

ORTEC Workforce Scheduling 7

User Manual Module Workstation Planning

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ORTEC

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Table of Contents

1	**Workstation planning**	**1**
1.1	Indirect or direct planning	1
2	**Configuration**	**2**
2.1	Locations and workstations	2
2.2	Workstation demands	10
3	**Plan workstations manually**	**18**
3.1	Assign workstations indirectly	18
3.2	Assign workstations directly	20
3.3	Reports and calculations	27
4	**Workstation optimizer**	**30**
4.1	Planning profiles	30
4.2	Schedule generation	39

1 Workstation planning

Workstation Planning helps planners solve the complex challenges involved in assigning qualified personnel to shifts, jobs and workstations. Especially where there are many variables (e.g. different time blocks, activities, tasks or workplaces), Workstation Planning gives a planner the quick overview of possibilities they need and offers the functionality to guarantee appropriate staffing throughout multiple scheduling stages.

Workstation planning enables planners to plan at a task level. When adding workstations as an extra component to a shift you can allocate employees to specific locations and/or times. A timeline overview shows the shifts and workstations, while the system checks capacity in real-time. To effectively use workstation planning, a good understanding of duties, skills, activity types and master schedules is required.

1.1 Indirect or direct planning

Plan workstations indirectly through duties or directly by assigning workstations to employees based on their availability. Workstation assignment can be done manually or automatically via the workstation optimizer. The use of workstation planning will dictate the necessary configuration in **ORTEC Workforce Scheduling**.

We'll outline the common use cases for workstation planning. Your organization's project manager or implementation consultant can provide more information if additional features are necessary.

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2 Configuration

Locations and workstations are an essential part of workstation planning. A workstation can be anything from a physical location, room, office, device, or machine where employees perform their tasks. Workstations are defined at the location level, and a hierarchical structure of locations is created to reflect your organizational structure.

Workstation demands allow you to specify the number of employees required at each workstation during specific times. This information is used to check for under- or overstaffing and generate a workstation planning. Workstation demands are valid for the whole organization. However, when accessing a workstation demand, you'll only see the workstations that are relevant to your department. This approach allows for the creation of cross-department workstation demands that can be used by multiple departments at once.

2.1 Locations and workstations

2.1.1 Add locations

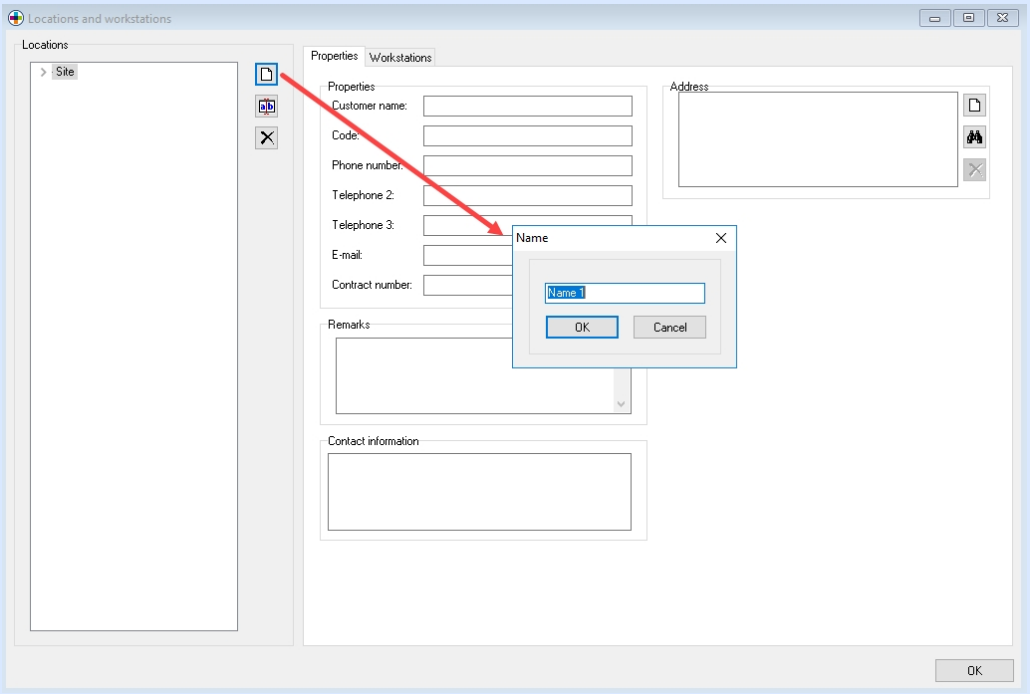
The first step in workstation planning, is to define the locations of the workstations.

1. Go to **Maintenance** > **Locations and workstations**.
2. In the left pane, select the level under which you want to create a new location.

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3. Click the **New** button.

Example



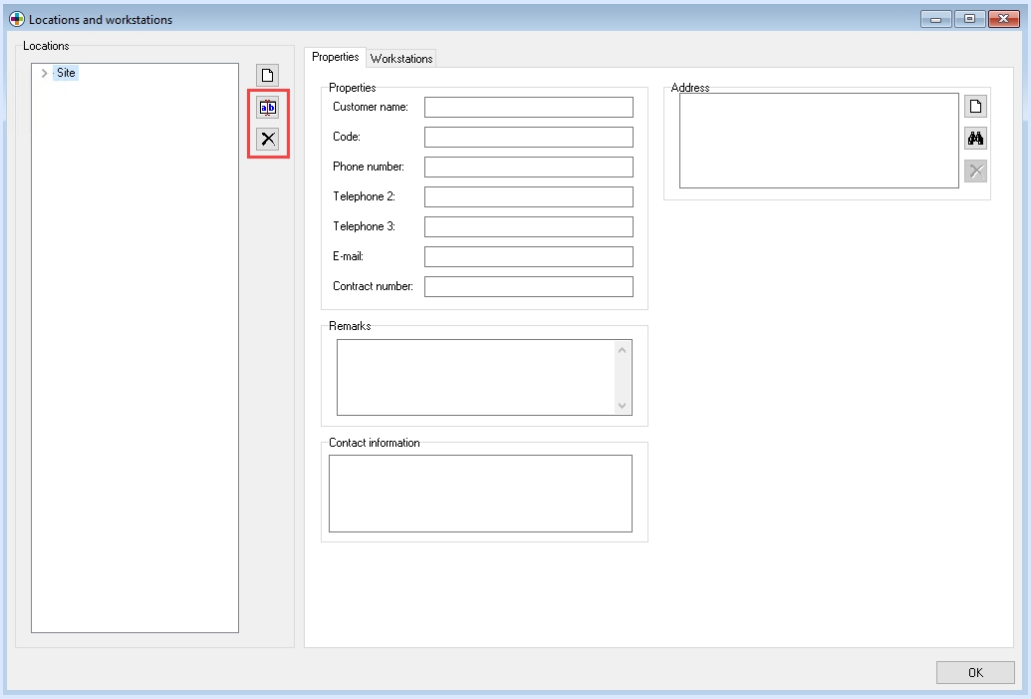
4. Enter the name of the new location.
5. Click **OK**. The new location appears in the location structure.
6. (Optional) Define the **Properties** of each workstation. Make sure to add a **Code** when you want to exchange information with an external system.

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2.1.2 Edit or delete locations

1. Go to **Maintenance** > **Locations and workstations**.
2. In the left pane, select the location you want to edit or delete.

Example



3.
   - To edit a location, click the **Change location name** button. Change the name and click **OK**.
     The altered location is updated immediately throughout the application.
   - To delete a location, click the **Delete the selected location** button. To confirm, click **Yes**.

   A location can only be deleted if it doesn't have any lower level locations or workstations.

2.1.3 Add workstations to locations

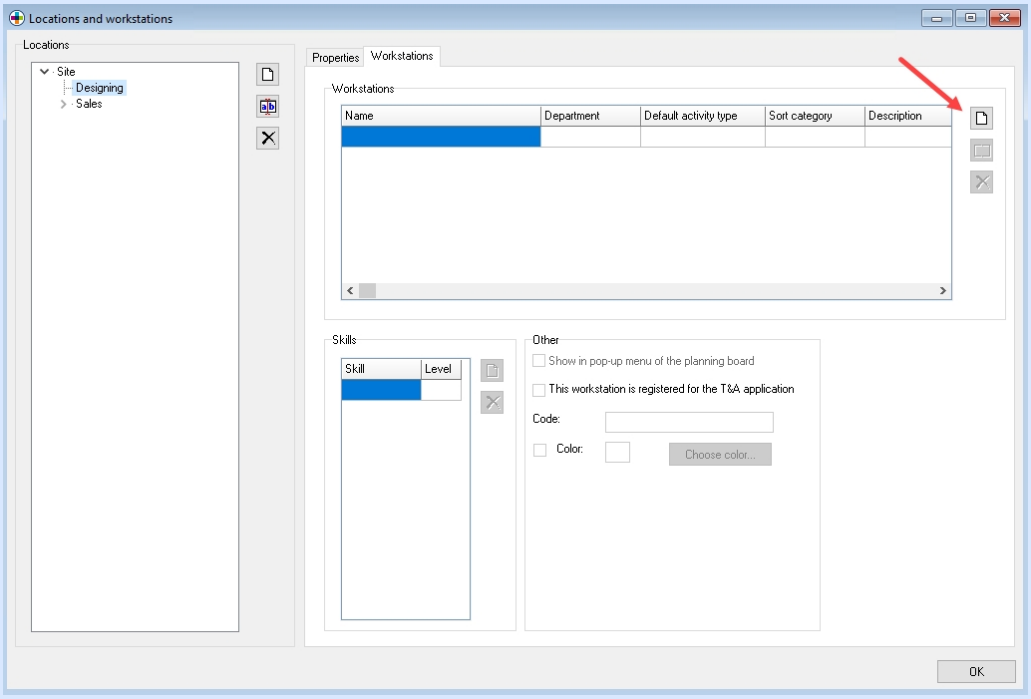
After locations have been defined, workstations can be added.

1. Go to **Maintenance** > **Locations and workstations**.
2. Select the location to which the new workstation belongs.
3. Select the **Workstations** tab.

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4. In the **Workstations** section, click **New** button.

Example



- Define a **Name** for the new workstation.
- (Optional) Make the new workstation a copy of an existing workstation. Select one from the drop-down list.

  It's also possible to copy an existing workstation and change its attributes.

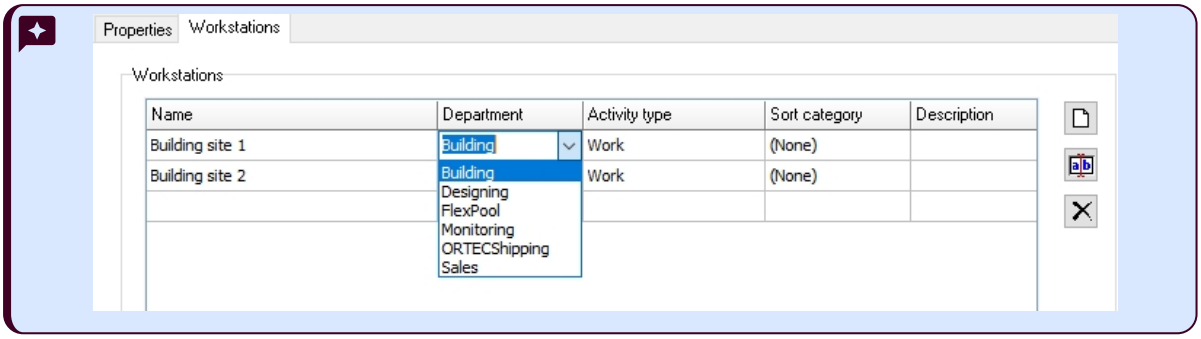
- Click **OK**.
  All workstations are sorted alphabetically according to name.

4. Select the **Department** for which the workstation should be made available.

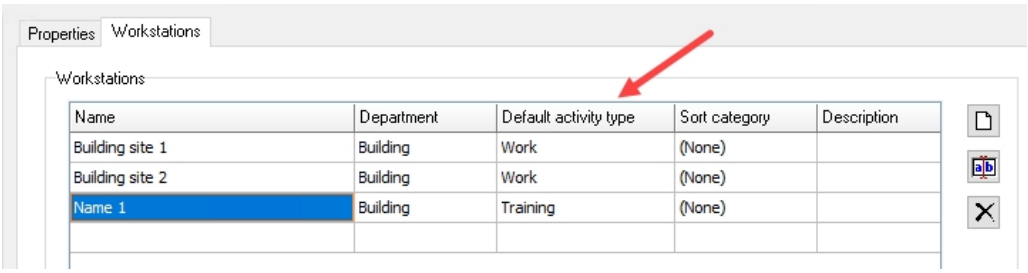
Example

Select a department higher up in the organization structure to make the workstation available for all departments belonging to that department.

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5. Select the **Activity type** that is performed on the workstation. No activity types other than the selected one can be performed on this workstation.

> You can also set the selected activity type as the default option while maintaining the ability to perform other activity types on the workstation.
>
> To do so, enable setting UseDefaultActivityTypeForWorkstation via **ORTEC WS Settings manager** > **General settings**. Once the processes are restarted, the **Activity type** column will read **Default activity type**.
>
> 
>

6. (Optional) Select a sort category to which the workstation will belong. This enables sorting on workstations in the plan board.
7. (Optional) Add a description of the workstation in the **Description** column. This description will be shown as hint text in the master schedule.
8. (Optional) Assign one or more required skills to a workstation. This can be relevant when you use activity types for which no skills are defined, or when multiple activity types are allowed on the workstation but the workstation always requires a certain skill.

> If the **Workstations** tab does not have a **Skills** section, follow these steps:
>
> a. Close the **ORTEC WS client**.
> b. Open the **ORTEC WS Settings Manager**.

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c. Go to the **General settings** tab.
d. Look for the UseSkillsForWorkstation option and enable it.
e. Restart the processes in **ORTEC System Configuration**.
f. Open the **ORTEC WS client** again. The option to use skills for the workstations should now be visible.

- Select the workstation to which you want to assign one or more required skills.
- In the **Skills** section, click the **New** button.
- From the list of available skills, select the one you want to assign to the workstation.
- Click **OK**.
- (Optional) Define a skill level.
  The skill is now assigned to the workstation. Repeat these steps to add more required skills to the workstation.

9. To show a workstation in either the right-mouse menu **Replace by workstation** on the master schedule planning board or the right-mouse menu **Change workstation** on the workstation planning board, select the checkbox **Show in pop-up menu of the planning board**.
10. To make a connection between a workstation and the **Time & Attendance** application, select the checkbox **This workstation is registered for the T&A application**. This might be relevant when hours on a specific activity type need to be billed. Enter the code.
11. Define the default **Color** for a workstation, so it's easy to recognize on the workstation planning board.

2.1.4 Edit or delete workstations

1. Go to **Maintenance** > **Locations and workstations**.
2. In the **Workstations** tab, select the workstation you want to edit or delete.
   - To edit a workstation, click the **Change** button. Change the name and click **OK**.
     The altered workstation is updated immediately throughout the application.
   - To edit the attributes of a workstation, simply change the fields by selecting the appropriate cells.

     The department of a workstation can be changed only if the workstation:

     - doesn't have workstation demands for the department
     - isn't used in calculations, duties etc.
     - isn't assigned to an employee
     - isn't used in a workstation optimizer profile

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- To delete a workstation, click the **Delete** button. To confirm, click **Yes**.

> A workstation can only be deleted if the workstation:
>
> - doesn't have workstation demands
> - isn't used in calculations, duties etc.
> - isn't assigned to an employee
> - isn't used in a workstation optimizer profile

2.1.5 Location properties

Use location properties to distinguish between workstations/locations in various calculation rules. For example to book all hours worked on specific locations.

Via **ORTEC WS Settings Manager** > **General settings**, enable the setting UsePhysicalLocationProperties and restart the processes. This will activate the **Location properties definition** and **Location properties values** tabs.

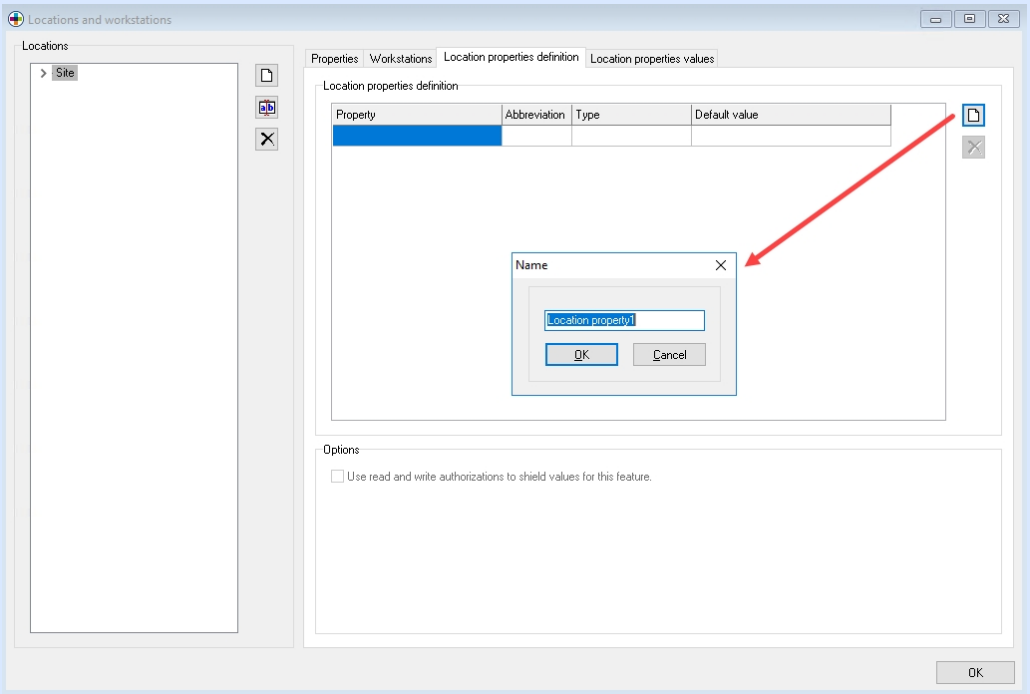
Manage location properties definitions

1. Go to **Maintenance** > **Locations and workstations**.
2. In the left pane, select the location at the highest level.
3. Select the **Location properties definition** tab.

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4. To add a new location property, click the **New** button.

Example



   - Enter a **Name**.
   - Click **OK**.
   - Double click in either the **Property**, **Abbreviation**, or **Default value** cell to make changes. From the **Type** drop-down list you can select another type.
5. To create a new **Access Control** permission for this property, select the checkbox **Use read and write authorization to shield values for this feature**. Once created, you can set read and write permissions for this property in **Access Control**.
6. Per property, define the **Restrictions**. The restrictions determine the possible values for non Yes/No based properties.
   - **No restrictions**
     All values are permitted.
   - **Values between n and n**
   - **Permitted values**
   - Click **Save**.
7. To edit or delete a property, select it and edit or click the **Delete** button.

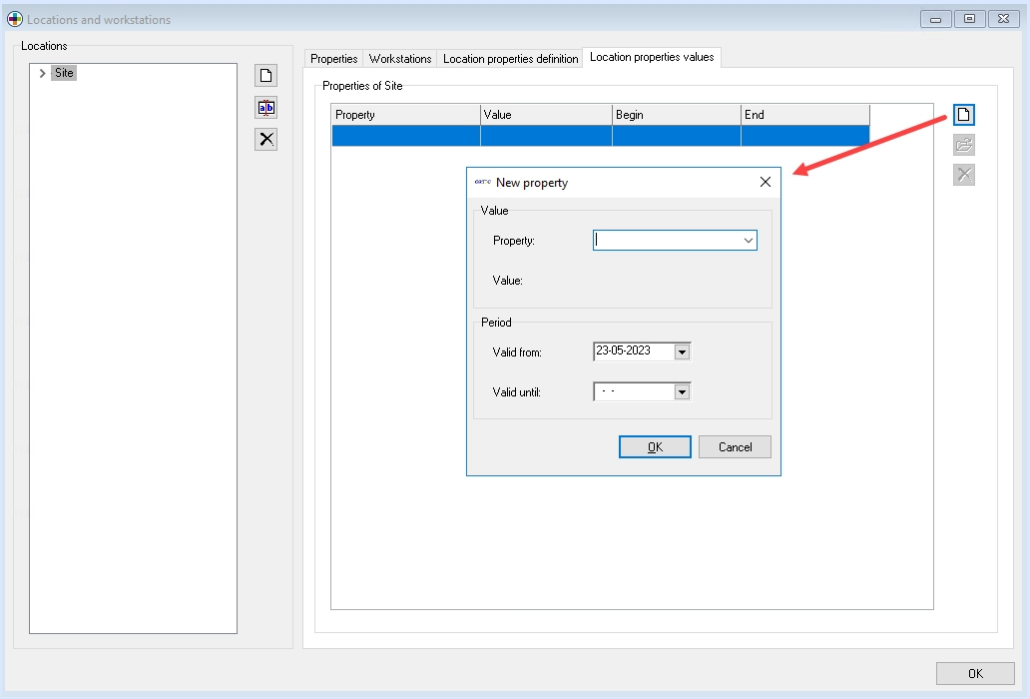
Manage location properties values

1. Go to **Maintenance** > **Locations and workstations**.
2. In the left pane, select the location for which you want to add values.
3. Select the **Location properties values** tab.

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4. To add a new location property value, click the **New** button.

Example



   - Select a **Property** from the drop-down list.
   - Define a **Value**.
   - Define the **Period** during which this value is valid. No end time is required.
   - Click **OK**.
5. Repeat step 4 to add more location property values.
6. To edit or delete a location property value, select it and click either the **Open** or **Delete** button.

2.2 Workstation demands

Set the demand for each workstation per day of the week or for a specific date. Or, create multiple demands, for example one with high demand and one with lower demand.

2.2.1 Add and/or view workstation demand sets

- A workstation demand set is not defined for a specific department. In the **Maintenance workstation demand** section you have an overview

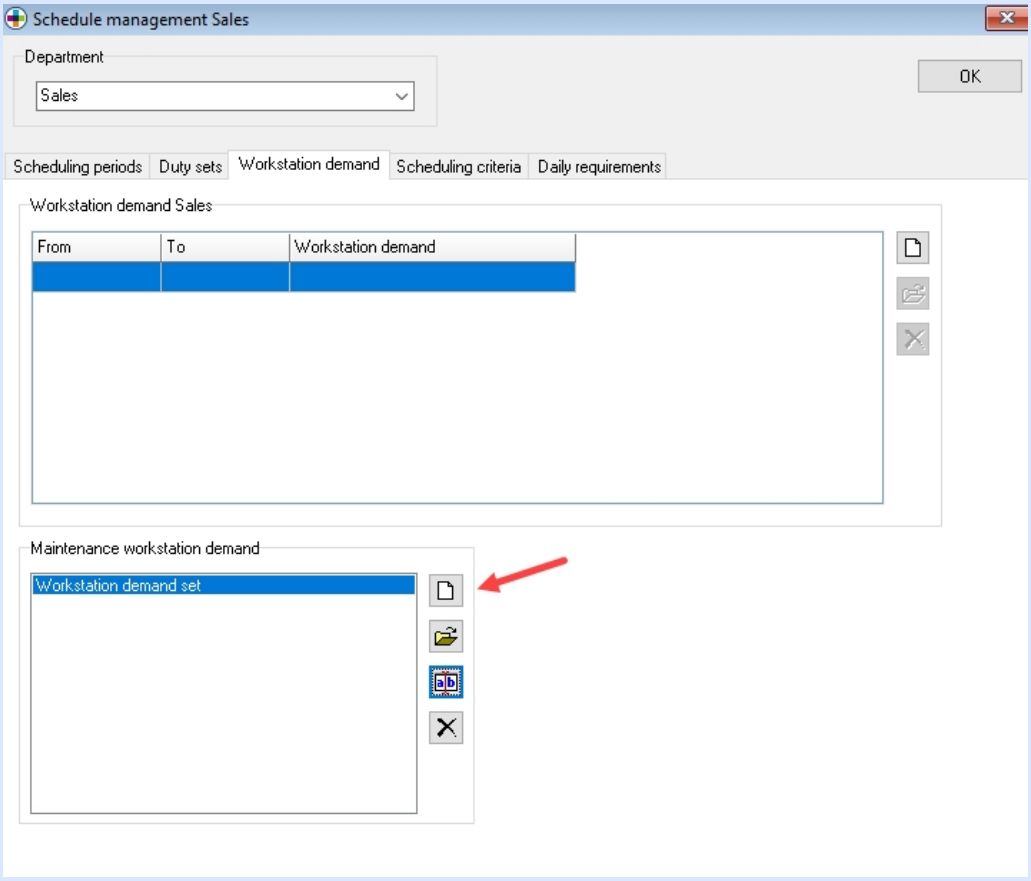
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of all workstation demand sets that exist. However, once you open one of the workstation demand sets, the only workstations that are shown are the ones valid for selected department.

- Because of maintenance and administrative reasons, it's wise to create one (or more) separate workstation demand sets for each department.

1. Go to **Planning** > **Schedule management**.
2. Select a department.
3. Select the **Workstation demand** tab.
4. (Optional) To add a new workstation demand set, click - in the **Maintenance workstation demand** section - the **New** button.

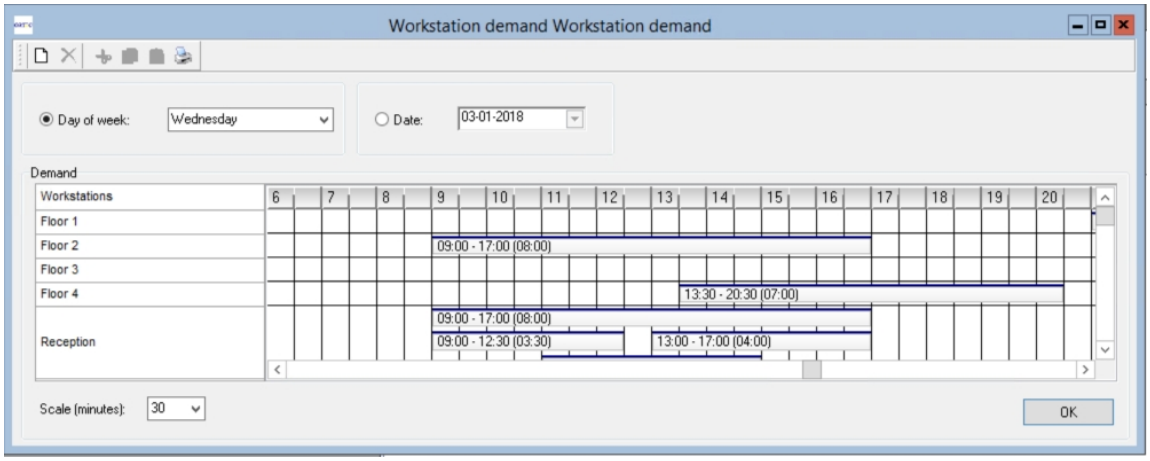
Example



- In the **New Workstation demand** screen, enter a **Name**.
- (Optional) Make the new workstation demand set a copy of an existing workstation demand set. Select one from the drop-down list.
- Click **OK**.

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5. In the **Maintenance workstation demand** section, select a workstation demand set.
6. Click the **Open** button.
7. The **Workstation demand** window will appear. The workstations previously defined via "Locations and workstations" on page 2 and applicable for the selected department (step 2) are shown.



Select one of the following:

- a **Day of the week** from the drop-down menu on the top-left side of this window, or
- a **Date** by using the calendar option (typing the date is also possible).

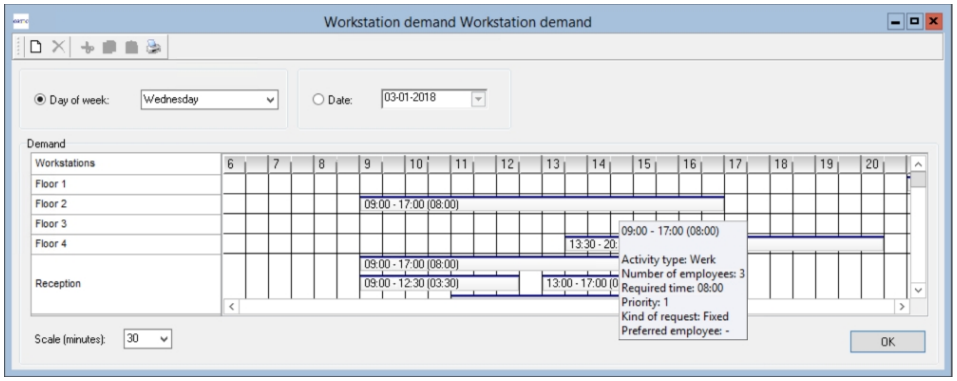
> By using one of these options, the window will be set into either day or date mode.
>
> - In day mode, only recurring workstation demands are shown (recurring on that specific weekday). They're recognizable by their blue colored bars in the workstation demand overview.
> - In date mode, both recurring demands and date specific demands are shown. Date specific demands are recognizable by their green colored bars in the workstation demand overview.

- At the bottom-left corner of the window, set the horizontal **Scale (minutes)**. This scale varies from 1 minute to 60 minutes.

> The time bars shown in the workstation demand overview have limited space for textual information. More detailed information can be acquired via the hint text. A hint text is a text shown when hovering over a time bar in the workstation demand

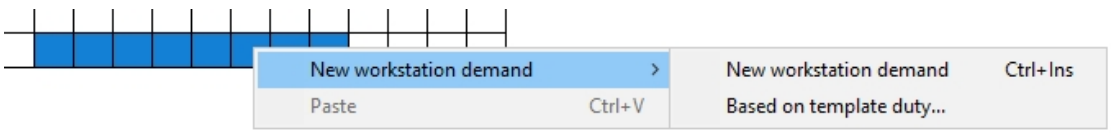
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overview with your mouse.



2.2.2 Add demands per workstation

1. Go to **Planning** > **Schedule management**.
2. Select a department.
3. Select the **Workstation demand** tab.
4. In the **Maintenance workstation demand** section in the bottom of the window, select a workstation demand set.
5. Click the **Open** button.
6. Enlarge the window so you can see the entire timeline.
7. In the **Workstation demand** window, for a specific workstation, add a time frame:
   - Select a block for the start time, press Shift, and select a block for the end time.
   - Or, select a block for the start time, click the left-mouse button and drag the mouse to the block of the end time. Release the mouse button.
   - a blue colored time frame has been created.
8. Place the cursor somewhere in the blue colored time frame, and push the right-mouse button.
9. Go to **New workstation demand** > **New workstation demand**. Or press Control + Insert.



The time frame changes into an actual time bar representing a new workstation demand.

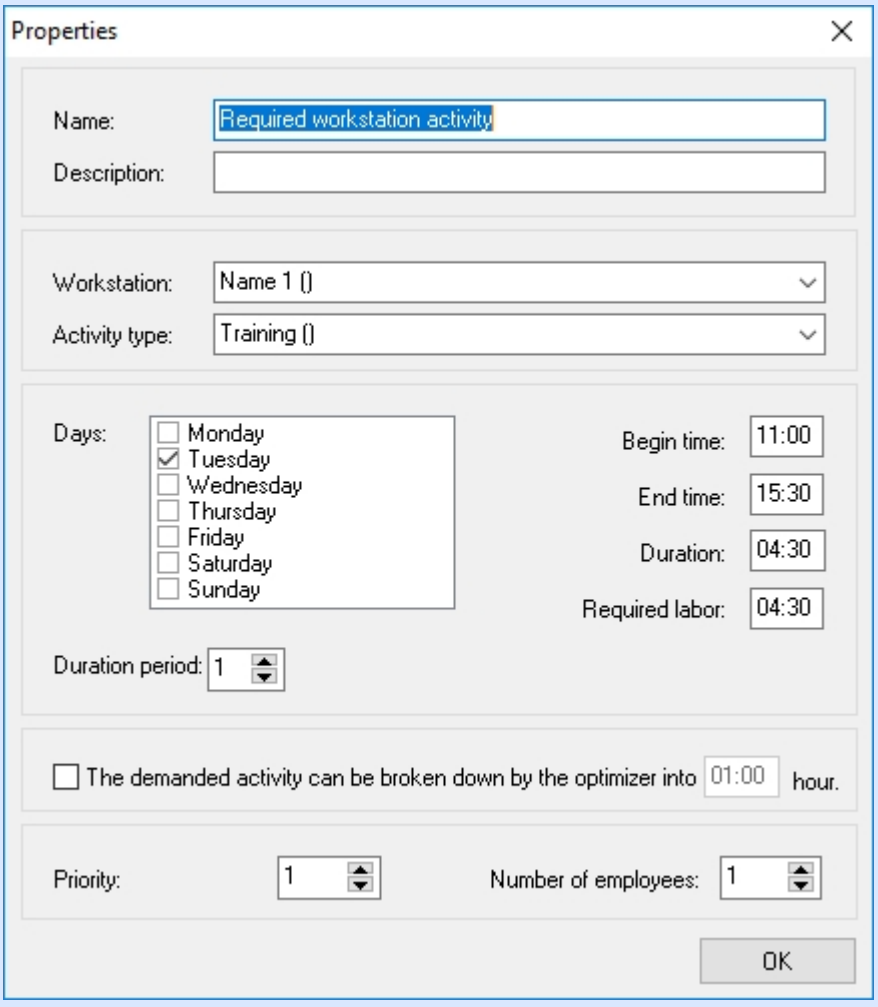
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When the **Workstation demand** window is set into day mode (see previous section), entering a new workstation demand will create a recurring demand by default. When the window is in date mode, the new workstation demand will be created for the selected date only.

10. To adjust the properties of the workstation demand, either double-click on the time bar or move the cursor above the time bar, push the right-mouse button, and select **Properties**.

Or, select the time bar and push Control + E.

Example



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- Enter a **Name** and **Description**.
- To move the time bar to another workstation, select another **Workstation** from the drop-down list.
- Select an **Activity type** if it wasn't defined when creating the workstation. You can't select a different activity type when it has already been defined, unless a **Default activity type** was defined during configuration. For more information, see step 5 in "Add workstations to locations" on page 4.
- Select the **Days** the workstation demand is valid.
- Adjust the **Begin time** or **End time** of the workstation demand. As a result, the **Duration** will be recalculated and adjusted.
- Adjust the **Duration**. As a result, the **End time** will be recalculated and adjusted.
- Adjust the **Required labor** time. This can be shorter than the demand duration.

> The required labor time indicates how much time the workstation needs to be occupied within the begin- and end time boundaries. This is relevant for the workstation optimizer and makes it possible to indicate that the workstation needs to be occupied for 3 hours within the period of 12:30h until 16:30h. In this case, the workstation optimizer will assign an employee that will occupy this workstation for 3 hours.

- Define the **Duration period** of the workstation demand. The duration period can be used to create non-weekly demands, for example bi-weekly.
- To define if and how this workstation demand can be broken down, select the checkbox **The demanded activity can be broken down by the optimizer into n hour**. Define the time block. For example, 00:30 minutes.

> This determines if the demand has to be assigned in one part to the same employee, or that it can be split up in multiple parts and assigned to multiple employees.

- Set the **Priority** of the demand. The optimizer will use this information in case not all demands can be assigned. It will prioritize the demands with the highest priority.
- Enter the **Number of employees**. This number represents the actual demand value.
- Click **OK**.

11. To add more workstation demands, repeat from step 7.
12. Click **OK**.

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2.2.3 Edit or delete demands per workstation

1. Go to **Planning** > **Schedule management**.
2. Select a department.
3. Select the **Workstation demand** tab.
4. In the **Maintenance workstation demand** section in the bottom of the window, select a workstation demand set.
5. Click the **Open** button.
6. Enlarge the window so you can see the entire timeline.
7. To delete a workstation demand, select it, push the right mouse button and click **Delete**. To confirm, click **OK**.
8. To adjust the properties of a workstation demand, either double-click on the time bar or move the cursor above the time bar, push the right-mouse button, and select **Properties**.

   Or, select the time bar and push Control + E.

   - Adjust the **Name** and **Description**.
   - To move the time bar to another workstation, select another **Workstation** from the drop-down list.
   - Adjust the **Activity type**, but only if it wasn't defined when creating the workstation.
   - Adjust the **Days** the workstation demand is valid.
   - Adjust the **Begin time** or **End time** of the workstation demand. As a result, the **Duration** will be recalculated and adjusted.
   - Adjust the **Duration**. As a result, the **End time** will be recalculated and adjusted.
   - Adjust the **Required labor** time. This can be shorter than the demand duration.

     The required labor time indicates how much time the workstation needs to be occupied within the begin- and end time boundaries. This is relevant for the workstation planning generator and makes it possible to indicate that the workstation needs to be occupied for 3 hours within the period of 12:30h until 16:30h. In this case, the workstation planning generator will assign an employee that will occupy this workstation for 3 hours.

   - Adjust the **Duration period** of the workstation demand. The duration period can be used to create non-weekly demands, for example bi-weekly.
   - Adjust if and how this workstation demand can be broken down. Select the checkbox **The demanded activity can be broken down by the optimizer into n hour**. Define the time block. For example, 00:30 minutes.

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> This determines if the demand has to be assigned in one part to the same employee, or that it can be split up in multiple parts and assigned to multiple employees.

- Adjust the **Priority** of the demand. The optimizer will use this information in case not all demands can be assigned. It will prioritize the demands with the highest priority.
- Adjust the **Number of employees**. This number represents the actual demand value.
- Click **OK**.

9. Click **OK**.

2.2.4 Activate workstation demand set

Activate a workstation demand set so you can use it when creating a (workstation) planning.

1. Go to **Planning** > **Schedule management**.
2. Select a department.
3. Select the **Workstation demand** tab.
4. In the **Workstation demand [department name]** section, in the upper half of the tab, click the **New** button.
   - In the **Workstation demand** window, define the **Period**.

     > When no end time is defined, only one workstation demand set can be active. Set the end time, to be able to activate multiple workstation demand sets for different periods.

   - Select a **Workstation demand** from the drop-down list.
   - Click **OK**.

> To edit an activated workstation demand set, select it and click the **Open** button.
>
> Only the highest (most recent) and lowest (oldest) lines can be deleted; select the line and click the **Delete** button.
>
> > When you remove the lowest (oldest) line from the overview, it's not possible to easily re-enter this line, because you can only add new lines at the top of the overview.

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3 Plan workstations manually

Plan workstations indirectly through duties or directly by assigning workstations to employees based on their availability. Workstation assignment can be done manually, as described in this section, or automatically via the "Workstation optimizer" on page 30. Each method enables you to create a finalized planning. A combination of these methods is also possible.

3.1 Assign workstations indirectly

Plan workstations indirectly through duties, by assigning workstations to its activities in the duty form. When a duty is required to be performed at the same workstation each time, you can assign the workstation to the default duty. This way, when the duty is assigned to an employee in the master schedule, it's automatically linked to the designated workstation. This helps in ensuring efficiency and reduces the chances of confusion or error.

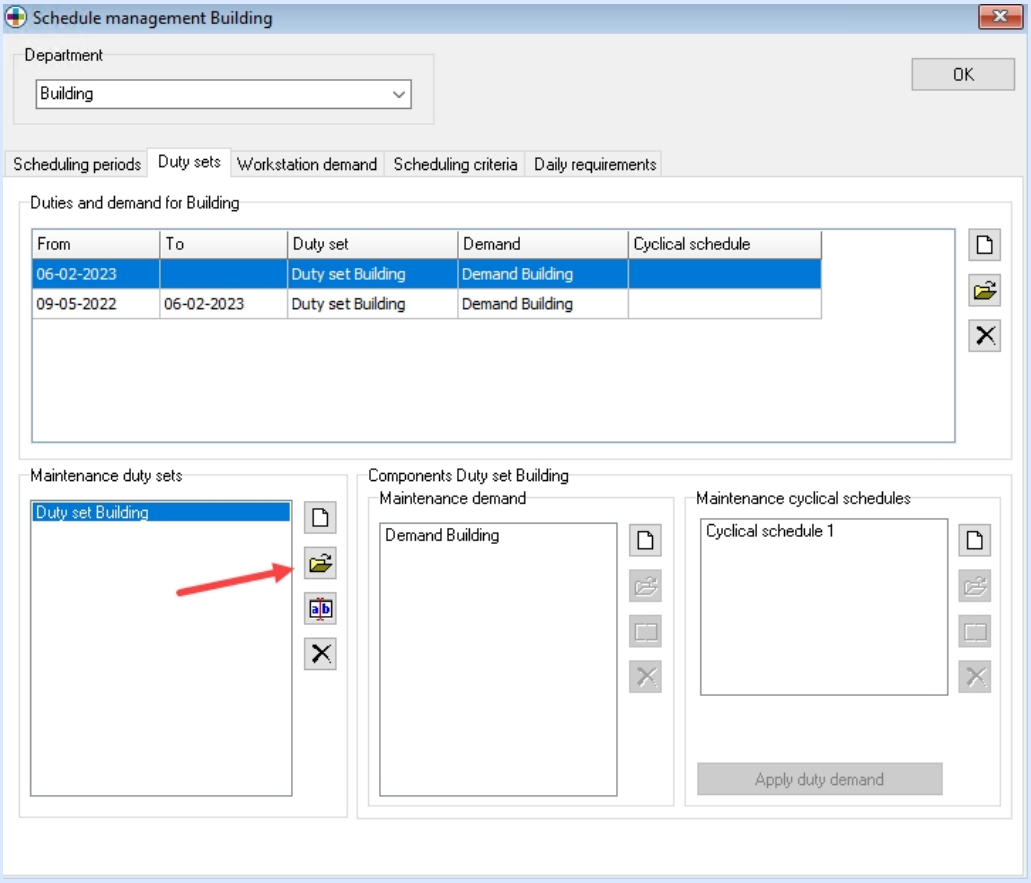
3.1.1 Assign workstations to duties

1. Go to **Planning** > **Schedule Management**.
2. Select the **Duty sets** tab.
3. From the **Maintenance duty sets** section, at the bottom-left corner, select a duty set.

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4. Click the **Open** button.

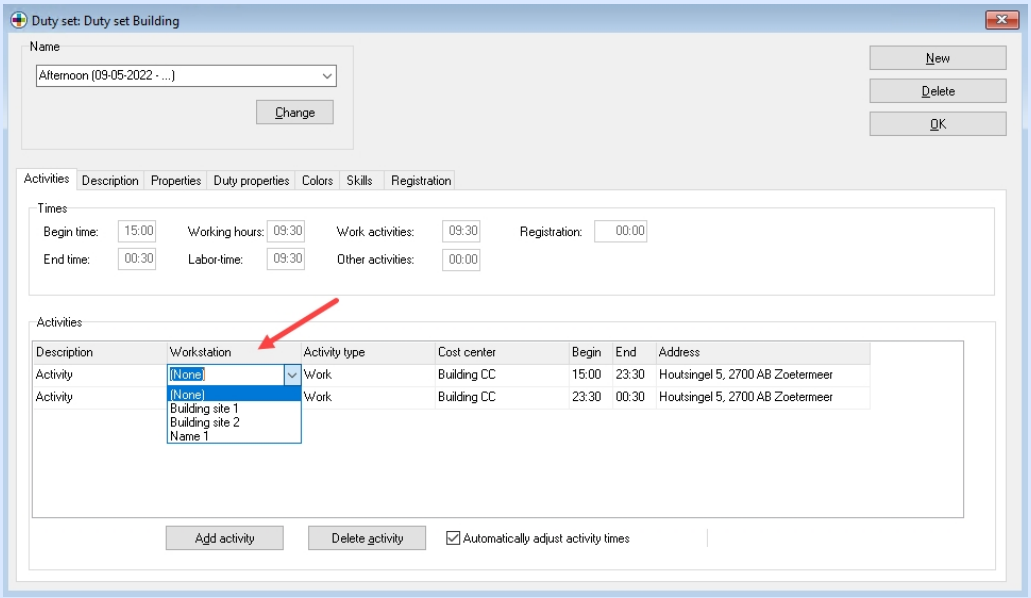
Example



5. From the **Name** drop-down list, select a duty.
6. In the **Activities** section, beneath the **Workstation** column, select the cell related to the activity you want to add a workstation to.
7. Select the arrow button and from the drop-down list, select a workstation for this activity.

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Example



8. Repeat step 5 to 7 for as many duties and activities as you want.
9. Click **OK**.
10. Repeat step 3 to 9 for as many duty sets as you want.

You can also indirectly assign workstations to one-time duties, or single instances of duties (=shift) in the master schedule.

3.2 Assign workstations directly

Plan workstations directly in the workstation plan board by assigning workstations to employees based on their availability. Workstation assignment can be done manually or automatically via the Workstation optimizer. In this section we'll describe the manual assignment of workstations to employees. For more information on using an optimizer for workstation planning, please refer to "Workstation optimizer" on page 30.

3.2.1 Assign workstations manually to employees

1. Go to **Planning** > **Workstation planning**.
2. Select a **Department** from the drop-down list.
3. Define a **Period**. The maximum period for which the workstation plan board can be opened is 7 days.

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4. Click **OK**.

> - Most functionalities are equal to the master schedule.
> - Use the arrow buttons or scroll bars to navigate through the board.
> - Additional functionality can be reached by either selecting a cell and clicking the right mouse button, or by double clicking on a cell.

5. Choose a method to proceed:
   - assign workstations to employees via Employee proposal, or
   - assign employees to workstations via Workstation proposal. or
   - assign workstations to new activities.

3.2.2 Employee proposal

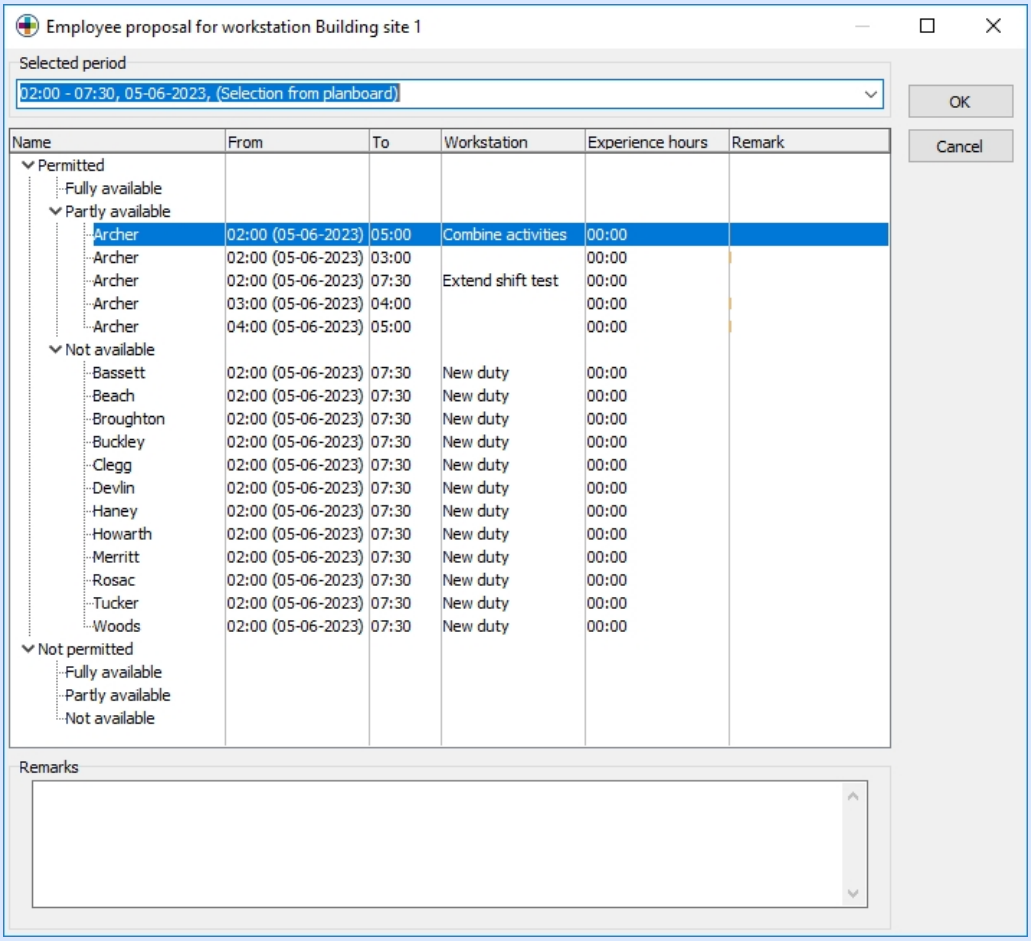
> In the bottom half of the window, you can view per workstation the assigned employees. Here you can also view the under- or overstaffing per workstation.

1. To assign a workstation to an employee, select - in the **Classification of workstations** pane - a workstation demand.
2. Push the right mouse button and select **Employee proposal**.

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3. (Optional) Select another period from the **Selected period** drop-down list.

Example



4. View the names of the **Permitted** and **Not Permitted** employees. Each section is divided into **Fully available**, **Partly available** and **Not available**. For each employee, view:
   - the time frame for which each employee is fully, partly, or not available
   - the current workstation of the employee. This column also reflects the shift changes that occur when an employee is selected. It may involve combining existing activities or creating a new shift to meet the workstation demand entirely.
   - the experience hours. This shows the number of hours that the employee has already worked on the concerned workstation in the past n days.
   - remarks. If the employee has a shift with a shift remark, the shift remark will also be visible here.
5. Select an employee from the list.
6. Click **OK**.
   The workstation is assigned to an employee.

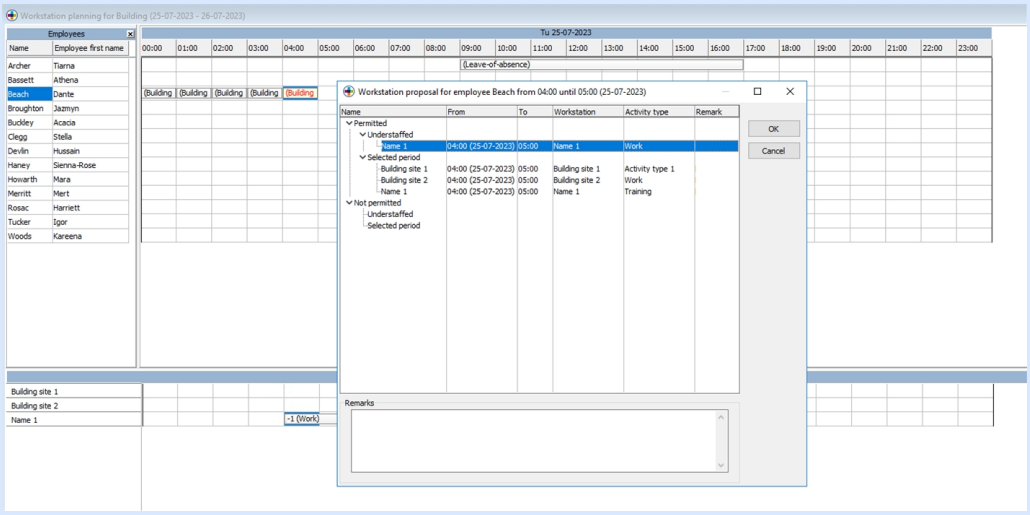
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3.2.3 Workstation proposal

In the upper half of the window, you can view per employee the assigned workstations.

1. Right-click one of the employee's activities.
2. Select **Workstation proposal**.
3. View the names of the **Permitted** and **Not Permitted** workstations. Each section is divided into **Understaffed** and **Selected period**. For each workstation, view:
   - the time frame
   - the possible workstation(s) to assign the employee to
   - the activity type
   - remarks

Example



4. Select a workstation from the list.
5. Click **OK**.
   The employee is assigned to a workstation.

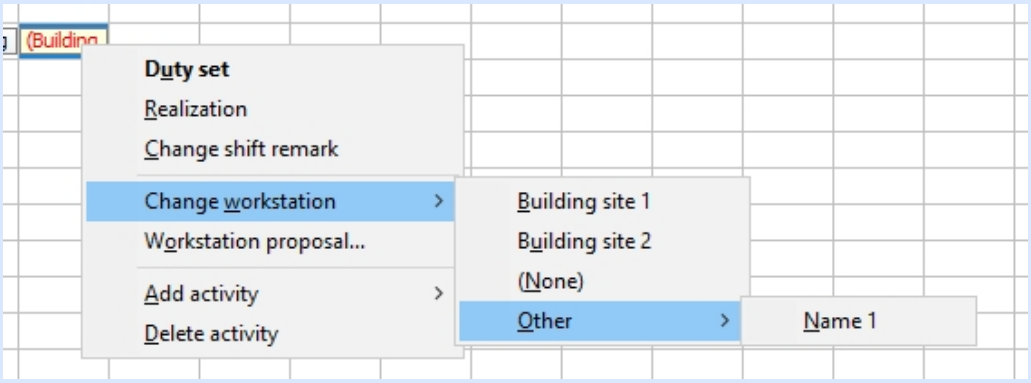
3.2.4 Assign workstations to new activities

Sometimes it's not possible to assign the (entire) workstation demand to existing employee availability (activities). If so, the workstation plan board provides options to add new activities before, during or after an existing activity. The (remaining) workstation demand can then be assigned to the newly created activities.

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1. Define - in the upper pane - a time frame.
   - Select a cell with the begin time, push Shift, and select a cell with the end time.
   - Or, select a cell, drag the mouse to the end time cell and release the mouse button.
2. Make sure the selection overlaps with at least one existing activity.
3. Click the right mouse button on the existing activity within the selected time frame and select **Add activity**.
4. Depending on the selected time frame, you can choose from:
   - **Before selected activity**
   - **After selected activity**
   - **During selected activity**
5. (Optional) Repeat step 1 to 3 to add more time frames and activities.
6. Add a workstation to one or more activities:
   - Right-click on an existing activity.
   - Select **Change workstation**.
   - Select the correct workstation from the list. It might be that the workstation is shown under the sub menu **Other**.
     Only workstations that an employee is qualified for are shown.

Example



Alternatively, double click on an activity or scheduled workstation. In the **Activities** tab, add activities. Per activity, change the description and select a workstation. You can also adjust the Begin and End time. Add an address where the workstation is located. Click Apply.

3.2.5 Delete activities

1. Right-click on an existing activity.
2. Select **Delete activity**.
3. To confirm, click **Yes**.
   The activity with (possibly) allocated workstations is deleted.

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3.2.6 Change assigned workstations

1. Click with the right mouse button on a workstation.
2. Select **Change workstation**.
3. Select the correct workstation from the list. The workstation might be shown under the sub menu **Other** > **[Workstation name]**.
   Only workstations that an employee is qualified for are shown.

3.2.7 Delete assigned workstations

1. Click with the right mouse button on a workstation.
2. Select **Change workstation**.
3. Select **(None)**.
   The workstation is removed from the time frame.

> It's possible that, after deleting a workstation, a different activity type is displayed than expected. In that case, double click on the activity and select another activity type.

3.2.8 Edit employee on workstation

1. Select - in the **Classification of workstations** pane - a workstation.
2. Push the right mouse button and select **Change employee**.
3. Select an **Employee** from the drop-down list.

   > Sometimes it's not possible to select a specific employee and you'll get a notification.

4. (Optional) Adjust the **Period**.

   > It's not possible to adjust the period, when another employee was scheduled for this workstation. Otherwise it's possible to adjust the period.

5. Click **OK**.

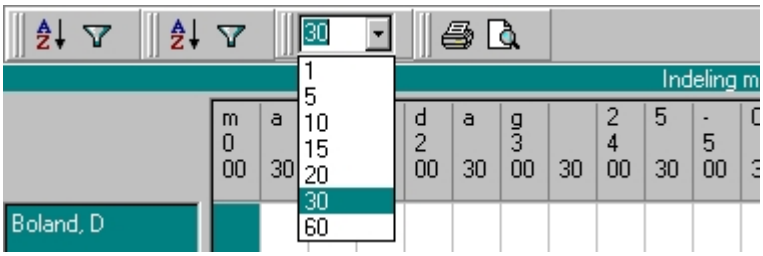
3.2.9 General settings

Adjust timeline

Use the **Zoom in** and **Zoom out** buttons  to adjust the scale of the timeline.

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When those buttons are not available, adjust the scale manually via the dropdown menu above the timeline:



Show or hide calculations, counters and violations

1. With the Workstation planning board open, go to **View** > **Plan board components**.
2. Select the components you want to show (not selected is not shown):
   - Employees
   - Employee calculations
   - Violations
   - Vacant shifts
   - Shift counters
   - Daily calculations
   - Daily requirements
   - Classification or workstation
   - Violations (text)
   - KPI calculations

3.2.10 Sort and filter

Sort employees or workstations

1. With the Workstation planning board open, select either the **Sort employees** or **Sort workstations** button:

   > Hover with your mouse above the buttons to find the correct one. The button on the left usually is the **Sort employees** button.
   >
   > Sort employees is also available via **View** > **Sort**.

2. Select one ore more criteria you want to sort on and order those criteria. The criterion on top will be sorted on first, and subsequently the other ones.

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3. Define the **Reference date**.

> This date is important for a few criteria (like the sort category) that can change over time.

4. Select, per selected criterion, **Ascending** or **Descending**.
5. (Optional) View the summary on how the sorting is done.
6. Click **OK**.

Filter employees, workstations or vacant shifts

1. With the Workstation planning board open, select either the **Filter employees**, **Filter workstations** or **Filter vacant shifts** button: 

> Hover with your mouse above the buttons to find the correct one. The button on the left usually is the **Filter employees** button.
>
> Filter employees is also available via **View** > **Filter**.

2. Select one ore more criteria you want to filter on.
3. Within each criterion, make a selection. To select all, select the checkbox **Select all**.
4. (Optional) View the **Summary** on how the filtering is done.
5. Click **OK**.
   Only employees, workstations or vacant shifts that meet the established criteria are displayed.

3.3 Reports and calculations

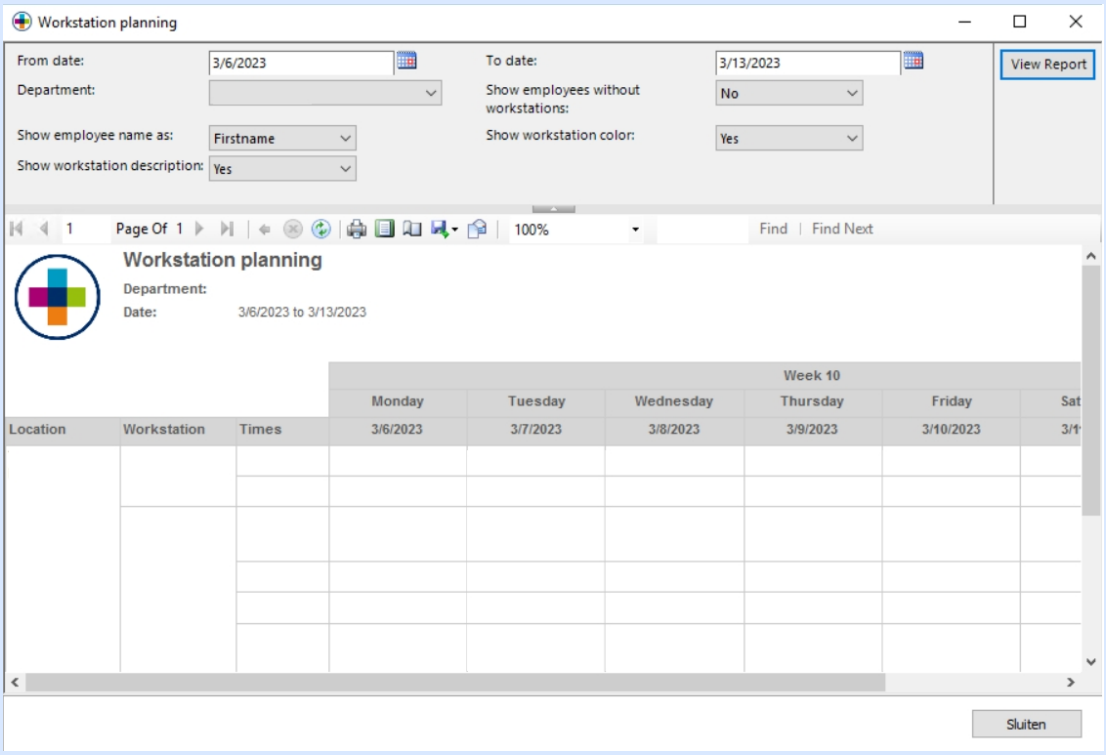
3.3.1 Report Workstation planning

The report Workstation planning shows per department where and when employees are scheduled.

- Go to **Reports** > **Workstation planning**.
- Define a period, select a department, and define how the information must be displayed.
- Click **View Report**.

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Example



3.3.2 Overview Workstation occupation analysis

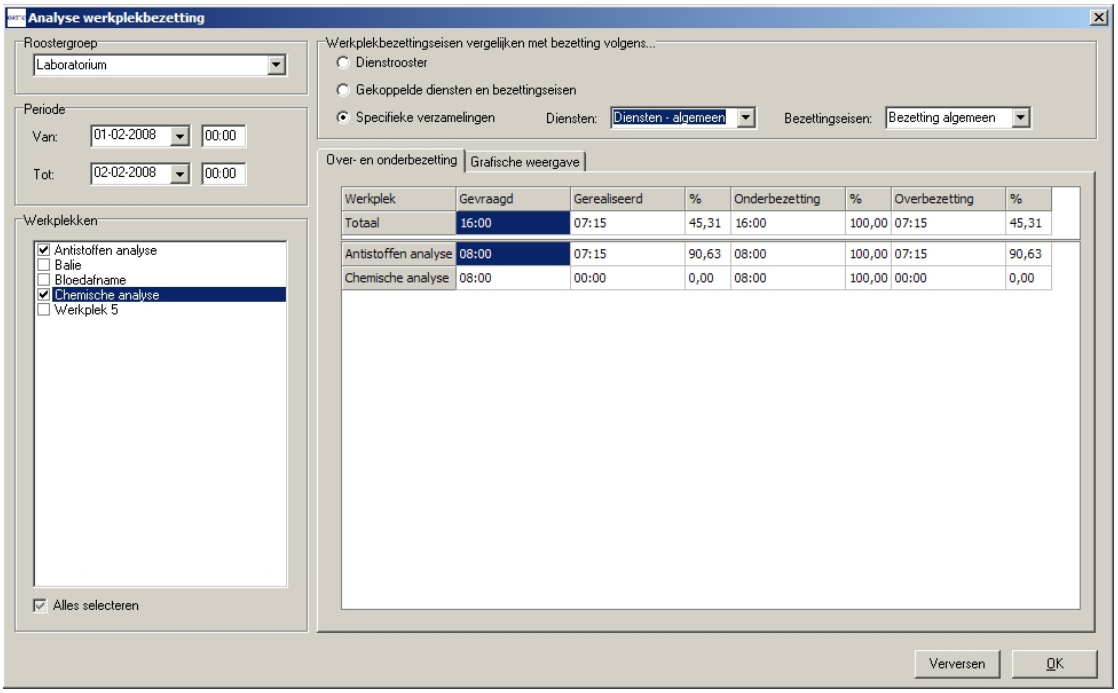
The overview Workstation occupation analysis – which can be opened from the menu Overview or by clicking the equally named button  on the toolbar - shows the under- and overstaffing for the selected workstations in the selected period, based on the workstation demands and assignments of the selected department. The authorization WSN_DEM_OVERVIEW is needed to be able to open this overview.

In this overview you have the option to compare the workstation demands with:

- assignments in the master schedule (where you can also decide to include vacant shifts as well)
- assignments as per the activated duty and duty demand set in the selected period
- assignments in a specific duty set and duty demand set (which you can then choose from).

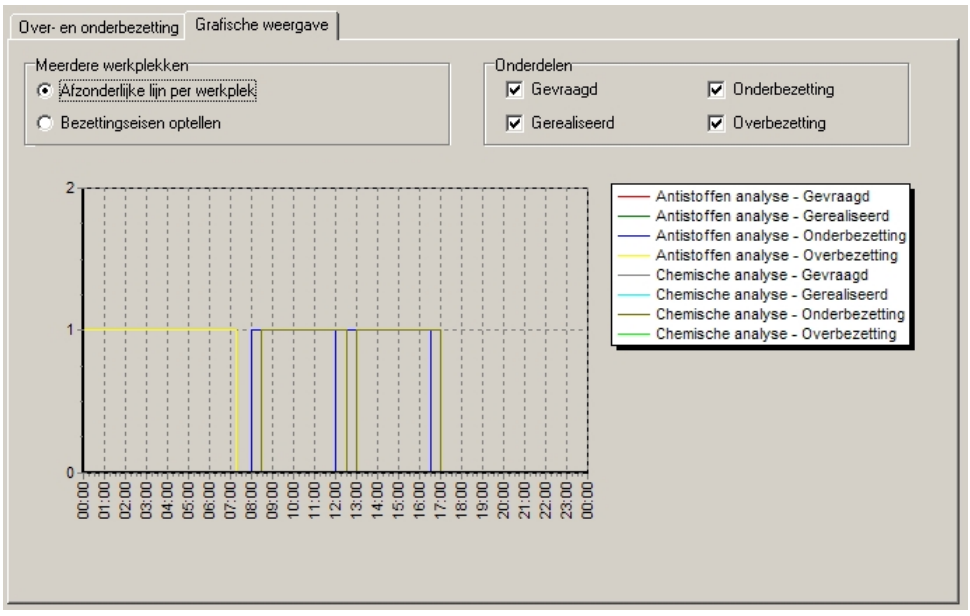
When you change the settings in this analysis overview, press the button Refresh to actualize the overview.

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It's also possibly to display the analysis in a graphical manner on the tab Graphical overview, where you have the option to:

- sum the workstation demands and assignments for all selected workstations together or show them individually per workstation
- enable and disable graphs for the demands, the assignments, the understaffing and the overstaffing



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4 Workstation optimizer

> In order for the **Workstation optimizer** to be activated, the Global Setting **UseWorkstationPlanner** must be activated from within **ORTEC WS Settings Manager**. Contact your ORTEC representative when needed.

Creating a shift schedule differs greatly to workstation planning. Workstation planning entails assigning employees to workstations, whereas shift planning entails allocating shifts (possibly with workstations) to employees. It's essential to realize that two constants are assumed during workstation planning:

- employee availability
- workstation demands

With these constants in mind, the workstations are filled with available employees. Assignments can be carried out manually (for more information, see "Plan workstations manually" on page 18) or automatically optimized with the **Workstation optimizer**. In this section, we will:

- describe the overall operation of the **Workstation optimizer**
- outline all available configurations
- demonstrate the effects of the various configurations on the outcome

Workstation optimization and the configuration of the **Workstation optimizer** is an advanced user component. It is assumed that the reader is familiar with the Workstation planning features.

4.1 Planning profiles

When automatically assigning employees to workstations, it's desirable to consider various user-defined decision rules. An example of such a rule or criterion might be, 'A user may only work at their preferred location.' Furthermore, the planner may choose to automatically assign only a portion of the employees, or to assign them only to a portion of the workstations. These criteria and conditions are recorded in profiles. Whenever a schedule is generated automatically, one or more profiles are executed in sequence. The execution of profiles and the various settings and rules that can be configured within a profile are detailed below.

4.1.1 Profile settings

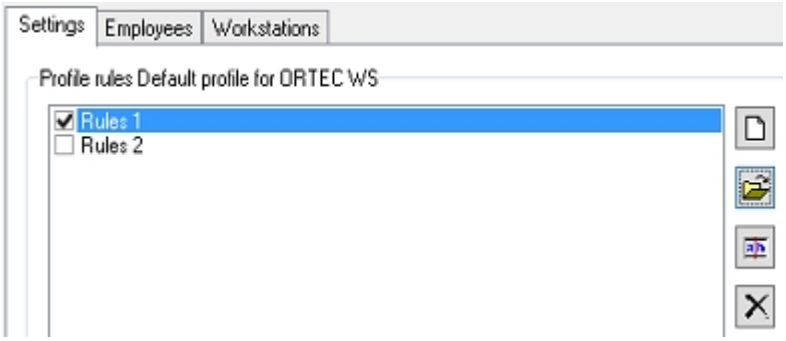
An overview of the available workstation planning profiles is displayed under the menu option **Optimizers** > **Workstation optimizer profiles**. Profiles are created for each department and are located in the top section of the screen. The profile

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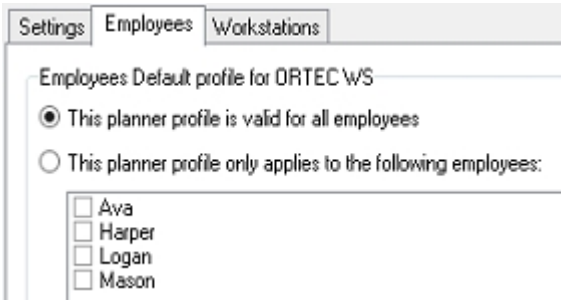
settings are displayed across three tabs in the bottom section of the screen. Employees and workstations to be assigned can be selected on the second and third profile tabs respectively.

> **Example**
>
> A practical application for the employee setting is the situation in which regular employees and trainees need to be assigned. In one profile, only regular employees are selected and in the other, only trainees. Initially, a schedule is generated using the employee profile followed by a schedule using the trainee profile. If a rule is added to the trainee profile (for more information, see "Cooperative associations" on page 34), which states that trainees may only be assigned to workstations where an employee has already been assigned, a schedule is created that – due to the corresponding setting – satisfies this rule.

The first profile tab contains the profile rule sets to be defined. Rules can be registered within a set. These rules are listed in the next section. A rule set is added to a profile by checking the box.

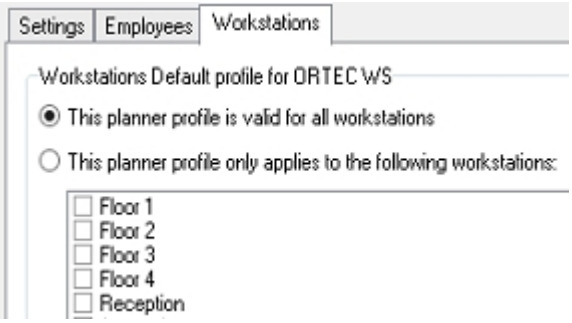


In the second profile tab, employees can be selected for which the profile applies. You can select all employees of the department, or select specific employees.



In the third profile tab, workstations can be selected for which the profile applies. You can select all workstations of the department, or select specific workstations.

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Last, the profile setting can be selected: 'Consider subsequent profiles'. This option is relevant in the event that multiple profiles have been defined and are executed in succession. If this option is disabled, the Optimizer will assign as many employees to workstations as possible for each profile. Profiles are executed sequentially; therefore, it is possible that full utilization of the first profile means that the second and third profiles make fewer assignments. This occurs because it is assumed that the sequence of profiles indicates their importance or priority. An assignment resulting from the first profile is therefore considered more important than two assignments from the second profile. A possible outcome is that the total number of assignments made is not the maximum achievable. Selecting this option considers subsequent profiles, thus increasing the total number of assignments.

Example

Suppose that a schedule must be created whereby two employees (1 and 2) are assigned to two workstations (A and B). Employee 1 may work at either workstation and has a preference for Workstation B, while Employee 2 may only work at Workstation B. The schedule is created using two profiles: Profile 1 assigns Employee 1 and Profile 2 assigns Employee 2.

If subsequent profiles are not taken into consideration, the following ensues. Profile 1 assigns Employee 1 to Workstation B because this is his/her preferred workstation. Profile 2 then makes no assignment because Workstation B is already occupied by Employee 1, and Employee 2 may not work at Workstation A. However, if subsequent profiles are taken into consideration, then both employees can be assigned. Maximization of employee assignments always takes precedence over personal preferences in first-run profiles.

4.1.2 Profile rules

After the workstations and employees to be assigned for each profile have been selected, profile rules may be set to further influence the planning. Each department has its own set of profile rules, which are available to all profiles of that department. Profile rules are configured as weighted criteria or requirements.

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To understand the difference, it must be noted once more that the Optimizer makes its assignments based on employee availability and workstation demands. Costs are attributed to an assignment in order to make it a less attractive option. The higher the weighting applied to a rule, the higher the cost when the rule is breached. If a rule is configured as a requirement, the rule can no longer be breached.

Example

Suppose that Employee 1 is available between 12:00 and 13:00. During this period, there are workstation demands defined for Workstations A and B. The demands are identical and the employee is qualified to work at both workstations. There are two possible assignments for which the Optimizer has no particular preference, and the choice is then random. Both assignments cost the same; assume a value of 1.

Suppose that in practice, Employee 1 has a preference for Workstation A. Suppose that assignments are made using the profile 'Preferred locations', weighted with a value of 10.

The two possible assignments discussed above are no longer equal due to the addition of this profile rule. The assignment of the employee to Workstation A is more attractive since this is his/her preferred workstation. In cost terms, the assignment to Workstation A remains unchanged (1), whereas assignment to Workstation B would cost 1 + 10 = 11 (standard cost + penalty for not complying with the criterion). Since these costs are higher, the Optimizer will therefore opt to assign Employee 1 to Workstation A. By raising the value for this criterion, assignment to Workstation B becomes an increasingly less attractive proposition. Please note that raising this weighting value is only worthwhile when additional rules have been implemented.

Finally, the profile rule can be set as a requirement. The option to assign Employee 1 to Workstation B is no longer valid because this workstation assignment would not comply with the requirement. Please note that the use of requirements can severely limit the total final number of assignments.

The various profile rules that can be set are activated from within the **Global Settings** in **ORTEC WS Settings Manager**. Moreover, the following authorizations are required in order to view and/or modify profiles and rules:

- WSN_PLANNER_PROFILE_READ – to view profiles
- WSN_PLANNER_PROFILE_WRITE – to edit profiles

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- WSN_PLANNER_RULE_READ – to view profile rules
- WSN_PLANNER_RULE_WRITE – to edit profile rules

An overview of all the available profile rules is shown below.

Employee experience on workstation

Employee experience on workstation

General settings > Rules workstation engine > WPRuleExperienceHoursInPeriod.

This rule will prioritize scheduling employees on workstations on which they, compared to their colleagues, have worked the least number of hours in the past 30 days. That will make sure their experience level is kept up to date. The default number of 30 days can be changed to anything between 1 and 365. However, if the number of days exceed the buffered history, the buffered history will be used in the calculations instead.

Avoid overlap with leave request

Avoid overlap with leave request

The rule avoids assigning employees with a leave request to a workstation. As leave requests can have different status, choose which status are relevant:

- Open
- Concept approved
- Approved

The rule can be set as a criterion and requirement. When set as criterion, a penalty is calculated when overlap is not avoided.

Cooperative associations

Cooperation with mentor

The rules schedules an employee on a workstation or location where he is monitored. Only set work relations of the following types are relevant:

- Mentored by
- Instructed by

Work relations can be set in 'Employee management' under tab 'Work relations'.

The rule can be set as a criterion and requirement. When set as criterion, a penalty is calculated when cooperation is not realized.

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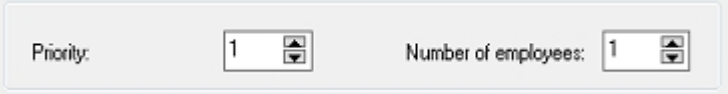
Divergence from current plan

Divergence from current plan

The rule avoids scheduling employees on another workstation or location than where they are already assigned. Two additional options are available:

- Employees without assigned workstation are (not) affected by this rule.
- If selected, only already assigned workstations with a configurable priority are affected by this rule.

  The priority of the workstation demand can be set in 'Maintenance workstation demand' by editing the properties of a specific demand.



The rule can be set as a criterion and requirement. When set as criterion, a penalty is calculated when an employee is reassigned.

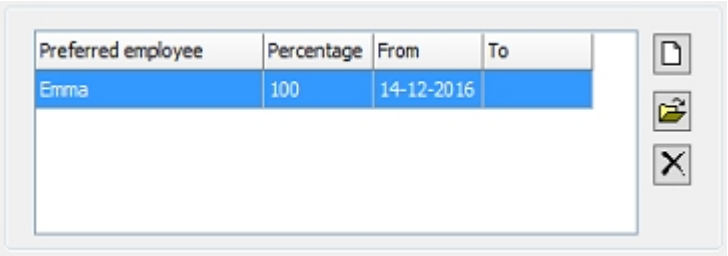
The rule does not apply when selecting the option 'Always save' in the 'Processing of existing assignments' part of the optimization engine window. Selecting this option does not reassign employees.

Preferred employees

Preferred employee of workstation demand

The rule schedules specified preferred employees to the workstation demand.

Preferred employees for workstation demand can be set in 'Maintenance workstation demand' by editing the properties of a specific demand.



The rule can be set as a criterion and requirement. When set as criterion, a penalty is calculated when an employee is less preferred.

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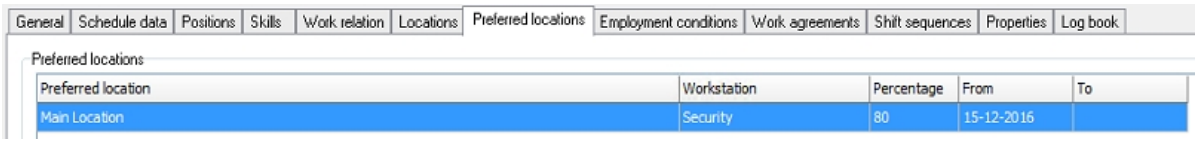
Preferred locations

Preferred locations

The rule takes preferred locations of employees into account when scheduling workstations. You have to choose between the two options:

- Use the percentage of preferred location as probability the employee is assigned to the location.
- Use the percentage of preferred location as desired distribution of employee working locations. The generator compares this desired distribution with the scheduled workstations in the planned period, including a configurable number of days in the past.

The employee preferred locations can be set in 'Employee management' in the tab 'Preferred locations'.



The rule can be set as a criterion and requirement. When set as criterion, a penalty is calculated when an preferred location of an employee is not realized or the desired distribution is not met.

Preferred workstations and locations of 0 percent

If a employee preferred location is set to 0%, the employee is not allowed to work at that location.

See 'Preferred locations' on how to set employee preferred locations.

The rule can only configured as a requirement.

Priority of workstation demand

Priority of workstation demand

General settings > Rules workstation engine > **WPRulePriorityDemand**.

The rules schedules workstations with a higher priority demand first. Without this rule, the set priority of the workstation demand has no influence on the Workstation Optimizer.

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See "Divergence from current plan" on page 35 on how to set the priority of a workstation demand.

The rule can be set as a criterion and requirement. When set as criterion, the priority of a workstation demand is taken into account when calculating the penalty.

Variation compared with past

The same workstation as in the past

The rule assigns employees to the same workstation or location as in the past. The number of days in the past is configurable. Two additional options are available:

- If a penalty has to be calculated due to a violation, scale the penalty to the number of days in the past. A penalty for not assigning the same workstation/location as yesterday is higher than a penalty for not assigning the same workstation/location as seven days ago.
- If a penalty has to be calculated due to a violation, scale the penalty to the realized percentage in the past. When not selected, the penalty only looks whether the employee was or was not assigned to the workstation/location. When selected, the duration on this workstation/location is taken as percentage of the total duration assigned to workstations.

The rule can be set as a criterion and requirement. When set as requirement, the two options are not available. When set as a criterion, violations of the rule create a penalty.

Workstation other than in the past

The rule assigns employees to a different workstation or location as in the past. The number of days in the past is configurable. Two additional options are available:

- If a penalty has to be calculated due to a violation, scale the penalty to the number of days in the past. A penalty for assigning the same workstation/location as yesterday is higher than a penalty for assigning the same workstation/location as seven days ago.
- If a penalty has to be calculated due to a violation, scale the penalty to the realized percentage in the past. When not selected, the penalty only looks whether the employee was or was not assigned to the workstation/location. When selected, the duration on this workstation/location is taken as percentage of the total duration assigned to workstations.

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The rule can be set as a criterion and requirement. When set as requirement, the two options are not available. When set as a criterion, violations of the rule create a penalty.

Variation within the planning period

Other workstation within period

The rule schedules an employee within a period to a different workstation or location. You can choose three periods as configuration:

- The period to be planned in
- A shift
- A series of activities

  The series of activities depends on the choice for 'assign workstation demands to' in the optimization engine windows. Here, one of the following options have to be selected:

  - Activities with the same activity type
  - Activities with the same main activity type
  - Activities with the same type
  - Activities with/without work
  - All activities

The rule can be set as a criterion and requirement. When set as a criterion, violations of the rule create a penalty.

The same workstation within period

General setting **WPRuleSameInPeriod**.

The rule schedules an employee within a period to the same workstation or location. You can choose three periods as configuration:

- The period to be planned in
- A shift
- A series of activities

  The series of activities depends on the choice for 'assign workstation demands to' in the optimization engine windows. Here, one of the following options have to be selected:

  - Activities with the same activity type
  - Activities with the same main activity type

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- Activities with the same type
- Activities with/without work
- All activities

The rule can be set as a criterion and requirement. When set as a criterion, violations of the rule create a penalty.

4.2 Schedule generation

Once the profiles have been configured, a workstation schedule can be generated from the workstation master schedule. The following screen is displayed by selecting **Optimizer** > **Workstation optimizer**. To be able to select this option, the **Workstation plan board** needs to be opened in the client.

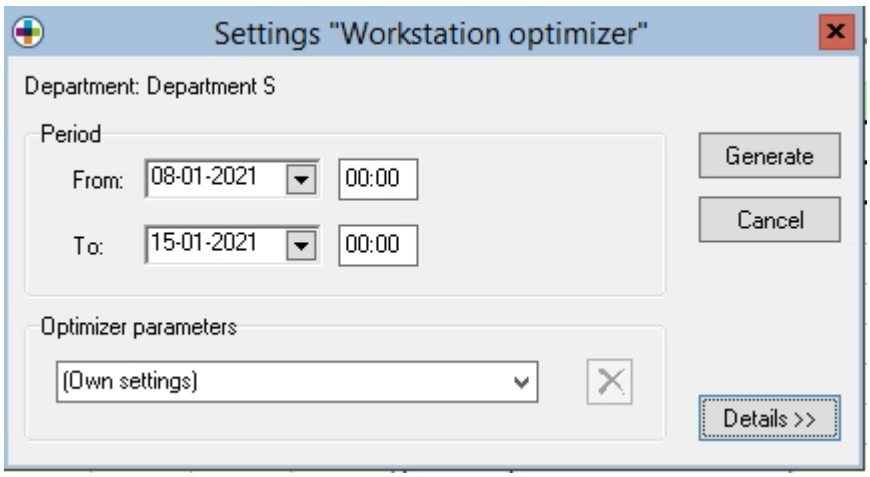


Figure 4.1: Select details to display all settings.

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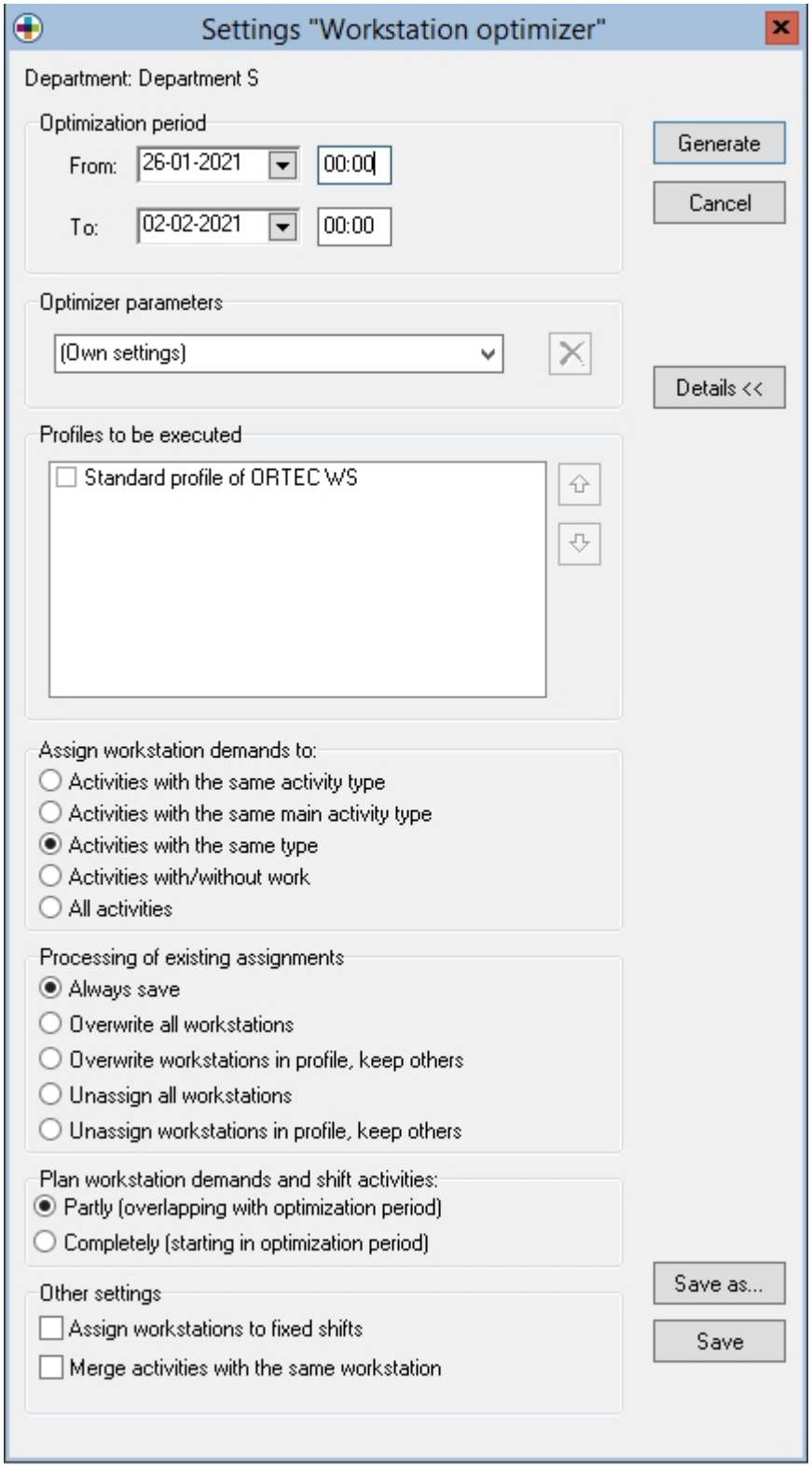


Figure 4.2: The various planning parameters used to generate a schedule. These can be saved as parameters by selecting Save or 'Save As' at the bottom of the screen

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4.2.1 Profiles to be executed

The screen displays all settings that are not profile-dependent. These settings apply equally to all profiles executed. These are the profiles selected in the center of the right-hand screen. Please remember that the order in which profiles are executed can alter the final outcome of the planning. For this reason, this sequence can be adjusted in this screen.

4.2.2 Assign workstation demands to activities

Define how the workstation demands can be allocated to the available employees by matching the underlying activities of each workstation demand with the activities of the available employees. There are five options available, each widening the scope of how strictly the demand should match the available employees. The wider the scope, the more possible assignments the Optimizer can generate. The five options are:

1. Activities with the same activity type
   Only the same activity types can be merged and matched.

2. Activities with the same main activity type
   All activity types that belong to a higher hierarchical activity type can be merged and matched, including all activities from option 1.

3. Activities with the same type
   All activity types that have the same activity class can be merged and matched, including all activities from option 2.

4. Activities with/without work
   All activity types that count as working hours can be merged and matched, including all activities from option 3.

5. All activities
   All activities can be merged and matched.

The assignment of the Workstation optimizer works in two levels:

1. Merge the activities on the demand side and the employee side, based upon the chosen option of 'assign workstation demands to'.
2. Match the activities of the workstation demand and the available employees.



The configuration of activity types determines the merging step.

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The Optimizer tries to match the exact activity duration as defined in the workstation demand on an available employee. The option 'the demanded activity can be broken down' influences the matching step. This option can be configured in the workstation demand properties window.

4.2.3 Processing of existing assignments

Another setting that has to be configured is ‘Processing of existing assignments’. This relates to availability processing before a schedule is generated. An employee who has already been assigned to a workstation (manually or by the Optimizer) can by default (first option) no longer fulfill other workstation demands. Once assigned, the assignment remains in place. Automatic planning only caters for additional assignments.

This can be circumvented by selecting the option ‘Unassign all workstations’. This setting removes all existing assignments before commencing automatic planning. Please note that it is therefore possible that an employee presently assigned to Workstation A, could subsequently be assigned to either Workstation A, B or no workstation at all! A variant setting is to only take the workstations as defined in the profile into account.

Unassigning all workstations is not always a desired result and for this reason, there is an ‘Overwrite’ option. This option ensures that an existing assignment is only deleted when a new assignment is available in its place. An employee presently assigned to Workstation A either remains assigned to Workstation A or is reassigned to another workstation when use is made of this option. The employee remains assigned. A variant setting is to only take the workstations as defined in the profile into account.

4.2.4 Other settings

- When 'Assign workstations to fixed shifts' is enabled, fixed shifts will be used by the optimizer.
- If the option ‘Merge activities with the same workstation’ has been selected, all consecutive activities for the same workstation with the same activity type will be merged into one activity once the Optimizer has run for all shifts.

The workstation optimizer takes all non blocked shifts into account. Shifts that are blocked will not be updated by the optimizer.

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Contact information

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