Warteschlangen-simulator

Tutorial:
Creating a first queueing model

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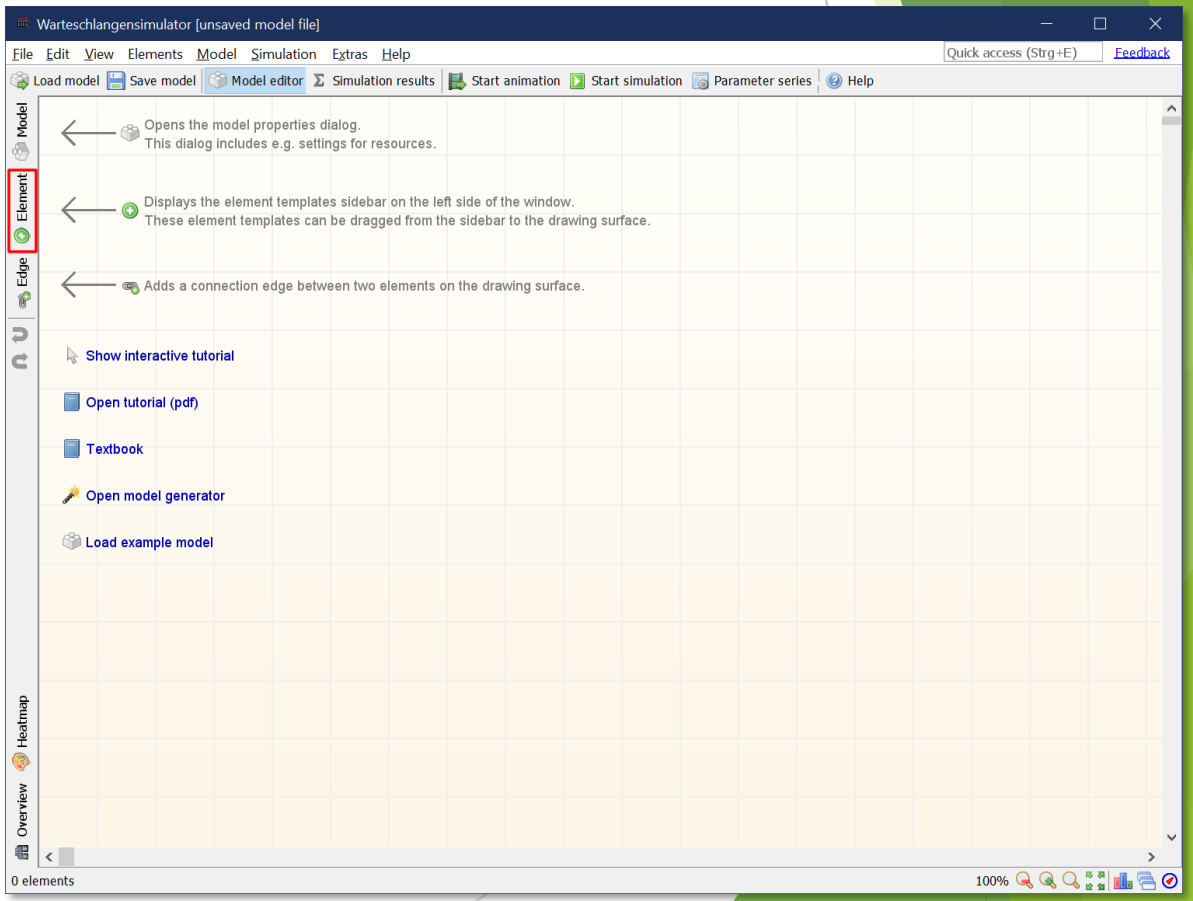
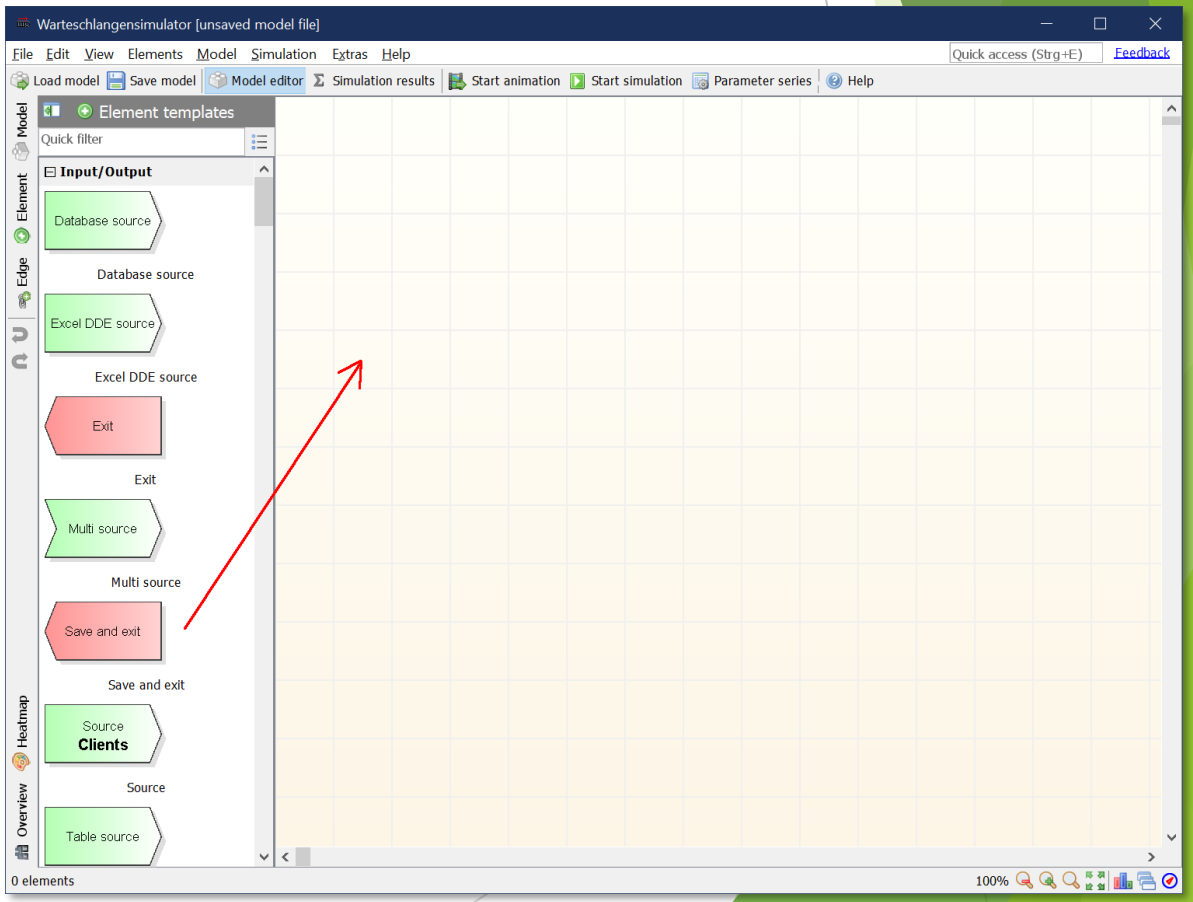
Adding stations to the model (1)

- In Warteschlangensimulator queueing systems are modelled in form of flow charts.
- Our model will consist of a source, a process station and an exit element.
- To add these elements to the drawing surface open the element templates panel **by clicking on “Element”** on the left toolbar.



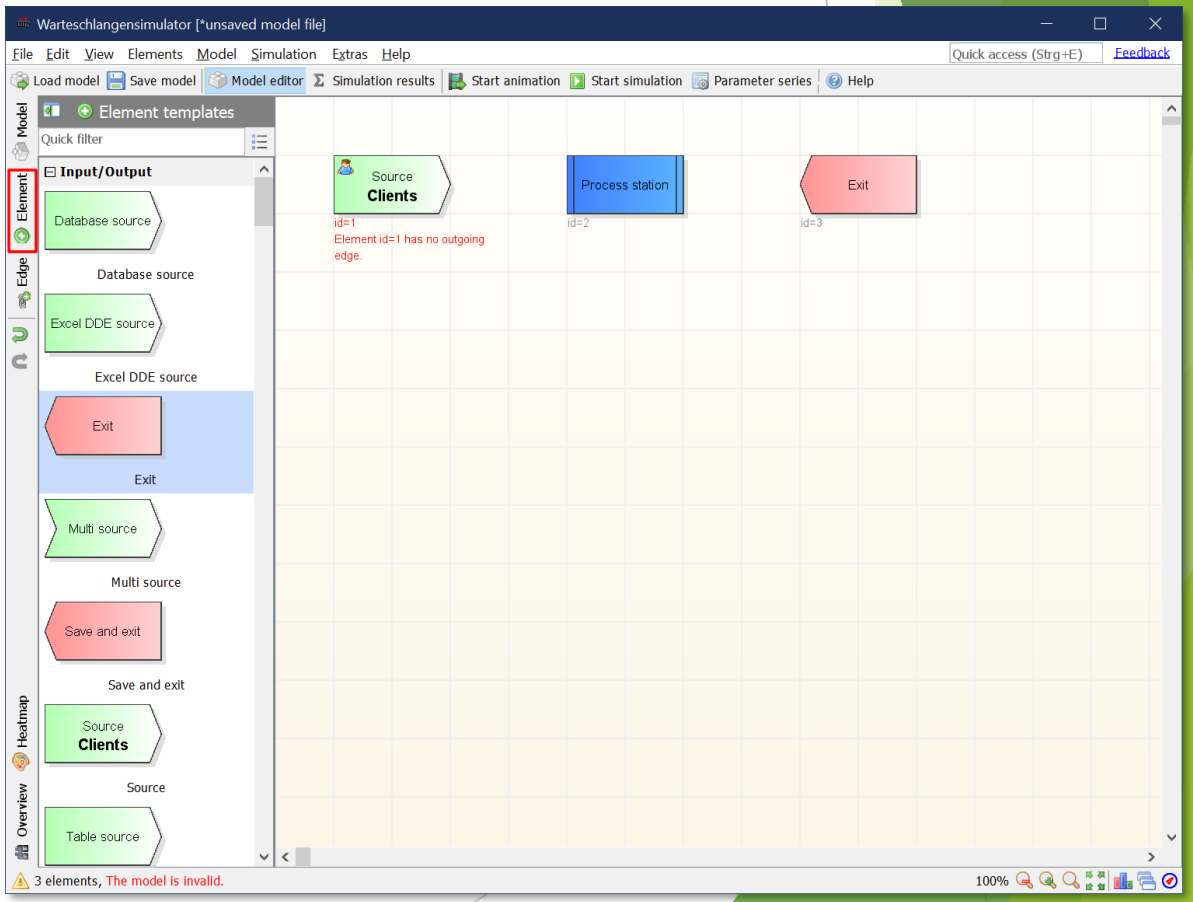
Adding stations to the model (2)

- Drag and drop a “**Source**”, a “**Process station**” and an “**Exit**” to the drawing surface.



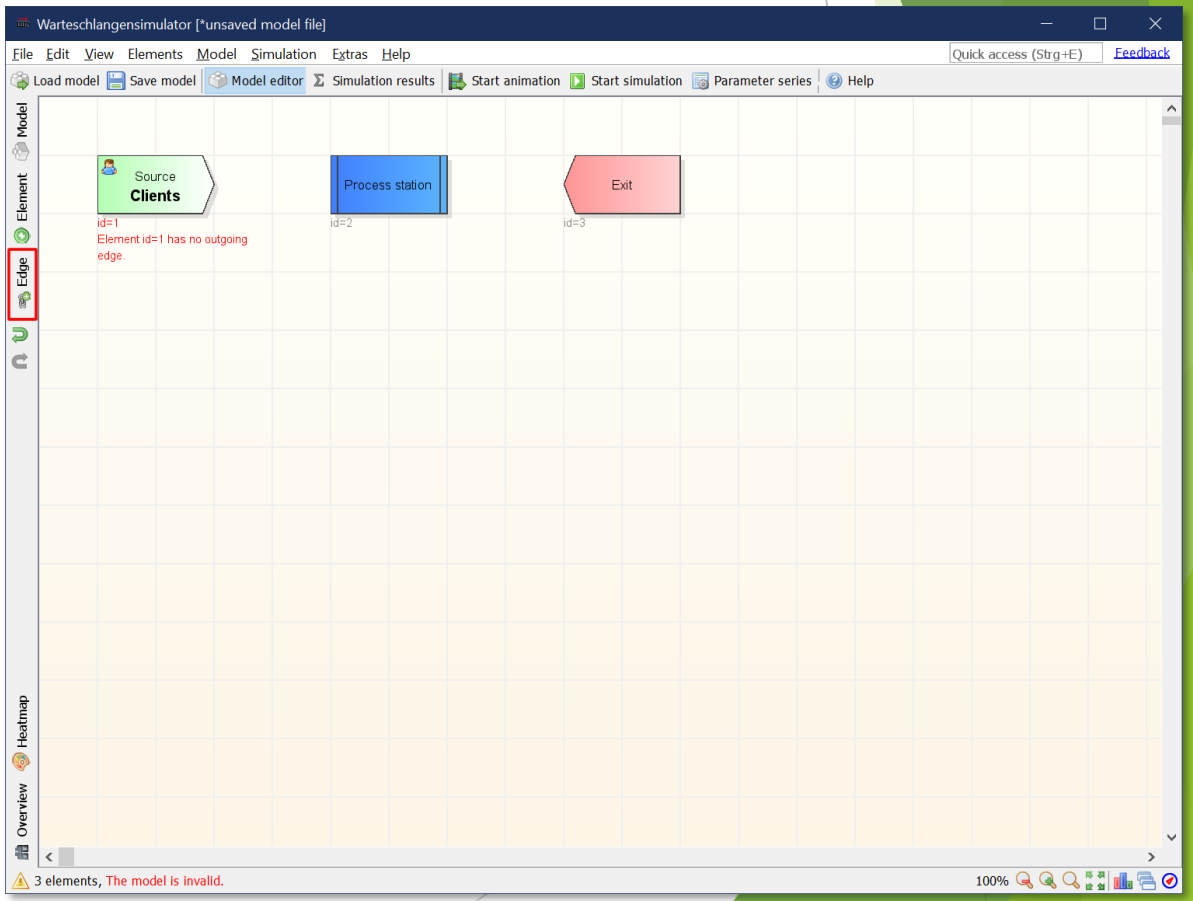
Adding stations to the model (3)

- After adding the elements again **click on “Element”** to close the templates panel.



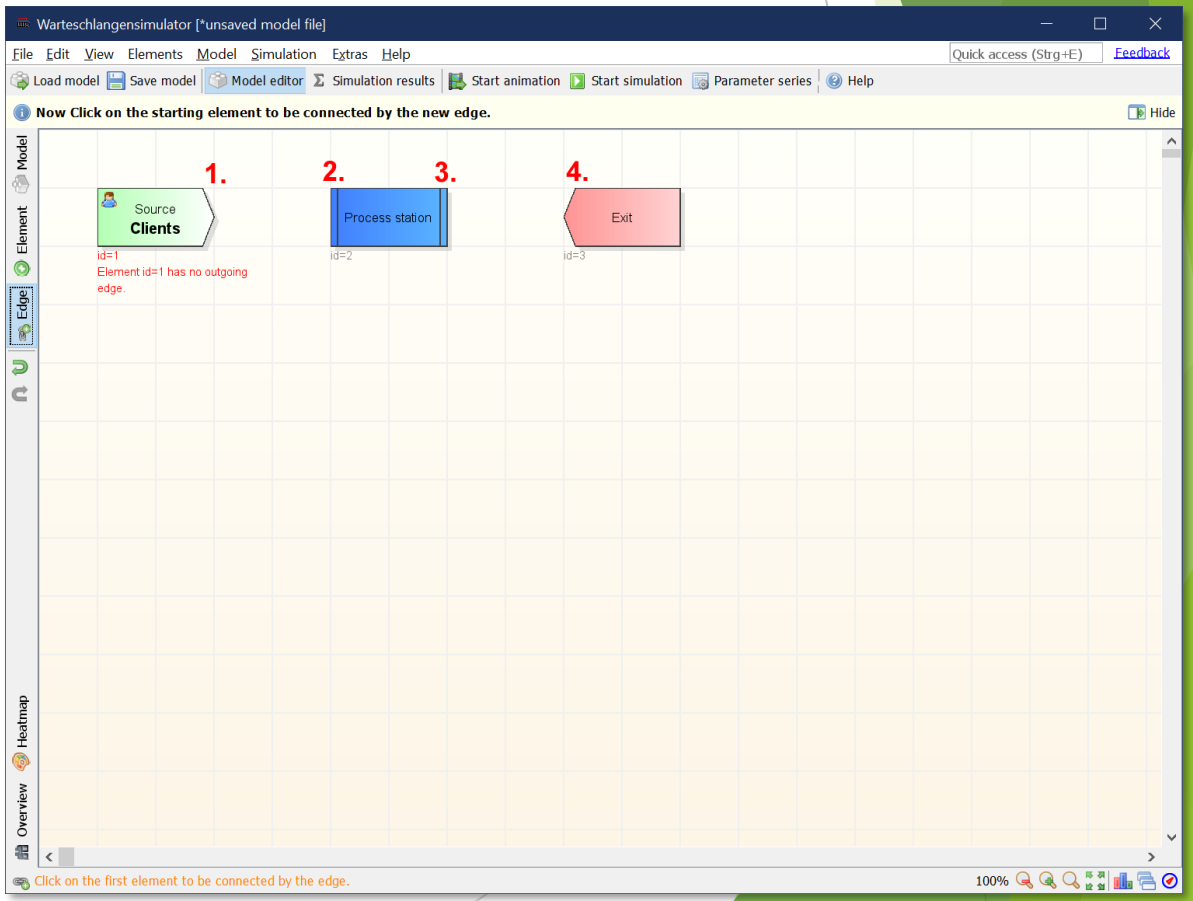
Connecting the stations (1)

- As next step, the three stations need to be connected.
- Clients created at the source are to be directed to the process station. After being served the clients should leave the system via the exit station.
- To activate the connections adding function **click on the “Edge”** button on the left toolbar.



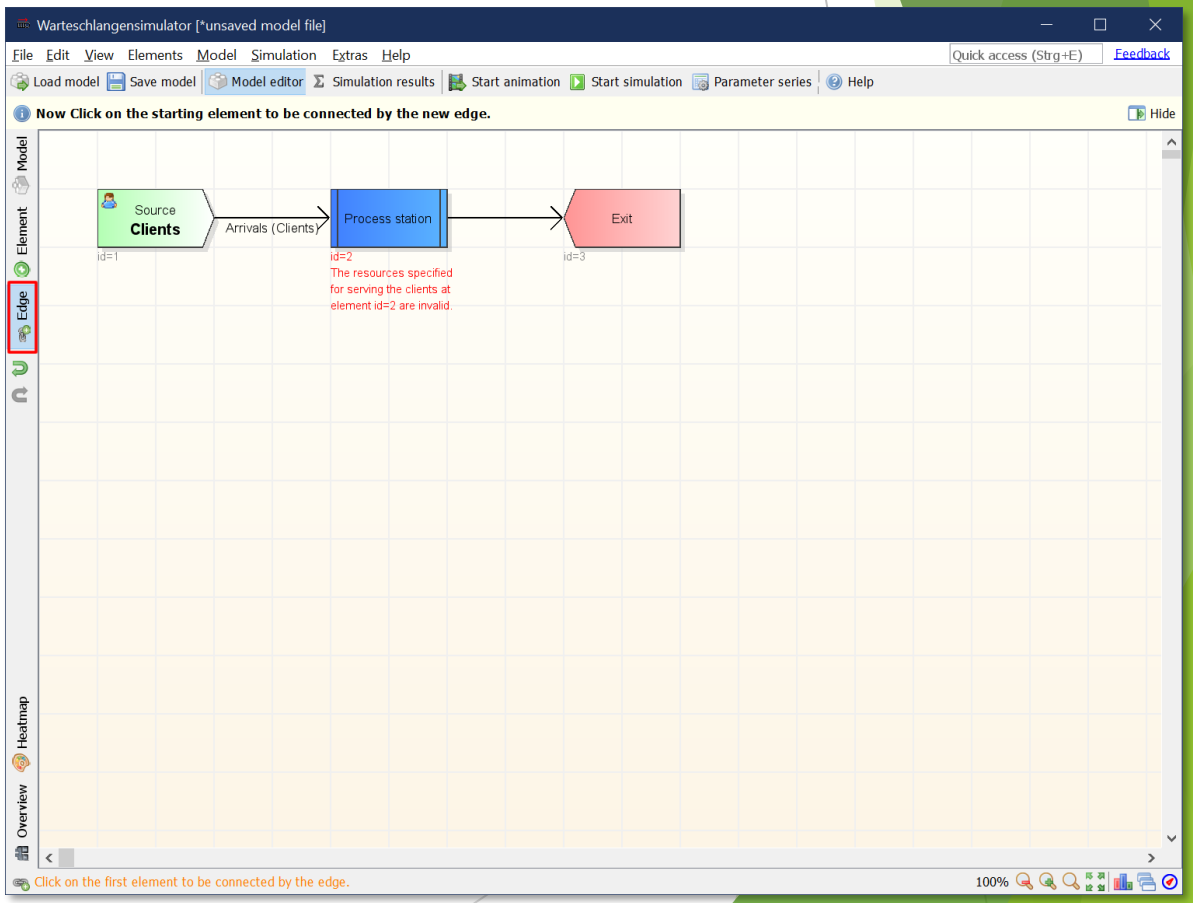
Connecting the stations (2)

- Edges are added by clicking the source and then the destination element of a connection.
- **So click on “Source” and then on “Process station”.**
- After adding the first edge **click on “Process station” and then on “Exit”** to add the second connection.



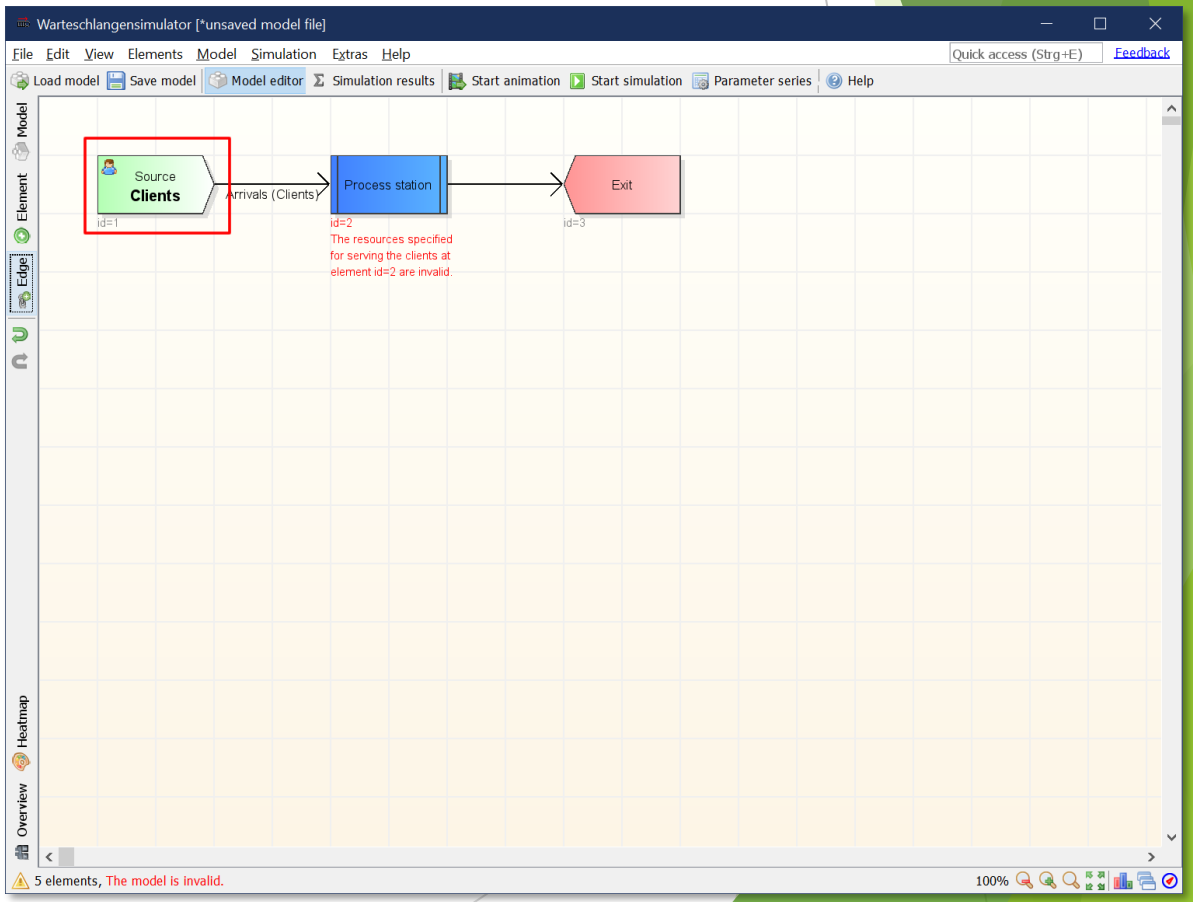
Connecting the stations (3)

- After adding the connections deactivate the connections adding function **by clicking the “Edge”** button on the left toolbar again.



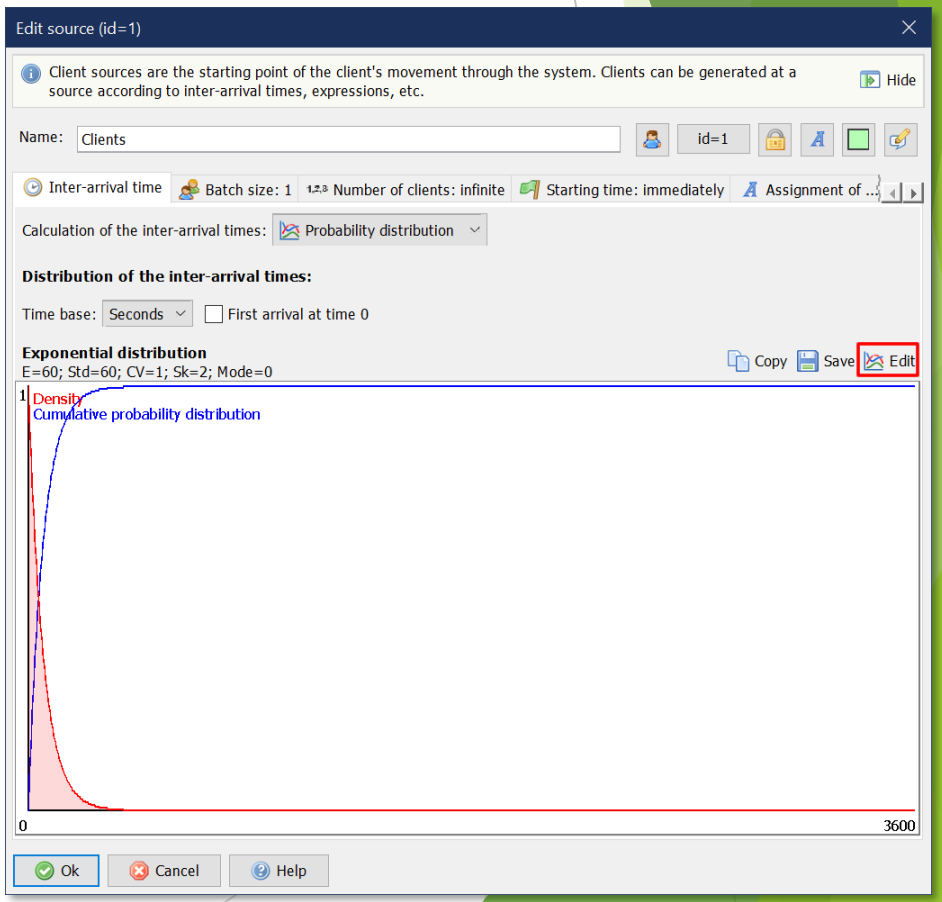
Configuring the source station (1)

- Now the stations need to be configured.
- To define the properties of the source, **double click on the source station.**



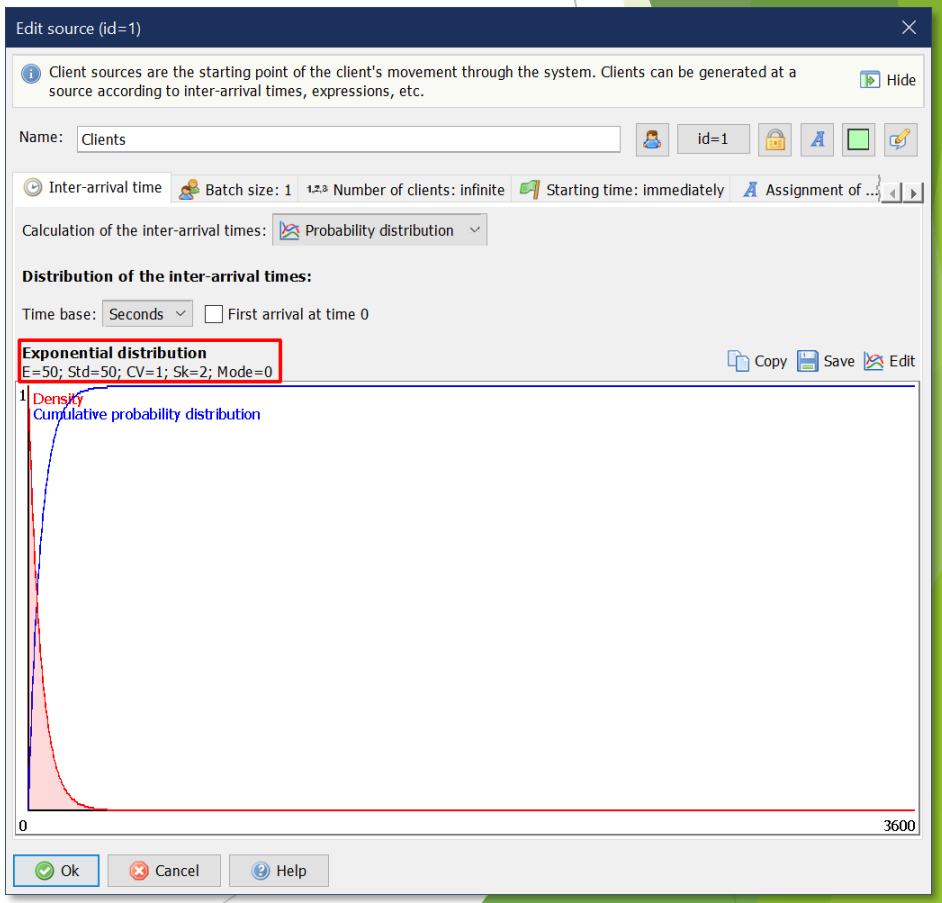
Configuring the source station (2)

- In the default case the exponential distribution with an average inter-arrival time of 60 seconds is chosen.
- We want an **average inter-arrival time of 50 seconds**, so we **click on "Edit" and change the average inter-arrival time.**



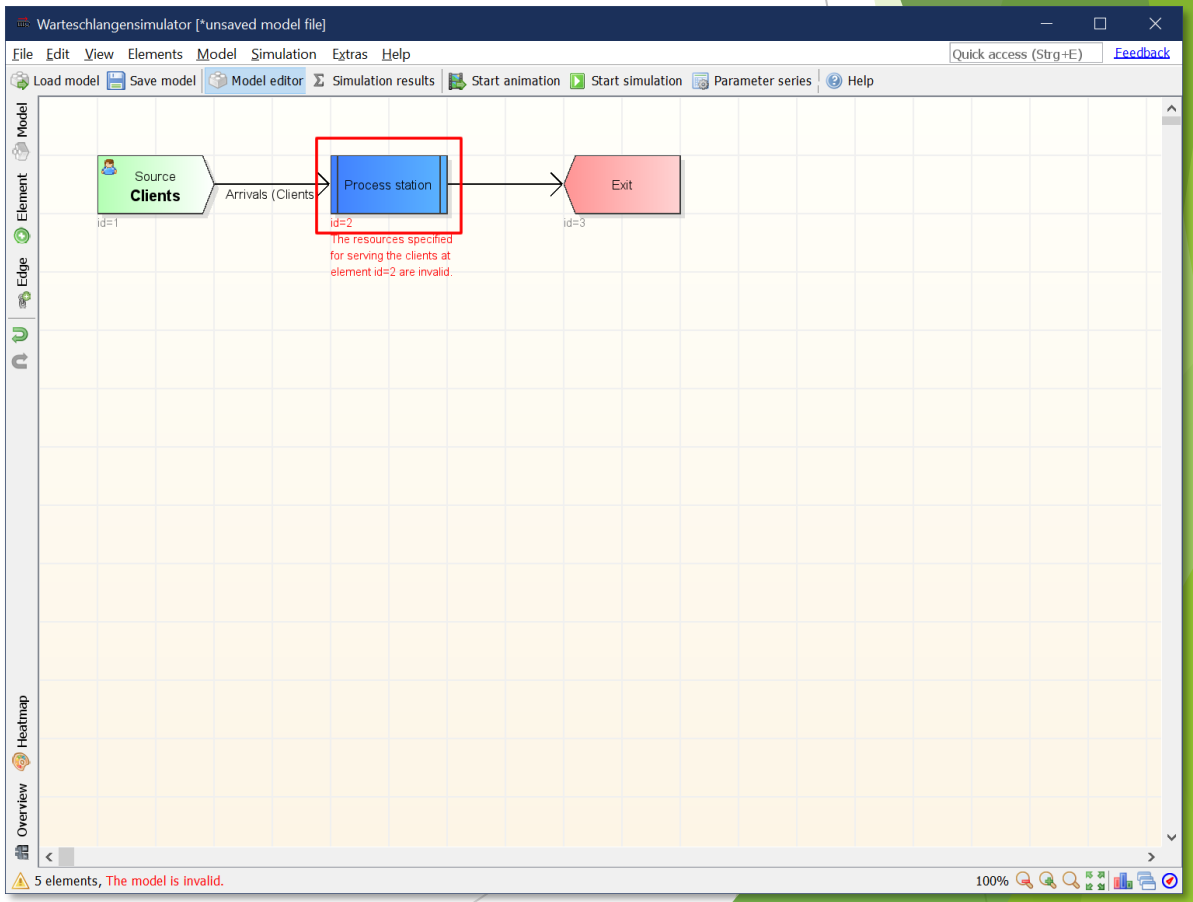
Configuring the source station (3)

- After closing the distribution editor the new inter-arrival time is shown in the source properties dialog.
- The dialog can be closed **by clicking “Ok”** now.



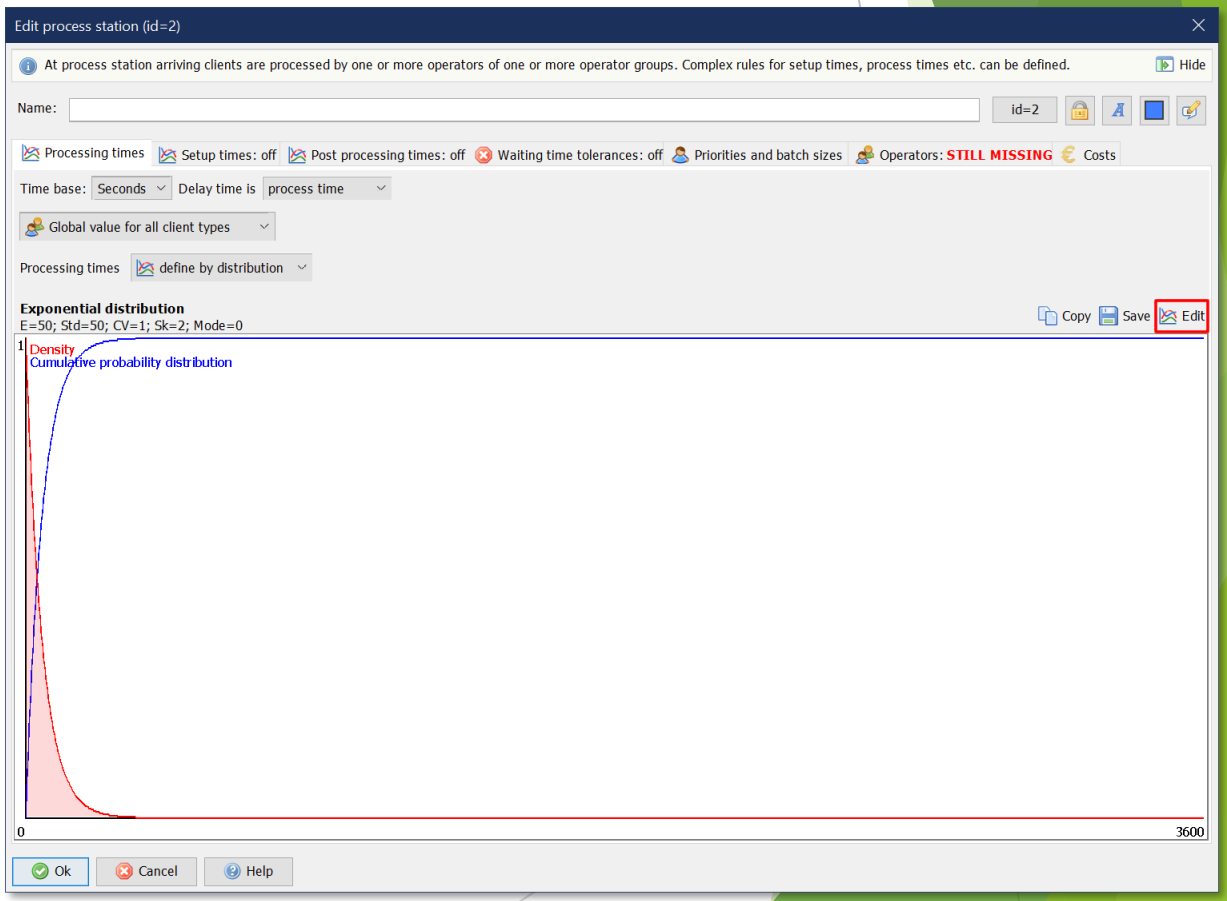
Configuring the process station (1)

- As the last step the process station needs to be configured.
- By **double clicking the process station element** the properties dialog for this station can be opened.



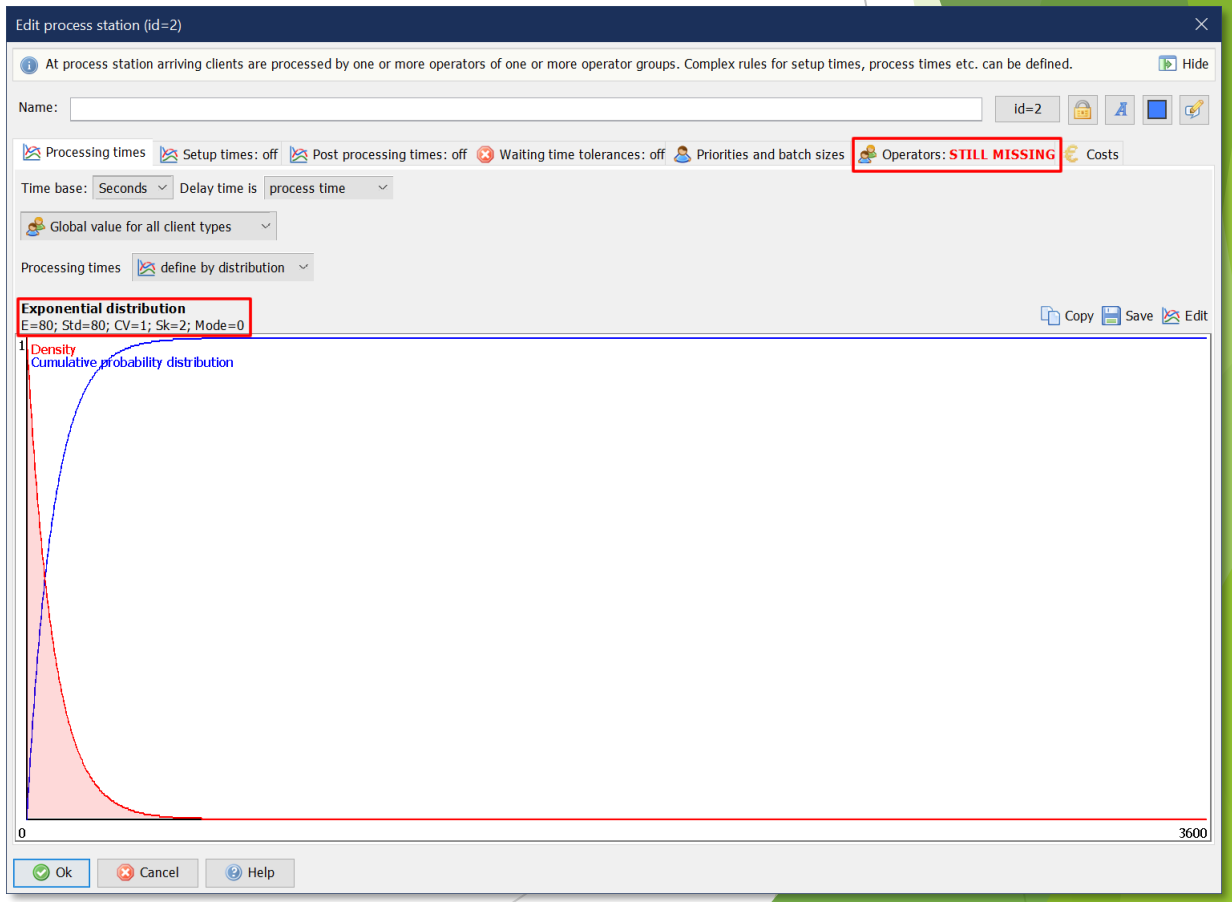
Configuring the process station (2)

- In the default case the exponential distribution with an average service time of 50 seconds is chosen.
- We want an **average service time of 80 seconds**, so we **click on “Edit” and change the average service time.**



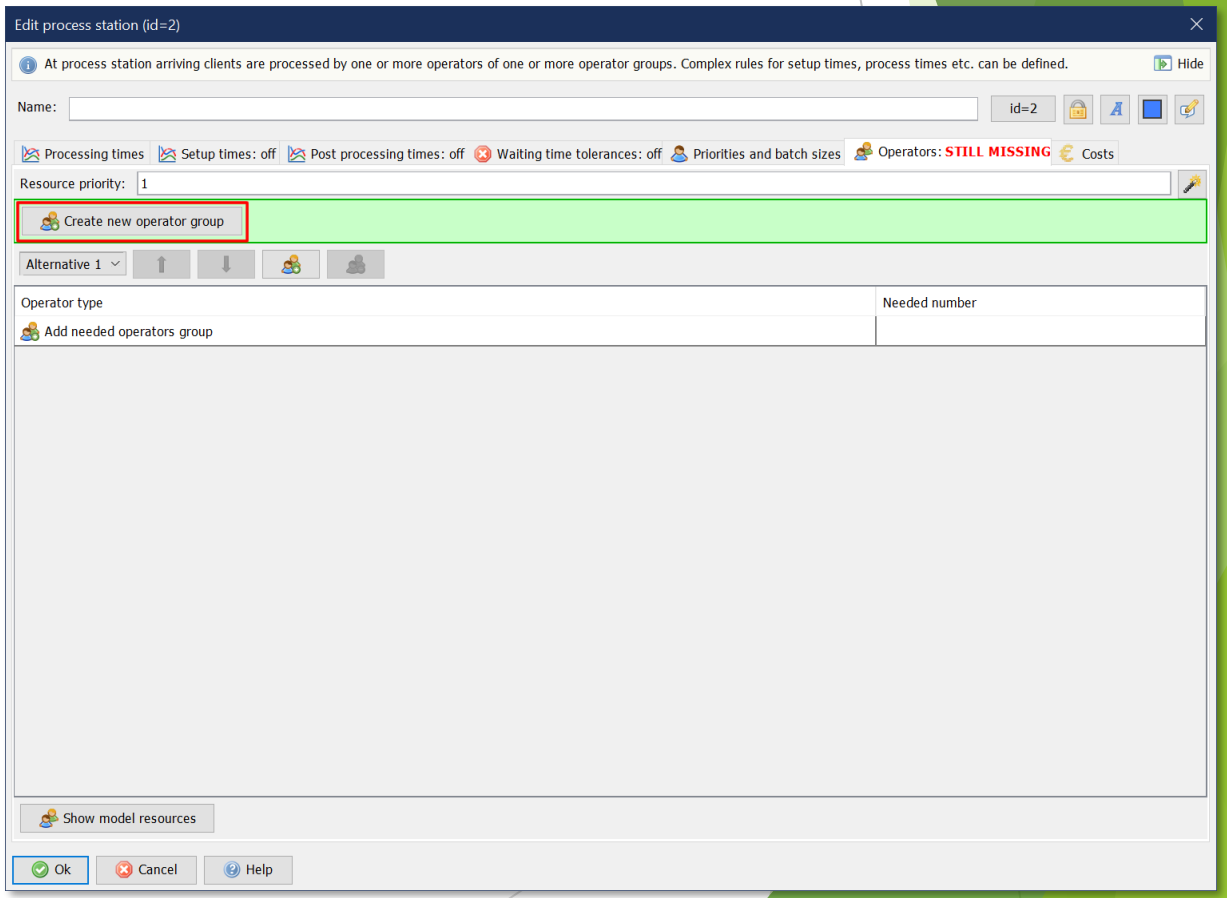
Configuring the process station (3)

- After closing the distribution editor the new service time is shown in the process station properties dialog.
- To make the process station work, we need to add operators as the last step. Therefore **the “Operators” dialog page needs to be activated.**



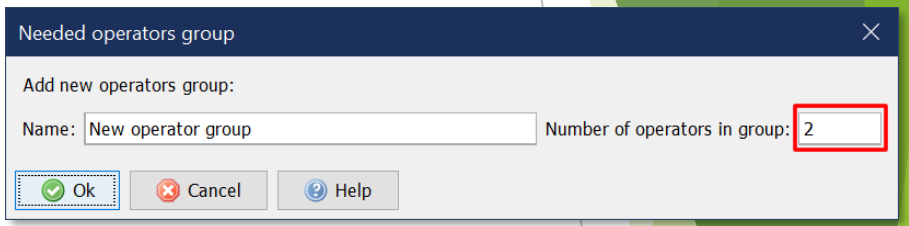
Configuring the process station (4)

- There are no operator groups in the system at the moment.
- So we need to create an operator group and assign it to the process station. This can be done **by clicking "Create new operator group"**.



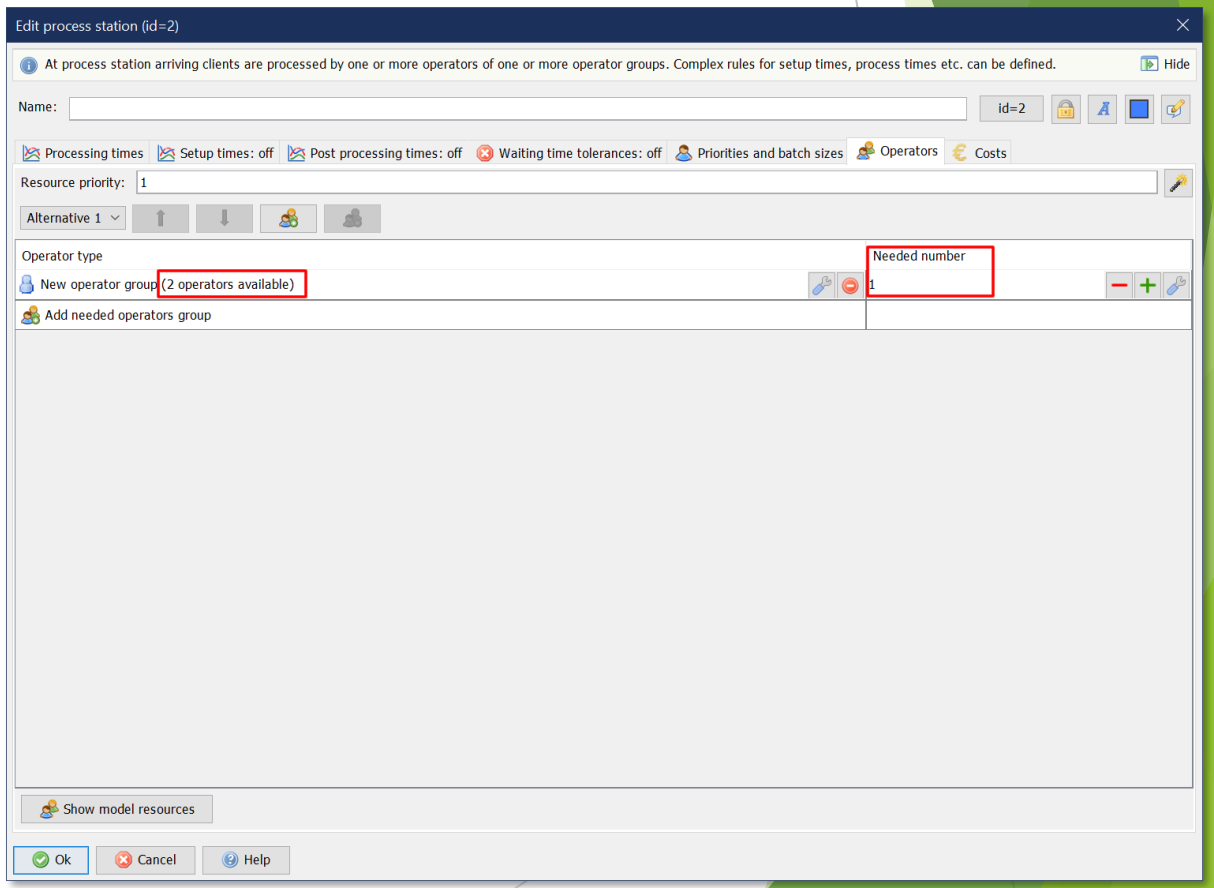
Configuring the process station (5)

- In the dialog for creating a new operator group the group size (the number of available operators in this group) can be specified.
- Because we want to create a M/M/c system with c=2, we enter a **group size of 2**.



Configuring the process station (6)

- Two operators are available in the group and one is needed to serve a client.
- That's all. The dialog can be closed **by clicking "Ok"** now.



Running simulations or animations

- The model can be animated or simulated now by clicking “**Start animation**” or “**Start simulation**” on the toolbar.

- You will find more tutorial documents in the **Help menu** of Warteschlangensimulator.
- Many ready-to-run models can be loaded via the “**Load example**” menu item of the **File menu**.