

# DOCUMENTATION

## Visual Production Scheduler (VPS)

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## 1. Technical requirements

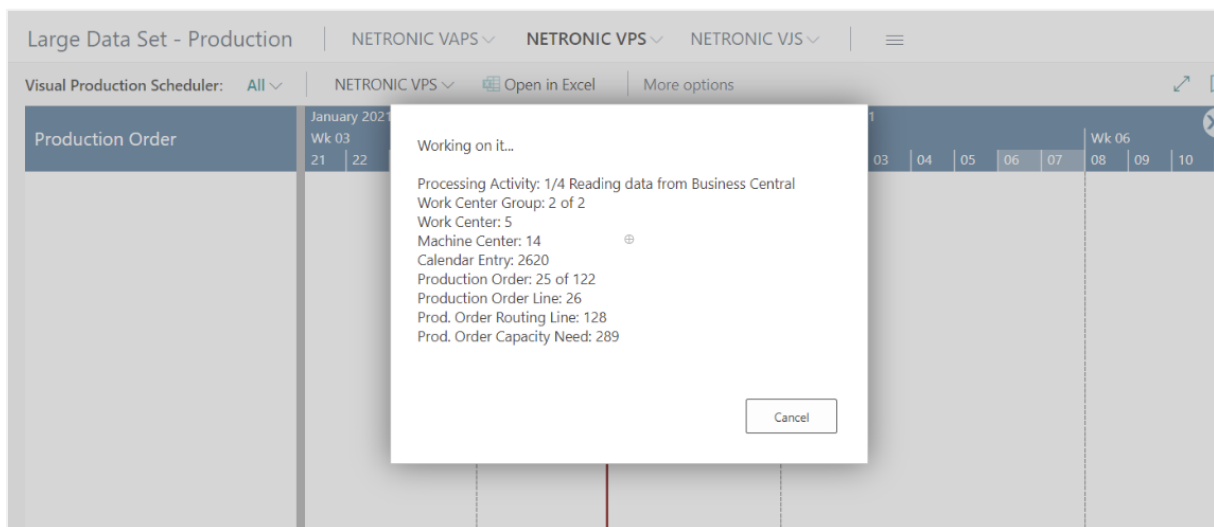
Microsoft Dynamics 365 Business Central

## 2. Starting the VPS: Info window shows progress when loading/reloading

When data is loaded into the VPS, multiple stages of data processing are executed until the visualization finally appears and the user can start working with it. Especially when there are large amounts of data to be loaded/reloaded, this can take some time during which the users do not know what is happening and are often unsure whether the application is still working.

To give the users detailed feedback as to what is happening during the loading process, we have implemented an info window that:

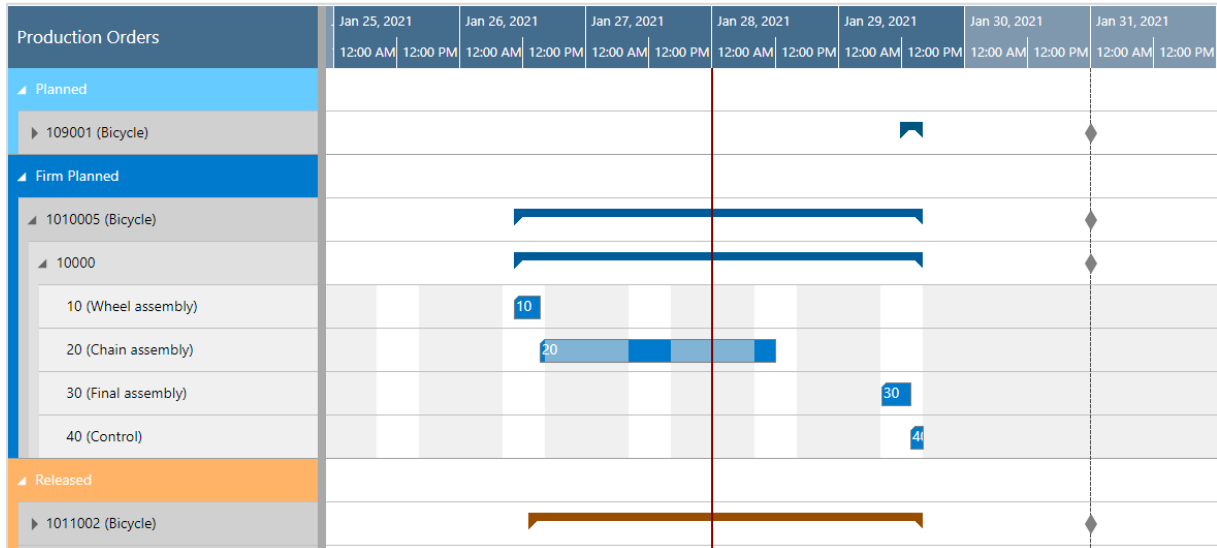
- gives feedback that something is happening at all (meaning the extension has not crashed)
- informs about the amount of data getting loaded, thus explaining why the process might take so long
- informs about how long this process might take and how long the users might need to wait
- also helps our support team during customer trainings or support cases to get a better understanding of the customers' environment.



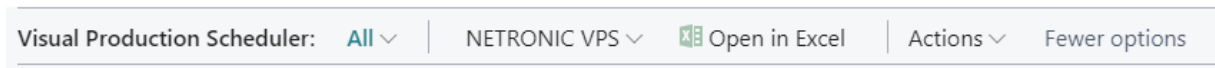
### 3. Understanding the VPS

Depending on the editing mode you are working in – Scheduler or Viewer – the elements and options shown and offered may differ. For detailed information about the differences between the two modes see chapter [Viewer Mode vs Scheduler Mode](#)

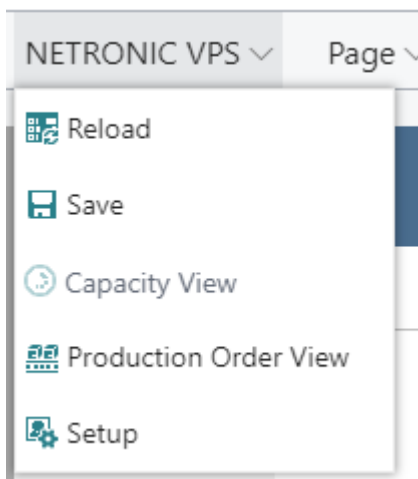
Since the VPS is a Gantt chart, it naturally has all its characteristics:



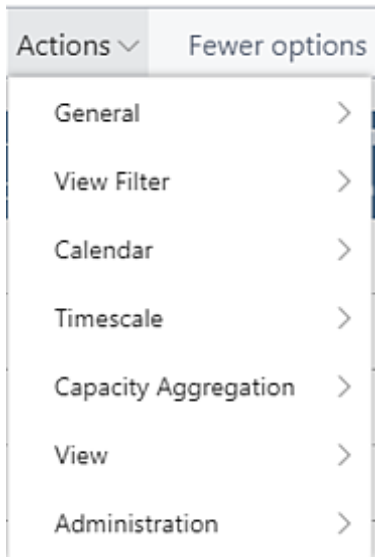
- A **timescale** at the top.
- A **table** at the left, production orders (in the Production Order View) or work and machine centers in the Resource View
- On the right below the time scale, a **chart** displaying the production schedule with a **calendar** in the background indicating work free periods in grey while working times appear in white.
- A menu ribbon allowing to make basic settings that will be explained in detail in the following.



The item “NETRONIC VPS” summarizes the options that we think are the most frequently used ones:

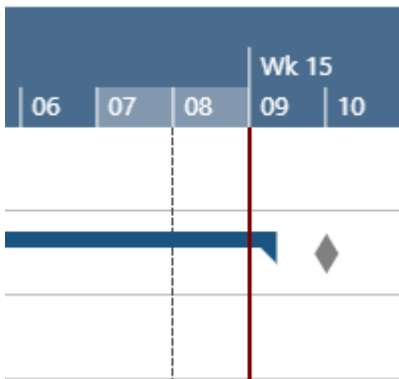


All options of the VPS can be found under “Actions”:

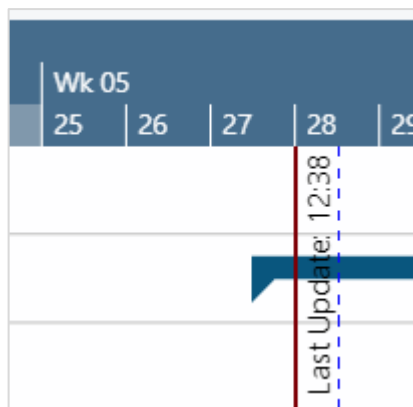


In case the “Actions” item is not visible in the menu ribbon, click “More options”. To hide it again, click “Fewer options”.

- A vertical line in the chart indicates the **work date** as having been set in Dynamics 365 Business Central.



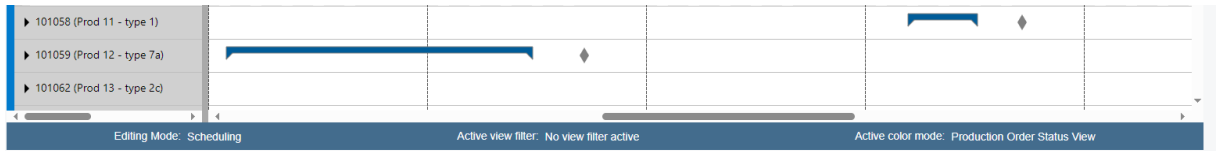
- A blue dashed line indicates the time when your plan was last updated.



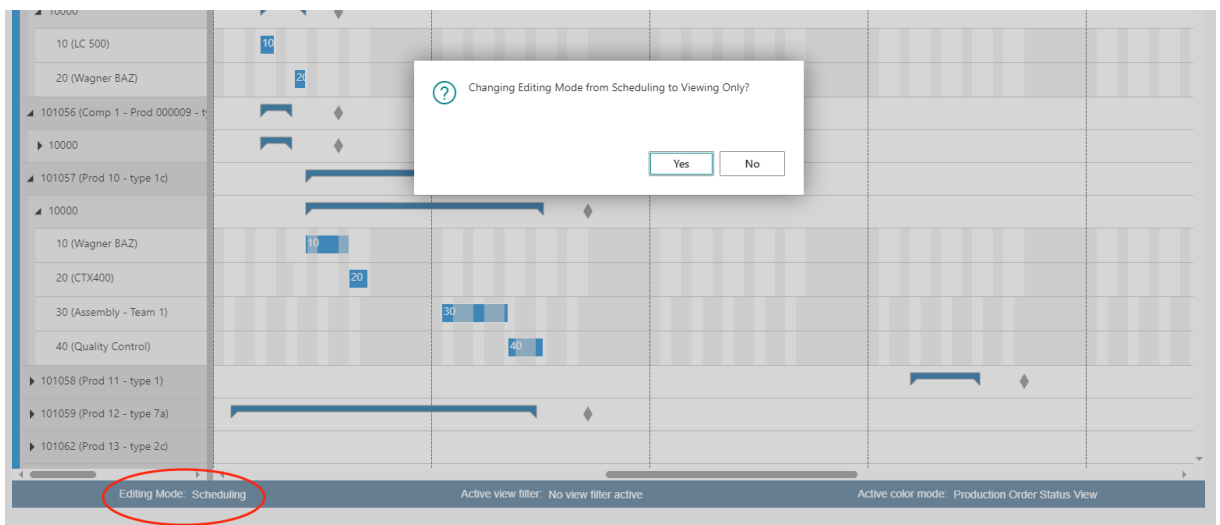
- An interactive status bar:  
In the world of visual scheduling, it's easy for planners to get lost in a sea of data and wonder

why they're seeing certain information. The status bar below the Gantt chart ensures that planners always know what they're looking at and provides real-time information about:

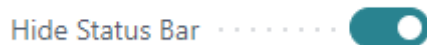
- The current editing mode.
- The active view filters, or whether no filter is active.
- The active color mode.



By clicking on the respective entry, the corresponding selection option is offered, which saves you having to go through the menu.



In the "Appearance Section" of the VPS Setup dialog, you can specify whether to show/hide the status bar.





## 4. Viewer Mode vs Scheduler Mode

In the earlier days when Business Central was known as Dynamics NAV, we offered a VPS planner license and a VPS viewer license. With the transition to Business Central, we just had one VPS license, enabling widespread access for schedule adjustments. If customers wanted only certain people to be able to make changes, we basically left it up to them to ensure this through appropriate processes and training.

Over time, spurred by customers' feedback and evolving needs, we recognized scenarios where a visual production schedule in a view-only mode could be invaluable. This led to the development of the VPS Viewer Mode.

### 4.1. Why and how: VPS Viewer Mode

There are use cases, where “non-production-scheduling-people” want to see the production schedule. Examples:

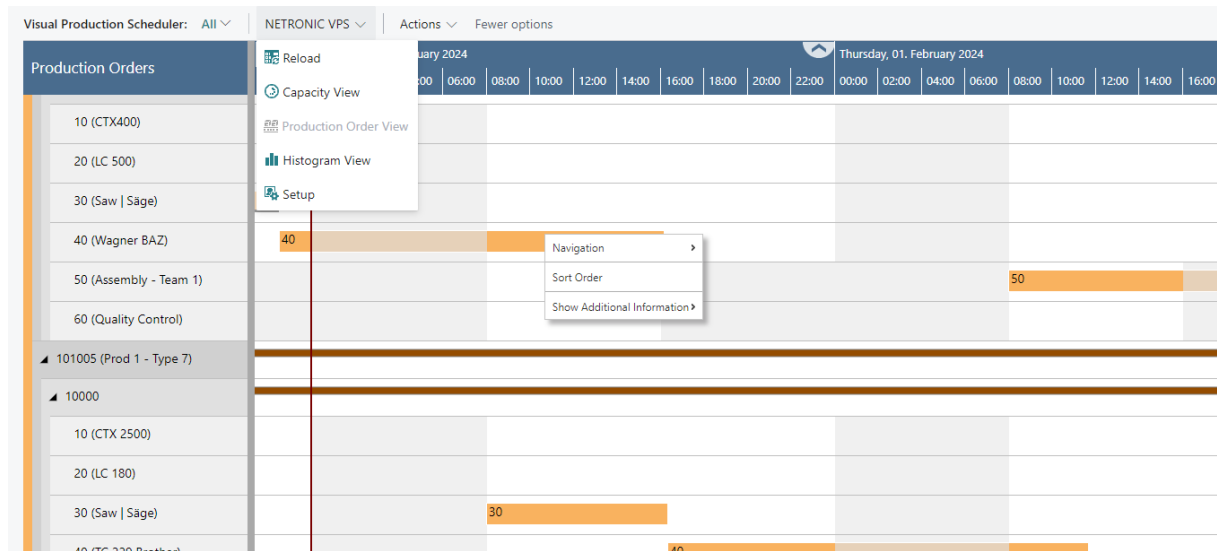
- Sales
  - What: check and understand the general production backlog
  - Why: derive conclusions for delivery time commitments
- Shopfloor workers
  - What: see which production orders are scheduled for today
  - Why: make operational decisions (if allowed)

We built the VPS Viewer Mode with all cases in mind but focused on the shopfloor

- Sales = open schedule, assess backlog, make conclusion, close schedule
- Shopfloor = schedule “always on” ... on a screen on the floor
  - Needs to show a fixed period
  - Needs to be pre-filtered
  - Needs to update automatically

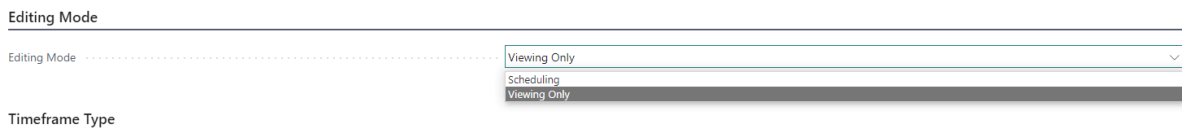
In the Viewer Mode, all options for changing the schedule are deactivated and the corresponding menus and functionalities – also for saving - are hidden. **However, changes to Business Central data are still possible via the Business Central pages!**

As usual, the progress window is displayed during reloading. If the user was previously working as a planner, changed data there, and then switched to the viewer mode, the changed data will be overwritten without prompting (saving is not provided in the viewer mode).



## 4.2. How to switch between Viewer Mode and Scheduling Mode

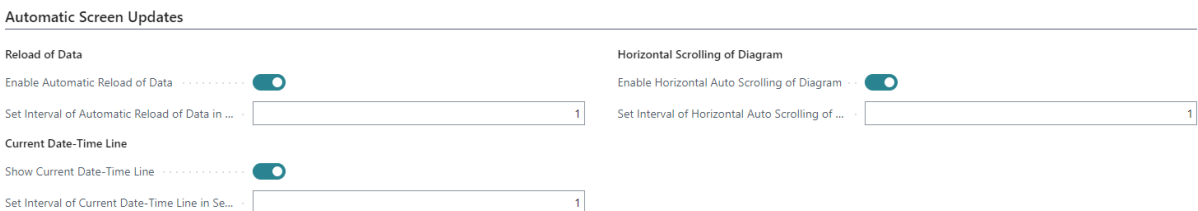
The mode can be selected by the according option in the “Editing Mode” area in the VPS setup. The Scheduling Mode is preset as default.



Depending on the selected mode, the settings offered in the newly added “Automatic Screen Updates” area of the Setup dialog differ:

### Viewer mode:

- whether and how often the view should be updated
- whether and how often the view should scroll
- whether the current date-timeline is shown and how often it should be updated

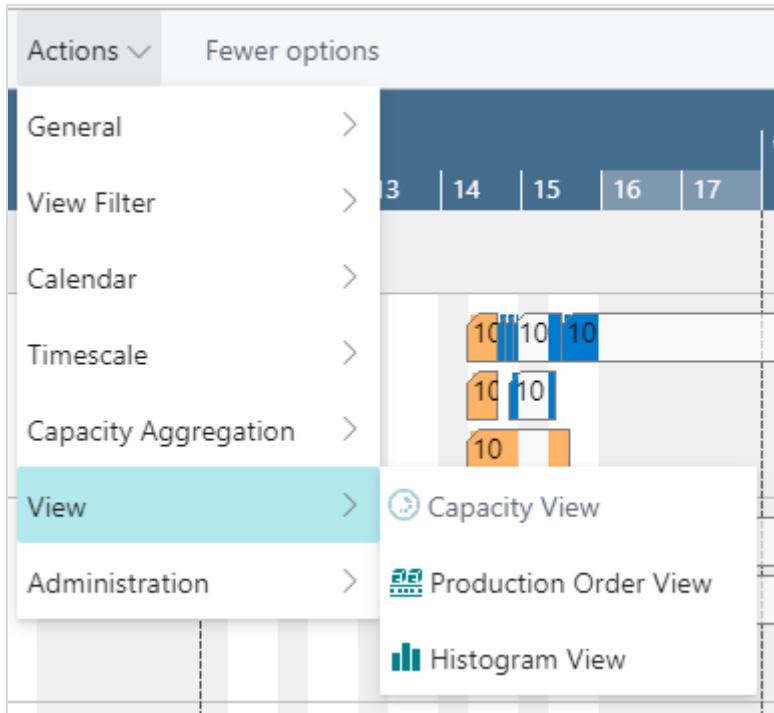


### Scheduler mode

- whether the current date-timeline is shown and how often it should be updated

## 5. Three different views and their options

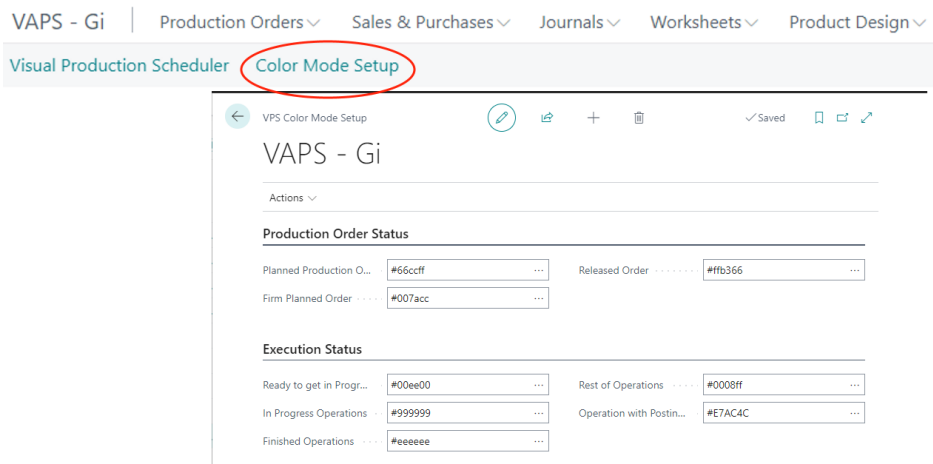
There are three different views in the VPS: The Production Order View, the Capacity View, and the Histogram View. You can switch between them by using the corresponding menu items:



### 5.1. Two color modes

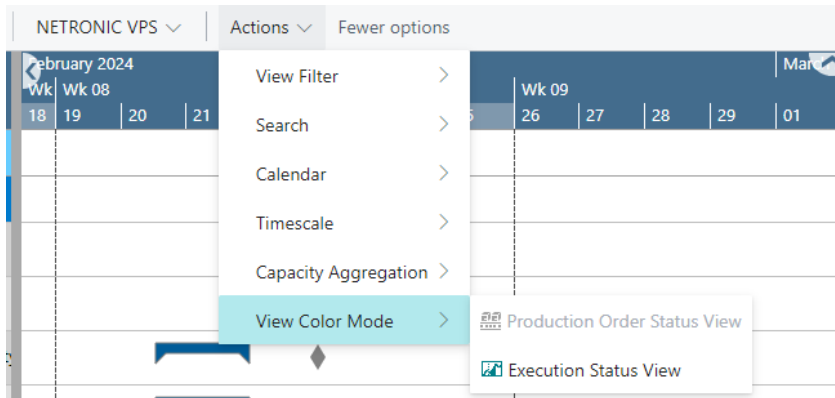
The VPS offers two different color modes to stress certain aspects of your plan with predefined colors for the bars. They can be applied in the Production Order View and in the Capacity View.

On the “Color Mode Setup” page, accessible from the Role Center via “Color Mode Setup”, users can freely define colors for both “Production Order Status” and “Execution Status”.

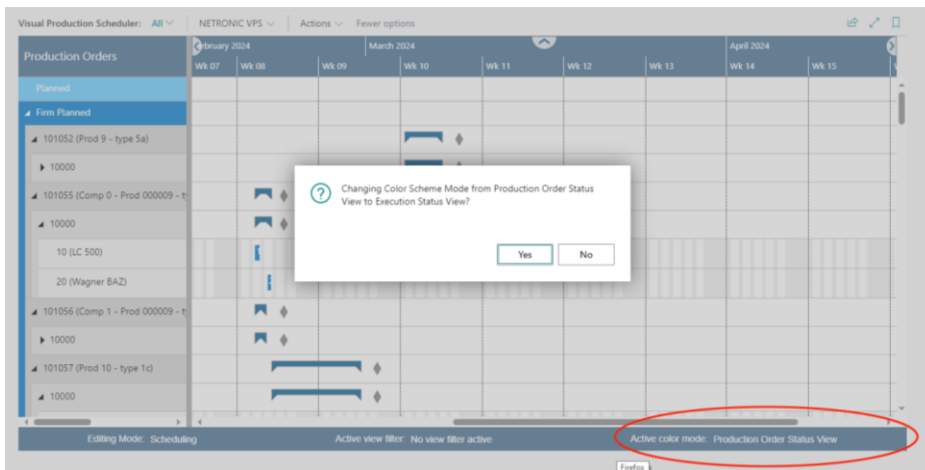


You can switch between the two modes by

- Selecting the view via "Actions" menu:

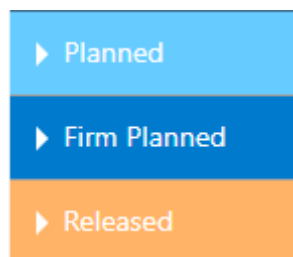


- Clicking on the entry in the status bar:



### 5.1.1. Production Order Status View Color Mode

The Production Order Status View is the default color mode of the VPS and helps you to quickly see where in your scheduling & execution process your production orders are. It differentiates production orders by their respective status and indicates this by different colors for the following statuses. The picture below shows the default colors:



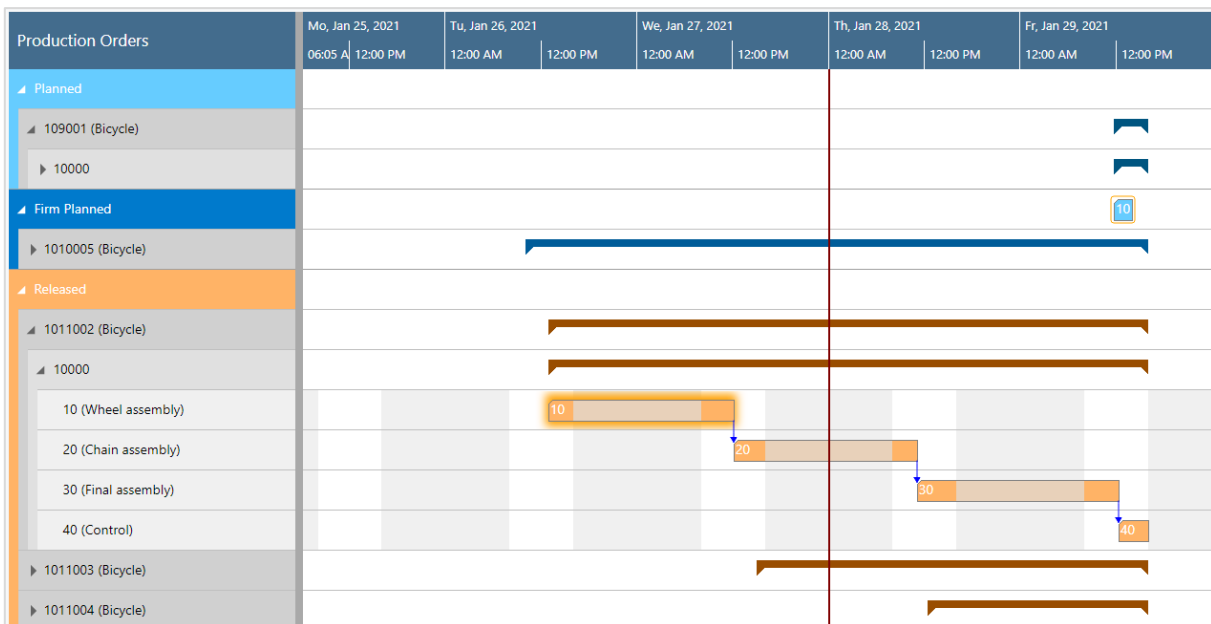
Please note that the VPS will always start in the Production Order Status View.

### 5.1.2. Execution Status View Color Mode

With this mode, you get feedback on the operations' status on the shop floor: ready to get in progress, in progress, finished, with posting issues, and the rest. The colors listed below are defined as default:

Color	Default Color Code	Color Setup Name
	#00ee00	Ready to get in Progress Operation
	#999999	In Progress Operation
	#eeeeee	Finished Operation
	#0008ff	Rest of Operation
	#ed7d31	Operation with Posting Issue

### 5.2. The Production Order View



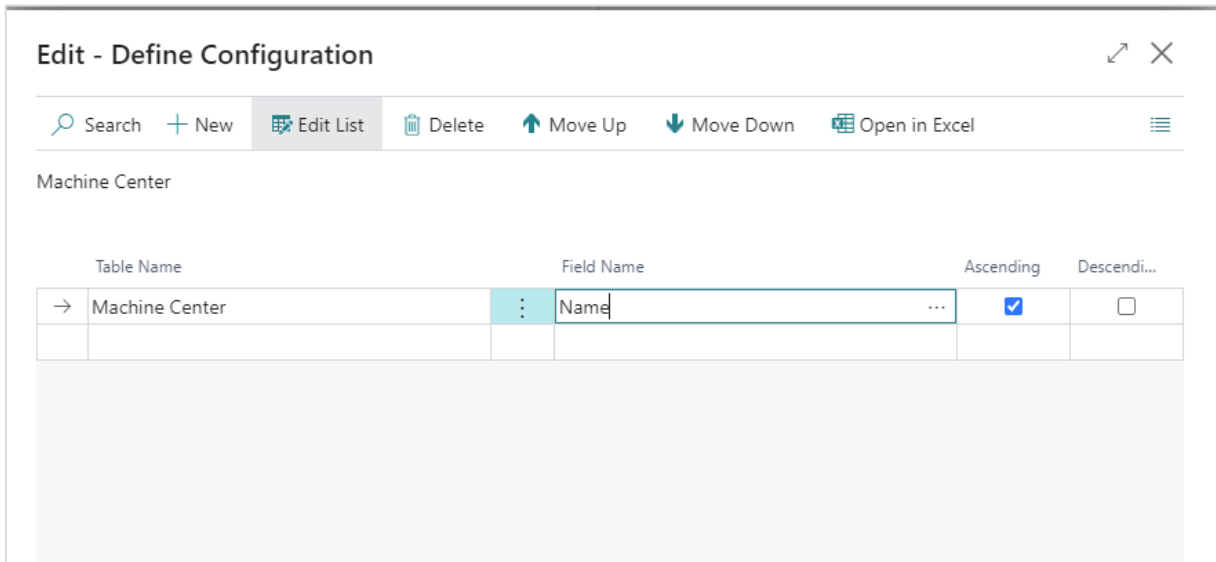
The Production Order View shows production orders categorized by status, the categories being indicated by different colors depending on the selected view color mode, workfree periods appearing slightly lighter.

#### 5.2.1. Sorting

Production orders, their production order lines, and production order routing lines are sorted in ascending numerical order.

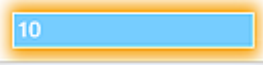
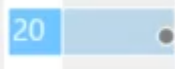
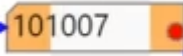
Within each production order, the relating production order lines with their production order routing lines are listed.

This sorting order can be changed in the according dialog which can be opened either by context menu or in the “Configuration”s tab of the user setup.



### 5.2.2. Information shown on bars

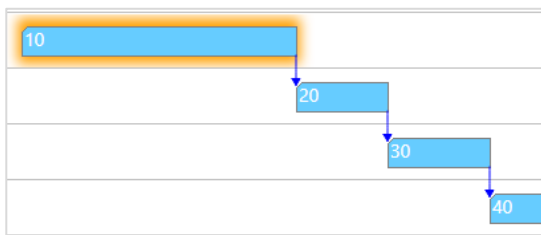
The following information can be gathered from optical indicators:

- Currently marked operation:  

- Operation changed but not saved yet  

- Violated due date  


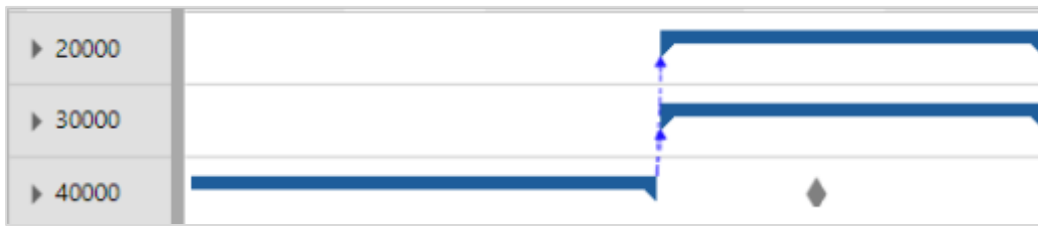
### 5.2.3. Links

Links are shown after having clicked the desired production order or production order line as described below:

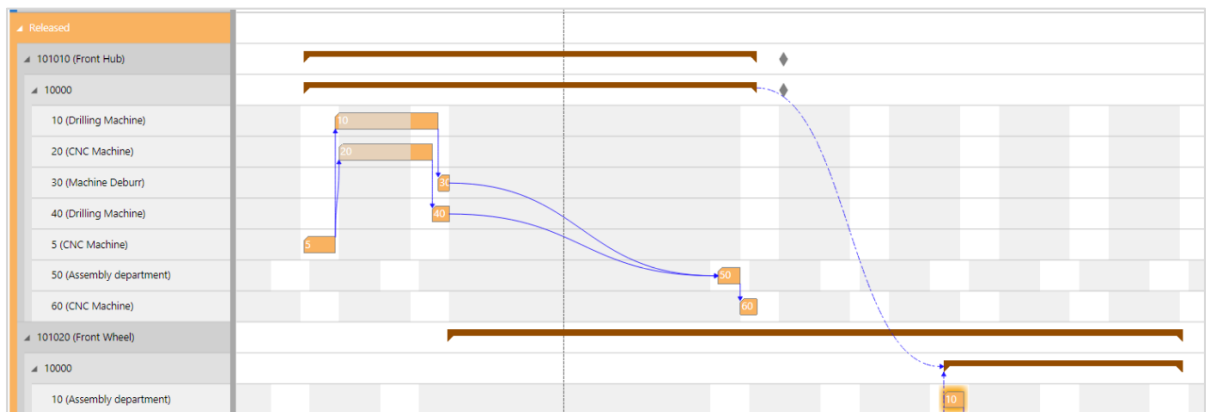
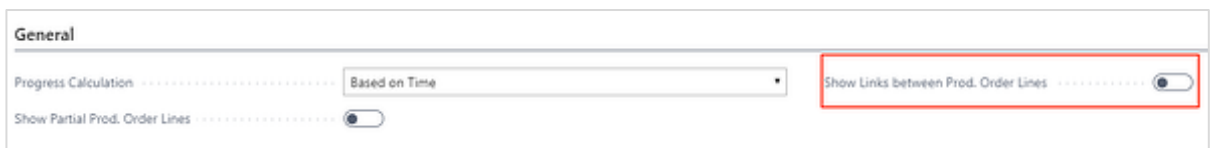
- between operations of one production order line



- between production order lines (make-to order)



You can decide whether to show these links or not by ticking/unticking the according option in the “General” section of the “Setup” dialog.

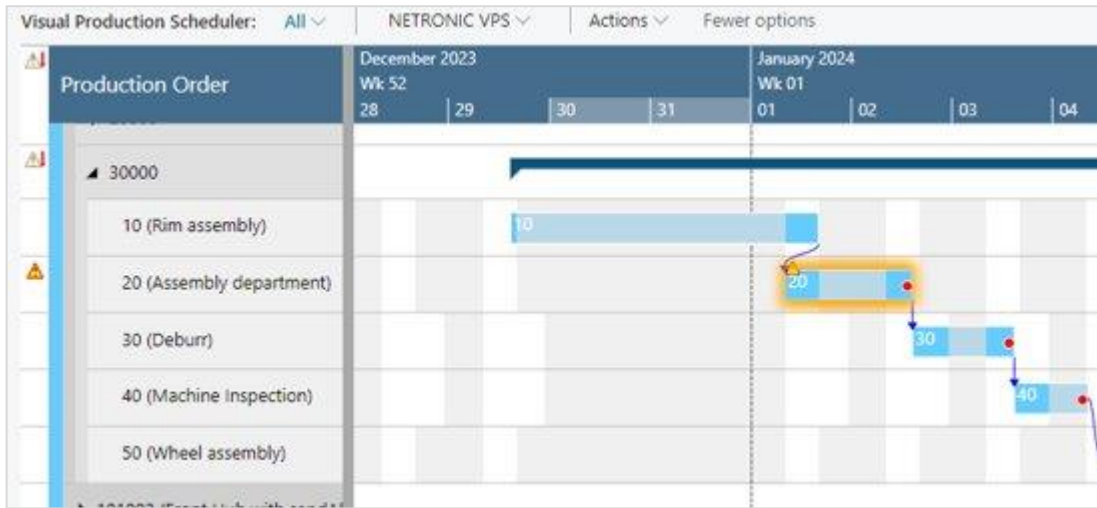


- between production orders

#### 5.2.4. Sequence violation

The sequence of operations in BC is determined by routings (and reservations). If a production order is created or recalculated, the operations are arranged according to these specifications. In the planning board, these operations can be moved in relation to each other, thus perhaps causing sequence violations.

The VPS now draws attention to these "not allowed" overlaps by symbols at the concerned elements and in the table part, where the information is "passed up" to the parents to indicate the overlap even in collapsed state or when the element is scrolled out of view.



The meaning of the symbols in detail:

	The element has a sequence violation. Shown at the bar or in the table. Can be displayed in the production order view at the production order routing line, in the capacity view at machine/workcenter.
	A child element has a sequence violation. Shown in the table header and both in the production order view for production order lines/production orders or in the capacity view for work center groups and work centers.
	Sequence violations in the element itself and in child elements. In case of the work center, there may be, for example, a sequence violation of a production order routing line of the work center and a sequence violation of one of its machine centers.

The feature gets activated/deactivated in the "Scheduling" area of the "Setup" dialog:

**Scheduling**

---

**Autoschedule With Zero Buffer Time**

Predecessors .....

Successors .....

Schedule Across Prod. Order Lines .....

Conflict Handling of Reservations ..... None ▼

Consider Queue Time .....

Consider Send Ahead Quantity .....

Routing Sequence Violation Check .....

### 5.2.5. Due date

The **due date** of a production order is represented by a diamond-shaped symbol, turning red in case of an exceeded due date.

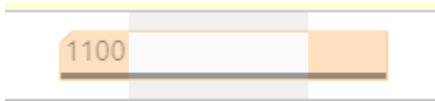




### 5.2.6. Progress

Based on the settings you have specified in the "Setup" dialog, you can display a progress bar for production order routing lines of **released** production orders, the color of the progress bar depending on the **routing status** and the **percentage of completion**. What's more, finished operations get grayed out:

- Status "finished":

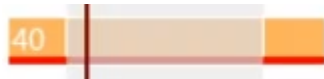


- Status "none", "planned", "in progress":

- Progress by quantity / by time < 100%: **grey**

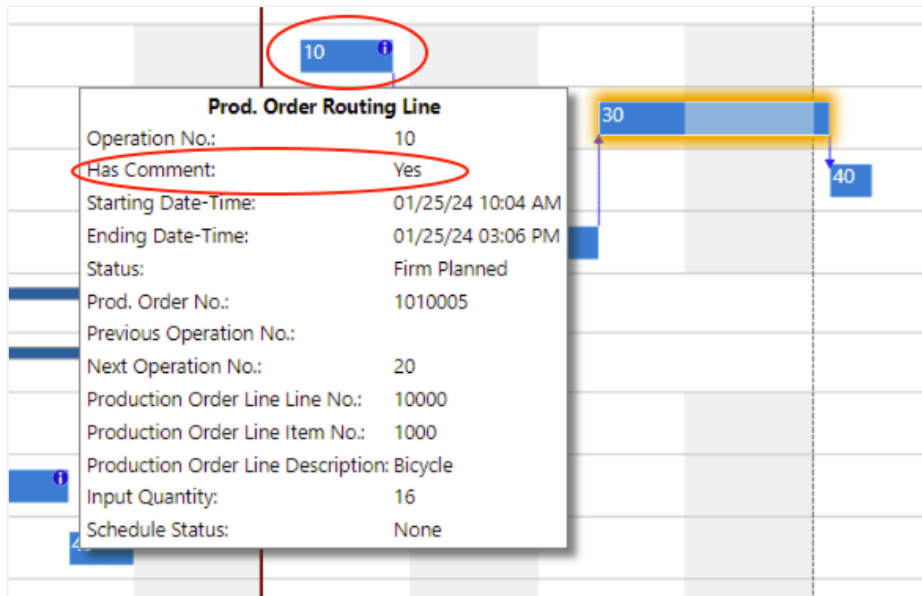


- Progress by quantity / by time (i.e., you have posted more than initially planned) > 100%: **red**

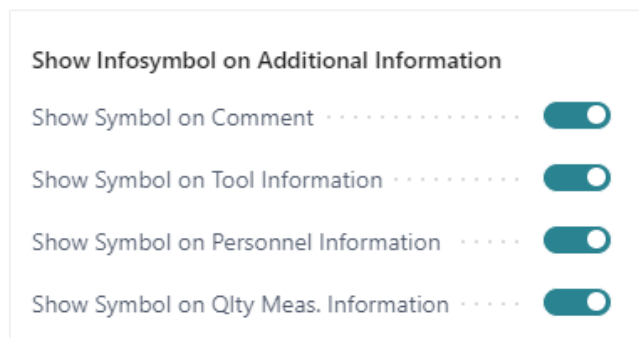


### 5.2.7. Quickly see and create additional BC information

In Business Central, the planner can add additional information to a production order routing line/an operation by creating comments, tool information, personnel information, and quality measure information that are used, e.g., for describing certain specialties that need to be followed during the production process. As this is, of course, valuable information, the VPS helps the planner to quickly recognize whether a production order line/an operation has such additional information so that the special requirements are not overlooked. You can also display this information in the tooltip.

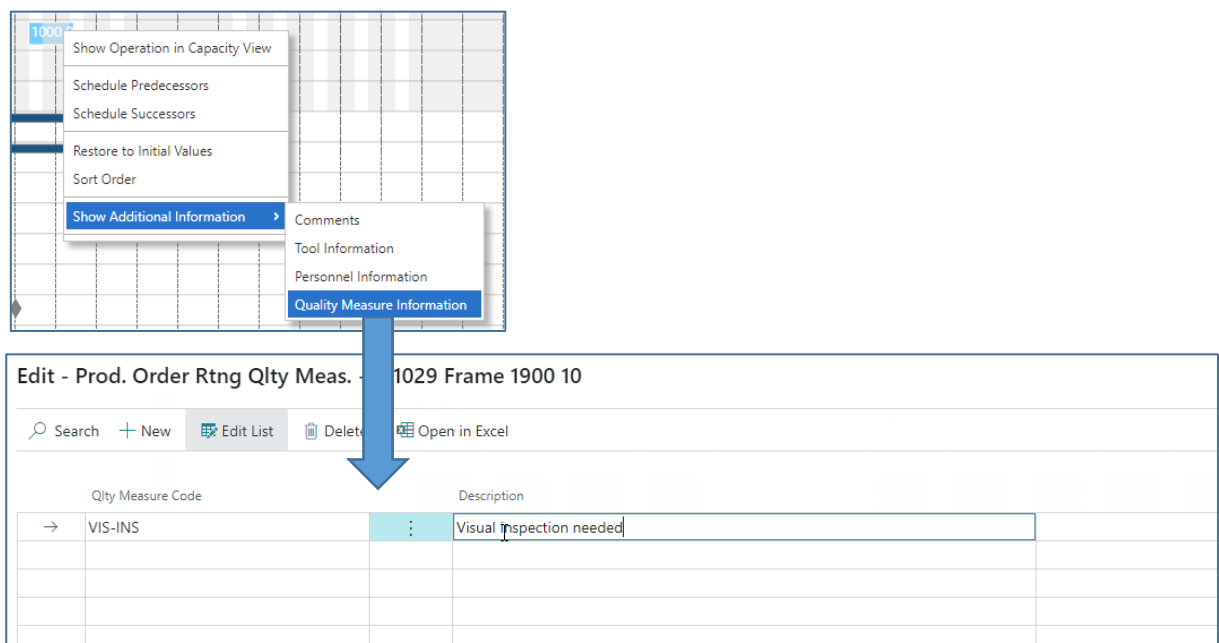


To activate the feature, tick the according option in the "General" settings of the VPS setup dialog:

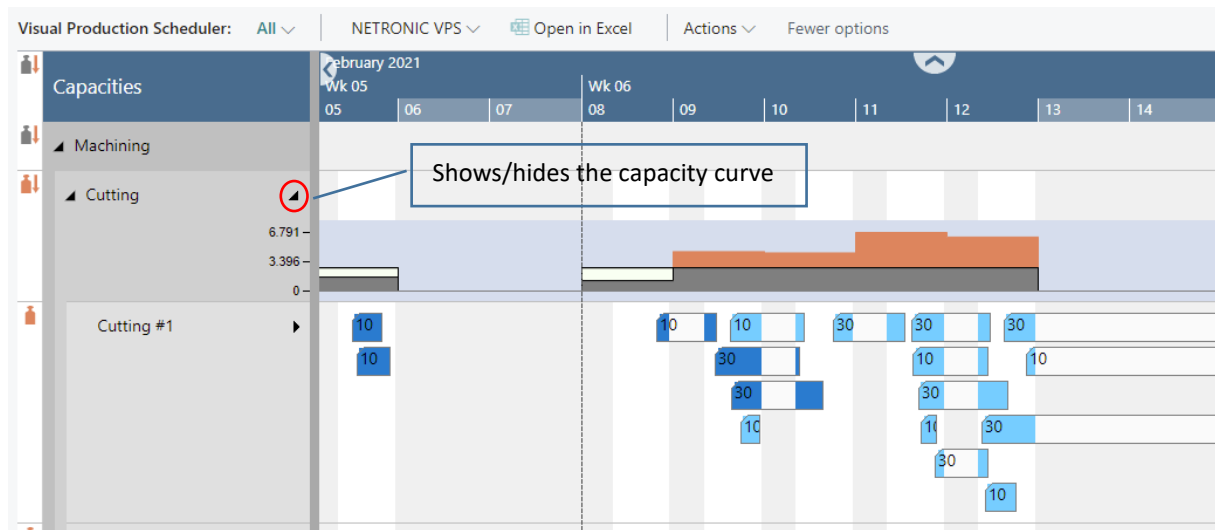


### Shortcut to creating additional information

You can directly create and edit additional information by clicking the according item in the context menu.






### 5.3. The Capacity View



- Shows capacity loads of work centers and machine centers, grouped by work center groups.
- Capacity bottlenecks and conflicts concerning delivery dates can be visualized by a red box in the capacity curve and by according symbols in the table part.
- The bars are displayed in the colors depending on the selected color view mode, workfree periods appearing slightly lighter.

The meaning of the symbols in detail:

-  No overload at the parent resource (group) but at one or more subordinate resource(s)
-  Overload at the resource (group) itself and at one or more subordinate resources
-  Overload only at the resource (group) itself

Please note that if there isn't any overload in the complete plan, the symbol column will not be shown.

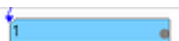
#### 5.3.1. Information shown on bars

The following information can be gathered from optical indicators:

- Currently marked operation:



- Operation changed but not saved yet

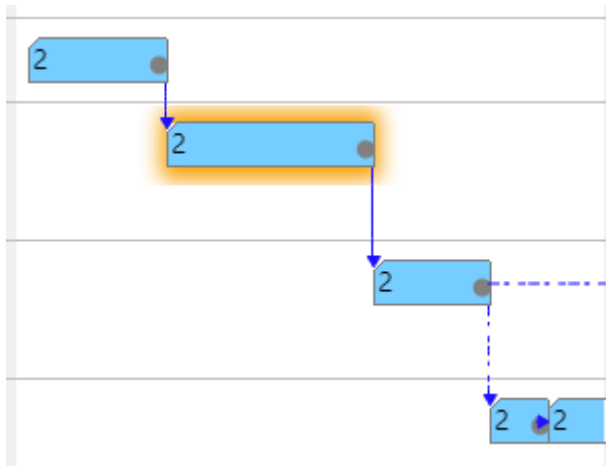


- Violated due date



### 5.3.2. Links

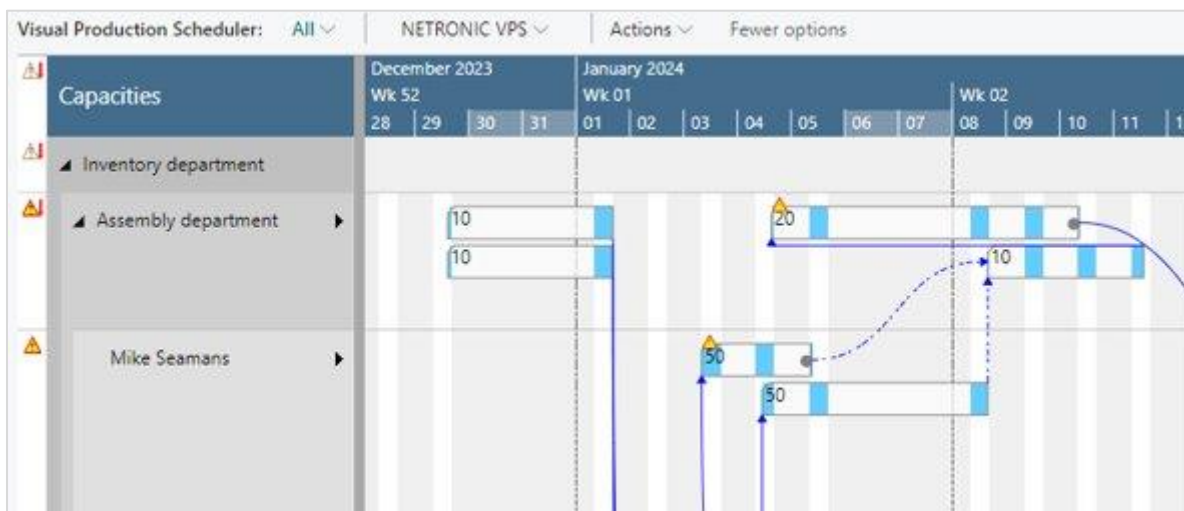
Links between operations are shown after having clicked one operation of the according production order.






### 5.3.3. Sequence violation

The sequence of operations in BC is determined by routings (and reservations). If a production order is created or recalculated, the operations are arranged according to these specifications. In the planning board, these operations can be moved in relation to each other, thus perhaps causing sequence violations.

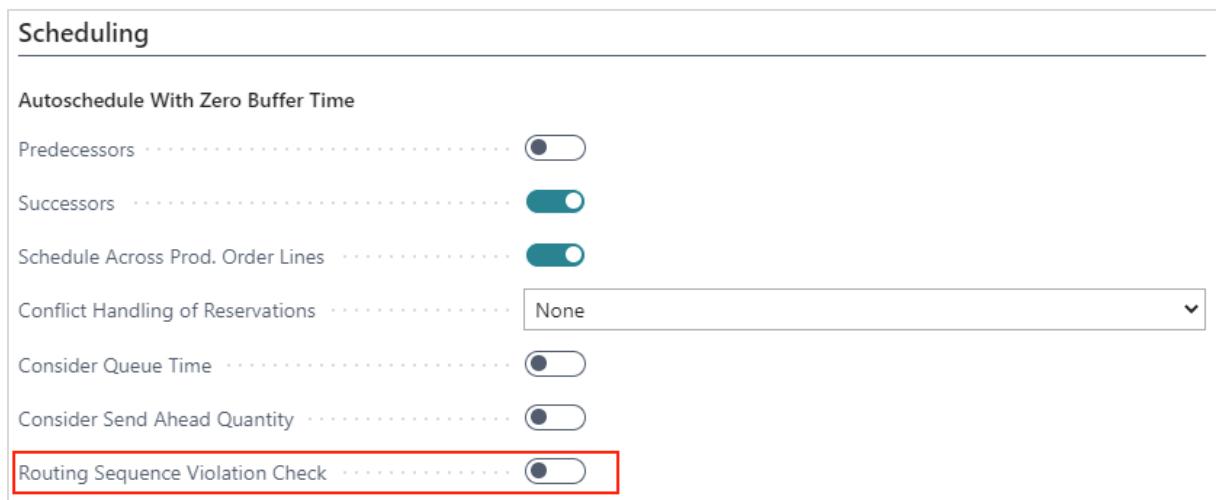
The VPS now draws attention to these "not allowed" overlaps by symbols at the concerned elements and in the table part, where the information is "passed up" to the parents in order to indicate the overlap even in collapsed state or when the element is scrolled out of view.



The meaning of the symbols in detail:

	The element has a sequence violation. Shown at the bar or in the table. Can be displayed in the production order view at the production order routing line, in the capacity view at machine/workcenter.
	A child element has a sequence violation. Shown in the table header and both in the production order view for production order lines/production orders or in the capacity view for work center groups and work centers.
	Sequence violations in the element itself and in child elements. In case of the work center, there may be, for example, a sequence violation of a production order routing line of the work center and a sequence violation of one of its machine centers.

The feature gets activated/deactivated in the "Scheduling" area of the "Setup" dialog:



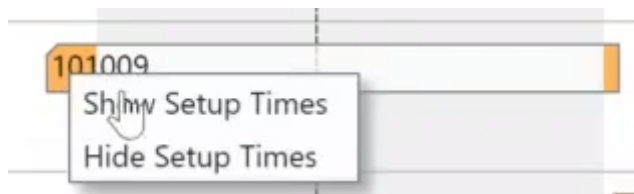
### 5.3.4. Due date

If you click an operation, a vertical line in the color of the operation's status appears, indicating the due date.

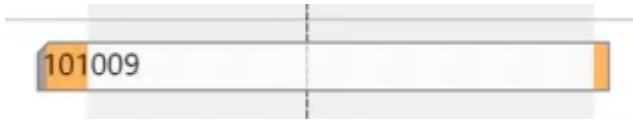


### 5.3.5. Setup times

A context menu enables to show or hide the setup times



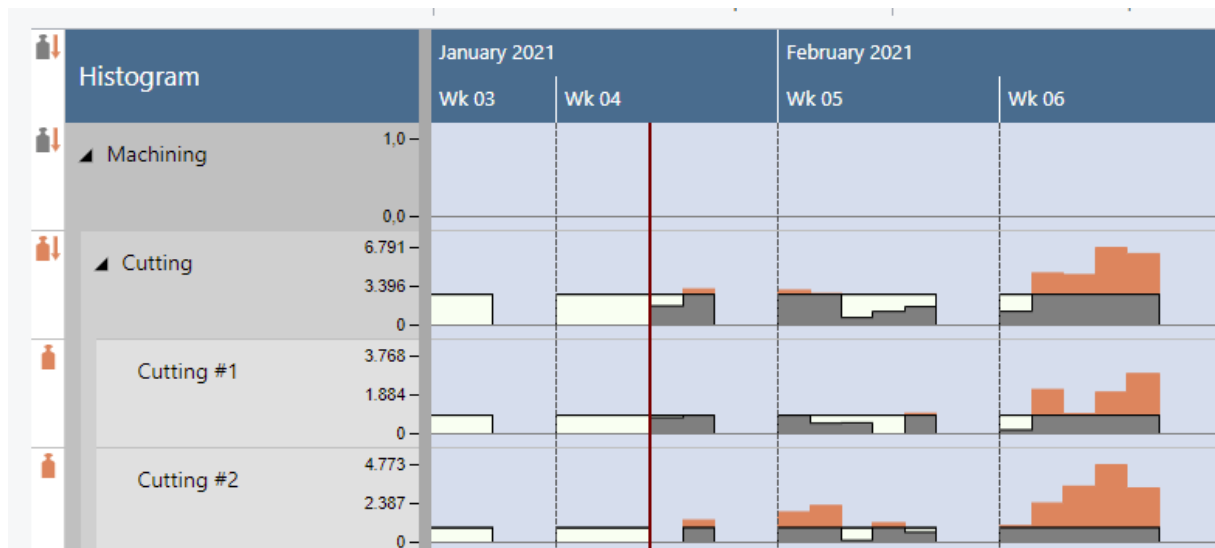
If “Show Setup Times” is selected, they are visualized as grey section at the beginning of the bar



### 5.4. The Histogram View

A histogram offers visual decision support by showing impending capacity problems. In the Histogram View, the histograms of the work centers and their respective machine centers are displayed.

Overloads at a resource are indicated by a red box in the chart and according symbols in the table part.



The meaning of the symbols in detail:

- No overload at the parent resource (group) but at one or more subordinate resource(s)
- Overload at the resource (group) itself and at one or more subordinate resources
- Overload only at the resource (group) itself

Please note that if there isn't any overload in the complete plan the symbol column will not be shown.

## 6. The calendar

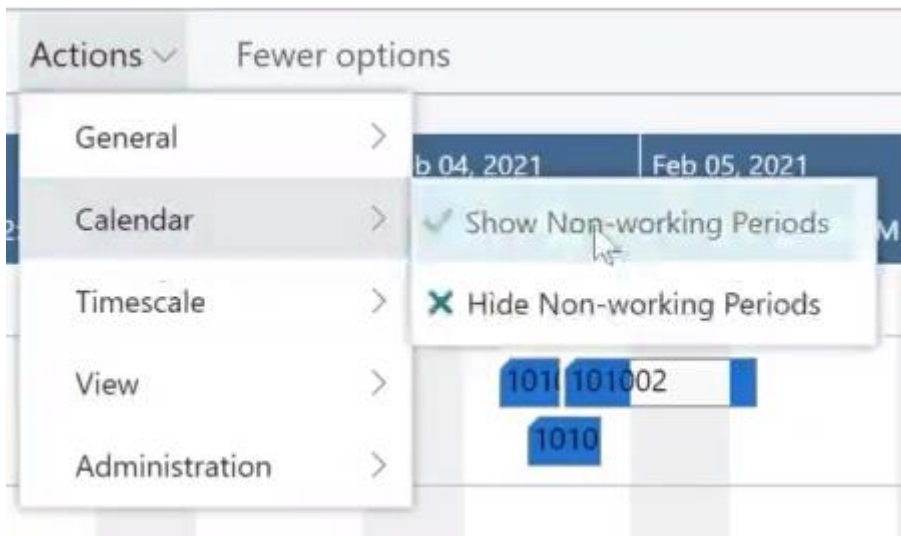
The grey and white area in the background of the views visualizes the work and non-work periods of the respective work/machine center. They are derived from the respective shift calendars

Production Orders	Friday, 22. January 2021				Saturday, 23. January 2021				Sunday, 24. January 2021				Monday, 25. January 2021			
	02:10	06:00	12:00	18:00	00:00	06:00	12:00	18:00	00:00	06:00	12:00	18:00	00:00	06:00	12:00	18:00
Planned																
101011 Bicycle																
1000   40																
10 Assembly station #1																
20 Assembly station #2																
30 Assembly station #3																
40 Inspection Table #1																

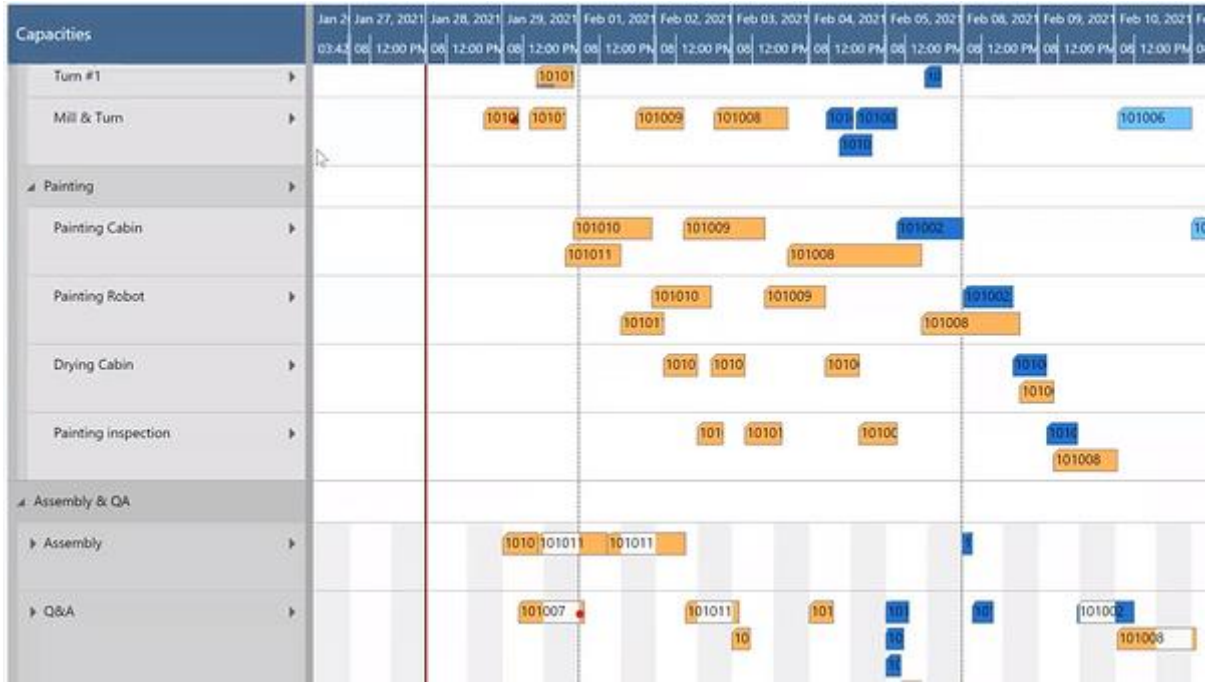
### 6.1. Show/hide non-working periods

Some planning situations require to focus on the working periods of a work or machine center only.

To show or hide non-working periods, click the "Calendar" item in the "Actions" menu and select the desired option.



After having selected "Hide non-working periods", you'll only see the non-working periods that are unique to some work and machine centers.

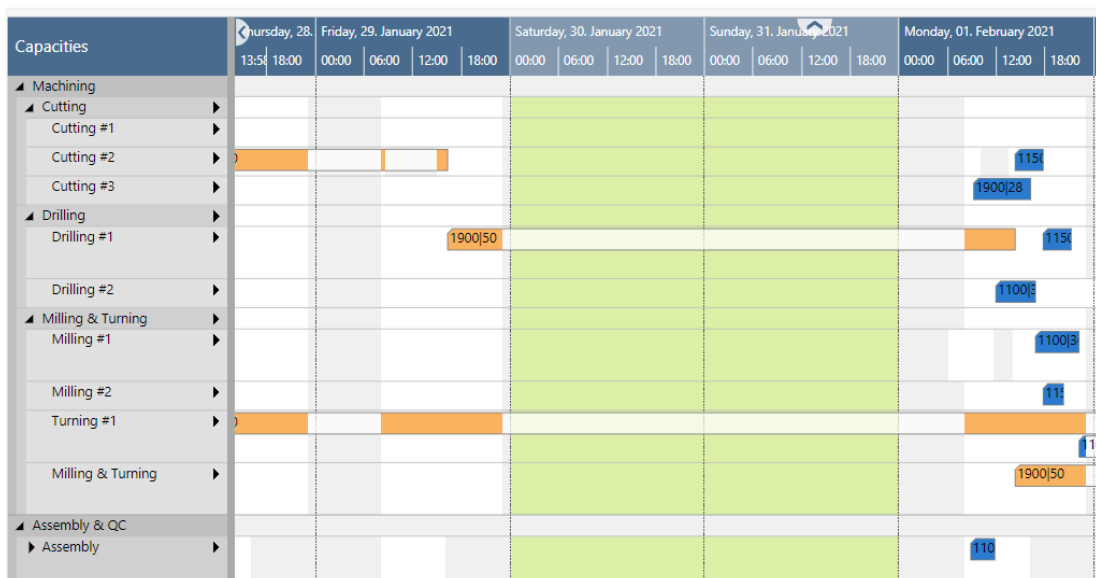


## 6.2. Individual design of weekend colors and date line grids

Some of our customers use a 24-hour working calendar and, as they told us, sometimes have difficulties navigating and planning by day in the diagram area because the change between the days and/or weekends and working periods are not clearly visible. This, in turn, forces the planner to constantly look back and forth between the timescale and the plan. So we set to work and implemented two new visual elements to create a better connection between timescale and diagram area:

- vertical separation lines between individually selectable intervals
- an individual background color and transparency degree for weekends

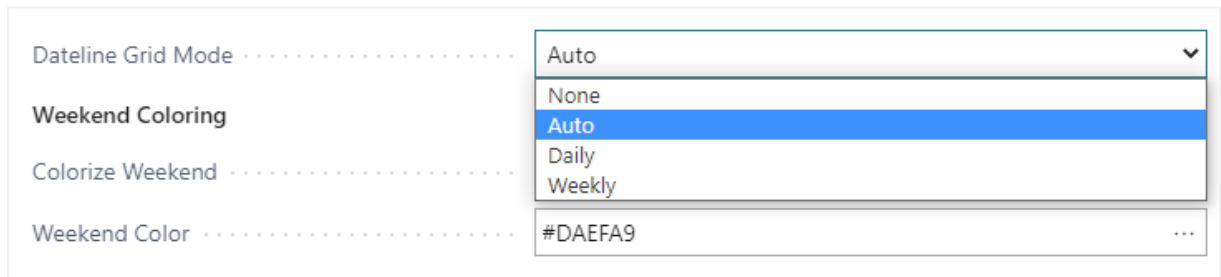
In the picture below, the date line grid mode is set to "Daily", the background color for the weekend to a light green.





The according settings can be found in the "Appearance" area of the VPS setup dialog:

- Dateline Grid Mode



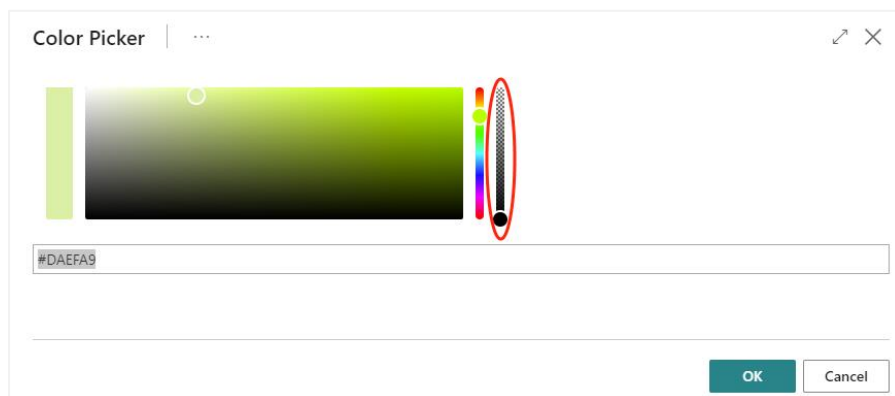
The "Auto" mode causes the grids to automatically adjust to the resolution of the time scale resulting from zooming in or out.

- Weekend coloring

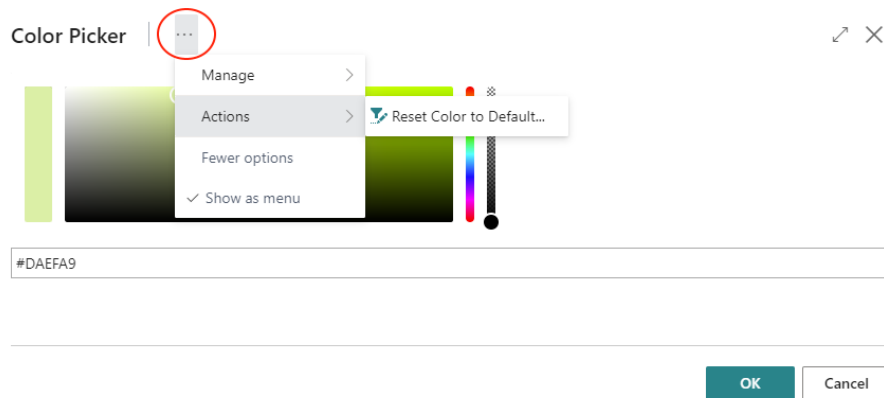


If you want to color the weekends individually, you can activate this here.

- By clicking you open the Color Picker dialog where you can
  - select the desired color
  - adjust the transparency:



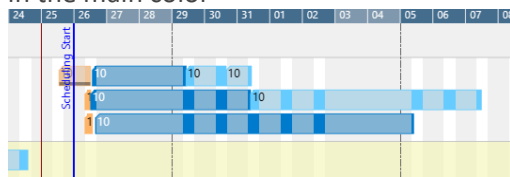
- reset the weekend color to default comfortably and at one click:



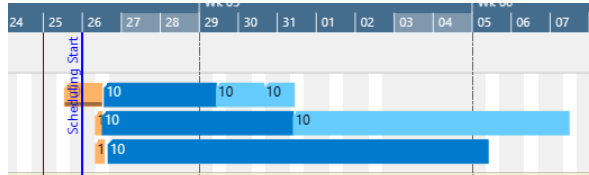
- Bar colors: Select individual bar color schemes that ensure that the label texts are always visible.

The options in detail:

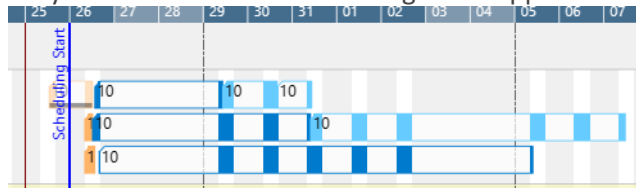
- Graded (default): nonworking times are displayed in a lighter shade of the main color; in case there are assignments during non-working periods they are drawn in the main color



- Solid: draws a continuous block in the main color



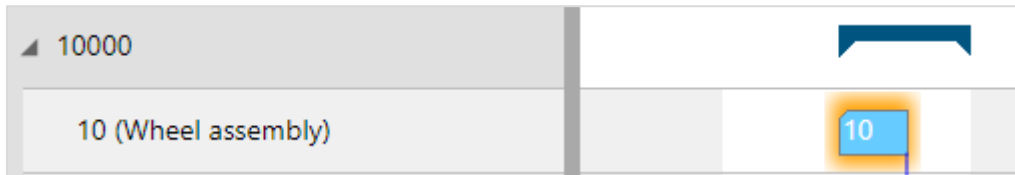
- Only Allocated Times: nonworking times appear with a white background



## 7. Open Microsoft Dynamics 365 Business Central dialogs

The VPS fully integrates with Microsoft Dynamics 365 Business Central. This means that by double-clicking the according element (production order, production order line, production order routing line, work center etc.) either in the table area or in the Gantt area, you'll directly switch to the according Dynamics 365 Business Central dialogs where you can navigate and make changes as usual:

Double-clicking a production order routing line...



...will call the according dialog:

Manage Process Order Show Attached Page More options

EDIT - FIRM PLANNED PROD. ORDER - 1010005 - BICYCLE

**General**

No. 1010005 Search Description BICYCLE

Description Bicycle Quantity 16

Description 2 Due Date 30.01.2021


Source Type Item Assigned User ID

Source No. 1000 Last Date Modified

**Lines** Manage More options

ITEM NO.	DUE DATE	DESCRIPTION	STARTING DATE-TIME	ENDING DATE-TIME	QUANTITY	UNIT OF MEASUREMENT CODE
1000	30.01.2021	Bicycle	26.01.2021 10:04	29.01.2021 16:00	16	PCS

## 8. Collapsing and expanding









The VPS allows to view your data from different angles easily and quickly. The symbols  in the table allow to collapse and expand production orders, work center groups, work and machine centers, thus hiding details or rendering them visible.

Please note that the VPS automatically saves the collapsed/expanded state of a view so that you can start exactly with the status you saw when you left the view.

All order categories **collapsed**:

Activities	January 2021					February 2021	
	Wk 53	Wk 02	Wk 03	Wk 04	Wk 05	Wk 06	Wk 07
▶ Planned							
▶ Firm Planned							
▶ Released							




After having expanded the “Planned” category with order 109001 and all its sub-operations:

Activities	Th,	Fr, Jan 29, 2021		Sa, Jan 30, 2021		Su, Jan 31, 2021	
	08:30	12:00 AM	12:00 PM	12:00 AM	12:00 PM	12:00 AM	12:00 PM
▲ Planned							
▲ 109001 (Bicycle)							
▲ 10000							
10 (Wheel assembly)							
20 (Chain assembly)							
30 (Final assembly)							
40 (Control)							
▶ Firm Planned							
▶ Released							

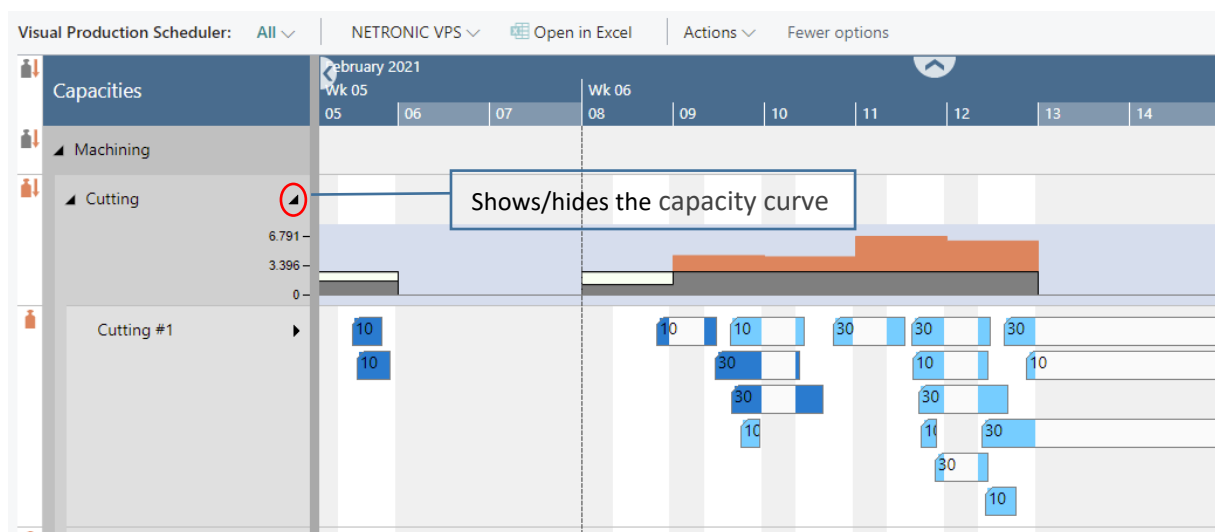
## 9. Capacity information

In the VPS, you can show a capacity curve in the Capacity View, to see free and exceeded capacities, a red box in the capacity curve and by according symbols in the table part indicating an overload.

The meaning of the symbols in detail:

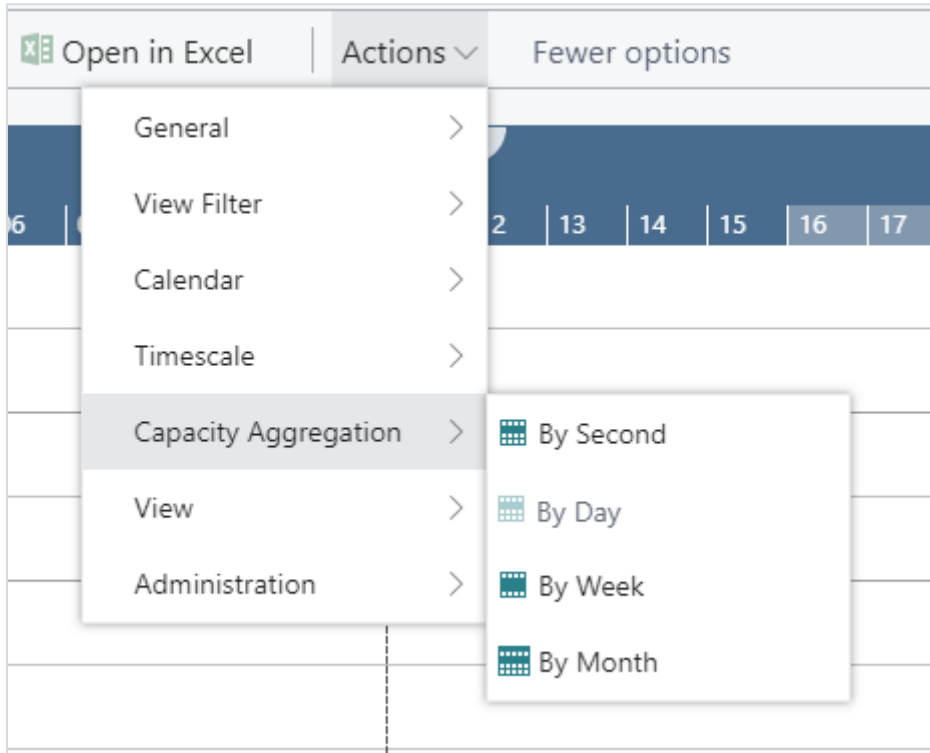
-  No overload at the parent resource (group) but at one or more subordinate resource(s)
-  Overload at the resource (group) itself and at one or more subordinate resources
-  Overload only at the resource (group) itself

Please note that if there isn't any overload in the complete plan the symbol column will not be shown.



The capacity curve combines information on a resource's allocation and its availability. If, for instance, a task's duration is 10 hours, the capacity curve of a resource with an availability of 8 hours/day shows an overload - if it is calculated per day.

In many cases, the planner regards a resource's availability by week or even by month. That is why the VPS lets you select whether you do the capacity calculation either by second, day, week, or month. The curve will aggregate the occupancy on the selected period.

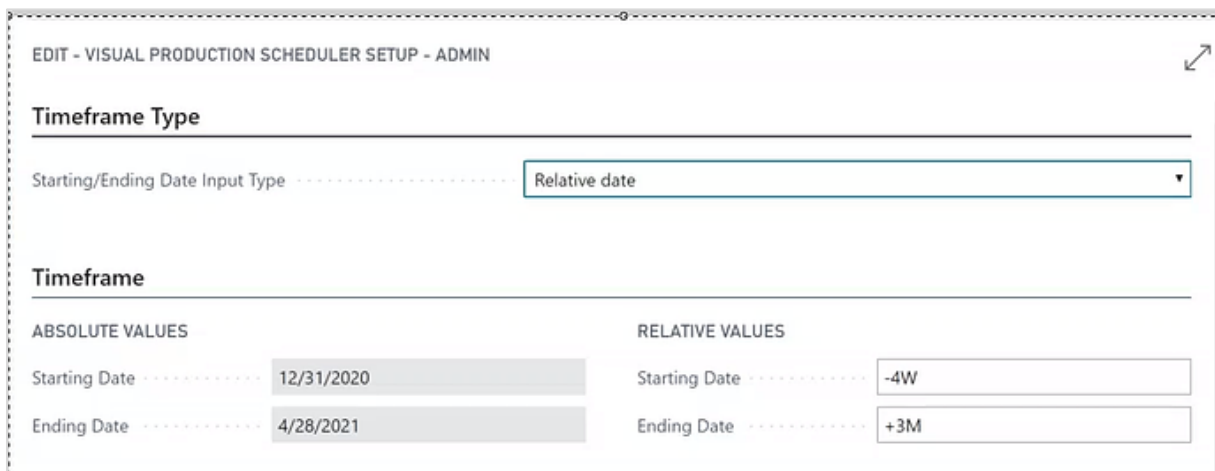


## 10. Navigation in the VPS

Navigating in the VRV largely comprises setting the time range for which parts of your plan are shown, modifying the timescale solution and quickly scrolling to certain parts of your plan.

### 10.1. Setting the timeframe

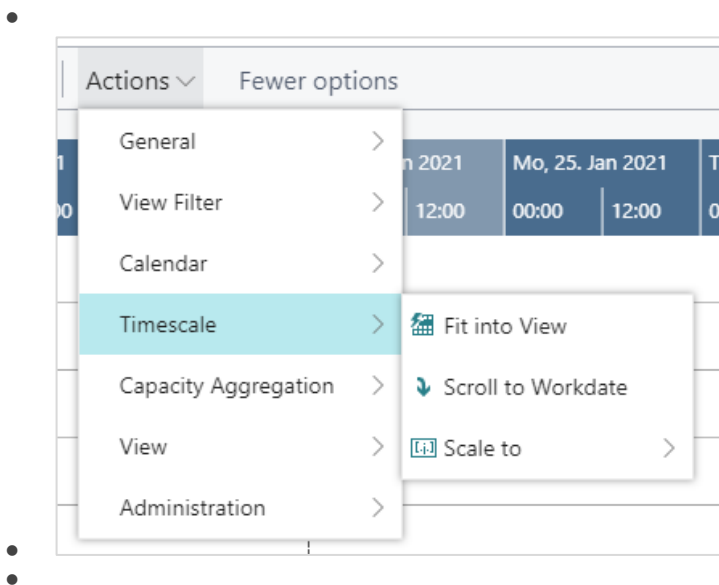
The timeframe specifies the time range covered by the timescale, either fixed by absolute values or relative to the workday. This is done in the “Setup” dialog, to be reached by clicking the “General” item in the “Actions” ribbon.



## 10.2. Change the timescale resolution

For zooming in a certain area of your plan or to zoom out for a better overview, you can change the timescale resolution either by

- scrolling the mouse wheel in the timescale area
- or, more specifically, by the corresponding items of the “Actions” menu, based on the work date as having been specified in the settings of Dynamics 365 Business Central.

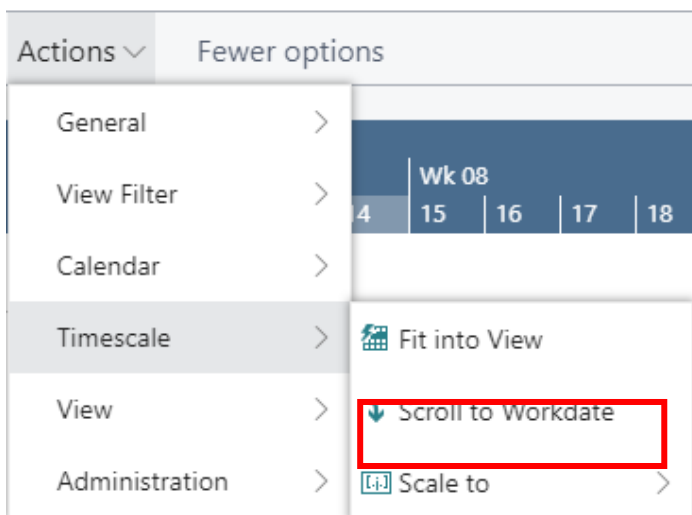


## 10.3. Navigating

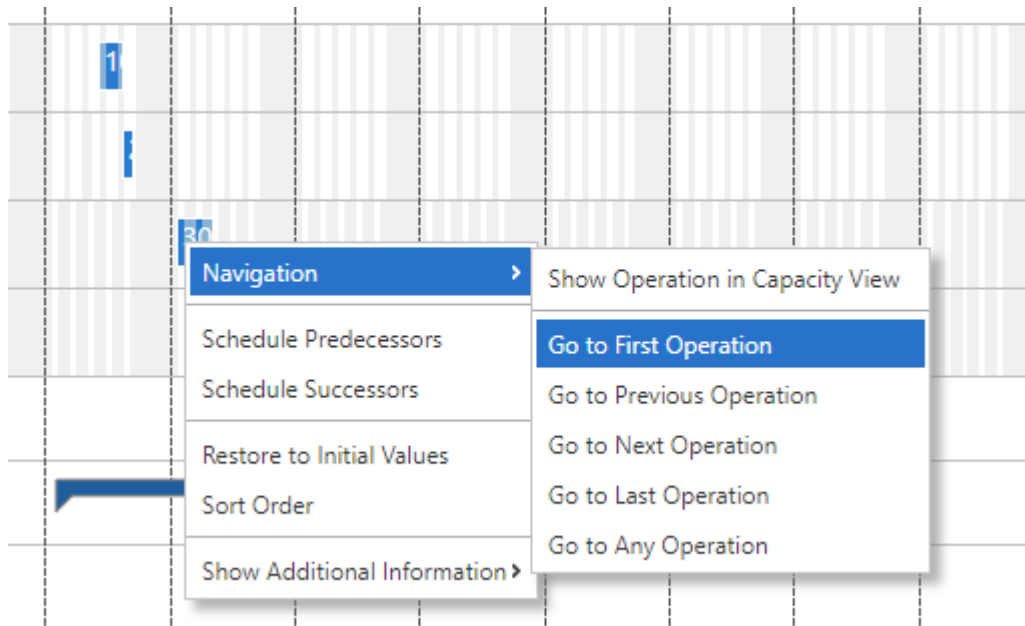
The VPS offers the following options for quickly navigating to certain positions in the diagram:

### 10.3.1. Scrolling

- the common scrolling options by vertical and/or horizontal scrollbar
- dragging the timescale either right or left
- scroll directly to the Dynamics 365 Business Central work date by selecting the corresponding item from the “Actions” menu.



### 10.3.2. Navigate within one routing



This function allows you to navigate in your plan easily and quickly, especially if you have long routings with lots of operations. It can be found in the "Navigation" entry of the context menu.

### 10.4. Fit into view

Select this item from the "Timescale" item in the "Actions" menu to switch directly to the timescale as defined in the "Setup" dialog.



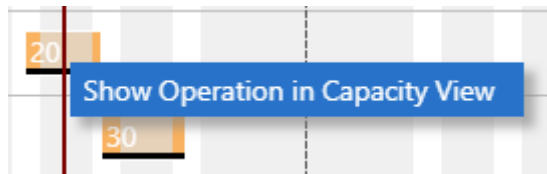
## 10.5. Adjust the width ratio between table and diagram

For adjusting the width ration between table and diagram, put the mouse cursor on the sash between the two parts and drag the double arrow appearing then.

Production Orders	Th, Jan 28, 2021		Fr, Jan 29, 2021	
	01:14 AM	12:00 PM	12:00 AM	12:00 PM
Planned				
109001 (Bicycle)				
10000				

## 10.6. Show operation in other view

Show the currently marked operation in the respective other view while it gets highlighted by a blinking frame.



## 10.7. Search function

In both views, you can search for production order lines and operations.

The respective view automatically scrolls to the first search result - the operation (for production order routing line) or the first operation of the production order line. The first found operation is highlighted by a blinking frame and gets selected, so that the links are shown. If a view filter is active the search dialog will only show the visible elements in the VPS.

The screenshot displays the 'Actions' dropdown menu in the Visual Production Scheduler. The menu is titled 'Actions' with a downward arrow and 'Fewer options'. The menu items are: General, View Filter, Search, Calendar, Timescale, Capacity Aggregation, View, and Administration. The 'Search' item is highlighted, and a sub-menu is visible with two options: 'Search Production Order Line' and 'Search Operation', both accompanied by a magnifying glass icon. The background shows a calendar view for 'Wk 03' with days 13, 14, 15, 16, 17, and 18. There are blue bars representing capacity or production levels for days 16 and 17.

## 11. Move operations

You can move operations by mouse either horizontally or vertically, each way having a different impact.

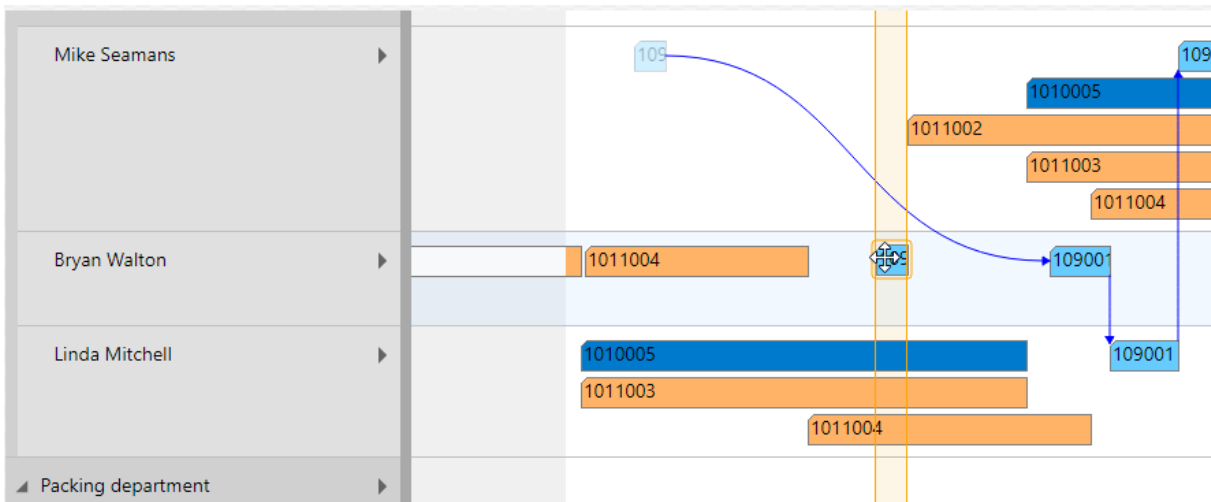
### 11.1. Move operations horizontally by drag & drop

To schedule an operation, you can move it horizontally along the time scale in the Production Order View as in the Capacity View: As a consequence, the operation will be worked off at a different time.



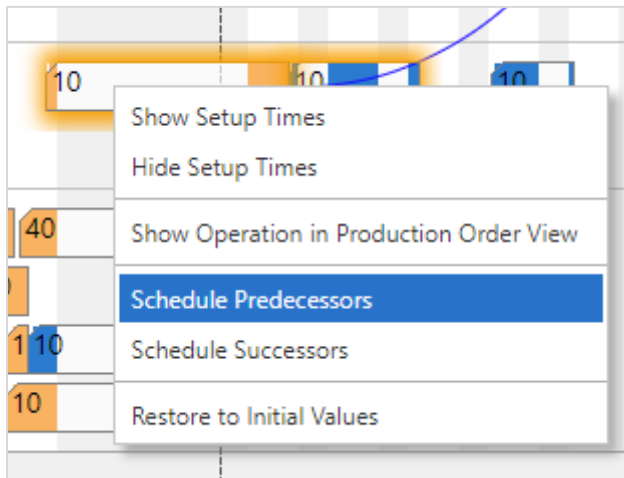
### 11.2. Assign an operation to another resource

In the Capacities View, an operation can also be moved vertically when scheduled – to a different work or machine center. As a consequence, the operation will be worked off by the work or machine center it was moved to. While moving the operation, a “phantom” bar will remain at the original place until the mouse will be released.

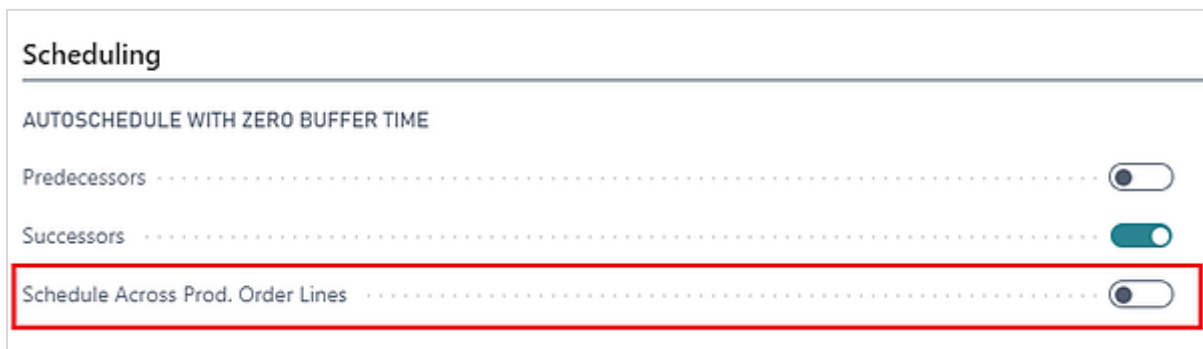


### 11.3. Schedule predecessors/successors

If moving an operation shall also affect its linked preceding and/or succeeding operations to the effect that they are moved accordingly you can make the according setting in the context menu.



Please note that if you want these links to be taken into account for scheduling, you have to tick the “Schedule across Production Order Lines” option in the “Scheduling” section of the “Setup” dialog.



### 11.4. Move multiple selected operations

The VPS allows to select and move several operations in one go. This is done either by clicking them while pressing the Ctrl key or by drawing a frame around the desired operations (rubber rectangle).

The feature needs to be switched on in the VPS settings with the following options:

- no multiple selection (default)
- select production order routing lines that are assigned to one capacity only
- multiple selection at will

**General**

Progress Calculation ... Based on Quantity ▾ Startup View ..... Last Active View ▾

Show Partial Prod. Or...  Show Symbol on Com...

Show Links between P...  Selection Type ..... Single ▾

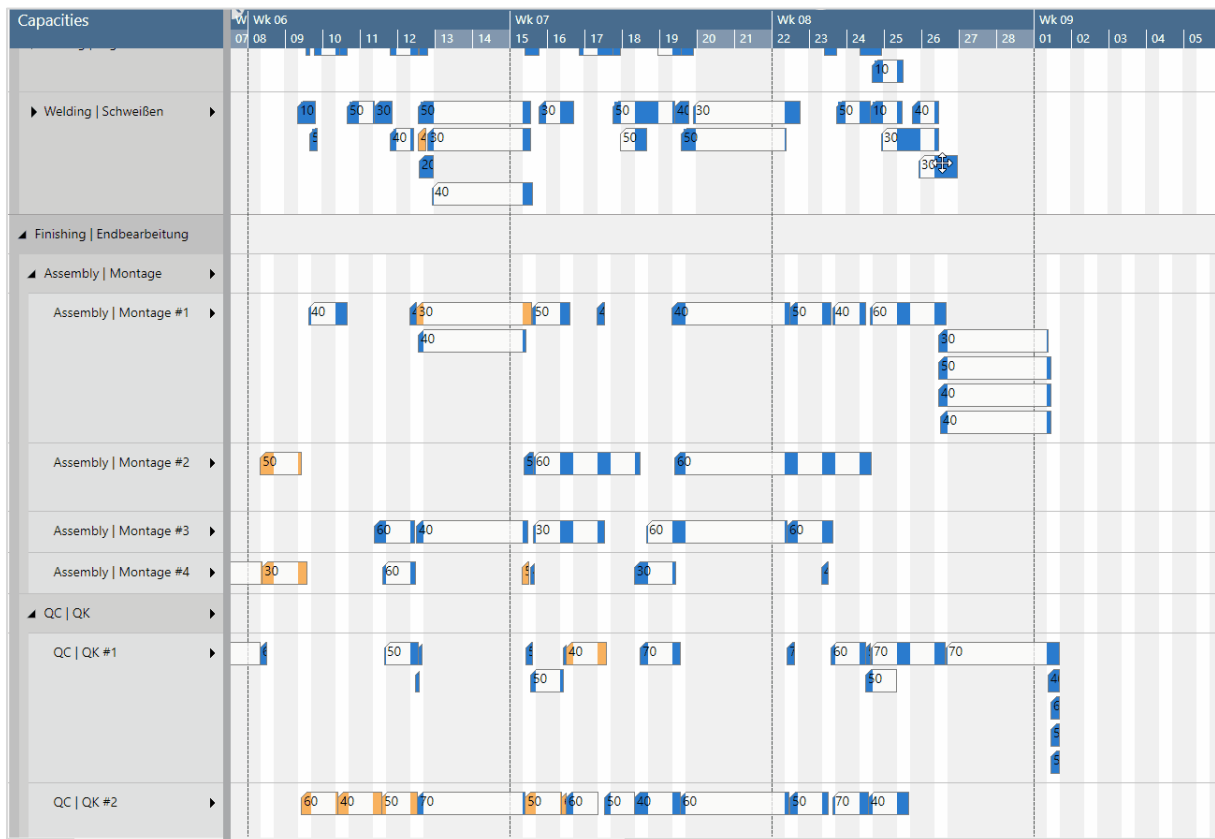
- Single
- Multiple on single Capacity
- Multiple

**Scheduling**

Selected operations can be moved horizontally and vertically, the behavior of their predecessors and successors depending on the settings in the VPS "Setup".

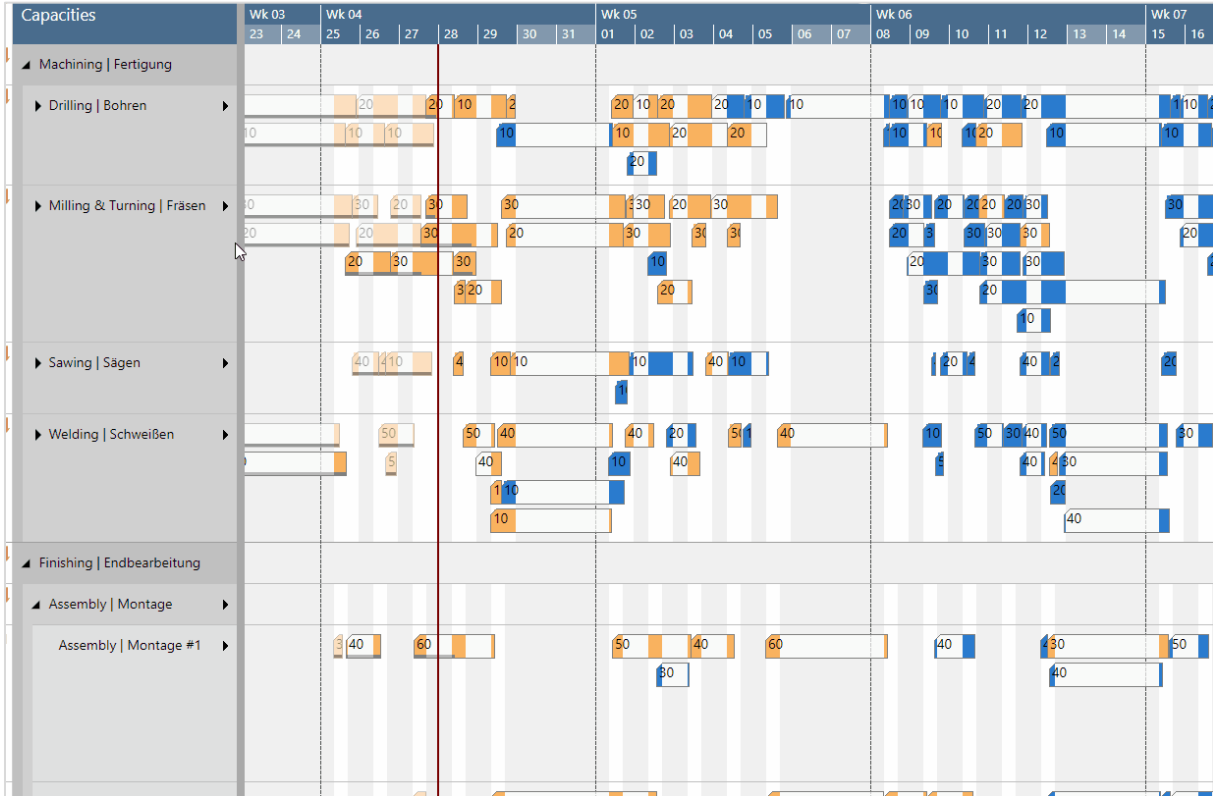
### 11.4.1. Moving with predecessors and successors

- First, the selected operations get moved. After having been placed at their target position, the position of their possible predecessors and successors gets calculated.
- The target capacity is determined by the operation packed with the mouse:
  - Horizontal movement: other elements selected on other capacities will also be moved horizontally only
  - Vertical movement to a different capacity: the other operations are also moved to this capacity



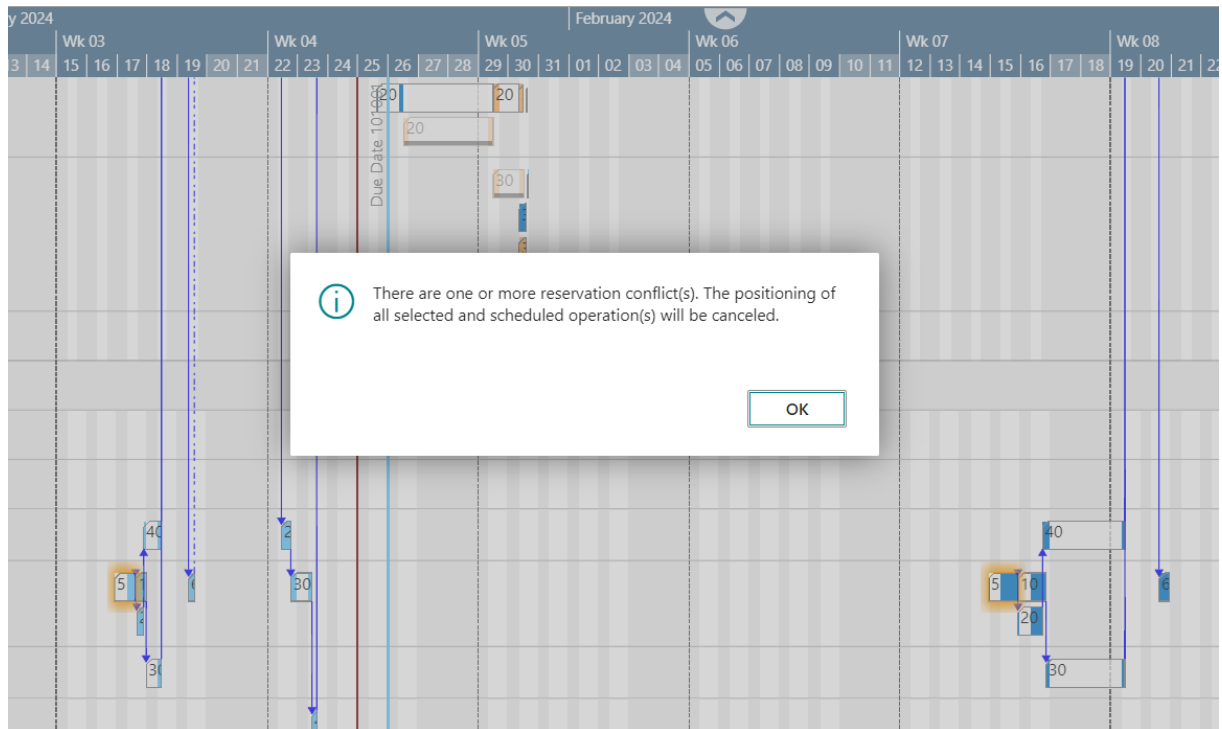
### 11.4.2. Handling of the progress status of an operation

- "Finished": the operations get selected, but will not be moved
- „In Progress": as before, the user can decide per upcoming dialog which operation should be moved or not



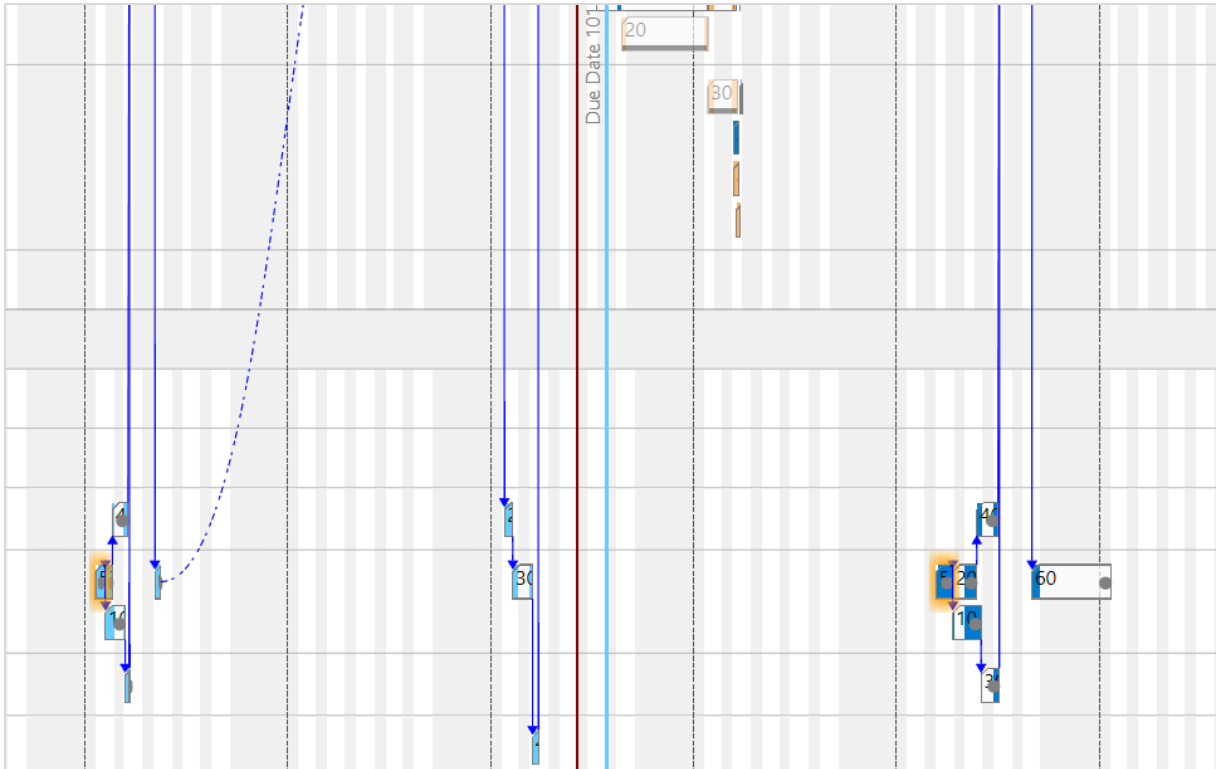
### 11.4.3. Handling of reservations

Provided you have activated the "Conflict Handling of Reservations in the VPS "Setup" dialog, you'll get a warning message if one of the selected operations violates the reservation, and the complete moving process will be rejected.



#### 11.4.4. Show links

In analogy to the behavior of when single operations are moved, links to other elements are also shown when multiple selected operations are moved.



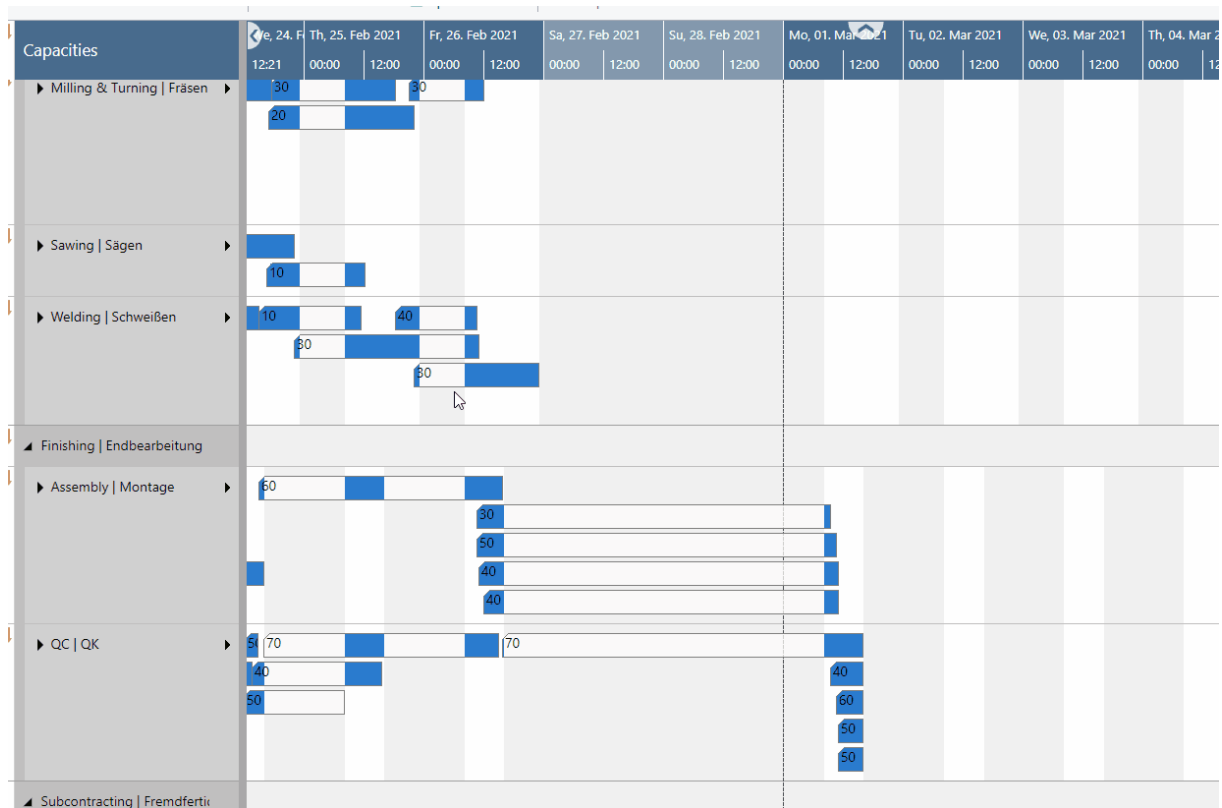
#### 11.4.5. Direct parallel routing

No parallel routing is carried out for multiple selected operations

#### 11.4.6. Due date line in the capacity view

- In case the operations get selected by clicking, a due date line will be shown for the first clicked element only
- In case of multiple selection via the rubber rectangle, no due dates will be shown



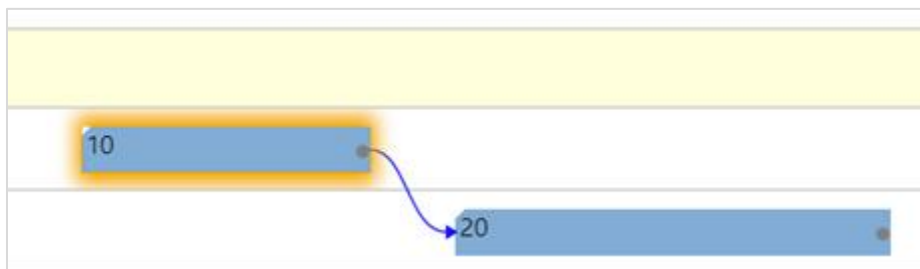


## 12. Consider the queue time in the scheduling algorithm

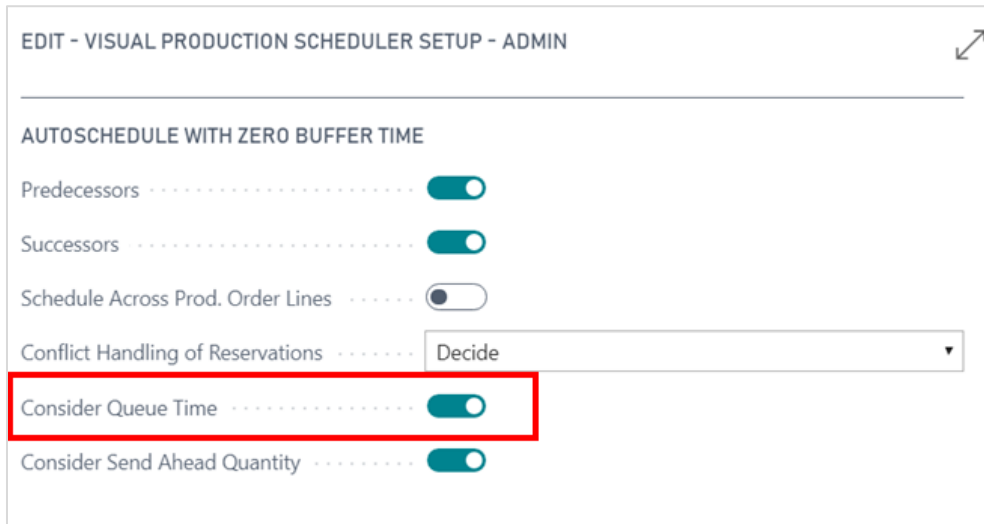
The VPS allows to consider the queue time that is set on the machine/work center card in 365 BC.

The screenshot shows the 'Scheduling' configuration window. The 'Queue Time' field is highlighted with a red box and contains the value '120'. The 'Queue Time Unit of Meas...' dropdown is set to 'MINUTES'. Other fields include 'Unit of Measure Code' (MINUTES), 'Capacity' (3), 'Efficiency' (100), and 'Shop Calendar Code' (1).

Setting a queue time has no impact on the load of a work/machine center but causes the starting time of the operation to be moved forward. It can be seen as a buffer time between an operation and its successor so that you create a gap between the end time and the start time of two consecutive operations:



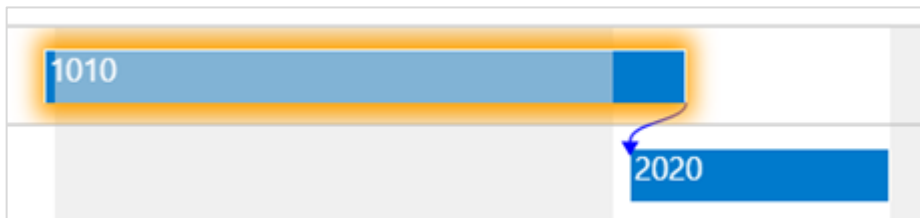
The option can be activated in the VPS setup dialog:



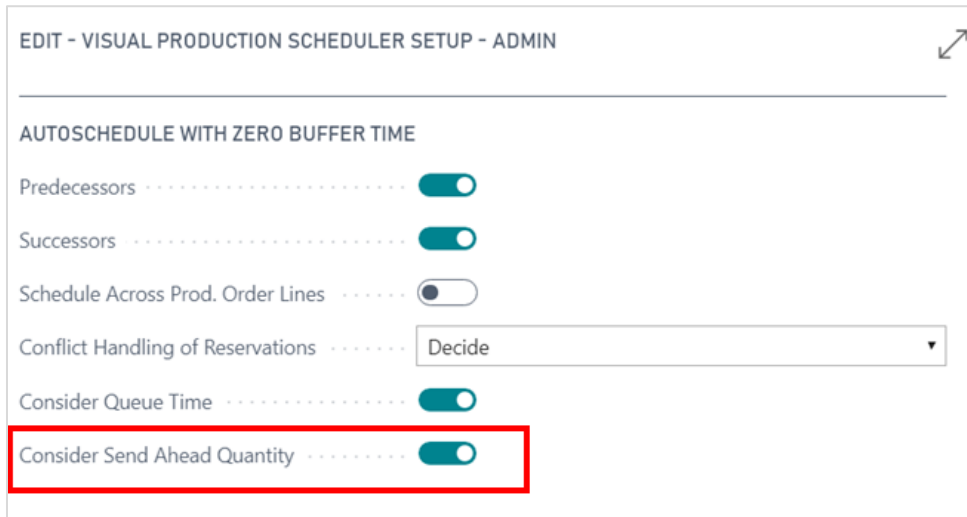
### 13. Consider the send-ahead quantity

In Business Central, the user can specify a send-ahead quantity for an operation when defining a routing. The send-ahead quantity can be used to start a dependent operation before the current operation is fully completed,

The VPS algorithm tries to avoid any gaps of nonproductive periods on the successor of an operation. By that, the following operation may start later than expected, but therefore has a continuous workload. This reduces the overall runtime of the production order line because the operations then start to overlap. The successor does not have to wait until the predecessor finishes and hence has no idle time.

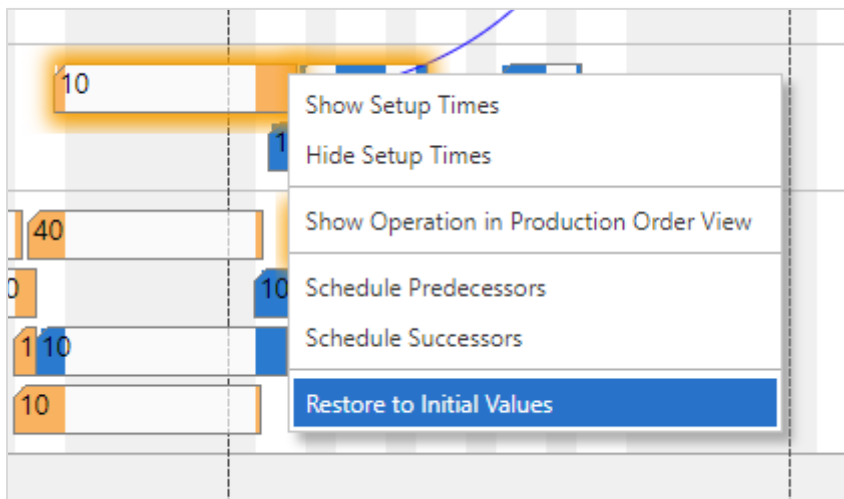


The option can be activated in the VPS setup dialog:



## 14. Restore to initial values

In case you have made changes to one or more operations, not yet saved your plan, and want to restore the original values again, click the according context menu item.



## 15. The “Setup” dialog

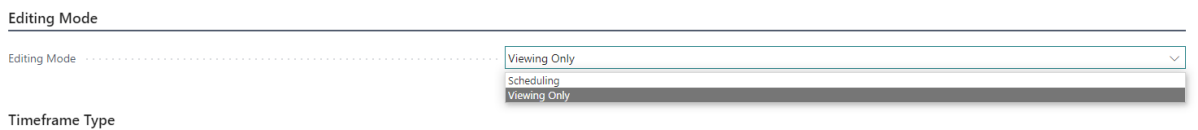


The “Setup” dialog allows to customize basic settings of the Visual Production Scheduler. You reach it via “Actions” -> “Administration”.

Here you can make or see the basic settings for:

### 15.1. Editing Mode

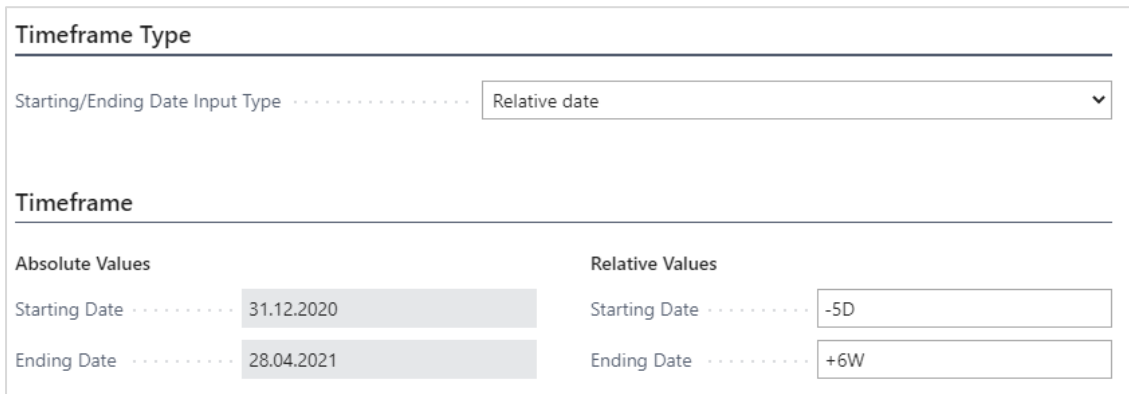
Choose whether to work in the Scheduler Mode (default) or in the Viewer Mode which only allows to view the plan but not change it.



Depending on the selected mode, the settings offered in the “[Automatic Screen Updates](#)” area of the Setup dialog differ.

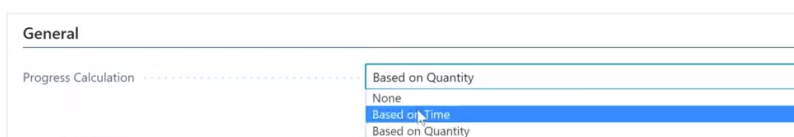
### 15.2. Timeframe:

Specify the timeframe that sets the time range covered by the timescale, either fixed by absolute values or relative to the workday (see also .6.1, “Setting the timeframe”).

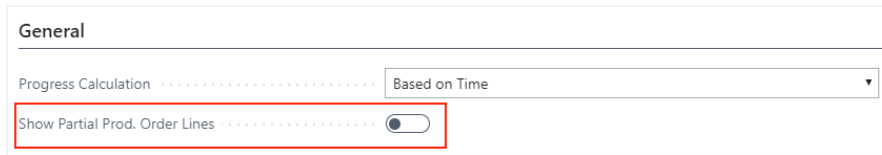


### 15.3. General

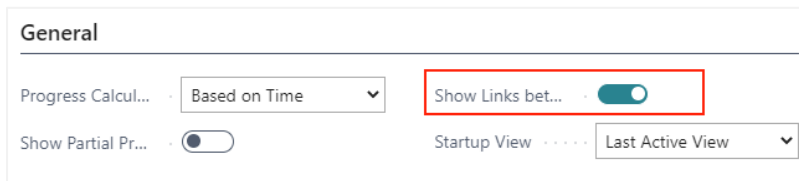
- Choose whether to display a **progress bar** for production order routing lines of **released** production orders, based on quantity or time.



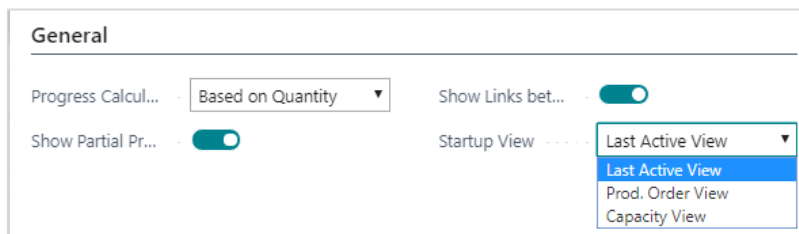
- When, by setting filters, a **single operation of a PO line gets filtered out**, the standard procedure in the VPS is **to only visualize the complete PO line**. By unticking the option, you can switch to visualizing also a **partial PO line**.



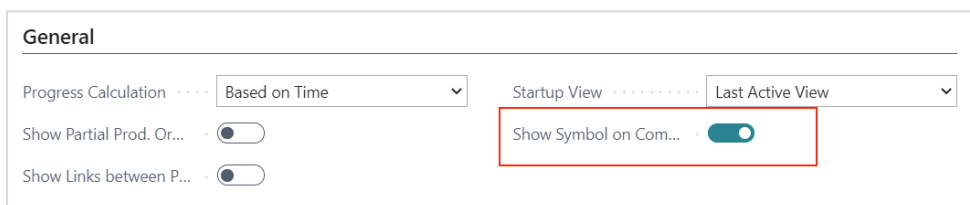
- **Show links between production order lines:** You can decide whether you want dependencies to be illustrated by links in production orders with more than one production order lines or not. Tick or untick the according option.



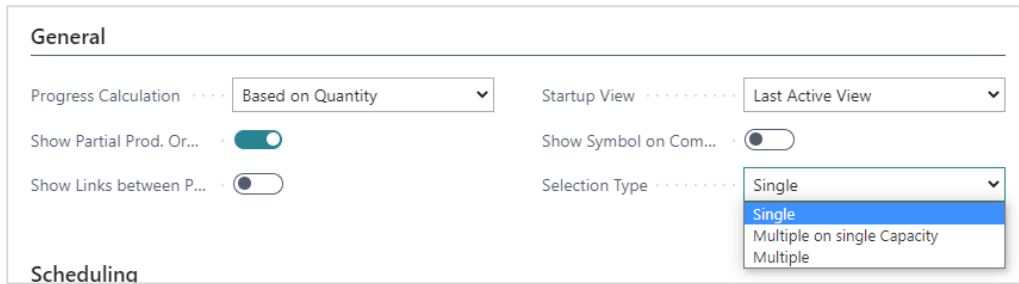
- Decide which **view** is shown upon starting the VPS. No matter which view you select, the following settings get saved upon closing the VPS and are active the next time it gets started:
  - Show/hide setup times
  - Show/hide work free periods
  - Histogram aggregation



- **Show Symbol on Comment:** Decide, whether the VPS shall alert you to existing BC comments [by showing an info symbol](#) on the production order line/an operation.

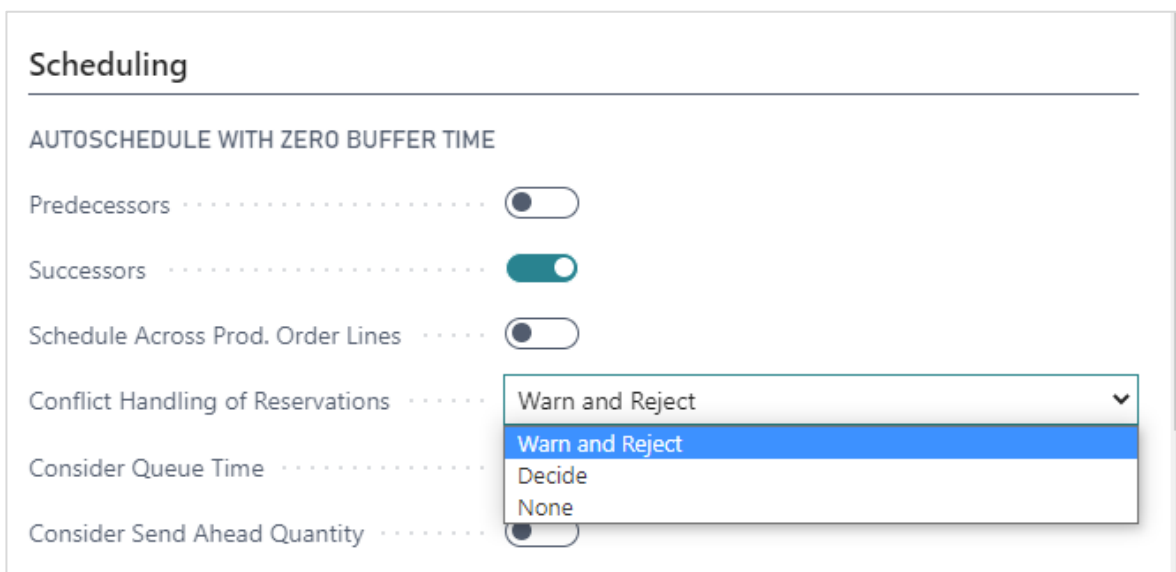


- **Selection Type:** Specify, whether and how the multiple selection of operations by CTRL + clicking or by rubber band shall be possible or not.
  - no multiple selection (default)
  - select production order routing lines that are assigned to one capacity only
  - multiple selection at will



## 15.4. Scheduling

- Determine whether or not predecessor operations should automatically be re-scheduled when an operation is modified.
- Determine whether or not **successor operations should automatically be re-scheduled** when an operation is modified.
- Determine whether dependencies between several production order lines of a manufacturing order are to be taken into account for the automatic planning.
- Users can decide how they want to handle conflicts between existing reservation entries and drag and drop actions they make in the planning board.
- **Warn and Reject:** The message informs about the conflict, and then the drag & drop action is rejected. That way, the users cannot violate any existing reservation with the VPS.
- **Decide:** The user receives a message about the conflict and can decide whether to cancel or confirm the interaction. If the action gets confirmed, the conflicting reservation will be removed.
- **None:** No warning is giving about possible conflicting interactions and the conflicting reservation will be removed.
- **Consider queue time:** Decide whether the queue time specified in Business Central on the work/machine center card is to be considered for the scheduling process.
- **Consider send-ahead time:** Decide whether the send-ahead time specified in Business Central on the work/machine center card is to be considered for the scheduling process.



## 15.5. Filter

- You can determine whether the **"Data filter" dialog comes up on starting the VPS** or not. Please note that if you decide to not have it shown, the last selected data filter will be activated.
- **The last selected view filter** can be applied when the VPS is started.

**Filter**

Show Data Filte...       Enable Last Use...

**Data Filter**

Current Data Fil... - Freigegeben      Machine Center... -

Work Center Gr... -

Work Center Fil... -

Production Ord... -

### 15.5.1. Data Filter

- See which data filters are currently active. VPS - options automatic screen updates in scheduling mode

### 15.5.2. Automatic Screen Updates

Depending on the selected mode, the settings offered in this area differ.

#### Scheduling Mode

Having selected "Scheduling" as editing mode, you can choose in this area whether the current date-timeline is shown and how often it will be updated.

**Automatic Screen Updates**

Current Date-Time Line

Show Current Date-Time Line

Set Interval of Current Date-Time Line in Seconds

#### Viewing Only Mode

In the "Viewing Only" mode you can specify

- whether and how often the view should be updated
- whether and how often the view should scroll
- whether the current date-timeline is shown and how often it should be updated

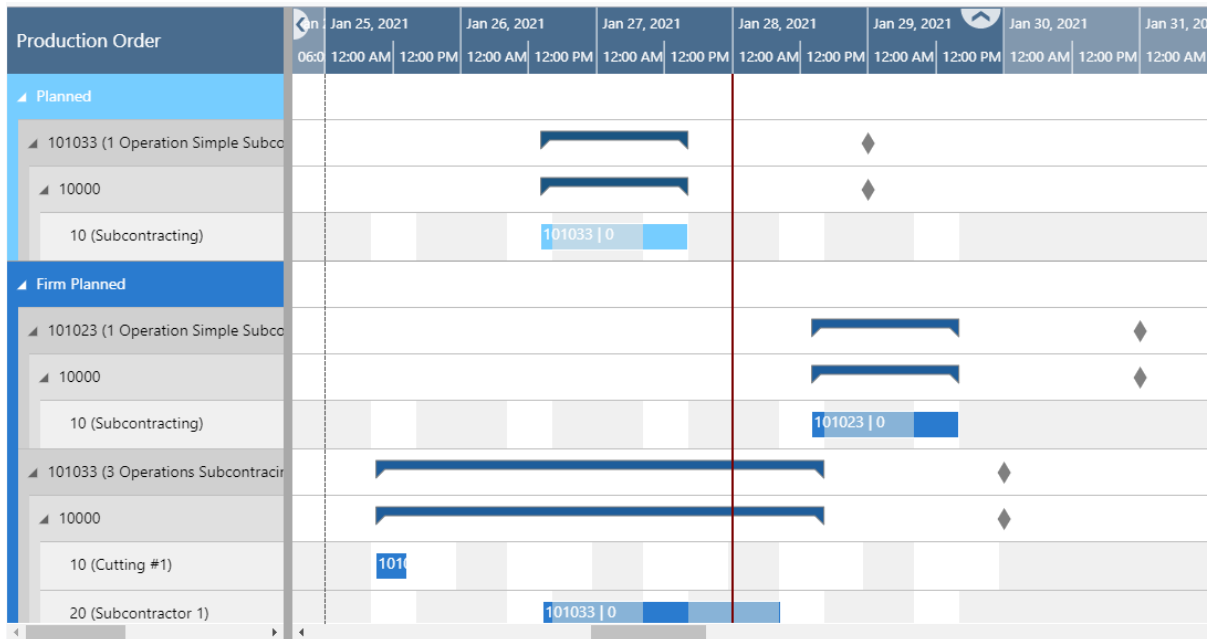
Automatic Screen Updates	
<b>Reload of Data</b>	
Enable Automatic Reload of Data	<input checked="" type="checkbox"/>
Set Interval of Automatic Reload of Data in ...	<input type="text" value="1"/>
<b>Horizontal Scrolling of Diagram</b>	
Enable Horizontal Auto Scrolling of Diagram	<input checked="" type="checkbox"/>
Set Interval of Horizontal Auto Scrolling of ...	<input type="text" value="1"/>
<b>Current Date-Time Line</b>	
Show Current Date-Time Line	<input checked="" type="checkbox"/>
Set Interval of Current Date-Time Line in Se...	<input type="text" value="1"/>

## 15.6. Appearance

### Appearance

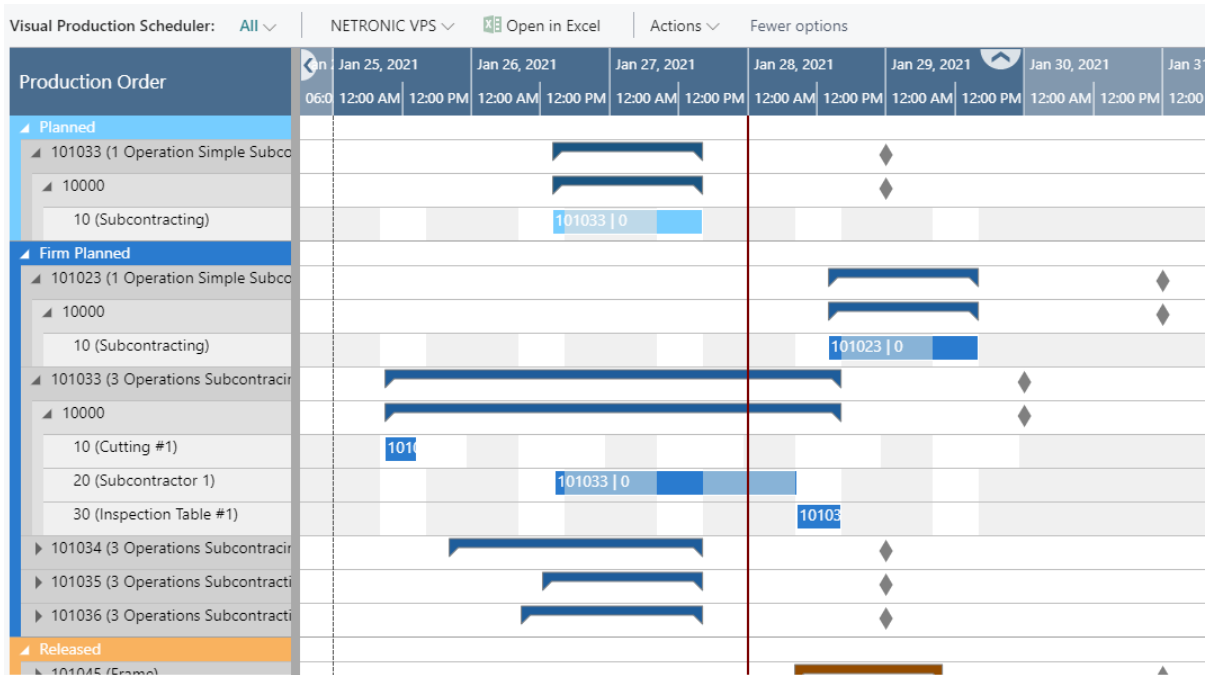
Zoom Factor(%)	<input type="text" value="100"/>	Selection Color	<input type="text" value="#ffa000"/>
Layout	<input type="text" value="STANDARD"/>	Tooltip Delay (ms)	<input type="text" value="2000"/>

- Specify a **zoom factor** in percent.
- Choose a **layout**: In the "Compact" layout, the display is reduced as much as possible to provide a better overview, especially with large plans.
- Standard layout:

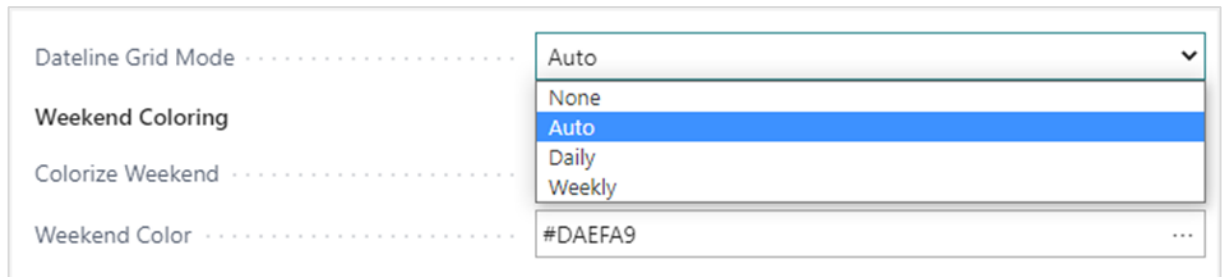




- Compact layout:

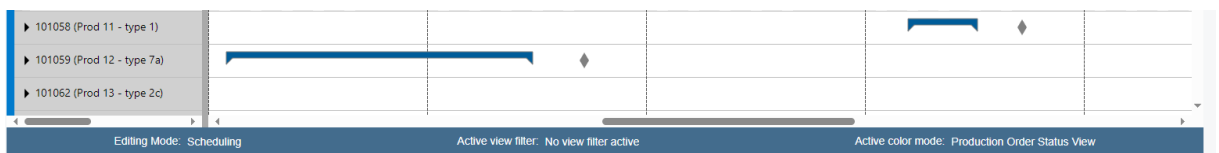


- Choose a selection color
- Specify a **tooltip delay**: give a time in milliseconds after which the tooltip shall appear
- Show/hide **vertical separation lines** between individually selectable intervals and select a display mode:

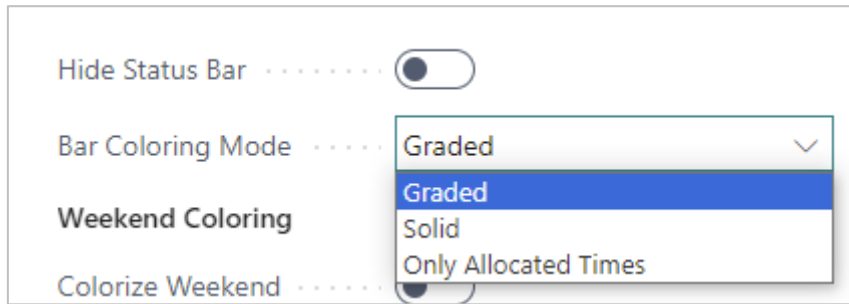


The "Auto" mode causes the grids to automatically adjust to the resolution of the time scale resulting from zooming in or out. For more information, see chapter [The calendar](#).

- Show/hide a **status bar** with real-time information about the active editing mode, view filters, and color mode.

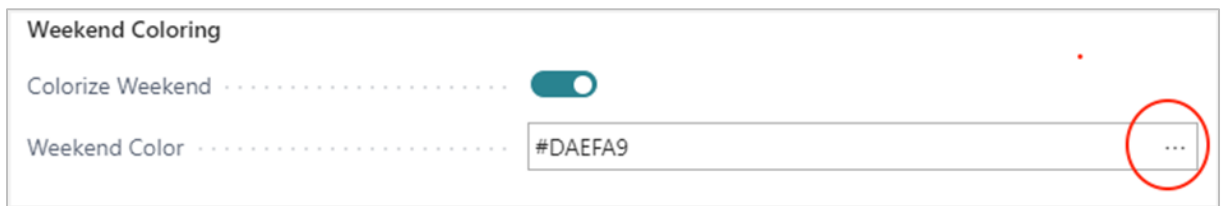


- **Bar colors**: Select individual bar color schemes that ensure that the label texts are always visible.

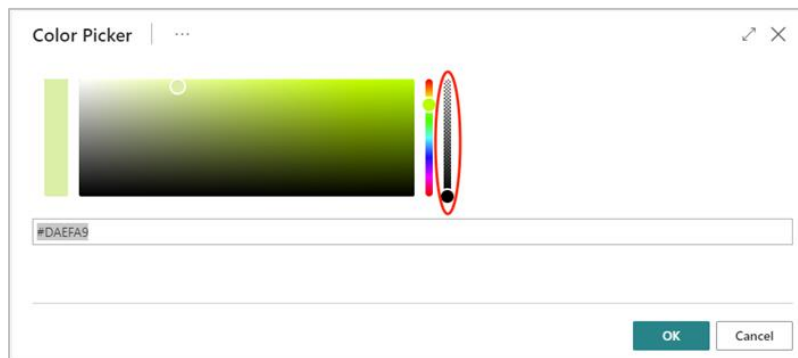


For more information on the options, see the [Bar colors section in chapter "The Calendar"](#).

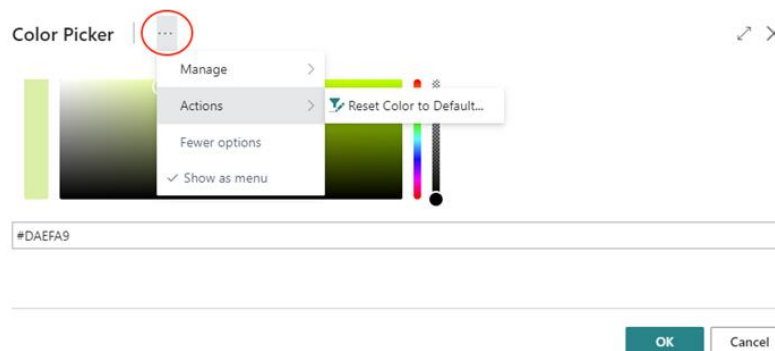
- Specify the coloring mode of the weekends
- select whether you want to color the weekends individually



- click "..." to open the Color Picker dialog where you can
- select the desired color
- adjust the transparency:



- reset the weekend color to default comfortably and at one click:





## 16. Use filters

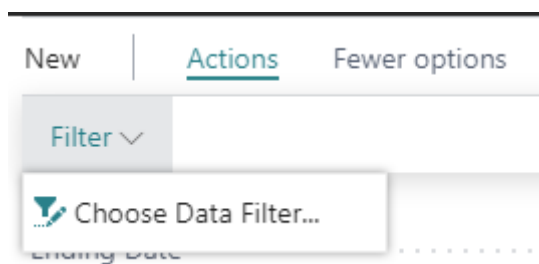
The VPS offers two kinds of filters, the difference between them lying in the time of application and the data being used.

### 16.1. Data filters

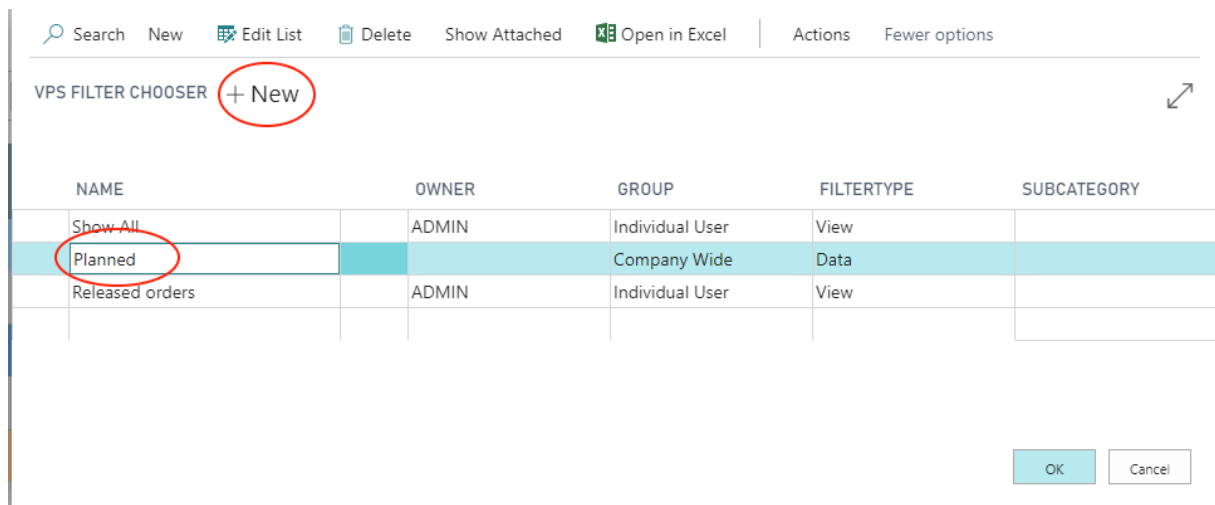
Data filters work as Dynamics 365 BC filter on reading the data (either when the VPS is started or on reloading) so that they are already effective at the data interface to make sure that only filtered data are handed over from Dynamics 365 BC to the VPS.

#### 16.1.1. Create and edit data filters

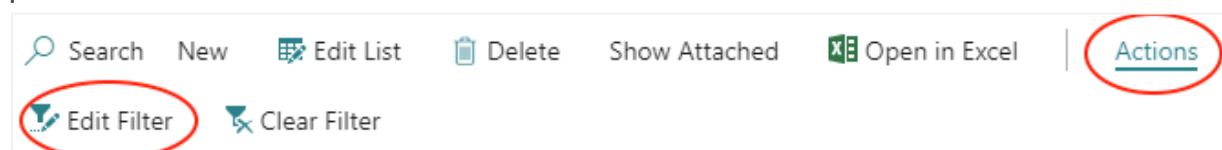
First, you have to open the according dialog by clicking "Choose Data Filter" in the "Setup" dialog:



In the dialog, you can edit, create and apply not only one but multiple data filters.



To create a data filter, click "+New" and then enter the name of the new filter. To specify the filter settings, click "Actions" "Edit Data Filter".



You can filter by work center groups, work centers, machine centers and production orders:

**EDIT - VPS FILTER**

**Work Center Group**

Show results:

Where: Code is:

And: Name is:

**Work Center**

Show results:

Where: No. is:

And: Name is:

**Machine Center**

Show results:

Where: No. is:

And: Name is:

**Production Order**

Show results:

Where: Status is: Released

And: No. is:

And: Description is:

OK Cancel

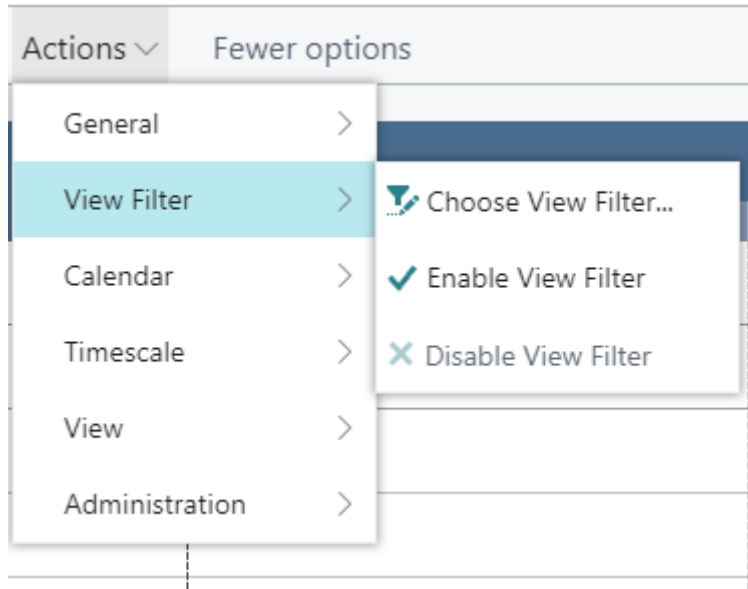
If you want to make sure that the "Edit Data Filter "dialog pops up when you start the VPS, tick the according option in the "Setup" dialog:

**Filter**

Show Data Filter on Start

## 16.2. View filters

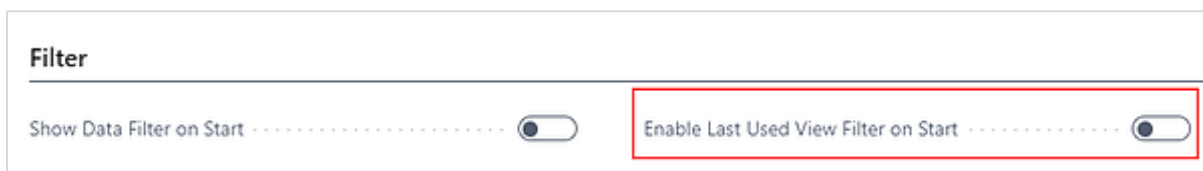
View filters are applied to data already having been loaded into the VPS. Accordingly, only the capacity utilization by the visible activities are shown in the histograms. To work with the filters, the "Actions" menu offers three according options:



### 16.2.1. Create and edit view filters

Click "Choose View Filter" to open the list of existing filters where you can create, delete and edit filters as described in the "Data filters" section.

If you want to make sure that the last used view filter will be applied when you start the VPS, tick the according option in the "Setup" dialog:

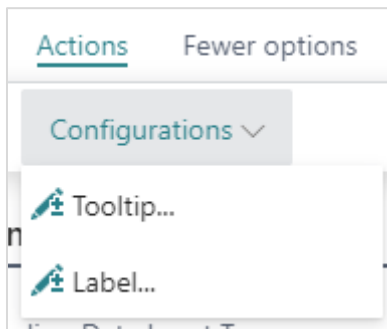


## 17. Configure tooltips

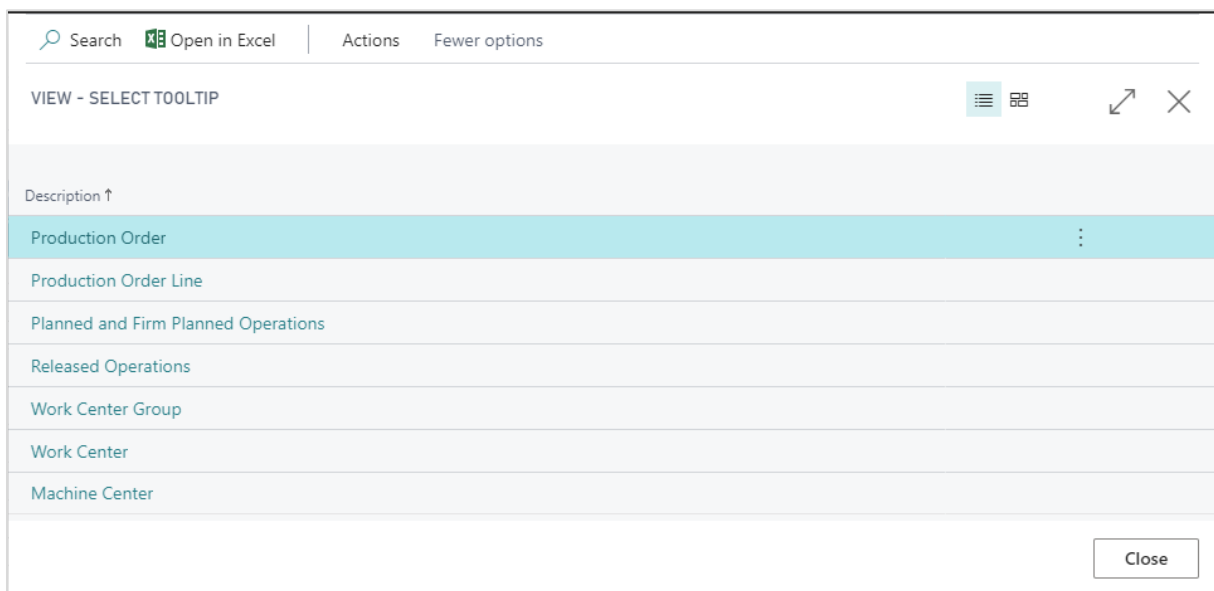
The tooltips of the VPS provide further information on the following items of your production schedule:

- production orders
- production order lines
- operations
- work center groups
- work centers
- machine centers
- planned and firm planned operations
- released operations

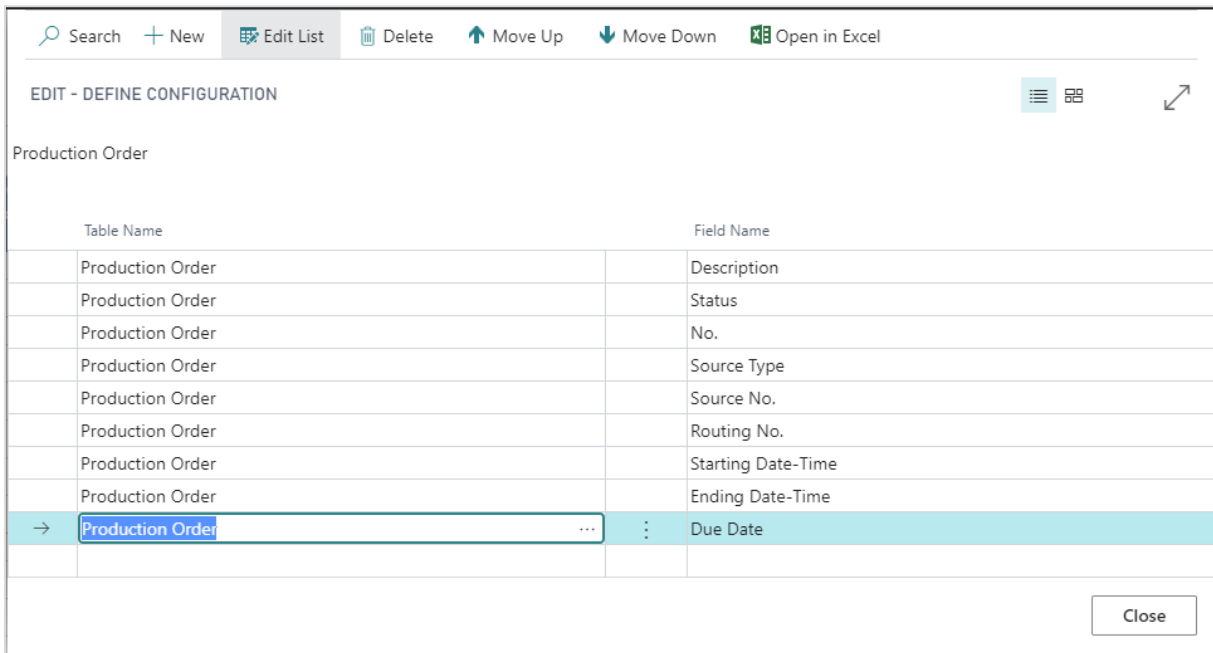
You can specify which information is to be shown in the tooltip of the respective item in the "Tooltip" dialog - to be reached by clicking "Configurations" in the "Actions" menu of the "Setup" dialog:



In the dialog popping up, you select the item for which you want to customize the tooltip and then either delete, edit or add fields and then click the "Edit" item from the "Actions" menu:

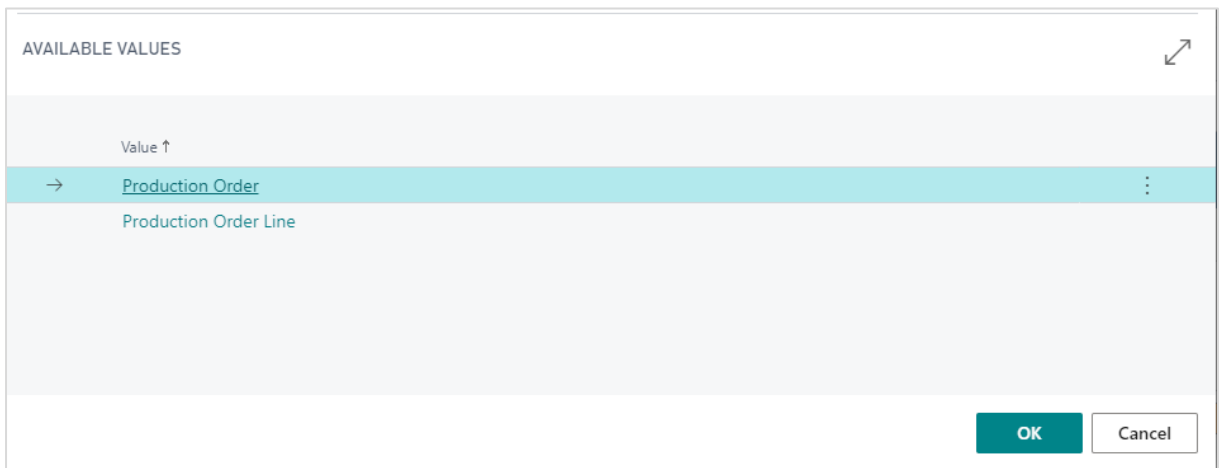



The dialog “Edit – Define configuration” pops up.

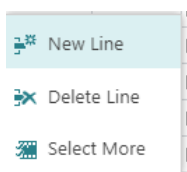


Here you can:

- Add a new field:  
either click +NEW or just click in the last row. You can select the desired Dynamics 365 BC data by clicking “...” either for table and field name.



- Insert a new field:  
Select the field above which you want to insert a new one and proceed as described above.
- Delete a field:  
Click  and select “Delete line”





## 18. Configure bar labels

You can decide which D365 BC information is to be shown as bar label.

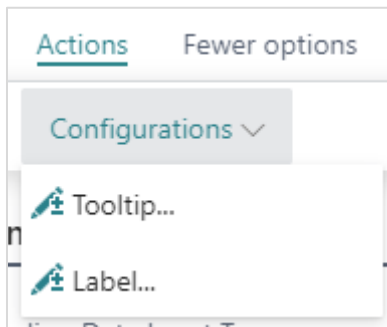
Bar labels are shown on

- operations in the Production View
- operations in the Capacity View

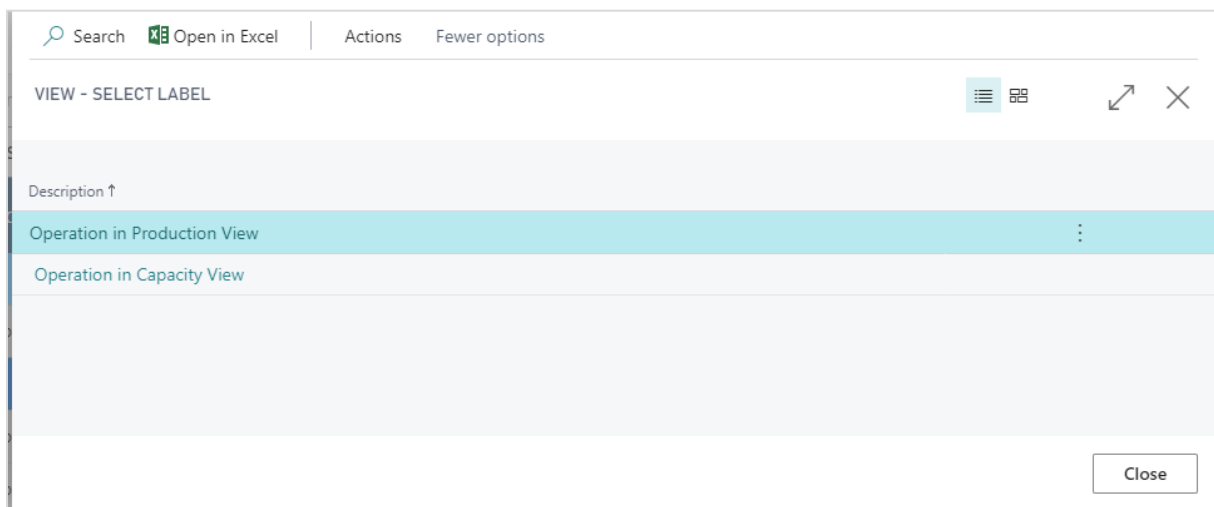
In the picture below, the bar label shows the production order number and the operation number, separated by “|”.



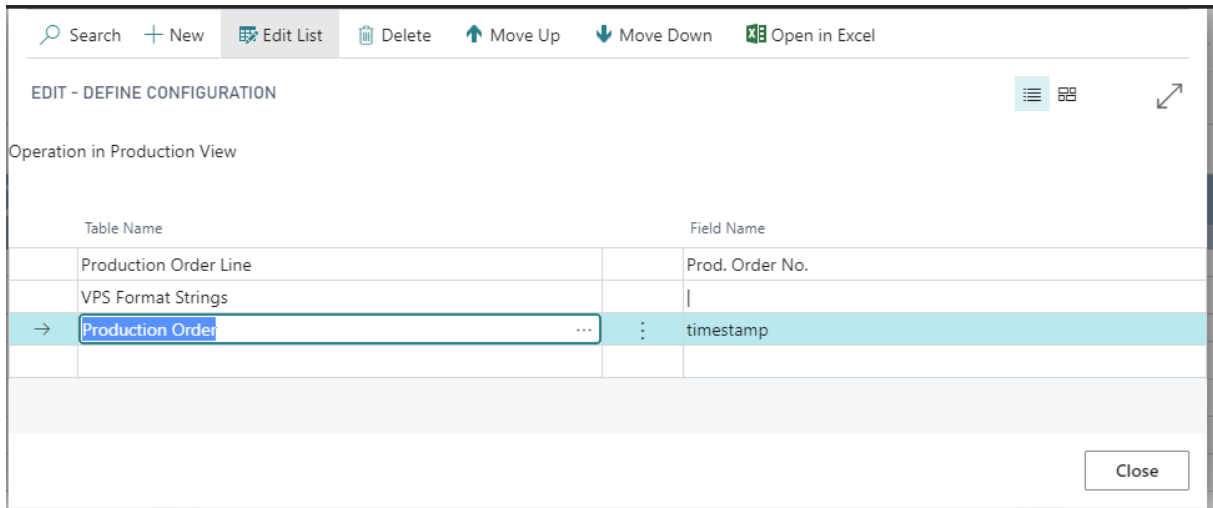
You can specify which information is to be shown on the bar label of the respective item in the according dialog to be reached by clicking "Configurations" in the "Actions" menu of the "Setup" dialog:



In the "View - Select Label" dialog, select the item and/or view for which you want to customize the bar label:



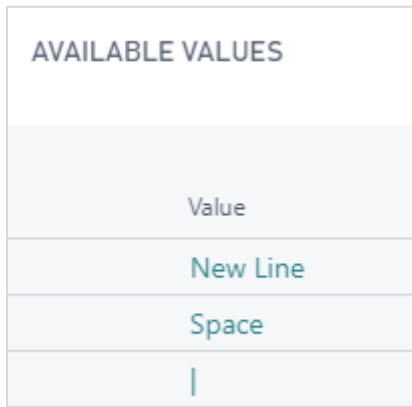
The “Edit – Define Configuration” dialog pops up:



Here you can add, insert, edit, and delete fields as well as change their order. You can select the desired table name and field name from your Dynamics 365 BC data by clicking “...”

### 18.1. Formatting the labels

Separate the field contents by a line break, a blank or a “|” by selecting the according separator from the “VPS Format Strings” table.



The separators can get enhanced by the function “Extendible bar text separator” that has to be implemented by the partner. Please contact us for further information.

## 19. Configure table labels

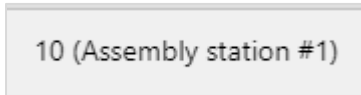
You can decide which D365 BC information is to be shown as labels in the table for:

- Production orders
- Production order lines
- Production order routing lines
- Machine centers
- Work centers

- Work center groups

The picture below shows the table label for a production order routing line, containing:

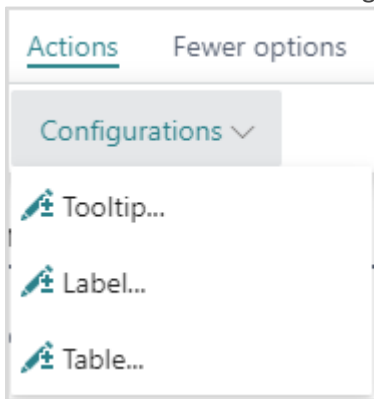
- the operation number
- a blank
- the description in brackets



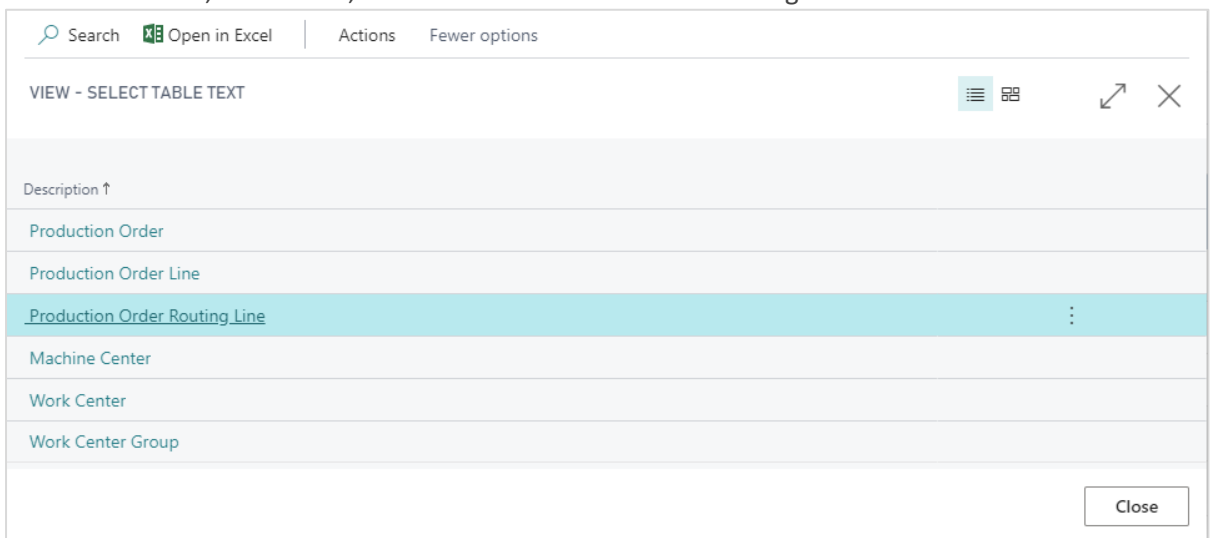
### 19.1. How to proceed

For customizing the table label, proceed as follows:

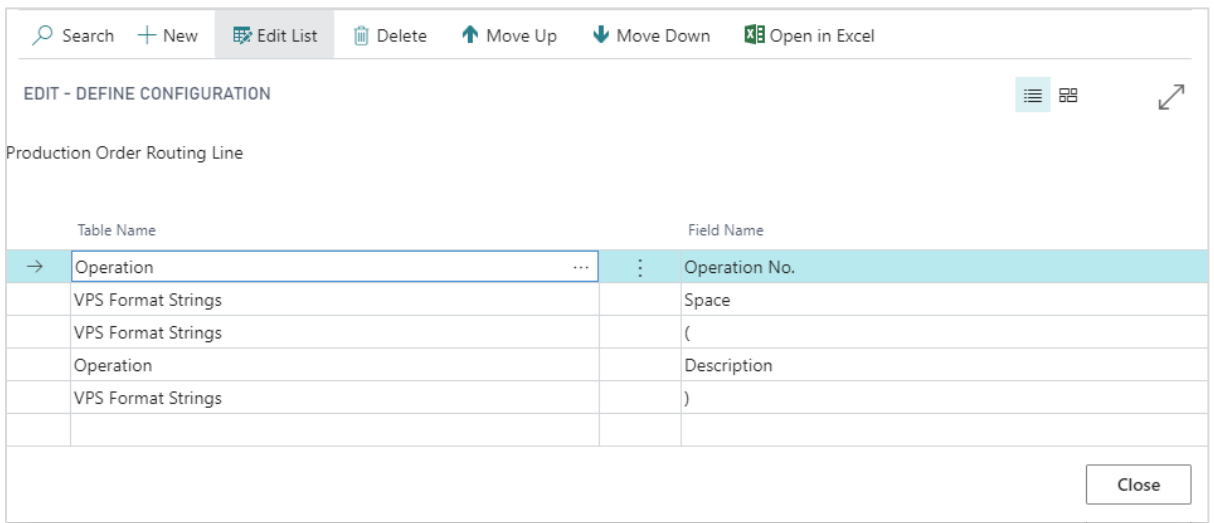
- In both extensions click "Configurations" in the "Actions" menu of the "User Setup" dialog:



- In the "View - select table text" dialog, select the item for which you want to customize the table label which, in our case, would be "Production Order Routing Line":



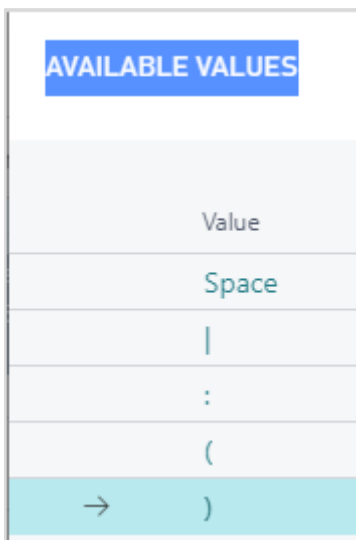
- The “Edit – Define Configuration” dialog pops up:



Here you can add, insert, edit, and delete fields as well as change their order. You can select the desired table name and field name from your Dynamics 365 BC data by clicking “...”.

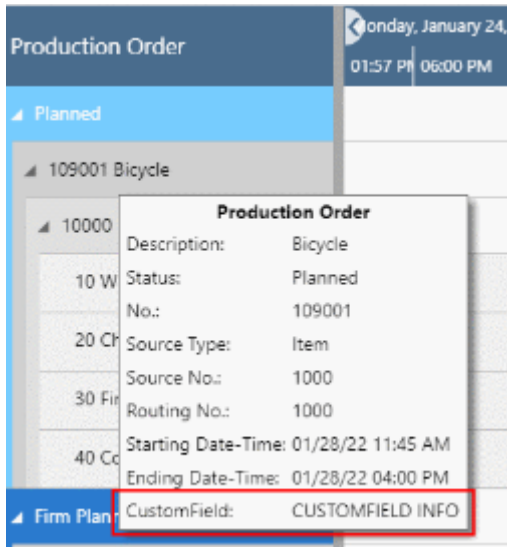
## 19.2. Formatting the labels

Separate the field contents by a blank, or by the separators shown below by selecting the according character from the “VPS Format Strings” table.



## 20. Custom fields

In addition to the default fields available in tooltip, label and table text it is possible now to equip custom fields with data to use them in tooltip, bar label and table text.

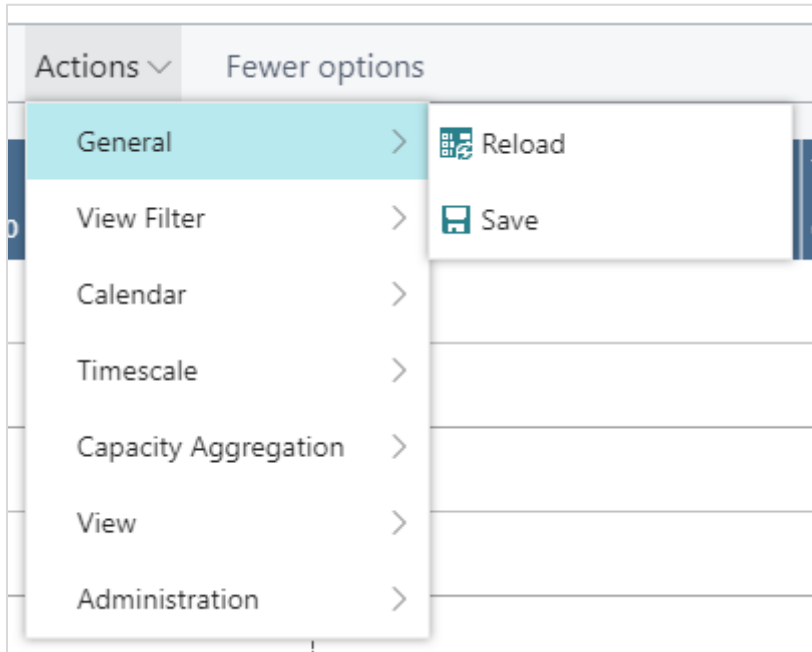


Please find a detailed description in the related Knowledge Base articles:

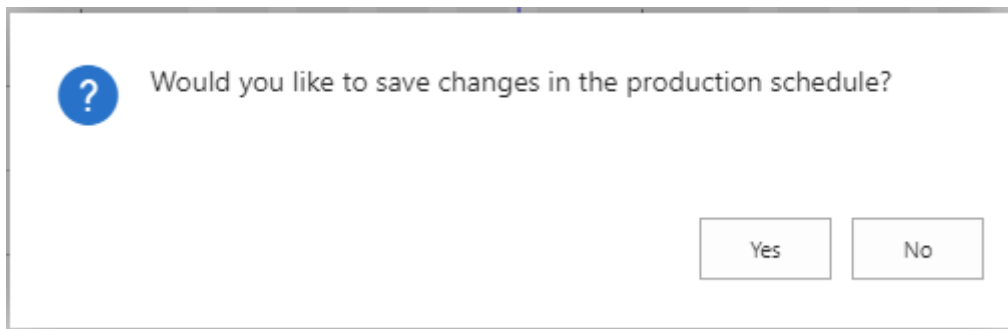
[How to add custom fields to the VPS](#)

## 21. Reload and save data

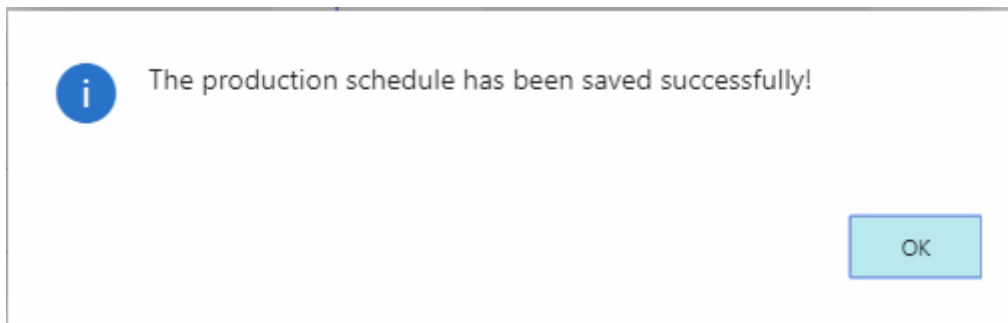
In case you wish to discard your changes after modifying the diagram (provided you didn't save them) you can simply reload the data of the diagram. The "General" items allow to reload the former values or, alternatively, to store your modifications.



If there are unsaved changes in your plan when you click "Reload", a dialog pops up where you can decide whether to save these changes or discard them.



After having saved your changes, a confirmation message pops up:



The successful reload will be stated by another message box:

