

Change capacity

In Produmex Manufacturing there are three methods to modify the capacity that can be allocated:

- **Modify shift capacity:** The available capacity can be changed by adjusting the shift length
- **Modify productive capacity:** The available capacity can be changed by modifying the productivity of the shift
- **Resource unavailability:** The available capacity can be changed by registering resource unavailability

1. Modify shift capacity

Please note: Shift capacity change is not supported when using multidimensional allocation.

1.1. Apply overtime/Expand shift day

In Produmex Manufacturing shifts marked as ‘Overtime’ are never used by the allocation logic and can be added for administrative reasons only. In order to apply overtimes, create a new Shift Day type.

In the example we have a ‘Normal Working Days’ shift day with two administrative overtime shifts: a ‘Morning Overtime’ shift and a ‘Night Overtime’ shift. In order to create a new shift day type, we duplicated the Shift Day by selecting the ‘Duplicate’ option from the right-click menu of the Shift Day type.

Shift Day Type

Code

nORMSDT

Name

Normal Working Days

ConvertedTotalProdTime

15:00

ConvertedTotalUnprodTime

01:00

Converted Total Overtime

07:00

Converted

09:00

Converted

16:00

Converted

00:00

Remove

Duplicate

Add Row

Delete Row

Shift	Description	From Time	To Time	Is Productive	Is Overtime	Productive Ratio
mOROT	Morning Overtime	06:00	08:00	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0.700
mOR	Morning Shift	08:00	12:00	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.750
INCBR	Lunch Brake Shift	12:00	13:00	<input type="checkbox"/>	<input type="checkbox"/>	1.000
aNN	AfterNoon Shift	13:00	17:00	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.950
nGHTOT	Night Overtime	17:00	22:00	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0.600

OK

Cancel

We named this new shift day type as 'Normal Working Days with overtime' and also changed the code of the shift day type. Then we simply unticked the 'Overtime box' for the night overtime shift and added the new shift day.

Shift Day Type

Code

nORMSDT_O

Name

Normal Working Days with overtime

ConvertedTotalProdTime

15:00

Converted Total Time

14:00

ConvertedTotalUnprodTime

01:00

ConvertedTotalWithOvertime

16:00

Converted Total Overtime

02:00

Converted Total Gap

00:00

Shift	Description	From Time	To Time	Is Productive	Is Overtime	Productive Ratio
mOROT	Morning Overtime	06:00	08:00	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0.700
mOR	Morning Shift	08:00	12:00	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.750
INCBR	Lunch Brake Shift	12:00	13:00	<input type="checkbox"/>	<input type="checkbox"/>	1.000
aNN	AfterNoon Shift	13:00	17:00	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.950
nGHTOT	Night Overtime	17:00	22:00	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.600

Add

Cancel

Then alter the Shift Year Plan.

- To apply overtime only for one day, open the current Shift Year Plan. Find the given date then change the Shift Day type.
- To apply the new shift day to more than one day, open the current Shift Year Plan and click on the 'Parameters' button. It is possible to change the shift plan for a period only. For more information please see: [Shift Year Plan](#)
- To assign overtime for one work center (resource) only, create a new shift plan by adding a new one from scratch or by duplicating an existing shift plan. Assign this new shift plan for the given work center.

After clicking on the 'Update' button on the Shift Plan Year or the Work Center form, the Reallocator Report will open up. On this form every allocation affected by the shift day change is listed. Filter the list based on the status of the allocations with the 'Ok', 'Warning' and 'Error' checkboxes on the header. Only allocations with the checked status will be displayed.

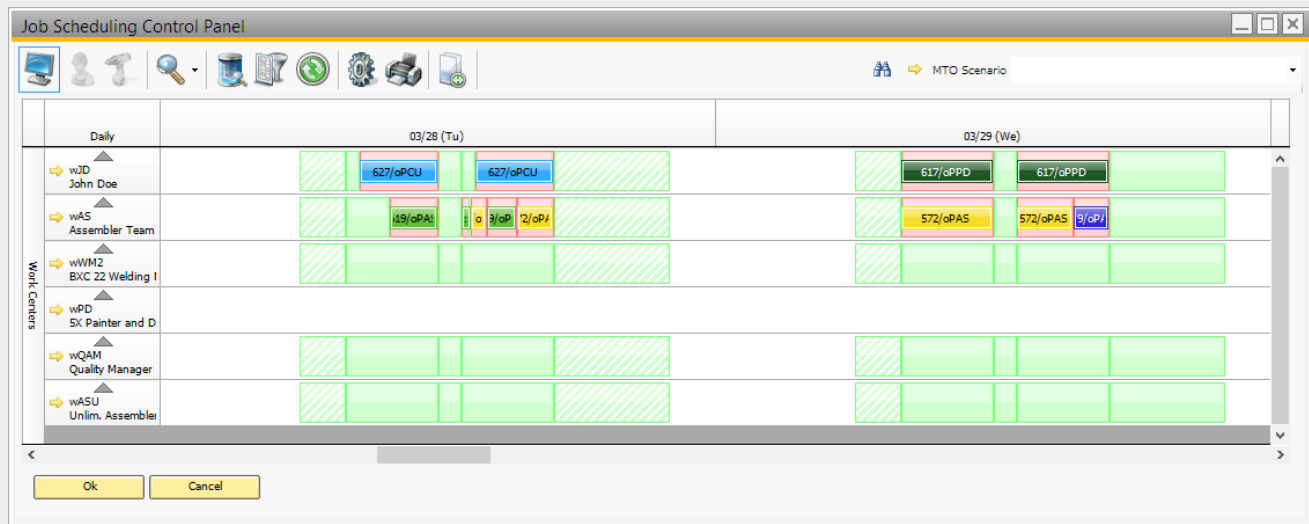
Status:

- 'Ok': Indicates additional capacity on the work center
- 'Warning': Indicates change in the capacity of an existing shift
- 'Error': Indicates an allocation that has to be reallocated



In order to proceed, acknowledge the message by ticking the 'Confirm' checkbox under the grid. The 'Proceed' button will become active. Click on this button to apply the shift plan change.

To display the difference, we assigned the 'Normal Working Days' shift day type to the work day on the left side and the 'Normal Working Days with overtime' shift day type to the work day on the right side.



The system will not automatically recalculate the scheduling when expanding the capacity. Affected production orders can be rescheduled with the following methods:

- To reschedule a single production order only, set the '[Force recalculation](#)' UDF to 'Yes' and click on the 'Update' button.
- To reschedule multiple production orders,
 - On the [Production Management Cockpit](#) select the production order(s) and click on the 'Recalculate' button.
 - On the Job Scheduling Control Panel use [semiautomatic rescheduling](#)

1.2. Shrink shift day

With default settings the shift capacity can only be decreased, if there are no allocations with the status 'Error' on the *Reallocator Report*.

If there are allocations with 'Error' status, the acknowledgement message is not displayed and the 'Proceed' button is not active.

The screenshot shows the 'Reallocator Report' window. It has a title bar with standard window controls. Below the title bar, there are three checkboxes: 'Ok' (checked), 'Warning' (checked), and 'Error' (checked). Below these is a section titled 'List of Work Centers and Days to be Changed' which contains a table with columns: Resource Type, Work Center, Day, Type, Prod.Hours Delta, Overt.Hours Delta, Status, and Message. The table has two rows of data, both with a red 'X' in the 'Type' column and an 'Error' status. The message for the second row is highlighted with a red box: 'Cannot reallocate segment! 3/28/2017 1:00:00 PM'. Below the table is a 'Proceed' button and a 'Cancel' button. Overlaid on top of the bottom right of the main window is a smaller window titled 'Reallocator Report Details'. This window has fields for 'Resource Type' (Work-Center), 'Resource' (wJD), 'Date' (03/28/17), and a table with columns: Pr.Ord.No, Pr.Ord.Line, From Time, To Time, and Type. The table has two rows of data, both with a yellow arrow icon in the 'Pr.Ord.No' column and a 'Released' type.

Resource Type	Work Center	Day	Type	Prod.Hours Delta	Overt.Hours Delta	Status	Message
Work-Center	wJD	03/27/17	X	-4,000	-5,000	Error	Cannot reallocate segment! 3/27/2017 1:00:00 PM
Work-Center	wJD	03/28/17	X	-4,000	-5,000	Error	Cannot reallocate segment! 3/28/2017 1:00:00 PM

Pr.Ord.No	Pr.Ord.Line	From Time	To Time	Type
627	1	08:00	11:25	Released
627	1	13:00	16:25	Released

To allow rescheduling triggered by capacity decrease, enable the 'Allow rescheduling Production Orders when shift day capacity is shrunk' option on the MRP tab of [Produmex Manufacturing settings](#).

In the case of a capacity shrinkage, production orders with affected allocations will be [rescheduled automatically](#).

2. Modify the productive capacity

2.1. Change productive ratio for a shift day type

It is also possible to modify the capacity by changing the productive ratio of a [shift day type](#).

- If the productive ratio is 1, it means that the required capacity equals to the total operation time.
- If the productive ratio is lower than 1, it means that the capacity that needs to be allocated is greater than the total length of the operation.
- If the productive ratio is greater than 1, it means that the capacity that needs to be allocated is less than the total length of the operation.

Productive Ratio	Total operation time	Total allocation duration
1	60 minutes	60 minutes
0.5	60 minutes	120 minutes
2	60 minutes	30 minutes

2.2. Change the time scale for a work center

The time scale of a [work center](#) defines its efficiency for performing a feature.

- If the time scale is 1, it means that the required capacity equals to the total operation time.
- If the time scale is lower than 1, it means that the work center capacity that needs to be

allocated is greater than the total length of the operation.

- If the time scale is greater than 1, it means that the work center capacity that needs to be allocated is less than the total length of the operation.

Job Time Scale	Setup time	Job time	Teardown time	Total allocation duration
1	-	60 minutes	-	60 minutes
0.5	-	60 minutes	-	120 minutes
2	-	60 minutes	-	30 minutes

The productive ratio of a shift day type and the time scale of the work center both affect the capacity allocated for an operation. Please refer to the example how the combination of these two settings affect the allocated capacity.

Example:

Total operation duration: 60 minutes

- Setup time: 0 minutes
- Job time: 60 minutes
- Teardown time: 0 minutes

Shift day type: Normal shift

The table below shows how the Time Scale and the Shift Productivity affect the duration allocated for the operation.

Time Scale	Shift productivity	Total allocation duration
1	1	60 minutes
2	1	30 minutes
1	2	30 minutes
0.5	1	120 minutes
0.5	2	60 minutes
2	2	15 minutes

3. Register maintenance and resource unavailability

Resource unavailability or planned maintenance can be registered on the Work Center Unavailability Management form. No allocations will be scheduled for the work center on periods that are registered as 'Unavailable'.

It is possible to add work center unavailability for a period that has allocations. In such cases those allocations have to be rescheduled.

To reschedule the production orders containing the affected allocations, click on the 'Report Conflicts' button. The Allocation Conflicts' form will open. On this form every affected allocation is listed. Click on the 'Reallocate Conflicting Production Orders' button to reallocate the production orders containing the affected allocations.



Last
update: 2017/06/09 14:26 implementation:manufacturing:capacity <https://wiki.produmex.name/doku.php?id=implementation:manufacturing:capacity&rev=1497018406>

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Last update: **2017/06/09 14:26**

