

7.11.5. Explain Inventory Calculation Dialog

Explain inventory calculation dialog is designed to show and explain Streamline’s planning process for each **planning item**. This dialog discovers the simulation modeling behind a purchase, transfer, material requirements, and production plans generated by Streamline. It is especially useful to help understand the planning logic in the following complex cases as:

- two-echelon planning;
- material requirements planning; and
- combination of both.

Description of the dialog

To open the **Explain inventory calculation** dialog:

1. Go to the **Inventory planning** tab.
2. Set the cursor at the planning item in question.
3. Press **Ctrl + E**, or right-click with the mouse and select the **Explain calculation** command from the context menu.

The **Explain inventory calculation** dialog appears (see figure below).

Explain inventory calculation — □ ×

Item: B05465-R — Basketball 29.5 (size 7) [seasonal model]

Location:

Safety stock: 94

Debt received from lower echelon (current/max): 0 / 0, accum. 0

Debt passed to upper echelon (current/max): 0 / 94

Simulation horizon: 6 months Manufacture details ↑ ↓



	Dec 1, 2018	Dec 12, 2018	Dec 31, 2018	Jan 1, 2019	Jan 4, 2019	Jan 12, 2019	Jan 15, 2019
Time fraction	0.032	0.366	1	1.032	1.129	1.366	1.484
Events	✉	🛒	🕒	✉	📈	🛒	📄
Demand forecast				100			
+ Manufacture forecast							
= Subperiod consumption		66	125	3	10	24	11
+ Safety stock			75	2	5	12	-8
Write-offs							
Orders in transition					-30		30
Debt after arrivals							
Inventory + in transition	266	200	161	158	118	94	168
+ Planned order arrivals		86				55	
= Projected inventory	266	286	161	158	118	149	168
Planned orders	86			55			
Demand passed to upper echelon	56			55			

Input / Calculated + - Co-dependent
Close

This dialog is divided into two parts. The top part shows the [properties](#) of the currently selected planning item. The bottom part, a [table](#) displaying events that will happen to the item in the future based on the input data (actual events) and Streamline's simulation modeling (simulated events).

The dialog has its own [color-coding](#) helping you understand the math behind the projected inventory levels.

Planning Item Properties

Item:	B05465-R — Basketball 29.5 (size 7) [seasonal model]		
Location:			
Safety stock:	94		
Debt received from lower echelon (current/max):	0 / 0, accum. 0		
Debt passed to upper echelon (current/max):	0 / 94		
Simulation horizon	6 months	<input type="checkbox"/> Manufacture details	

- **Item** shows the code and the description of the item.
- **Location** shows the code and the description (if available) of the location.
- **Safety stock** is the [calculated safety stock](#) for the planning item.
- **Debt received from lower echelon (current/max)** shows the [current](#), [maximal](#), and [accumulated](#) safety stock debts. The **current** safety stock debt is calculated at the lower echelon and passed to the current echelon. The **maximal** and the **accumulated** safety stock debts are calculated at the current echelon.
- **Debt passed to upper echelon (current/max)** displays the [current](#) and [maximal](#) safety stock debts that are calculated at the current echelon. The **current** safety stock is passed to the upper echelon in the [two-echelon model](#). The **current** and **max** amounts [are calculated](#) for each location in the two-echelon model.
- **Simulation horizon** shows the number of periods to simulate ahead. This number is specific for each planning item and is not less than the [forecast horizon](#). To get all the necessary events calculated and shown within the [Purchase plan](#) and [Projected inventory levels](#), Streamline extends the **Forecast horizon** to a certain number of periods. This number is specific for each planning item and depends on the lead time and order cycle set for the planning item.

Table

	Dec 1, 2018	Dec 12, 2018	Dec 31, 2018	Jan 1, 2019	Jan 4, 2019	Jan 12, 2019	Jan 15, 2019
Time fraction	0.032	0.366	1	1.032	1.129	1.366	1.484
Events							
Demand forecast				100			
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- Each column header of the table displays the date the particular **event** happens. The date shown in the header of the first column indicates the date of the last imported **transaction**. This date is also shown in the title of the Streamline application window.
- **Time fraction** is a numerical representation of the date shown in the table header. Zero time fraction corresponds to the beginning of the first day of the current period.
- **Events** shows events that happen along the simulation. This column is the one that breaks data aggregation periods into subperiods. The date shown in the table header falls at the end of the subperiod. Each event has a unique icon. Icons and the corresponding events are shown in the table below.

Icon	Event
	Placement of a transfer , purchase , or manufacturing order recommended by Streamline (simulation).
	Arrival of the order planned by Streamline (simulation).
	Arrival of actual purchase or transfer order. You can view this order in the To receive tab of the In transition details dialog.
	Shipment of a sales order. You can view this order in the To ship tab of the In transition details dialog.
	Item write-off (simulation).
	End of the data aggregation period.

- **Demand forecast** indicates the final demand forecast for each data aggregation period. Streamline shows this value in the cell that corresponds to the first event of the period.
- **Manufacture forecast** shows the total consumption of the item (*Material* or *Intermediate*) got from the lower echelon. For example, assume we have a *Material* item which is used in two *Finished* items directly. In Streamline, relations between these items are represented by a two-echelon model, where the material is at the highest echelon and the finished products are at the lowest one. Consequently, the total demand for these two finished products is the manufacture forecast for the material.
- **Subperiod consumption** is the total of **Demand forecast** and **Manufacture forecast** brought to the subperiod time interval.

Streamline doesn't take into account the consumption for the past period **including the current date**.

- **Safety stock** shows how the calculated safety stock is spread out along the first order cycle period. If safety stock is **determined** as the demand of the future periods, Streamline also shows safety stock for all the other order cycles by indicating the difference between the current and the previous order cycle.
- **Write-offs** indicates how much inventory will be discarded due to the batches' shelf life within the simulation horizon. This row comes into play if inventory batches were imported, and shows the volumes of write-offs.
- **Orders in transition** row shows quantities that will be shipped to customers (negative values) and received to locations (positive values) within the simulation horizon. This row pulls information from the **To receive** and **To ship** tabs of the **In transition details dialog**. These are *actual* (not simulated) events that are going to happen.
- **Debt after arrival** indicates the **accumulated** safety stock debt for each subperiod.
- **Inventory + in transition**. The main purpose of this row is to calculate and display the remaining on-hand level at the end of each order cycle period. Besides these goal quantities, the row displays how the on-hand level is decreased within each order cycle. These amounts are shown at the end of each subperiod. Streamline uses a **color-coding** to explain how this row is calculated (see figure below). This row shows the current item **On hand** in the first column of the table.

	Dec 1, 2018	Dec 12, 2018	Dec 31, 2018
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Write-offs			
Orders in transition			
Debt after arrivals			
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Demand passed to upper echelon	56		

< [Progress bar]

Input / Calculated + - Co-dependent

- **Planned order arrivals** shows arrivals of orders planned by Streamline. The values of this row are tightly linked to the **Planned orders** row as they indicate the arrivals of the corresponding planned orders. Streamline displays this dependency using a color-coding once you set the cursor at the non-blank cell of the **Planned orders** row (see figure below).

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< [Progress Bar]

Input / Calculated + - Co-dependent

- **Projected inventory** shows the projected inventory levels at the end of each subperiod. It is the sum of the **Inventory + in transition** and **Planned order arrivals** (see figure below). The values of this row shown at the end of each data aggregation period make up the **Projected inventory level report**.

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< [Progress Bar]

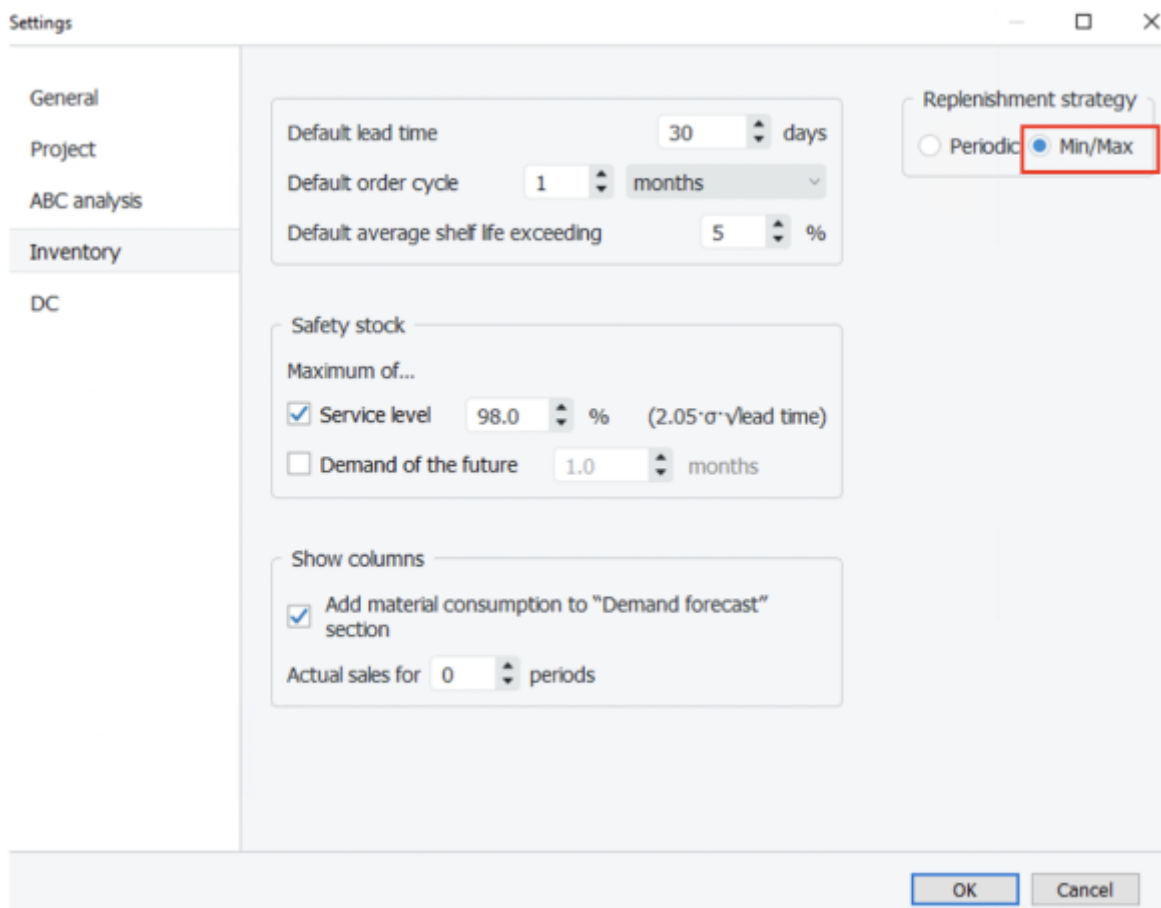
Input / Calculated + - Co-dependent

- **Planned orders** shows Streamline's recommendations on **how much and when** to place a replenishment, purchase, or work order.

The first column of the table can be a little bit misleading, showing you an order placement (the email icon) on the past date. This is due to the *zero time point* which is used as a starting point to run the simulation from. Do not pay attention to the date in the header of this column. Streamline always

calculates the **Planned orders** quantity for the first column on the [current date](#).

Effective inventory row is displayed in the 'Explain calculation' when replenishment strategy in Settings is set to Min/Max.



Effective inventory includes into calculation To receive and To ship, which are expected during the lead time. Streamline takes it into account instead of On hand when deciding when an order should be placed.

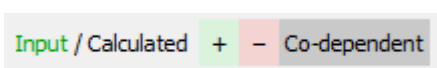
Buttons and Options

Buttons with **Up** and **Down** arrows on the right of the dialog allow navigating through the planning items.

Manufacture details option expands the table with all the items of the lower echelon which are linked to the current planning item based on the BOMs and shows the manufacture forecast for them.

Color-coding

The color-coding legend for the table is shown in the figure below.



- **Green numbers** are the inputs for the **Planned orders** and **Projected inventory** rows calculation.
- **Black numbers** are calculated values which, in turn, can also be considered as the inputs to the next level of calculations.

There are three color backgrounds for cells:

- **Green** and **Red** backgrounds indicate that the value is used with a *positive* and *negative* sign in the calculation accordingly.
- **Grey** background highlights cells that are co-dependent on each other.

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