and you can always change it back.
- Select **Delete current deployment** to delete Resource Scheduling Optimization Azure resources. The Resource Scheduling Optimization solution will remain, which will not impact anything inside of the Dynamics 365 organization.

## Bulk deletion jobs

Resource Scheduling Optimization includes two built-in system jobs:

- Delete Resource Scheduling Optimization Requests
- Delete Resource Scheduling Optimization Simulation Bookings

These [system jobs](#) run daily and delete tables related to Resource Scheduling Optimization that are older than two weeks. Each time an optimization job runs, the service creates records that help with [monitoring](#) them. These records are meant to be purged periodically.

While a system administrator or users with sufficient privilege can modify system jobs, we advise against doing so. Changed system jobs could lead to accumulated stale records that decrease system performance and delay or block updates.

# Configuration and security roles

Learn how to [configure Resource Scheduling Optimization in your environment](#). The scheduling parameter updates and the data changes are unlikely to get modified over time. We recommend that you review security roles periodically because these roles might get modified or deleted.

## Privacy notice

By enabling Resource Schedule Optimization, information, including schedule configuration information and work order details (location-relevant address information, such as account address and resource address) will be sent from Dynamics 365 for Customer Engagement to Bing Maps to allow for:

- Determining the geo location (latitude, longitude) of a specific address.
- Calculating the distance and travel time between locations.

Bing Maps then returns the information to Dynamics 365 for Customer Engagement. An administrator can subsequently disable Resource Schedule Optimization to prevent address information from being sent to Bing Maps.

## Next steps

- [Quickstart for Resource Scheduling Optimization](#)
- [Resource Scheduling Optimization configuration](#)

---

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback ↗](#)

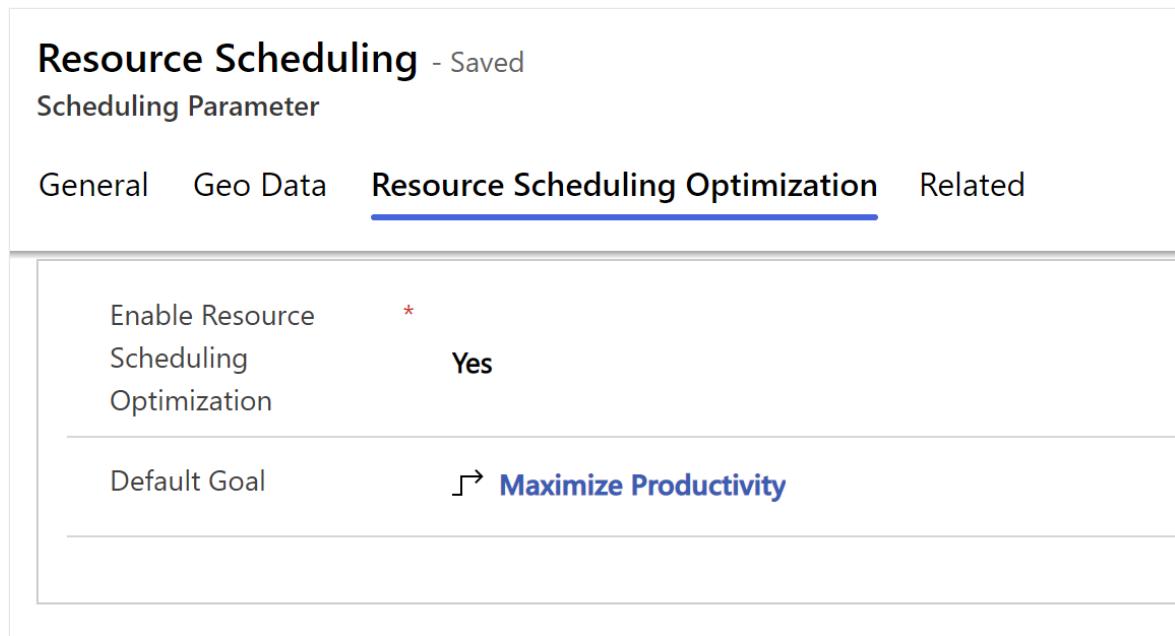
# Resource Scheduling Optimization configuration

Article • 07/01/2024

Perform these configuration steps after [successful deployment](#) of the Resource Scheduling Optimization solution.

## Enable Resource Scheduling Optimization

1. First, make sure that [maps are configured for your environment](#). Review the privacy considerations for sending data between services.
2. Go to **Resource Scheduling Optimization > Administration > Scheduling Parameters > Resource Scheduling Optimization** tab.



Setting	Value
Enable Resource Scheduling Optimization	Yes *
Default Goal	Maximize Productivity

- Set **Enable Resource Scheduling Optimization** to Yes.
- Set **Default Goal**. An [optimization goal](#) defines how the algorithm optimizes data. Users can still choose different goals when they start an optimization request.

## Add required security roles to users who configure and run Resource Scheduling Optimization

Ensure that Resource Scheduling Optimization can optimize work order-related requirements and bookings:

1. Go to **Settings > Advanced Settings > Security > Users**. And assign the security role *Field Service - Administrator* to the Resource Scheduling Optimization application user.
2. Go to **Security > Field Security Profiles**. Select **Resource Scheduling Optimization – Administrator** and add the Resource Scheduling Optimization application user to the field security profile.

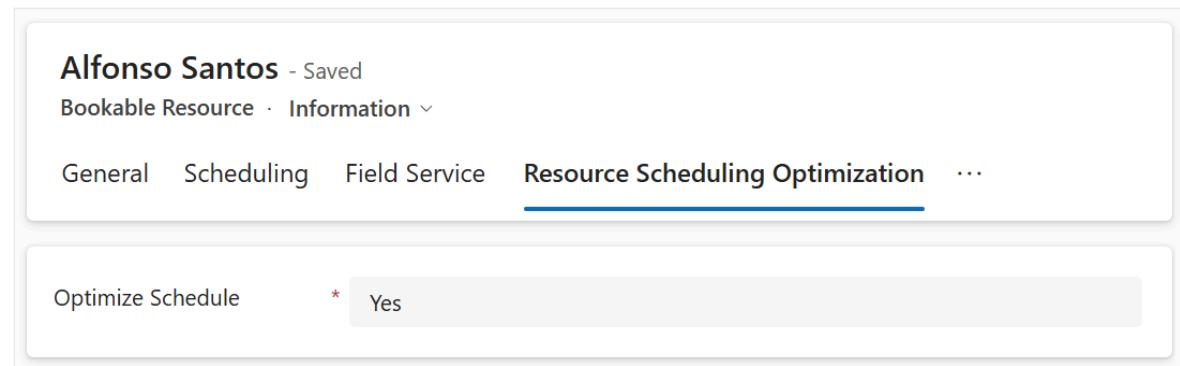
Enable dispatchers to interact with Resource Scheduling Optimization:

1. Go to **Settings > Security > Users**.
2. Locate the user or team of dispatchers.
3. Select **Manage Roles**.
4. Assign a security role.
5. Select **Save**.
6. Go to **Settings > Security > Field Security Profiles**.
7. Open **Resource Scheduling Optimization - Dispatcher** and add the user or team to the profile and then select **Save**.

## Prepare resources for optimizations

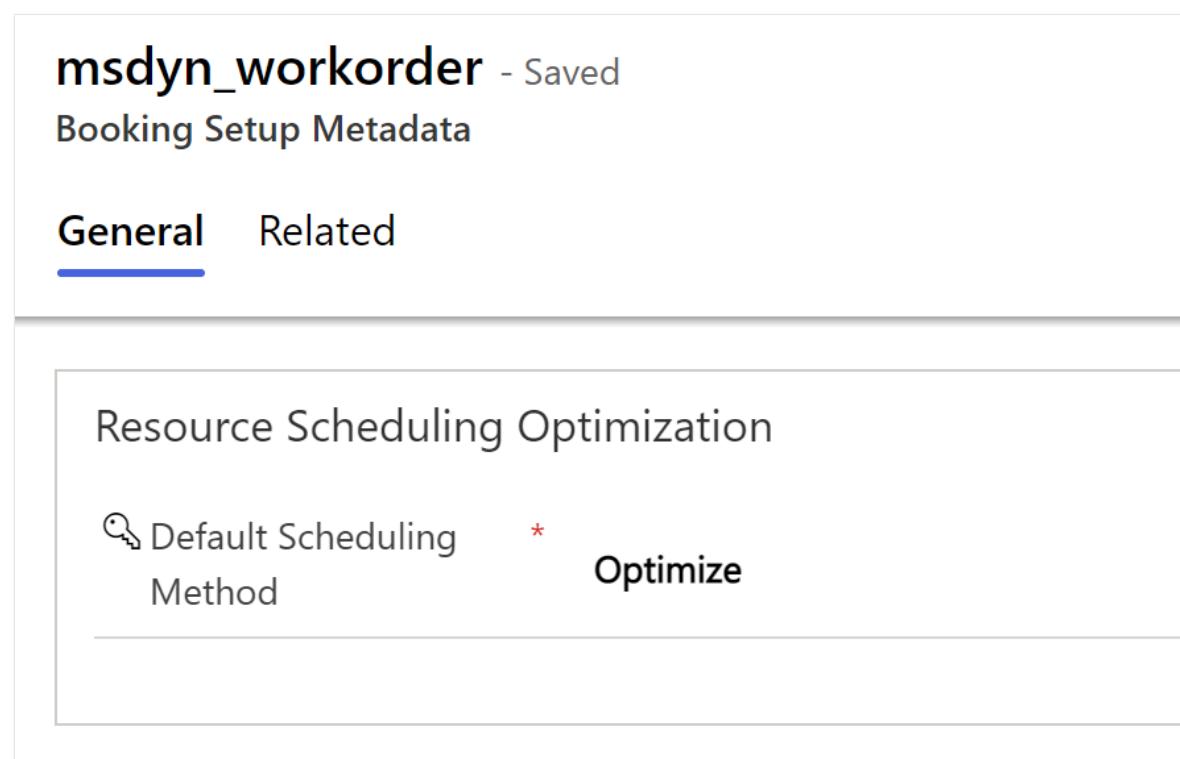
The settings described in this section apply to all optimization scopes.

1. Go to **Resource Scheduling Optimization > Resources**. Open the **Scheduling Summary** view. Select one or more resource records and select **Edit**.
2. In the Resource Scheduling Optimization tab, set **Optimize Schedule** to **Yes** and **Save** the records. Enabling the setting doesn't automatically schedule requirements to the selected resource. It enables Resource Scheduling Optimization to consider the resource during schedule optimization runs.



The screenshot shows the 'Resource Scheduling Optimization' tab selected in the navigation bar of the 'Alfonso Santos' entity settings. Below the tab, there is a section labeled 'Optimize Schedule' with a dropdown menu showing 'Yes'.

3. After enabling the resources for schedule optimization, specify the address for the organizational unit or resource address, depending on their start and end location.
4. Go to **Resource Scheduling Optimization > Settings > Administration > Enable Resource Scheduling for Entities**.
5. Double-click an enabled entity to configure booking setup metadata. In the **Resource Scheduling Optimization** section, set the **Default Scheduling Method** to **Optimize** and **Save** the changes. For example, you can enable it for the work order entity. The system sets every new work order and related resource requirement to optimize automatically.



The screenshot shows the 'Booking Setup Metadata' for the 'msdyn\_workorder' entity. The 'General' tab is selected. In the 'Resource Scheduling Optimization' section, there is a field for 'Default Scheduling Method' with a dropdown menu showing 'Optimize'.

6. For existing resource requirement records, update the resource requirements scheduling method. Go to **Resource Scheduling Optimization > Resource Requirements** and open the **Unscheduled Work Order Requirements** view. Select the records to optimize, and select **Edit**.

- On the **Resource Scheduling Optimization** tab, set the **Scheduling Method** to **Optimize**.
- On the **Scheduling** tab, make sure the location is **On Site** or **Location Agnostic**. If **On Site** is the requirement, you must specify the address.
- On the **General** tab, check that **From Date** and **To Date** fall into the time window you want to schedule. You can use the bulk edit feature to update values for selected records as well.

7. Go to **Resource Scheduling Optimization** > **Settings** > **Booking Statuses**. Select a booking status and choose the **Scheduling Method**.

Active Booking Statuses* ▾			
	Name ▾	Description ▾	Scheduling Method ↓ ▾
	In Progress		Optimize
	Simulation - RSO	Suggested bookings...	Ignore
	Arrived		Do Not Move

- **Optimize**: Allows the system to freely move this booking to optimize scheduling.
- **Do Not Move**: The system doesn't change the booking. Resource Scheduling Optimization preserves the estimated arrival time and assigned resource. The start time and estimated travel duration can be changed if the earlier booking is in a new location. It's similar to a user setting the booking to **Locked to resource + time**.
- **Ignore**: Resource Scheduling Optimization ignores this booking for both, location and time. Use this setting when the booking status is proposed or canceled.

**(!) Note**

Booking statuses with no specified scheduling method are treated as Do Not Move.

## Feedback

Was this page helpful?

 Yes

 No

Provide product feedback 

# Optimization scopes in Resource Scheduling Optimization

Article • 07/18/2024

Optimization scopes define what Resource Scheduling Optimization optimizes. Scope definitions include the resources, requirements, or bookings, and the time range to consider for optimization. Optimization scopes should be defined as narrowly as possible.

Often, organizations already have partitions that can be used for Resource Scheduling Optimization. Here are some examples:

- **Temporal partitions:** Resources that work during the day or resources that work at night
- **Geographical partitions:** Neighborhoods, cities, or other territories
- **Logical partitions:** Support levels, incident types, and so on

System views and personal views are critical building blocks for optimization scopes. A view is a set of filters that result in a list of records. [Create personal views](#) to ensure that the system focuses on the correct records. Optimization is completed more quickly if optimization requests contain fewer resources, requirements, or bookings, and a shorter time range.

## Create an optimization scope

1. In Resource Scheduling Optimization, go to **Settings > Optimization Scopes**.
2. Select **New** to create a new scope. Alternatively, you can edit an existing scope.
3. Select views to define the list of records that the system optimizes when this scope is used. If you select a personal view, it's shared with the Resource Scheduling Optimization application user and other users who have access to the optimization scope.
  - **Resource View:** This view defines which resources are considered for optimization.
  - **Requirement View:** This view defines which resource requirements are considered for optimization.
  - **Booking View:** This view defines which bookable resource bookings are considered for optimization. To ensure that optimization runs consider only

future bookings that occur after a specific point, you can select a value in the **On or After** field.

4. Configure optimization range settings. The optimization range is the time range during which bookings can be created, updated, or deleted.

- **Range Reference:** Specify the start time for all subsequent work order range calculation. Select either **Job current time** or **Beginning and the job's current day**.
- **Range Offset:** Specify the amount of time to add to the range reference to define the start of the time range.
- **Range Duration (days):** Specify the number of days to add to the range reference to define the duration of the time range.

The following diagram shows how the range reference, range offset, and range duration work together to define the optimization range.



#### (!) Note

If bookings or resource requirements are listed in the selected views, but the promised date/time windows are outside the optimization range, Resource Scheduling Optimization doesn't create or update those requirements or bookings.

5. Save the optimization scope. Then, on the command bar, select **Schedule Board** to preview the selected resources, requirements, and bookings on a new schedule board tab. You can modify filters in the left pane and save the results to the optimization scope.
6. Expand the **Optimization** pane to [select the optimization goal](#). Select **Run** to [start an ad-hoc optimization request](#).

## Feedback

Was this page helpful?

 Yes

 No

Provide product feedback 

# Optimization goals in Resource Scheduling Optimization

Article • 07/25/2024

An optimization goal defines conditions and expectations that Resource Scheduling Optimization should consider when performing an optimization.

The Resource Scheduling Optimization engine processes a list of resources and a list of resource requirements and existing bookings. It creates the optimal route or list of bookings for the resources. Bookings are considered optimally scheduled if they meet all constraints respect the importance of the listed objectives in the defined order.

## Create a scheduling optimization goal

Using the elements of a goal, you define how bookings should be optimized.

**Maximize Productivity** - Saved  
Scheduling Optimization Goal

**General** **Related**

Name	★ <b>Maximize Productivity</b>		
Engine Effort Level	★ <b>Moderate</b>		
Travel Time Calculation	★ <b>Bing Maps without historical traffic</b>		
Constraints	Schedule Within Working Hours, Meets Required Characteristics, Scheduling Lock Options, Scheduling Windows		
<b>Objectives</b>	<b>+ New Scheduling Opti...</b> <b>:</b>		
✓ Objective ▼	Order ↑ ▼	Status ▼	Description ▼
Maximize Total Working hours	1	Active	---
Schedule As Soon As Possible	2	Active	---
Minimize Total Travel Time	3	Active	---
Best Matching Skill Level	4	Active	---
High Priority Requirements	5	Active	---

1. In Resource Scheduling Optimization, in the **Settings** section, go to **Optimization Goals**.
2. Enter a **Name** for the optimization goal.

3. Choose an **Engine Effort Level**. It defined the amount of effort that the system puts in to find the best combination of resources, route, and day or time. Higher effort levels mean that the optimization engine considers more possible combinations. The more combinations the system considers, the longer it takes to complete the calculations.
4. Choose the **Travel Time Calculation** option to specify the method of calculating travel distance between resources and requirements. You can include historical traffic information when using Bing Maps to get more accurate travel time estimation based on general traffic patterns in the past. This option doesn't include real-time traffic disruptions, such as road maintenance or accidents. Choosing historical traffic information leads to longer processing times of the optimization run and supports up to 500 requirements in the optimization scope. If your optimization scope includes more requirements, split it into smaller chunks and create an optimization goal with historical traffic for each scope. Due to the longer processing time, consider using that option mainly on schedules that are set to run automated of business hours.
5. Select all **Constraints** for the optimization goal. **Constraints** are restrictions that are imposed on the bookings that the system creates.
6. Select **Save** to create the *Scheduling Optimization Goal* record.
7. In the **Objectives** section of the record, select an objective to change its properties. Select **New Scheduling Optimization Objective** to add more. **All objectives** are explained in detail below.
8. Select **Save & Close** to apply your changes.

## Default optimization goal

When Resource Scheduling Optimization is deployed, the system automatically creates a default goal with some constraints and objectives. You can modify it as needed or create a new optimization goal and set it as default.

The default goal is used when single resource optimization is selected from the schedule board.

Go to **Resource Scheduling > Settings > Administration > Scheduling Parameter > Resource Scheduling Optimization** to set the default goal.

## Understand constraints

Resource Scheduling Optimization works with a set of constraints that you can use to define an optimization goal.

## Schedule Within Working Hours

Creates the booking if the travel time to the work location and the work itself fit in a resource's working hours. It also includes travel time from the last booking to the resource's end location. However, the travel time at the end of the day isn't represented on the schedule board.

If the constraint is removed from the goal, work will still be scheduled within working hours, but travel to and from bookings *can* happen outside of the resource's working hours. It might not leave time at the end of the day to travel to the resource's end location. All bookings will end within a resource's working hours. For more information, go to [Allow travel time outside of working hours](#).

## Meets Required Characteristics

Ensures that a resource has all the required [characteristics and proficiency](#) to complete a resource requirement.

## Meets Required Roles

Ensures that a bookable resource has the required roles to complete a resource requirement. If the resource requirement lists more than one role, the system will ensure one of the roles matches.

## Scheduling Lock Options (deprecated)

The Scheduling Lock constraint is deprecated and will soon be removed as a constraint option. Selecting this option won't have any effect on subsequent Resource Scheduling Optimization runs. For more information on using and troubleshooting the updated booking lock options, go to [Understand the booking lock option in Resource Scheduling Optimization](#).

## Scheduling Windows

This constraint ensures that Resource Scheduling Optimization creates a booking within the time window of the resource requirement or booking record.

- **From/To Date or Date Window Start/End** set to the same date: Resource Scheduling Optimization schedules the booking on that day but the time of day doesn't matter.
- **Time Window Start and Time Window End** define a time frame: Resource Scheduling Optimization schedules the booking in that time frame but the date doesn't matter.
- **Time From Promised and Time To Promised** are set to a date and a time frame: Resource Scheduling Optimization schedules a booking on the selected date in the selected time range.
- **Date Window Start/End and Time Window Start/End** are set to a time frame on the same day: Resource Scheduling Optimization schedules a booking on the selected date in the selected time range.
- **Empty time values (v3.0+)**: Resource Scheduling Optimization will respect scenarios where either the start or end time isn't defined.

For example, if a requirement has only a time window start value, the system schedules the requirement after that time, regardless of date.

This logic applies to the following fields on the *Resource Requirement* and *Resource Booking* entity:

- **Time Window Start and Time Window End**
- **Time From Promised and Time To Promised**
- **From Date and To Date**

#### ① Note

If time and date fields contain conflicting information, Resource Scheduling Optimization uses **Time From/To Promised** first.

## Meets Resource Preferences

You can add preferred resources to the requirement entity. For more information, go to [Resource preferences](#). Resource Scheduling Optimization respects three different types of resource preferences:

- **Preferred**: Scheduling preference for the defined resource, if available, but not guaranteed if a different resource better fits the optimal schedule.

- **Restricted:** The system won't schedule to the resources added to requirements with this resource preference.
- **Must choose from:** The defined resource gets scheduled if available during the time range. For multiple resources, the system will schedule the first that is available. If none of them are available, the requirement won't get scheduled.

## Matches Territories

Respect the [Territory field](#) values on the requirement and resource records, and schedule bookings only when the territory values on both records match. A requirement can only belong to one territory, but resources can belong to multiple territories.

## Matches Resource Type

Resource types define how the resource relates to the organization. The system considers the [Resource Type field](#) values on the requirement and resource records. It schedules bookings only when the resource type values on both records match.

The following resource types are considered for optimization:

- Users
- Contacts
- Accounts
- Equipment
- Facility

## Understand objectives

Add and rank the objectives of the Resource Scheduling Optimization goal. You can select multiple objectives, but the order matters. The higher it is on the list, the more preference the system gives to the objective.

## Maximize Total Working Hours

The most aggregate work time best meets this objective. Aggregate work is calculated by taking all bookings that were created or updated during the optimization process.

## Minimize Total Travel Time

Iteration with the total lowest aggregate travel time best meets this objective. It considers the travel time for the resource to get back to their end location after their last

booking, although this travel time isn't shown on the schedule board.

#### Note

This can't be the first objective in the list because to truly minimize travel time, Resource Scheduling Optimization might not schedule any requirement that requires travel time to meet the first objective.

## Locked Bookings (deprecated)

The Locked bookings objective is deprecated and will soon be removed as a goal option. Selecting this option won't have any effect on subsequent Resource Scheduling Optimization runs. For more information on using and troubleshooting the updated booking lock options, go to [Understand the booking lock option in Resource Scheduling Optimization](#).

## High Priority Requirements

Prioritize bookings for requirements with the highest score for priority. The priority is set on the *Resource Requirement* record and is an option set with weighted values. Resource Scheduling Optimization checks **Level of Importance** on priority to determine how important that priority is. Example: The Level of Importance is 10 for urgent priority and 1 for low priority. Mathematically speaking, Resource Scheduling Optimization looks at the importance of one urgent requirement (Level of Importance:  $10 \times \text{Number of requirements: 1}$ ) same as that of 10 low-priority requirements (Level of Importance:  $1 \times \text{Number of requirements: 10}$ ).

#### Note

This objective doesn't optimize to book all high priority requirements ahead of the others within the day. It only optimizes to ensure that the high priority requirements are booked to the earliest possible day, not the earliest possible time slot within the day.

## Maximize Preferred Resources

Consider the list of [preferred resources](#) noted on related requirements. The system will try to assign bookings to preferred resources first while meeting other constraints and objectives.

## Best Matching Skill Level

Resource Scheduling Optimization will consider the proficiency rating when matching [characteristics](#) required by requirements and the resources who possess those characteristics. If all required characteristics match, the system prioritizes resources with fewer skills first to keep resources available with more or unique skills for emergency work.

This objective depends on the [Meets Required Characteristics constraint](#) within the optimization goal.

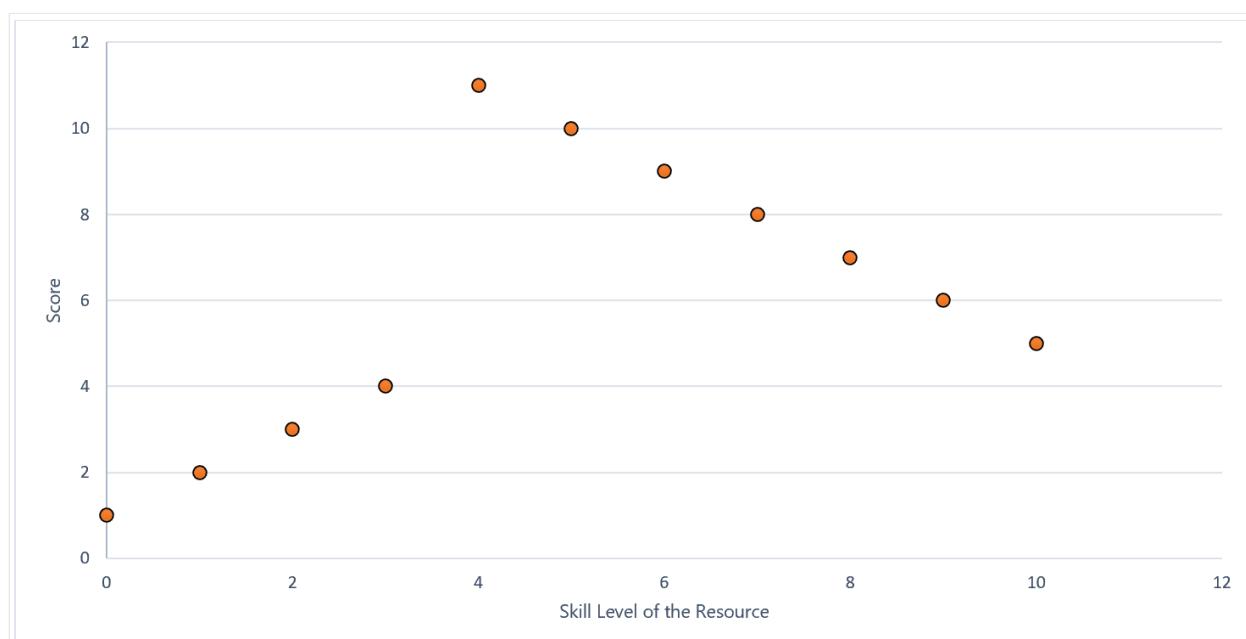
Meets Required Characteristics constraint **selected**:

- Resources without the characteristic (skill) or lower-than-required proficiency ratings aren't considered.
- Resources with the exact skill level are the best match and get the highest score.
- The more overqualified a resource is, the lower their score will be.

Meets Required Characteristics constraint **not selected**:

- Less qualified resources and resources without the skill can still be booked.
- Overqualified resources get a higher score than less qualified resources.
- The more overqualified a resource is, the lower their score will be.
- The less qualified a resource is, the lower their score will be.
- Resources without the skill get the lowest score.

The following graphic shows the score distribution, depending on the skill level for a characteristic rating model that ranges from 1 to 10. The desired skill level is 4, which gets the highest score.



## Schedule as soon as possible

Occasionally, there may be more resource capacity than demand for resources. To effectively front-load optimized bookings, add the **Schedule As Soon As Possible** objective into your optimization goal.

---

## Feedback

Was this page helpful?

 Yes

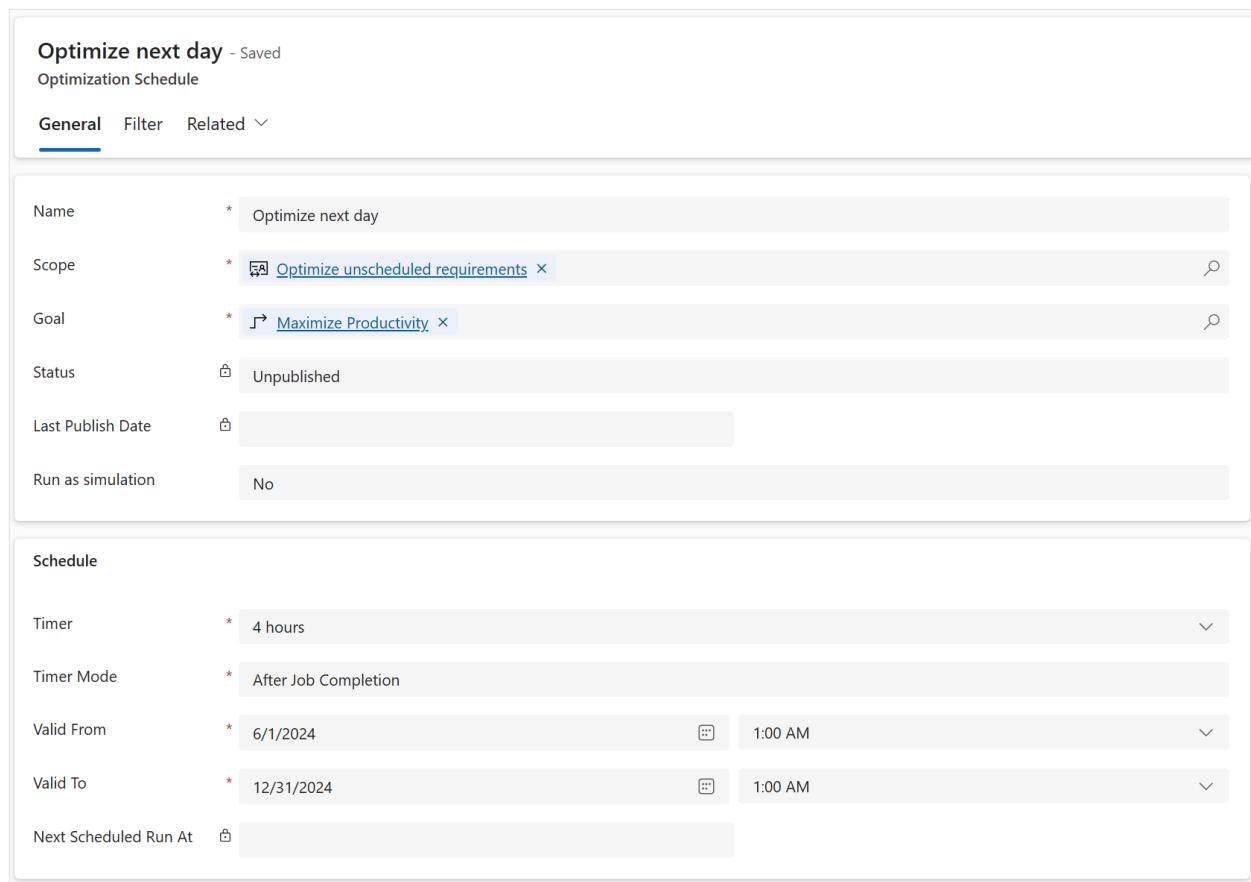
 No

[Provide product feedback ↗](#)

# Create optimization schedules in Resource Scheduling Optimization

Article • 07/31/2024

After you create a scope and a goal, you can combine and schedule them in an optimization schedule. An optimization schedule defines when Resource Scheduling Optimization automatically starts to optimize requirements and bookings. For example, an optimization schedule might specify that optimization occurs at 1:00 AM on weekdays. In this way, schedules are updated before the team starts to work, and there is minimal disruption during working hours.



Optimize next day - Saved  
Optimization Schedule

General   Filter   Related

Name: Optimize next day

Scope: Optimize unscheduled requirements

Goal: Maximize Productivity

Status: Unpublished

Last Publish Date: (empty)

Run as simulation: No

Schedule

Timer: 4 hours

Timer Mode: After Job Completion

Valid From: 6/1/2024, 1:00 AM

Valid To: 12/31/2024, 1:00 AM

Next Scheduled Run At: (empty)

## Create an optimization schedule

1. In Resource Scheduling Optimization, go to **Tools > Optimization Schedules**.
2. On the **General** tab, in the **Name** field, enter a name for the schedule.
3. In the **Scope** field, select an [optimization scope](#) for the schedule.
4. In the **Goal** field, select an [optimization goal](#) for the schedule.
5. In the **Timer** field, select how often the optimization schedule runs.

6. In the **Timer Mode** field, select one of the following values:

- *Fixed*: Optimization runs occur after every specified time interval.
- *After Job Completion*: Optimization runs wait for the specified time interval after the last Resource Scheduling Optimization job is completed.

7. Use the **Valid From** and **Valid To** fields to define the date and time range that the schedule is active during.

8. On the **Filter** tab, you can specify more details to define when the schedule runs during the specified time range. Filters can be helpful if you want to run optimizations only on specific days.

9. Review all the values. If they are correct, select **Publish** on the command bar to activate the schedule.

## Optimization schedule statuses

- *Unpublished*: This status is the default status when a schedule is created or reset.
- *Publishing*: The system is trying to publish schedules.
- *Published*: The system published a schedule, and it's ready to run.
- *Out of Sync*: The schedule must be published again because of changes that were made against it.
- *Under Maintenance*: Someone is upgrading Resource Scheduling Optimization to a newer version.
- *Failed*: The system failed to publish schedules. You can find error details on the schedule page. If you receive an error message that states, "A SASKey has not been configured for ServiceEndpoint RSO Data Sync," Azure resources for Resource Scheduling Optimization aren't set up correctly.

## Reset an optimization schedule

To unpublish a schedule and cancel all pending jobs that are related to it, you can reset the schedule.

1. In Resource Scheduling Optimization, go to **Tools** > **Optimization Schedules**.
2. Open a published schedule.
3. On the command bar, select **Reset Resource Scheduling Optimization**.

## Review optimization requests

Every time a schedule triggers an optimization job, it creates a *scheduling optimization request* record. You can open these records to review details about the associated resources and bookings.

- View which resources are being optimized and which aren't, together with the reason.
- View booking details and charts that compare travel time to the scheduled work hours for the job run.

### Tip

If one of your schedules runs for a long time and seems stuck, [reset it](#). If a reset of a single optimization schedule doesn't work, or if it becomes stuck too, reset and republish all your schedules.

## Feedback

Was this page helpful?

 Yes

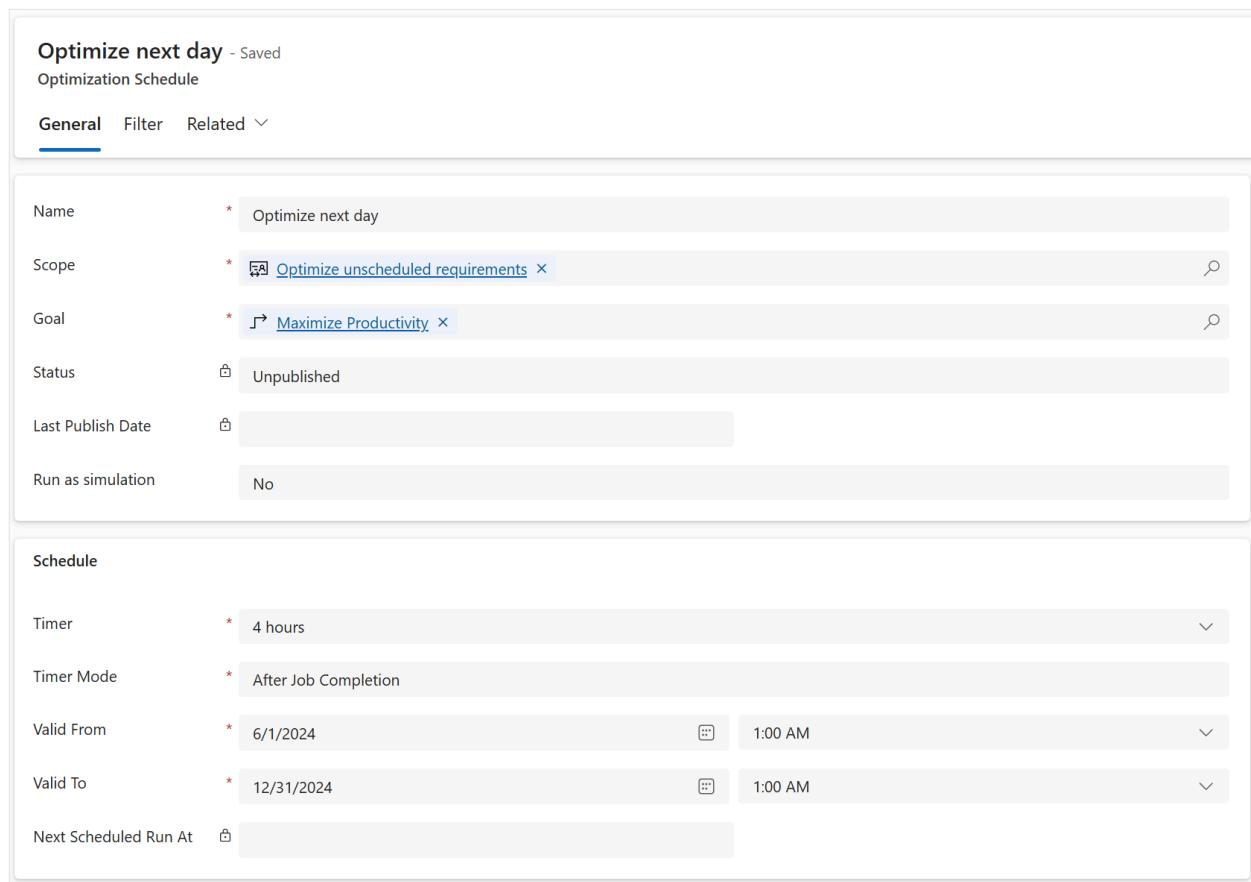
 No

[Provide product feedback](#) ↗

# Create optimization schedules in Resource Scheduling Optimization

Article • 07/31/2024

After you create a scope and a goal, you can combine and schedule them in an optimization schedule. An optimization schedule defines when Resource Scheduling Optimization automatically starts to optimize requirements and bookings. For example, an optimization schedule might specify that optimization occurs at 1:00 AM on weekdays. In this way, schedules are updated before the team starts to work, and there is minimal disruption during working hours.



Optimize next day - Saved  
Optimization Schedule

General   Filter   Related

Name: Optimize next day

Scope: Optimize unscheduled requirements

Goal: Maximize Productivity

Status: Unpublished

Last Publish Date: (empty)

Run as simulation: No

Schedule

Timer: 4 hours

Timer Mode: After Job Completion

Valid From: 6/1/2024, 1:00 AM

Valid To: 12/31/2024, 1:00 AM

Next Scheduled Run At: (empty)

## Create an optimization schedule

1. In Resource Scheduling Optimization, go to **Tools > Optimization Schedules**.
2. On the **General** tab, in the **Name** field, enter a name for the schedule.
3. In the **Scope** field, select an [optimization scope](#) for the schedule.
4. In the **Goal** field, select an [optimization goal](#) for the schedule.
5. In the **Timer** field, select how often the optimization schedule runs.

6. In the **Timer Mode** field, select one of the following values:

- *Fixed*: Optimization runs occur after every specified time interval.
- *After Job Completion*: Optimization runs wait for the specified time interval after the last Resource Scheduling Optimization job is completed.

7. Use the **Valid From** and **Valid To** fields to define the date and time range that the schedule is active during.

8. On the **Filter** tab, you can specify more details to define when the schedule runs during the specified time range. Filters can be helpful if you want to run optimizations only on specific days.

9. Review all the values. If they are correct, select **Publish** on the command bar to activate the schedule.

## Optimization schedule statuses

- *Unpublished*: This status is the default status when a schedule is created or reset.
- *Publishing*: The system is trying to publish schedules.
- *Published*: The system published a schedule, and it's ready to run.
- *Out of Sync*: The schedule must be published again because of changes that were made against it.
- *Under Maintenance*: Someone is upgrading Resource Scheduling Optimization to a newer version.
- *Failed*: The system failed to publish schedules. You can find error details on the schedule page. If you receive an error message that states, "A SASKey has not been configured for ServiceEndpoint RSO Data Sync," Azure resources for Resource Scheduling Optimization aren't set up correctly.

## Reset an optimization schedule

To unpublish a schedule and cancel all pending jobs that are related to it, you can reset the schedule.

1. In Resource Scheduling Optimization, go to **Tools** > **Optimization Schedules**.
2. Open a published schedule.
3. On the command bar, select **Reset Resource Scheduling Optimization**.

## Review optimization requests

Every time a schedule triggers an optimization job, it creates a *scheduling optimization request* record. You can open these records to review details about the associated resources and bookings.

- View which resources are being optimized and which aren't, together with the reason.
- View booking details and charts that compare travel time to the scheduled work hours for the job run.

### 💡 Tip

If one of your schedules runs for a long time and seems stuck, [reset it](#). If a reset of a single optimization schedule doesn't work, or if it becomes stuck too, reset and republish all your schedules.

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback ↗](#)

# Optimize schedules during the night

Article • 07/25/2024

Resource Scheduling Optimization is flexible and can be configured to run optimizations based on your organization's scheduling needs. Some organizations prefer running the optimization during the night to provide frontline workers and dispatchers with the latest schedules when they start their days.

You can configure Resource Scheduling Optimization for overnight scheduling so it runs each night at a defined time and schedules work orders for the following day. This article discusses key settings to enable overnight scheduling.

## Configure the optimization scope for overnight scheduling

[Create a new optimization scope](#) or edit an existing scope.

- Set **Range Reference** to **Job Current Time**.
- Set **Range Offset** to **1 minute**. Because this optimization runs at night, it doesn't affect a technician's ability to respond quickly to schedule changes.
- Set **Range Duration** to **1 day**. This means that jobs are booked within a 24-hour period from when Resource Scheduling Optimization runs.

## Configure the optimization goal for overnight scheduling

[Create a new optimization goal](#) or edit an existing goal.

- Set **Engine Effort Level** to **Intense** or **Very Intense**. The optimization takes longer to run but returns better optimizations. Because overnight scheduling is intended to run during the night when no one is working, we prioritize quality over speed.
- Add constraints based on your business needs.

## Configure the optimization schedule for overnight scheduling

Create a new optimization schedule or edit an existing schedule.

- Set **Timer** to **1 hour** so the system checks every hour if it should run.
- Set **Timer Mode** to **Fixed**.
- For **Valid From** and **Valid To**, enter the date range for which overnight scheduling is valid.
- On the **Filter** tab, define when you want Resource Scheduling Optimization to run:
  - **Filter Time Zone**: Choose your resources' time zone.
  - **Hours**: Set to **12:00 AM** or some time at the night.
  - **Days Of Week**: Choose the days of business operations. For example, Monday - Friday.

Based on the timer, the system checks the filters and starts an optimization request if there's a matching value. In our example, every hour, Resource Scheduling Optimization checks if the hour of the day is 12:00 AM and the day of the week is Monday through Friday.

---

## Feedback

Was this page helpful?



[Provide product feedback ↗](#)

# Get email alerts for failed or canceled optimization requests

Article • 07/18/2024

Resource Scheduling Optimization runs can fail for various reasons. As a best practice, we recommend that you set up an automated workflow that monitors optimization jobs and sends alerts based job status. Microsoft Power Automate is a comprehensive end-to-end automation platform that you can use to help with monitoring and send alerts when failures occur.

## Create a flow in Power Automate

1. Sign in to [Power Automate](#).
2. Select the environment where Resource Scheduling Optimization is installed.
3. Select **Create**, and then select **Automated cloud flow**.
4. Give your flow a name, and select the **When a row is added, modified, or deleted** trigger.
5. Configure the trigger parameters:
  - **Change Type:** *Modified*
  - **Table Name:** *Scheduling Optimization Requests*
  - **Scope:** *Organization*
  - **Selected Columns:** *modifiedon*, *mydyn\_optimizationstatus*, and *optimizationId*
6. Add an action, and select **Control**.
7. Select **Condition** in the list. For alerts about any failures or cancellations in the past six hours, set up the following expression.

condition

AND

```
modifiedon is greater than addHours(-6)
OR
OptimizationStatus is equal to 192350003
OptimizationStatus is equal to 192350004
```

In this expression, `192350003` represents a canceled optimization request, and `192350004` represents a failed request.

8. In the **True** branch of the condition, add an action, and select **Send an email notification (V3)**.
  9. Configure the parameters for the email notification. To include column values in the subject or body, select the lightning bolt symbol, and then select the name of the column in the filter box.
- 

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback ↗](#)

# Run an optimization ad hoc

Article • 07/31/2024

Typically, Resource Scheduling Optimization is run through [automated optimization schedules](#). However, high-priority work sometimes comes up and leads to changes on subsequent bookings. In this case, a dispatcher might want to run the schedule optimization on demand.

## Run schedule optimization from an optimization scope

1. In Resource Scheduling Optimization, go to **Tools > Optimization Schedules**.
2. Open a published schedule.
3. On the command bar, select **Run now**.

## Use the schedule board to review optimization results

To view the outcome of an optimization run in a more visual way, you can show the results on a schedule board.

1. In Resource Scheduling Optimization, go to **Tools > Optimization Schedules**.
2. Open a published schedule.
3. On the command bar, select **Schedule board**.

On the schedule board:

- Resource filters match the [configuration of the optimization scope](#).
- The requirements pane has three tabs:
  - **Open and eligible for optimization:** This tab shows unscheduled requirements that match the scope definition, requirement range, and requirement state setting.
  - **Eligible for optimization:** This tab shows unscheduled requirements and other eligible bookings that match the scope definition, requirement range, and requirement state setting.
  - **Excluded from optimization:** This tab shows requirements or bookings that won't be optimized because of failures such as an invalid longitude or latitude value.

- An icon on a resource indicates that the resource isn't part of the optimization scope.
- An icon on the booking indicates that the [booking is locked](#).
- Yellow lines indicate the start and end times of the optimization range.
- The **From** and **To** dates and times match the time range that is defined in the optimization scope.

You can change the values and save the changes to the optimization scope. If the same scope is used for multiple optimization schedules, your changes apply to all of them.

---

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback](#) ↗

# Run Resource Scheduling Optimization as a simulation

Article • 07/25/2024

Running an optimization as a simulation lets admins see what optimization results will look like. Review results closely before setting up a recurring schedule.

The simulation feature also empowers admins to review optimization results before pushing the assignments to all resources, or to discard the results and rerun by adjusting optimization parameters.

## How to trigger a simulation run

There are two ways to run an optimization request in simulation mode:

- 1. From the schedule board:** Choose a schedule board with the custom web resource for Resource Scheduling Optimization configured. Select the **Optimization** options, set the optimization parameters and choose **Run as simulation**.
- 2. From the optimization schedule:** Open the configuration of an optimization schedule and set **Run as simulation** to **Yes**. Publish the optimization schedule and run it.

After reviewing the results a simulation run, you can apply or discard the changes.

---

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback !\[\]\(d6ac915d1580ead600d2b759bc48cf4f\_img.jpg\)](#)

# Resolve booking conflicts in Resource Scheduling Optimization

Article • 07/15/2024

Booking conflicts can occur when someone changes a resource, requirement, or booking during an optimization run that involves that resource, requirement, or booking. Resource Scheduling Optimization helps you understand and resolve these conflicts.

In conflict scenarios, the optimization request has a status of *Completed with Conflicts*.

The optimization request booking view includes bookings that have conflicts because of edits that were made during optimization. You can identify these bookings because they have a booking status of *Simulation*, and a conflict icon is shown for them.

The **Operation Details** column shows more details, such as the specific data that was changed during optimization.

To resolve the conflicts, select one or more of the affected bookings (that is, bookings that have a status of *Simulation*), and then select one of the following options:

- **Apply with Overwrite:** Commit the simulation booking. Select this option if you want to favor the optimization results.
- **Discard:** Remove the simulation booking. Select this option if you want to favor the manual booking edits from the dispatcher or field technician.

After you select **Apply with Overwrite** or **Discard**, the optimization status is changed to *Completed*, and the conflict is resolved.

---

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback ↗](#)

# Single resource optimization for Resource Scheduling Optimization

Article • 10/15/2024

You can configure the Resource Scheduling Optimization Add-in for Dynamics 365 Field Service to [run optimizations based on your entire organization's scheduling needs](#).

Sometimes you might need to optimize only a single resource's schedule, rather than for a set of available resources. Single resource optimization provides a quick way to optimize a resource's schedule and travel route. It considers the existing bookings on the resource's schedule and more requirements.

It helps accommodate schedule changes that occurred during the day, when a resource:

- Has a gap in the schedule due to a cancellation.
- Is double-booked because emergency work order was assigned.
- Has a schedule that was put together manually and needs a route with minimal travel.

To optimize an individual resource's schedule, a dispatcher can manually run single resource optimization. Workflows can also trigger single resource optimization. Unlike other Resource Scheduling Optimization scenarios, you can't schedule single resource optimization runs.

## ⓘ Note

Starting with Field Service version 8.8.99.10 and Resource Scheduling Optimization version 3.4.0.623, single resource optimization runs take requirements and existing bookings into account. As a consequence, the system can delete existing bookings to create a schedule that better matches the optimization goal. In earlier versions, single optimization runs only considered existing bookings.

## Prerequisites

- Dynamics 365 Field Service version 8.8.99.10 or newer.
- Resource scheduling optimization version 3.4.0.623 or newer.
- **Optimize Schedules** is set to **Yes** for the bookable resource you want to run single resource optimization for.

# Step 1: Set up a goal

Single resource optimization is the only Resource Scheduling Optimization scenario that doesn't require an optimization scope. The scope is automatically defined as *bookings for the resource in the defined date range*. [Optimization goals](#) define what metrics Resource Scheduling Optimization should consider and prioritize.

First, [create a new optimization goal](#).

Single resource optimization typically cleans up a schedule that changed throughout the day. Consider the following recommendations:

- Set **Engine Effort Level** to **Very Light**. The faster single resource optimization completes, the better dispatchers can react to scheduling needs.
- Remove the **Schedule Within Working Hours** constraint to allow more bookings to fit in the resource's schedule. This setting can be helpful if a resource needs to pick up urgent work. Removing this constraint allows the end time of a booking to spill over into nonworking hours. Using the constraint, the system ensures there's time after completing the last booking to travel back to the resource's end location.
- Remove the travel time calculation option for historical traffic if it's enabled on the optimization goal.
- Remove constraints related to matching territory, roles, and characteristics because the scenario assumes the *dispatcher knows best*. Keeping constraints enabled could lead to a situation where the dispatcher assigns a work order to a resource overriding the constraints, then runs single resource optimization, which deletes the booking because it doesn't match the resource's attributes.
- Add **Scheduling Lock Options** and **Scheduling Windows** constraints so single resource optimization upholds time promises or SLAs with the customer.

## Tip

A location agnostic resource can only have bookings for which the *Resource Requirement* is also set to location agnostic. Resource Scheduling Optimization treats that resource like a remote worker who only gets scheduled for work that doesn't involve travel. Alternatively, you can [Enable a resource to travel outside working hours](#) to work around this constraint.

Next, [add your single resource optimization goal as the default goal](#).

## Step 2: Run and view results

There are three ways to run single resource optimization:

- Run with defaults
- Run after making changes to defaults
- Run as simulation after making changes to defaults

### Run with defaults

On the schedule board, right-click a resource (except a [crew](#), [pools](#) or [facilities](#)) and select **Optimize Schedule** to optimize with:

- The default optimization goal
- The default optimization range, which is from now to the end of today (12:00 AM)
- The existing bookings on the resource's schedule in that optimization range
- Requirements from the active view of requirements at the bottom of the schedule board, ordered according to any sorting or filtering that have been applied to that view

When the optimization completes, you see the new set of bookings on the schedule board. In the right pane, you find details about bookings that were updated, deleted, or created.

### Run after making changes to defaults

You can change the default goal and time range before running the optimization. For example, if you extend the time range to the next day, the system considers all existing bookings and requirements between now and the end of the next day to create a schedule.

1. Select a resource's name and open the **Optimizations** pane.

 **Note**

This capability is only available from the schedule board view associated with the optimization scope.

2. Select **Single resource**.

3. Set the optimization range to the desired values.

4. For **Requirements**, choose the view from which to consider requirements for optimization. Filters and sorting settings of the selected view determine the order of requirements. Select **None** to optimize only the existing bookings.

5. Select the desired optimization goal.

6. Select **Run > Run now** to start a single resource optimization request.

You can see the request status in the **Optimization requests history** section on the **Optimizations** pane. When completed, the schedule board updates with the optimized set of bookings. Double-click the optimization request to view the details about which bookings were deleted, updated, or created.

## Run as simulation after making changes to defaults

By running single resource optimization as a simulation, you can see the resulting optimization before committing to it. To run a simulation, follow the steps in [Run after making changes to defaults](#). This time, instead of selecting **Run now** in the drop-down, select **Run as simulation**. After the optimization request completes, bring up the details to **Apply** or **Discard** the results.

### Note

Simulated bookings don't show on maps with routes.

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback](#) 

# Optimize multi-day service requests (preview)

Article • 07/15/2024

[This article is prerelease documentation and is subject to change.]

A [service requirement can be manually scheduled across multiple days and weeks](#). An example is a 40-hour work order across an entire work week, where the same field technician is expected to perform more detailed work at the same location each day. You can now use Resource Scheduling Optimization to optimize multi-day service requests of this type.

## ⓘ Important

- This is a preview feature.
- Preview features aren't meant for production use and may have restricted functionality. These features are available before an official release so that customers can get early access and provide feedback.

## Multi-day requirements for a single resource

For multi-day requirements, the booking method that is set for the requirement determines what logic is used when the requirement is scheduled. The system then uses the duration of the requirement details to optimize the schedule.

Resource Scheduling Optimization assigns all bookings of a multi-day requirement to the same resource within the defined optimization range. If no resource is available, or if available resources don't have enough capacity to fulfill the multi-day requirement, the system leaves the requirement unscheduled.

Scheduling considers break times that are defined in the resource calendar. Multi-day bookings are scheduled around break times.

Resource Scheduling Optimization also calculates travel time from and to the start and end locations, just as it does for other onsite bookings. If you want technicians to travel at their own expense or outside of working hours, you can configure travel outside of working hours as required.

# Special cases for multi-day requirements

## The optimization range is shorter than the multi-day requirement

If [the defined optimization range](#) is less than the length of a multi-day requirement, Resource Scheduling Optimization can schedule the multi-day requirement to different resources.

For example, there is a five-day requirement for a three-day optimization range. In this case, the system assigns three-day bookings within the optimization range to the same resource. Then, during the next optimization run, it might assign the remaining bookings to a different resource.

To prevent Resource Scheduling Optimization from assigning the remaining bookings to a different resource, you can lock any of the multi-day bookings to a resource. Then, during the next optimization run, the system assigns the remaining bookings to the same resource.

## The optimization range doesn't fully overlap the multi-day requirement

If [the defined optimization range](#) doesn't fully overlap a multi-day requirement, Resource Scheduling Optimization partially fulfills the multi-day requirement.

For example, there is a 40-hour multi-day requirement between March 1 and March 5, but the optimization range is two days, March 1 through March 2. In this case, the system creates bookings for March 1 and 2 for the same resource. If no resource is available on those two days, the bookings remain unscheduled. For the subsequent optimization run for March 2 and March 3, Resource Scheduling Optimization assigns the booking for March 3.

To prevent the system from partially fulfilling multi-day requirements, ensure that the optimization range matches the date range of the multi-day requirement.

## Known issues

Optimization runs might create an extra booking for multi-day requirements if one existing booking has a status of *Completed*.

If you lock multiple bookings to different resources, optimization runs might delete multi-day bookings instead of optimizing them.

---

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback ↗](#)

# Schedule in sequence with requirement dependencies

Article • 07/15/2024

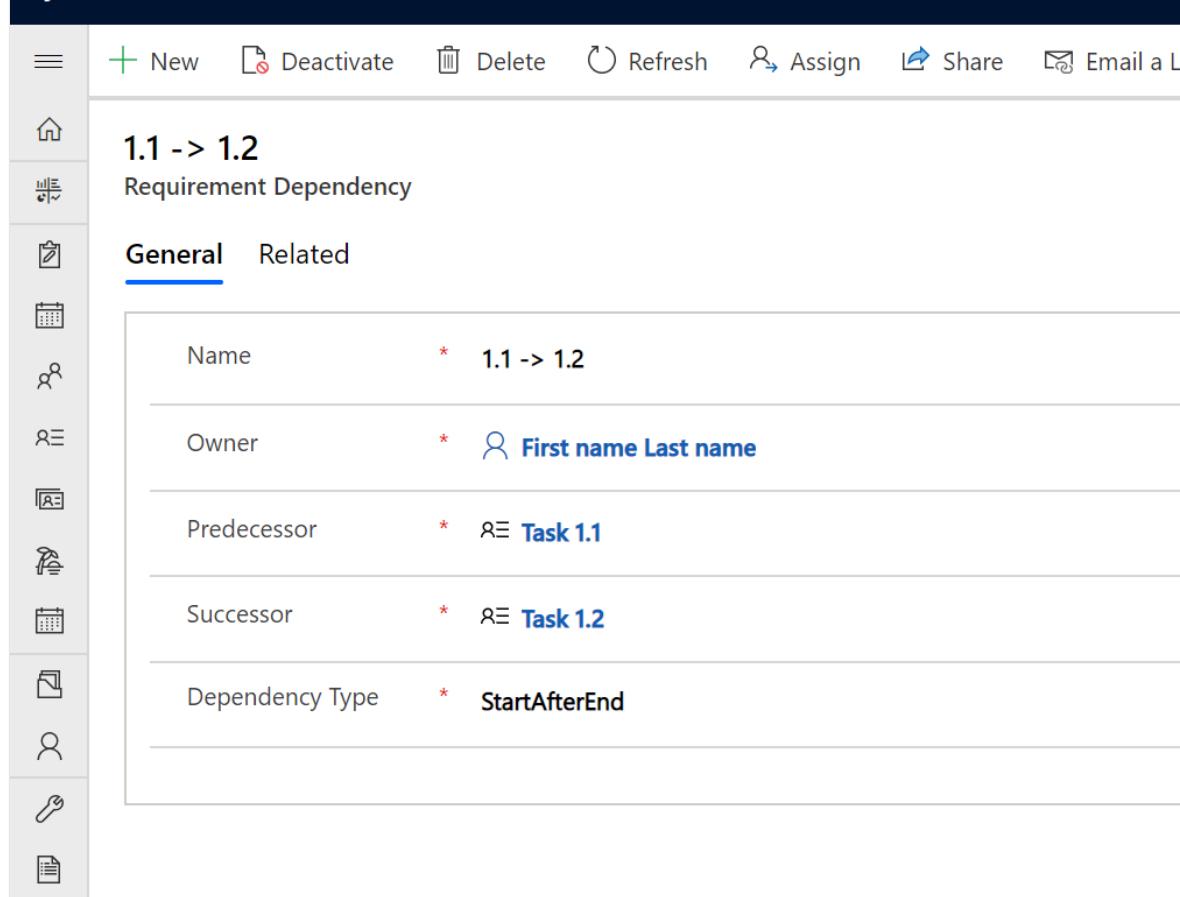
In some situations, requirements must be scheduled in a specific sequence. For example, a technician must stop by a warehouse to pick up a unique part before they go to a customer's site to install that part.

If Resource Scheduling Optimization should schedule requirements in a specific sequence, you can add requirement dependencies. Then, when Resource Scheduling Optimization runs, it ensures that the requirements are scheduled in the correct order. It also ensures that the start time of each successive requirement is after the end time of its predecessor.

## Create a requirement dependency

In the following example, there are two requirements: Task 1.1, which should be completed first, and Task 1.2, which should be completed second.

1. Open the requirement that must be completed first, and select **Related > Successors**.
2. Provide a name, and select the requirements that should be the predecessor and the successor.
3. Set the **Dependency Type** field to *StartAfterEnd*.



The screenshot shows the Dynamics 365 Field Service Resource Requirements page. The top navigation bar includes 'New', 'Deactivate', 'Delete', 'Refresh', 'Assign', 'Share', and 'Email a L'. The main content area displays a requirement dependency named '1.1 -> 1.2' with the following details:

- Name:** \* 1.1 -> 1.2
- Owner:** \* First name Last name
- Predecessor:** \* Task 1.1
- Successor:** \* Task 1.2
- Dependency Type:** \* StartAfterEnd

4. Repeat the previous steps to add a requirement dependency for every other requirement in the sequence.

Provided that the requirements are [within the optimization scope](#), the system respects the dependencies [when Resource Scheduling Optimization runs](#).

### ⓘ Important

- Requirement dependencies support only individual requirements that are scheduled to the same resource through optimization runs. Resource groups aren't supported.
- Resource Scheduling Optimization schedules successive requirements around [locked bookings](#) and considers a resource's work hours. Therefore, depending on the optimization scope, successors might be scheduled for the next workday in some cases.

## Feedback

Was this page helpful?

 Yes

 No

Provide product feedback 

# Allow travel time outside of working hours with Resource Scheduling Optimization

Article • 07/17/2024

By default, the Resource Scheduling Optimization add-in for Dynamics 365 Field Service considers travel time part of a technician's work hours. However, this default setting doesn't match every organization's business needs. For example, a technician's work hours begin at 8 AM. By default, the optimization algorithm schedules the technician to start to travel to the customer's site at 8 AM. Therefore, the technician won't start to work at the site until some time after 8 AM.

Administrators can [change the settings of an optimization goal](#) to allow travel time outside of working hours. The system can then schedule a technician to begin their workday a little earlier. In this way, they can start to travel before the beginning of working hours and arrive at the work location when their work hours begin.

[Resource utilization](#) might improve if travel time isn't considered part of a technician's work hours.

[https://www.microsoft.com/en-us/videoplayer/embed/RE4Fe9O?postJslIMsg=true ↗](https://www.microsoft.com/en-us/videoplayer/embed/RE4Fe9O?postJslIMsg=true)

## Edit the constraints of an optimization goal

To remove the default constraint from an optimization goal, follow these steps.

1. [Open the optimization goal](#) for which you want to allow travel time outside of working hours.
2. Remove the **Schedule Within Working Hours** constraint.

Maximize Productivity - Saved  
Scheduling Optimization Goal

General Related ▾

Name	* Maximize Productivity	
Engine Effort Level	* Moderate	
Travel Time Calculation	* Bing Maps without historical traffic	
Constraints	<input type="checkbox"/> Schedule Within Working Hours <span style="color: red;">X</span>	<input type="checkbox"/> Meets Required Characteristics <span style="color: red;">X</span>

## Enable a resource for scheduling outside of working hours

To define which resources are considered for travel outside of working hours, follow these steps.

1. In Resource Scheduling Optimization, go to **Scheduling > Resources**.
2. Open a bookable resource.
3. On the **Scheduling** tab, for the **Schedule Outside Work Hours** field, select **Allow Travel Before Work Hours**, **Allow Travel After Work Hours**, or both.
4. For the **Travel Limit (in minutes)** field, specify how much extra time, in minutes, the Resource Scheduling Optimization algorithm can allocate for travel. The travel limit that you define applies to both travel before working hours and travel after working hours. You can't define a separate travel limit for each option.

David So  
Bookable Resource

General Scheduling Work Hours Resource Scheduling Optimization Related

Start Location	* Resource Address	Organizational Unit	---
End Location	* Resource Address		

**Scheduling**

Display On Schedule Board	* Yes	Enable for Availability Search	Yes
Schedule Outside Work Hours	Allow Travel Before Work Hours, All...	Travel Limit (in minutes)	30

---

# Feedback

Was this page helpful?

 Yes

 No

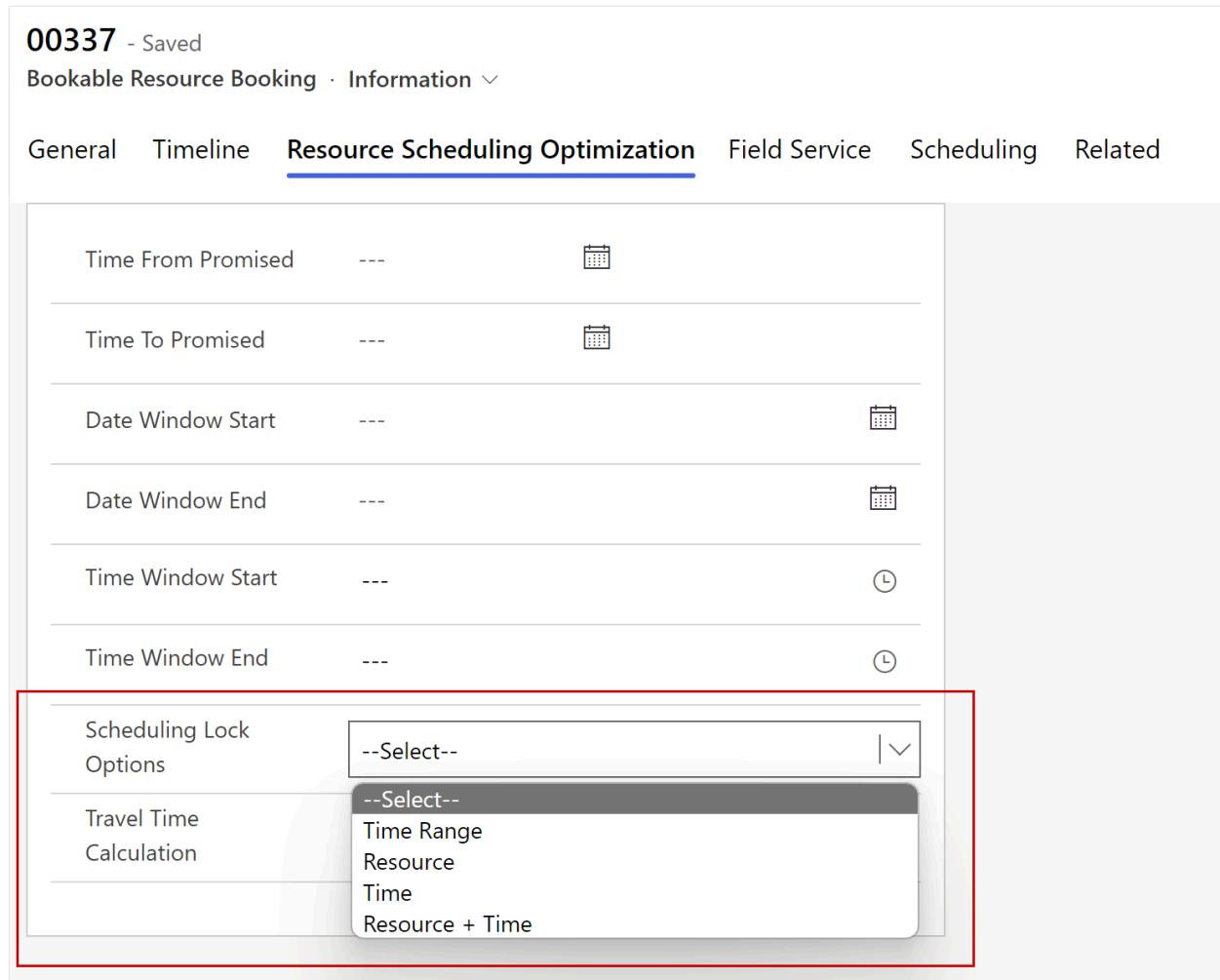
[Provide product feedback ↗](#)

# Understand the booking lock option in Resource Scheduling Optimization

Article • 01/27/2023

Once a booking is created, a lock can be set on the **Scheduling Lock Options** field in the **Resource Scheduling Optimization** tab of the *Bookable Resource Booking* record.

Resource Scheduling Optimization will always include locked bookings as part of the optimized schedule.



00337 - Saved  
Bookable Resource Booking · Information ▾

General Timeline **Resource Scheduling Optimization** Field Service Scheduling Related

Time From Promised	---	
Time To Promised	---	
Date Window Start	---	
Date Window End	---	
Time Window Start	---	
Time Window End	---	

Scheduling Lock Options

--Select--

--Select--

Time Range  
Resource  
Time  
Resource + Time

## Booking lock options

There are four options:

- **Time Range:** Resource Scheduling Optimization can move bookings within certain time ranges to ensure the *Estimated Arrival Time* falls into this time range but not the booking end time. Resource Scheduling Optimization can assign bookings to other resources by respecting the time range and the following time-related fields.

- **Date Window Start** and **Date Window End** are set to the same day: Resource Scheduling Optimization schedules the booking on that day but the time of day doesn't matter.
- **Time Window Start** and **Time Window End** define a time frame: Resource Scheduling Optimization schedules the booking in that time frame but the date doesn't matter.
- **Time From Promised** and **Time To Promised** are set to a date and a time frame: Resource Scheduling Optimization schedules a booking on the selected date in the selected time range.
- **Date Window Start/End** and **Time Window Start/End** are set to a time frame on the same day: Resource Scheduling Optimization schedules a booking on the selected date in the selected time range.

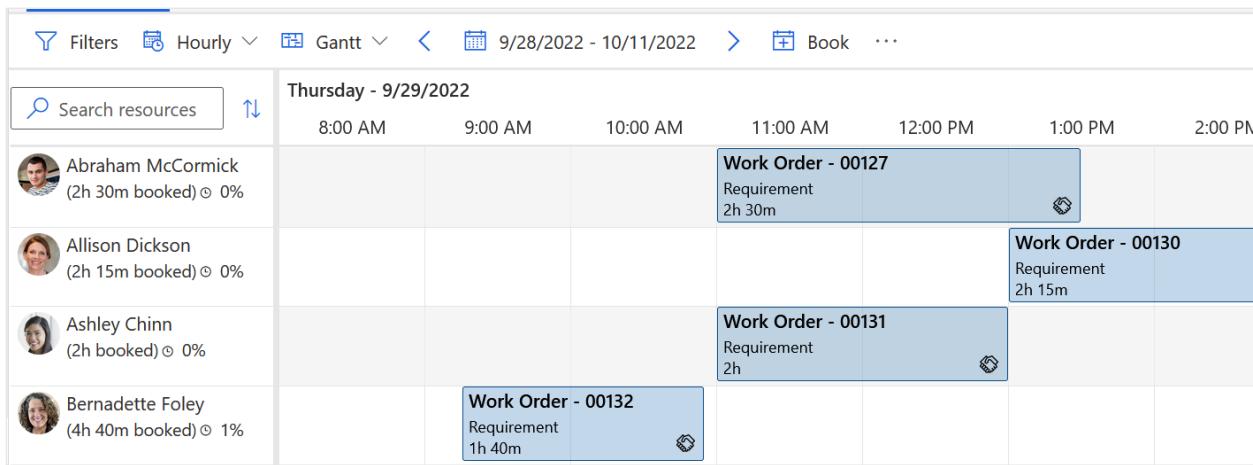
 **Note**

If time and date fields contain conflicting information, Resource Scheduling Optimization uses **Time From/To Promised** first.

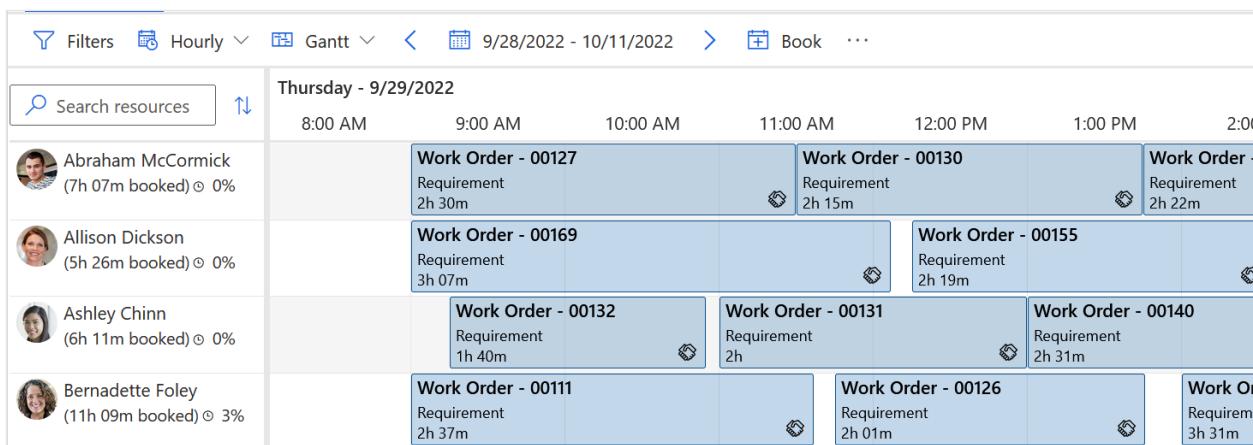
- **Resource:** Resource Scheduling Optimization can move bookings to other time frames, but has to keep the same resource.
- **Time:** Resource Scheduling Optimization can move bookings to other resources but has to keep the estimated arrival time.
- **Resource and Time:** Resource Scheduling Optimization can't move bookings to any other resource or any other time frame. The booking's start time and estimated travel duration may be changed if Resource Scheduling Optimization schedules a booking in a new location before the booking becomes a locked booking.

## Example

The resource Bernadette has a booking that starts at 9:15 AM. This booking is locked to time. When Resource Scheduling Optimization runs, the system detects a 15-minute idle time for Bernadette in the morning. No other requirement duration fits into that slot with the locked booking next to it.



To respect the defined lock option, Resource Scheduling Optimization keeps the locked booking in the schedule. However, as part of the schedule optimization, the booking gets assigned to Ashley. This change frees up time for Bernadette to complete other jobs.



## Excessive use of lock constraints

Excessive use of lock constraints may result in poor optimization of the final schedule. Booking lock options should be used wisely to maximize Resource Scheduling Optimization results and minimize interference with other Resource Scheduling Optimization objectives.

For example, there are two requirements, A (one hour) and B (eight hours). We have one resource (Jeff) that works eight hours per day. When Resource Scheduling Optimization is run with the objective to maximize total working hours, requirement B (8 hours) should be assigned to the resource Jeff.

If you book requirement A (1 hour) to the resource Jeff and lock that booking to the resource, Resource Scheduling Optimization makes sure that requirement A remains on the schedule. On the other hand, it won't schedule the requirement B (eight hours) on the same day and leaves Jeff with only one hour of scheduled work.

# Error handling and troubleshooting

Excessive use of lock constraints may result in poor optimization of the final schedule. Booking lock options should be used wisely to maximize Resource Scheduling Optimization results.

If a locked booking can't respect all defined constraints, the optimization request will continue, skipping over the identified resources that have violations. The following error message will be generated to assist with troubleshooting.

System failed to optimize some records. Inner error(s): Locked booking is infeasible, reason: `Violation`. Tracing data points: `RequirementId`, `RequirementName`, `BookingId`, `BookingName`, `ScheduledTimeWindow`, `FullTimeWindow`, `ArrivalTime`, `Lock Type`

The tracing data points help you identify what went wrong. Try updating the booking settings to address the violation reason before running Resource Scheduling Optimization again.

## Violation types

- The locked booking cannot fulfill the time window filter.
  - **LockBookingTimeWindowFilter**. Potential scenarios:
    - Locked booking is outside of resource working hours
    - Invalid promised time window
    - Invalid travel time
  - **ResourceBreakTimeWindowFilter**. A locked booking conflicts with a [scheduled break time](#).
- The eligibility check failed with constraint.
  - **MeetsRequiredSkills**. A locked booking has an invalid match of the [resource skill characteristics](#).
  - **MeetsRequiredRoles**. A locked booking has an invalid [resource role match](#).
  - **MeetsResourcePreferences**. A locked booking has an invalid “[must choose from](#)” or “[restricted](#)” resource.

---

## Feedback

Was this page helpful?

 Yes

 No

Provide product feedback 

# Overview of Field Service integrations

Article • 11/05/2024

Microsoft Dynamics 365 Field Service integrates with your other business apps to streamline your field service operations and information management.

## Integrate with Microsoft 365 Outlook and Teams

With Microsoft 365 integrations for Field Service, frontline workers and managers can create, view, and manage work orders in Outlook and Teams. As an organization, you can use the capabilities of Field Service using Microsoft Outlook or Microsoft Teams or both. [Learn more about Microsoft 365 integrations for Field Service](#).

## Integrate with Dynamics 365 Business Central

Service organizations require a front-to-back application in which financials, inventory, and procurement are tightly coupled with service delivery. Field Service organizations generate financial data with every transaction of their system. Every work order represents cost and revenue. Every resource generates profit and loss. Every customer interaction adds entries on the general ledger. The integration between Dynamics 365 Business Central and Field Service greatly reduces the effort required to connect the two apps. [Learn more about Integrate with Dynamics 365 Business Central](#).

## Integrate with finance and operations applications (preview)

Seamless financial and inventory data flow between Dynamics 365 Field Service and Dynamics 365 Finance and Supply Chain Management helps ensure the frontline and back office stay in sync. By syncing real-time price and cost information from work orders and automatically updating financial and inventory data as work orders are executed, this integration reduces the effort required to connect data between these Dynamics 365 apps. [Learn more about Field Service integration with finance and operations applications \(preview\)](#).

# Integrate with Dynamics 365 Supply Chain Management

Dynamics 365 Field Service includes basic inventory capabilities for managing frontline worker truck stock, tracking asset service history, requesting purchase orders, and documenting returns. Many organizations also integrate Field Service with their enterprise resource planning (ERP) systems. With an easy integration of Field Service with Dynamics 365 Supply Chain Management and Dataverse, you can set up two-way sync for more comprehensive inventory tracking, resource planning, and asset management across systems. [Learn more about integrating Field Service and Supply Chain Management.](#)

## Integrate with Dynamics 365 Remote Assist

If your organization is using Dynamics 365 Remote Assist, integrate it with Field Service to better support your frontline workers when they need to perform tricky procedures onsite. Technicians can start a mixed reality video call from the Field Service mobile app or their HoloLens to connect with a remote expert. [Learn more about collaborating in mixed reality with Field Service and Remote Assist.](#)

## Integrate with Dynamics 365 Guides

Integration with Dynamics 365 Guides lets you attach mixed reality guides to Field Service tasks. Frontline workers can launch the Guides HoloLens app and follow step-by-step holographic instructions to get their work done. [Learn more about integrating Field Service and Guides.](#)

## Integrate with Microsoft Teams

With Teams integration, frontline workers can chat with team members in the context of their work orders to quickly get answers and troubleshoot issues. The chat history makes it easy to see which team members worked on a work order. Learn more about [collaborating on work orders with Microsoft Teams](#) and [Microsoft Teams integration with customer engagement apps.](#)

## Integrate with SAP

Integrate Dynamics 365 Field Service with SAP C-4Hana and SAP S-4Hana to connect your work order scheduling system to your ERP system and Dataverse. Microsoft offers

guidance for integrating Field Service with the SAP Planned Maintenance and SAP Industry-Specific Utility (IS-U) modules. [Learn more about integrating Field Service and SAP.](#)

## Integrate with Microsoft Planner

Combine Field Service work orders and Microsoft Planner tasks in a single task management application. Simplify task tracking by automatically creating corresponding tasks in Planner for each work order. [Learn more about synchronizing Field Service with Planner.](#)

---

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback ↗](#)

# Integrate with Dynamics 365 Business Central

Article • 04/05/2024

Service organizations require a front-to-back application in which financials, inventory, and procurement are tightly coupled with service delivery. They generate financial data with every transaction. The integration between Business Central and Field Service streamlines the end-to-end process of managing service operations and ensures a smooth flow of information between the two systems.

By integrating Business Central with Field Service, you don't have to enter data manually or duplicate efforts. The integration also provides a comprehensive view of service operations and financials, enabling better decision-making and operational efficiency.

[Learn more about the integration of Field Service and Business Central.](#)

# Field Service integration with finance and operations applications

Article • 04/19/2024

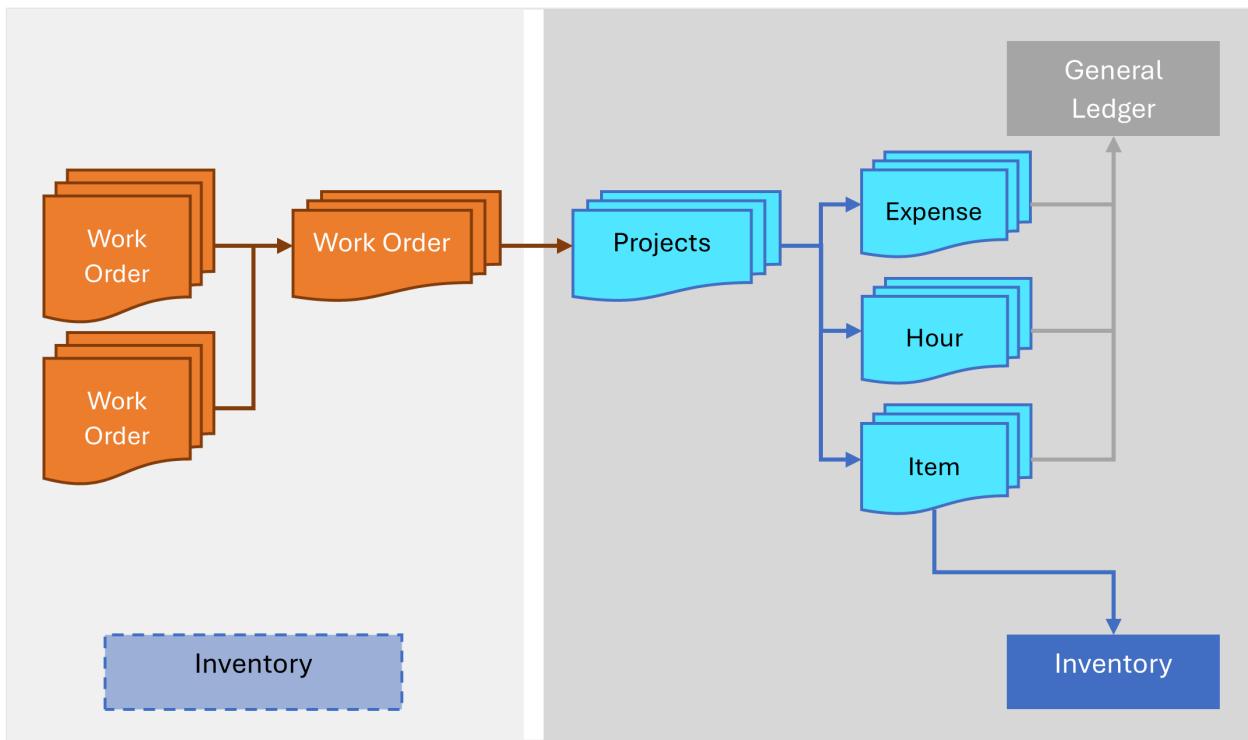
The Field Service integration with [finance and operations applications](#) allows organizations to enable out-of-the-box alignment. Field Service work order transactions land correctly in journals in the finance and operations applications. For organizations that use Field Service and finance and operations applications, service delivery automatically updates financial and inventory systems. You can create and manage work orders in Field Service and have them automatically synchronize with finance and operations apps.

The integration offers a unified experience between Field Service and finance and operations apps.

- Sync real-time pricing and costing information from work orders into finance and operations apps.
- Automatically update finance and operations apps as work orders are executed for real-time financial and inventory integration.
- Take advantage of all that finance and operations apps have to offer for invoicing, accounting, and inventory management.

## Transactional alignment

Field Service transactions (work order product and work order service records) create parallel transactions on their respective finance and operations project in the form of journals.



- Work order products with inventory create item journals and item journal lines.
- Work order products without inventory and a related project category with an *expense* transaction type create expense journals and expense journal lines.
- Work order services where the product has a related project category with an *hours* transaction type creates hours journals and hours journal lines.

Fee journals currently don't align to Field Service transactions.

## Item-based transactions

In Field Service, all transactions have a related product. Sometimes those products have an inventory and sometimes they refer to a noninventory product or a service that is charged for by duration.

Across the many journal types on a project, only item journal lines have a related product (item).

## Category-based transactions

In Field Service, the concept of category transactions doesn't exist. Even the services and noninventory products relate to an item.

In finance and operations applications, all journal types that aren't item journals are category-based transactions. For example, expense journal lines, hours journal lines, and fee journal lines. These journal lines don't relate to an item and require a category.

To bridge this conceptual gap, [capture the Project Category value](#) that Field Service uses for work order transactions. This field is a lookup to the Project Category table in the finance and operations database. Dual-write doesn't automatically populate this value. As a best practice, organizations should either update this value on products that are synced across using dual-write. Or, create specific products for use as a proxy for transacting against a category in noninventory and service scenarios.

## Company alignment

Field Service and finance and operations applications don't automatically share the same concept of a company. Dual-write solutions add company-related data to relevant tables like account, product, or warehouse. Field Service introduces guardrails to help users select the right records across their work orders and work order transactions.

Work orders in Field Service require **Service Account**. Dual-write introduces the **Company** field on the account table. Service account relates to a company and defines that value for the work order and its work order transactions.

If the service account and the company don't match on a work order and the work order transactional records, transactions don't synchronize until the discrepancy is resolved.

Field Service highlights company misalignment in several places:

- On the work order
- On the work order product or work order service
- On the finance and operations transaction

As a best-practice, organizations that implement this integration should consider creating incident type records with products and services with company alignment in mind. And use the right incident type based on the company of the service account on the work order.

## Transaction synchronization

The solution introduces a new site navigation item for finance and operations transactions in the **Settings** area of the Field Service application. This area holds transactional data and their states.

The integration uses a reliable asynchronous transaction framework to make sure that Field Service updates are accurate and reliable.

- The integration relies on the [enabled dual-write framework and the mappings](#) to ensure that transactions use a common understanding of critical core concepts.
- Each transaction on a work order is committed in Field Service before creating an update in finance and operations applications.
  - When the transaction is finalized in Field Service, it creates a record in a transaction log table that shows the status of each transaction.
  - The integration monitors the transaction statuses of the work orders and projects. The transaction statuses indicate the synchronization state of the data, such as unsynchronized, processing, synchronizing, and failed. The integration also provides error handling and retry mechanisms to resolve any synchronization issues.
  - If the transaction fails to complete, the status in Field Service indicates the failure and failure reason. The system [retries the transaction several times](#).
  - If the transaction still fails to synchronize, the error and transaction details are preserved in the finance and operations transaction record. Users can troubleshoot the issue and resync the transaction ensuring no loss of financial and inventory transactional data.

With correct system configuration, transaction failures are exceptions. Resolving this type of issue is critical to making sure that transactional consistency is maintained between the two systems.

## Hierarchical finance and operations projects

The integration creates hierarchical projects, which consist of a main project and one or more subprojects. The main project acts as a container for the subprojects, which represent the individual work orders in Field Service.

## Storage dimensions, warehouse, and location selection

The integration supports storage dimensions when correctly configured. Storage dimensions define the levels of detail used for an item's storage in inventory. Sites, warehouses, and locations track some items, while other items are tracked only at the site or site and warehouse level.

Depending on the inventory product selected when creating a work order product, the defined storage dimensions determines whether location is required in the work order product.

- When a user adds a work order product where the chosen product has **Inventory** for the **Field Service Product Type** in Field Service, they can select a warehouse and a location from the lookup fields on the transaction form. The warehouse and location fields are filtered to show the values from finance and operations applications, based on the legal entity to which the work order's service account belongs. The configuration of the finance and operations product and its storage dimensions determine if the work order product location field is required when marking a product as used.
- When a user modifies or deletes the corresponding work order product record in Field Service, the integration updates the relevant journal line.

The warehouse and location fields in Field Service are related to the warehouse and location concepts in finance and operations applications, which are used to track the physical locations of the inventory items.

#### Note

The integration doesn't require population of the **Site** value and instead, populates site based on the selected warehouse, which has a hierarchical relationship with site. We recommend configuring default order settings to minimize errors when a work order product with an inventory product is created.

## Inventory

When the finance and operations integration is [enabled from the Field Service Settings](#), the system of record for inventory is Dynamics 365 Supply Chain Management, and Field Service's default inventory functionality is suppressed.

Field Service hides the following navigation items:

- Product Inventory
- Transfers
- Adjustments
- Return merchandise authorizations (RMAs)
- RMA Receipts
- Return to vendor (RTVs)

Field Service shows the following items:

- Inventory By Site
- Inventory By Warehouse

These new inventory items use [virtual tables](#) to expose inventory data directly from Supply Chain Management inside Field Service. The true inventory levels from the system of record are available to users.

The inventory validation function against Field Service's default inventory is disabled when the integration is enabled. The Field Service setting for **Use of Products Out of Stock** is hidden to ensure users don't receive irrelevant inventory validations or blocking behavior.

The integration doesn't autovalidate a work order's inventory transactions based on Supply Chain Management inventory levels.

## Inventory views with and without variant details

When the integration is enabled, the inventory views have a version for organizations that don't use product variants. This inventory view removes several columns and simplifies inventory visibility.

For organizations using product variants, there are relevant views that show all of the details of the inventory levels including columns for size, color, style, and configuration. If necessary, organizations can modify the default views as they can with any table.

### Note

Different than normal tables, currently individual rows in these inventory tables (*mserp\_inventorysiteonhandv2entity* and *mserp\_inventwarehouseonhandv2entity*) don't support being opened in a form. The view control used in these views suppresses the ability for these records to be opened in a form.

## Worker alignment

The Field Service integration with finance and operations applications extends the [Dynamics 365 Human Resources to bookable resource integration](#) that introduces the concept of the worker to the bookable resource. In addition, the Field Service integration extends to:

- Allow a worker to be captured on a work order product or work order service.

- Autopopulate the worker value on the work order product or service based on the bookable resource's worker in the transaction's associated booking. This value can be manually populated or overridden.
- Require the worker on noninventory related work order products or work order services. The requirement is based on whether the company's associated project management and accounting parameters are configured to require a worker value in hours journal lines or expense journal lines.

If the worker requirement is configured in finance and operations apps, Field Service only requires a value when the work order product or service is set to used. So that it doesn't block creating estimated records without knowing the eventual worker. The transaction fails to sync unless the worker is recorded.

The worker field isn't filtered based on the eligibility of the worker to perform work on the related project. Eligibility isn't considered as a scheduling parameter when determining the bookable resource to schedule on a work order. As a best practice, organizations might consider using security roles and business units or introduce resource characteristics to ensure workers are only scheduled for relevant work orders. Consider these options if it's a critical consideration for an organization's implementation of finance and operations applications.

## Field Service field changes

The integration introduces new fields and hides other fields.

## Work order field changes

The integration adds a virtual table lookup field called **F&O Project** that filters based on the relevant company/legal entity and whether the project is in a state where transactions can occur. The integration hides the **Billing Account** field since it isn't relevant when a finance and operations integration is selected.

When a user is selecting a project, the project lookup filters show projects with the following parameters:

- The project must be for the same customer as the work order's service account.
- The project must be for the same legal entity as the work order's service account.
- The project must be in a stage that allows journal creation.

## Work order product field changes

The integration introduces several fields to the work order **Product** table. These fields are visible if the integration is installed and enabled.

- **Journal Description**
  - Only visible for expense transactions (noninventory products). Hidden for inventory products (which result in item journals).
  - Autopopulates with the product name of the applied product though users are encouraged to override the value with a more meaningful description.
  - Limited to 60 characters. It flows from the record in Field Service to the journal line to the invoice generated in Finance.
- **Line Property**
  - A virtual table lookup that is filtered based on the relevant company/legal entity.
  - The integration hides the **Quantity to Bill** field since there's no equivalent concept on journal lines. Instead, line property defines whether a transaction is billable or not.
- **Location**
  - Hidden for noninventory products.
  - Seen only if the inventory dimensions configured in finance and operations applications on the product indicate location is required.
  - Only required when the record is set to used.
  - A virtual table lookup that is filtered based on the relevant company/legal entity and selected warehouse.
- **Transaction Date**
- **Worker**
  - Only required based on project management and accounting parameters configured on the relevant company.
  - Autopopulated if the work order product's booking value is populated based on the worker of the bookable resource set on the booking.

## Work order service field changes

The integration introduces several fields to the work order **Service** table. These fields are visible if the integration is installed and enabled.

- **Journal Description**
  - Autopopulates with the product name of the applied product though users are encouraged to override the value with a more meaningful description.

- Limited to 60 characters. It flows from the record in Field Service to the journal line to the invoice generated in Finance.
- **Line Property**
  - A virtual table lookup that is filtered based on the relevant company/legal entity.
  - The integration hides the **Duration to Bill** field since there's no equivalent concept on journal lines. Instead, line property defines whether a transaction is billable or not.
- **Transaction Date**
- **Worker**
  - Only required based on project management and accounting parameters configured on the relevant company.
  - Autopopulated if the work order service's booking value is populated based on the worker of the bookable resource set on the booking.

## Product field additions

The integration introduces a virtual table lookup field called **Project Category** which is filtered based on the relevant company/legal entity and whether it's an inventory (for item categories), noninventory (for expense categories), or service (for hours categories) product.

## Work order transaction handling

Based on events with a Field Service work order's product and service records, corresponding transactions are triggered in their respective journal and journal line records.

## Create

- **Product:** When a work order product record is created, the integration creates an item journal and journal line or an expense journal and journal line. The product's **Field Service Product Type** determines whether the transaction triggers an item or expense transaction.
  - Inventory products trigger items
  - Noninventory products trigger expenses
- **Service:** When a work order service record is created, the integration creates an hours transaction.

## Update

- When a work order product or service is updated and the related journal and journal line are unposted, the integration updates the transaction appropriately.
- When a work order product or service is updated and the related journal and journal line are posted, the integration:
  - Creates a reverse transaction against the original journal and journal line.
  - Creates a new journal and journal line reflecting the updates transaction.

## Delete

- When a work order product or service is deleted and the related journal and journal line are unposted, the integration deletes the journal and journal line.
- When a work order product or service is deleted and the related journal and journal line are posted, the integration creates a reverse transaction against the original journal and journal line.

## Work order system status impact

Based on the **System Status** value of a work order, the integration adds or deletes journal lines that are related to work order product or work order service records that are still in an estimated state.

- When a work order is updated to **Canceled** or **Posted**, all unposted journals and journal lines are deleted.
- When a work order is updated from **Canceled** or **Posted** to any other system status, estimated lines that were removed automatically get new lines recreated.

## Limitations

This integration supports the use of [Microsoft-managed](#) environments. Customer-managed environments aren't supported with this integration.

[Project Operations resource/non-stocked integration](#) doesn't allow the Field Service integration to work with the same legal entities that have are enabled for the resource/non-stocked integrated scenario. However, it can work in the same environments for other legal entities.

Offline virtual tables are currently not supported, which is why it's critical to [set up the defaulting logic for locations](#) so that transactions don't get blocked.

The following processes or features available in the finance and operation apps aren't supported or aren't reflected in Field Service out-of-the-box for this integration:

- [Reserving inventory feature](#) to reserve inventory quantities for certain orders.
- Tracking dimensions to define the granularity of an item's tracking in subsequent transactions. This feature is useful for tracking items by batch or serial number.
- The **Require Activity On Journals** settings in a Project set to "Yes" isn't supported. If activities for Hours, Expenses, or Items are configured as required, the transactions from Field Service don't succeed.
- The integration currently supports limited alignment of data updates from project journals back to its respective work order transaction. When a Field Service user creates or updates a work order product or service, those updates sync with the respective journal. However, expense journal lines, hours journal lines, or item journal lines only sync the defaulted line property and a reference to the active journal line for the record. Other changes to the respective Field Service transaction record aren't synced from their respective line journals.

## Next steps

- [Set up Field Service integration with finance and operations applications](#)
- 

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback ↗](#)

# Set up Field Service integration with finance and operations applications

Article • 05/03/2024

Set up the integration between Dynamics 365 Field Service and finance and operations applications.

## Prerequisites

- You have system administrator permissions.
- Finance and operations applications minimum advised build versions:
  - 10.0.39 (10.0.1860.184)
  - 10.0.40 (10.0.1935.112)
  - 10.0.41 (10.0.2015.41)
- [Human resources to bookable resource integration](#) is installed.

### ⓘ Note

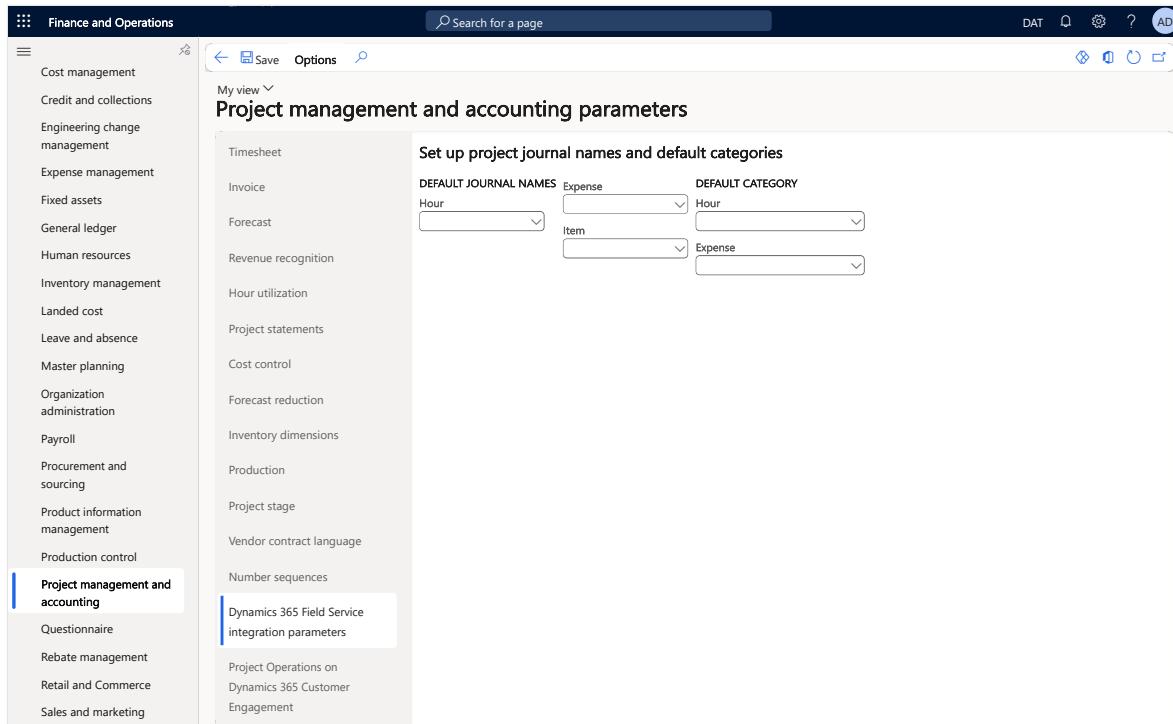
The solution is currently only available in public regions. At this time it is not available in regions like GCC and GCC-High.

- Dynamics 365 Field Service version number is 8.8.124.20 or later.

## Enable the integration from finance and operations applications

1. Sign in to Finance and Operations.
2. Access **Modules** and select the **System Administration** module.
3. Open **Feature Management**.
4. Find and enable the **Enable Field Service Integration** feature.
5. From **Modules**, select the **Project management and accounting** module.
6. From the **Setup** submenu, select **Project management and accounting parameters**.

7. Open the Dynamics 365 Field Service integration parameters tab. For each legal entity that uses Field Service, provide the required values.



## Enable and map dual-write

The integration depends on [dual-write](#) to create a common understanding for primary tables. The work order transactional integration uses virtual tables and logic in Field Service and finance and operations applications to ensure transactional level alignment and transactional consistency. For more information about setting up dual-write, see [Guidance for dual-write setup](#).

1. Access **Workspaces** and select the **Data management** workspace.
2. Select **Dual-write**.
3. Select **Apply solution** in the command bar and apply the following solutions:
  - Dual-write applications core entity maps
  - Dynamics 365 Finance extended entity maps
  - Dynamics 365 Supply Chain Management extended entity maps
  - Dynamics 365 Human Resources entity maps
  - HCM Scheduling
4. Select each of the following required table mappings. Then select **Run** and **Initial Sync**.
  - Styles
  - Colors

- Configurations
- Sizes
- Units
- Currencies
- CDS Released distinct products
- Customer payment method
- Payment days CDS
- Vendor payment method
- Sales tax groups
- Terms of payment
- Customer groups
- Vendor groups
- Customers V3 (contacts)
- Tracking dimensions groups
- Storage dimensions groups
- Product dimensions groups
- All products
- CDS Contacts V2
- CDS Contacts V2
- Customers V3 (accounts)
- Vendors V2
- Sites
- Warehouses
- Released products V2
- Worker

For maps and initial syncs against global entities that fail with permissions errors, you might need to specify the owning team.

## Assign security roles

The integration relies on virtual tables and process execution in each user's context.

[Set up the following security roles.](#)

- **Field Service Integration User:** For each user that creates or updates work orders which sync data with finance and operations applications. Users with this role can only interact with finance and operations data through the integration. They aren't entitled to access the finance and operations applications unless they have a full license. For more information, see the [Dynamics 365 Licensing Guide](#).

- **Field Service Integration Admin:** For administrators who manage the Dynamics 365 Field Service integration parameters settings tab.

## Configure default order settings

To ensure that the integration can successfully create item journals, [use default order settings that automatically apply a site](#) to all items you plan to use in Field Service. Otherwise, all work order products where the product is a Field Service product type inventory require a warehouse value before the item journal can be created. Once a work order product is marked as used, since Field Service requires a value in the Warehouse field, the integration can set the site. However, without default order settings, estimated work order products might not synchronize.

## Configure inventory and warehouse management in warehouses

To ensure that the integration can successfully integrate journals related to items that require location, we advise that all warehouses you plan to use with Field Service have **inventory and warehouse management** configured to define default locations. This configuration allows all work order products where the product's storage dimensions are configured to require location to successfully synchronize, even when created offline.

## Enable the integration from Field Service

### Install and enable the solution

1. In Field Service, change to the **Settings** area.
2. Select the **Features** tab.
3. Select **Install** for **Install Finance and Operations**. A notification appears when installation completes.
4. Enable **Finance and Operations Integration** and confirm.

## Configure posting behaviors

Depending on the nature of your organization's Field Service work, select a posting behavior for journals and lines. The behavior applies across the Field Service

environment.

1. In **Field Service Settings**, select the **Work Order/Booking** tab.
2. Choose a value for **Post used for Finance and Operations**:
  - **When work order is posted**: For work orders of short duration, posting transactions to journals can likely wait until the work is completed. Inventory changes and financial updates only post to the general ledger or inventory when the work order is posted. In this scenario, there's a smaller chance of posting a reversal for a given transaction. It only happens if a transaction changes after the work order is posted.
  - **When product or service is used**: For long-running work orders, posting transactions as soon as they occur helps track inventory consumption and financial impacts in real-time. It also enables invoicing without delays that can cause inventory and financial discrepancies. Changes to transactions after they were posted reverts the previously posted transaction and generates a new transaction.
3. Select **Save & Close**.

## Create products with project categories

To map to the correct journal lines, update the products in Field Service with the project categories from finance and operations applications.

1. In **Field Service Settings**, select **Products and services**.
2. For each product, select the product and select the **Project Category**.
3. Select **Save & Close**.

For hours journals, evaluate which project categories to use in Field Service work orders.

[Create a product record in Field Service](#) that allows users to transact on the category.

The integration creates an hours journal and hours journal line according to the selected project category.

### Tip

All products can have an associated project category, even inventory products. Make sure that field is populated for non-inventory products and service products to ensure correct transactional alignment.

## Update security roles

If your environment has custom security roles, add new table permissions. Updated predefined Field Service security roles enable users to see and modify the required virtual tables and new tables that this integration requires.

## Align the work order to projects

The **Finance and Operations** project field in Dynamics 365 Field Service is a required field when the work order's **System Status** is **Posted**. This field specifies the project associated with the work order. Your organization can capture this value manually or can build automated logic to populate a value, which aligns with that organization's business processes.

Once populated, the integration synchronizes the work order with the selected project, creating a subproject in the finance and operations applications. The work order and subproject alignment is essential to ensure all work order transactions are correctly placed in the enterprise resource planning (ERP). By default, the subproject name is based on the work order number. Once the subproject is created through the synchronization transaction, the subproject is associated with the work order in Field Service.

## See also

- [Field Service integration with finance and operations applications](#)
- [Create a work order](#)

---

## Feedback

Was this page helpful?

 Yes

 No

[Provide product feedback](#) 