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Safety Stock and Buffer Simulation

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THE BEST RUN SAP

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1 Safety Stock and Buffer Simulation

Determine the best safety stock method for each of your materials. You use **safety stock and buffer simulation** to find the best model and set the corresponding safety stock parameters.

The **safety stock and buffer simulation** is a tool for optimizing safety stocks and reorder points, as well as the service level. Three different simulation types are available:

- *Scenario Simulation*
- *Optimization of Service Level*
- *Optimization of Service Level of Exception Groups*

> **Note**
>
> Throughout the documentation, the terms "service level optimization", "service level optimizing safety stock and buffer simulation", and the abbreviation "optimization" are used synonymously.

The main functions of this **SCM Consulting Solution** are:

- Simulation of safety stocks and reorder points for alternative replenishment lead times, service levels, and uncertainties in demand or replenishment (replenishment lead times) based on various methods
- Simulation of safety times for various input values
- Cost value assignment of default alternative scenarios (including aggregation and disaggregation function)
- Cost-optimized determination of service levels as output from planning ("service level optimization")
- Mass maintenance function for safety stock, reorder point, safety time, and service level based on the generated default values
- Scenario analysis for an increase or reduction of the specifications (such as service level, absolute replenishment lead time, and forecast errors)
- Determination of safety-relevant and reorder-point-relevant key figures such as safety stock range of coverage, implicit service level, and so on

You can also use the **comprehensive functions**. These include the following functionalities:

- Tasks and resubmissions
- Comment function
- Individual material groups
- Alerts
- Formula editor for creating your own formulas
  You use the formula editor to create your own formulas to calculate your own key figures. The formulas can be used in all SCM consulting solutions.

In addition, the following **SCM Consulting Solutions** are part of the **comprehensive functions**:

- **Material master update**
- **Enhanced material master view**
- **Material Document Analysis**
- **Excel Upload/Download**

- **Flexible Material Master Update**

The **comprehensive functions** consist of various functions that can make your work with the **SCM Consulting Solutions** even more effective.The material master update allows you to save data in standard SAP fields and fields of the **enhanced material master view**. You can edit the material master data directly from the results list of your SCM Consulting Solutions.You can use the **enhanced material master view** to access the material master data fields of the **SCM Consulting Solutions**. You can use **material document aggregation** to create customized consumption and inventory histories that you can use for the analyses in the **MRP monitor**, **inventory controlling cockpit**, and **safety stock and buffer simulation**. The **stock development** shows you the current stock values and provides you with a variety of aggregation options.

> ⓘ Note
>
> Please note that when executing **SCM Consulting Solutions**, you must enter the prefix */n/SAPLOM/* before each transaction.

For this **SCM Consulting Solution**, the following note exists: 1363890

You can create error messages under this component: `XX-PROJ-CON-SBS`

You can find additional information (such as presentation slides) here: Materials

Related Information

Documentation on the **comprehensive functions**
Overview of **SCM Consulting Solutions**

1.1 Scenario Simulation: Overview

The scenario simulation enables you to determine safety stock and reorder point quantities and their values for various service levels, and to compare the results with the current quantities in the material master. In addition, the scenario simulation determines a wide range of other key figures (for example, ranges of coverage and delta key figures) that you can use to classify the safety stock and reorder points determined. After comparing the data, you can save the quantities determined by the system in the material master. To determine the quantities, the following three business safety stock calculation methods are performed for the specified service levels and are evaluated on the basis of stock level and stock value:

- Safety stock and safety days' supply as well as reorder point using the ERP standard method combined with the average method
- Safety stock and safety days' supply as well as reorder point using the optimized ERP method combined with the average method
- Safety stock and safety days' supply as well as reorder point using the advanced method combined with the average method

In addition to the above methods, a calculation of the safety stock and reorder points is performed with the demand-driven planning method.

Via the **comprehensive functions**, you can create formulas, which you can then use in the scenario simulation to determine safety and reorder points based on your own calculation logics.

The results of these calculations can be saved on the standard views and/or the SCM CS views of the material master.

1.2 Service Level Optimization: Overview

The second operation mode enables the optimization of safety stocks and reorder points.

Three different optimization goals are available:

1. Costs
2. Profit
3. Space and budget

There is a separate optimization procedure for each optimization goal. For all optimization procedures, the optimum safety stocks and reorder points can be determined using a method that you have selected (ERP method, optimized ERP method, or enhanced method). Optimal service levels can also be determined for the optimization goals "Cost" and "Profit".

You cannot combine the optimization procedures, meaning that you cannot take more than one optimization goal into account to determine optimized results.

However, you can execute different optimization procedures in one optimization run at the same time by selecting the desired procedures. On the results screen you can then compare the results of the individual procedures.

The results of the optimization can then be transferred to the corresponding parameters of the material master.

1.3 Overview: Service Level Optimization of Exception Groups

Service level optimization of one or more exception groups is a special form of service level optimization, where the optimization refers to exception groups defined in the system.

2 Call via the SBS Transaction

The scenario simulation and the SL-optimizing **safety stock and buffer simulation** can be called as follows:

1. Entering the Transaction Code
   Enter the transaction code */SAPLOM/SSS* preceded by */n* (to call in the same session) or preceded by */o* (to call in a new session) in the transaction window.
2. Calling via the Easy Access Area Menu

Alternatively, you can call the safety stock and buffer simulation via the area menu for SCM consulting solutions. This is located in the SAP Easy Access menu of the SAP initial screen in the Logistics folder. There are several menu paths for calling the safety stock and buffer simulation:

- *Logistics* > *SCM Consulting Solutions* > *Advanced Materials Planning* > *Safety Stock Planning* > *Safety Stock and Buffer Simulation* > *Safety Stock and Buffer Simulation* > *Safety Stock and Buffer Simulation*
- *Logistics* > *SCM Consulting Solutions* > *Demand Driven Planning (DDP)* > *Buffer Level Management / Dynamic Adjustments* > *Safety Stock Planning* > *Safety Stock and Buffer Simulation* > *Safety Stock and Buffer Simulation*
- *Logistics* > *SCM Consulting Solutions* > *Theory of Constraints (TOC)* > *Buffer Level Management / Dynamic Adjustments* > *Safety Stock Planning* > *Safety Stock and Buffer Simulation* > *Safety Stock and Buffer Simulation*
- *Logistics* > *SCM Consulting Solutions* > *Advanced Spare Parts Planning* > *Buffer Level Management / Dynamic Adjustments* > *Safety Stock Planning* > *Safety Stock and Buffer Simulation* > *Safety Stock and Buffer Simulation*

2.1 Default Variants

You can save a default variant for the transaction of the consulting solution. The variant is loaded automatically each time you open the consulting solution. Two types of standard variants are available:

System-Wide Variant, Valid for All Users

If a variant exists with the same name as the transaction code (including /SAPLOM/), this variant will be the default for all users who start the consulting solution, unless they have a user-specific variant saved on the same system. Typically, system-wide variants are used to provide a predefined set of values that increases usability when fields such as plant, currency, or time are to be prefilled, for example. The user can change the values at any time before executing the program.

User-Specific Variants

If a variant exists with the naming convention *U_<user name>*, this variant will be defaulted for this specific user when they start the consulting solution.

> **Example**
>
> A user with the logon name *JSMITH* would save their own variant as follows: *U_JSMITH*

This can also improve usability since certain fields, such as plant, currency, or time, can be prefilled for a specific user. The user can change the values at any time before executing the program. Each user can have only one predefined variant per system, but the variant can be overwritten with new values.

2.2 General Tab

Additional material parameters

Classification (1)

ABC(D) indicator	to	
EFG(N) indicator	to	
HIJ(K) indicator	to	
KSTX(N) indicator	to	
LMN(O) indicator	to	
PQR indicator	to	
UVW(N) indicator	to	
XYZ(N) indicator	to	

Lifecycle / Storage (2)

Make to Order	to	
Life cycle indicator	to	
Stocking/Destocking	to	
Deletion Indicator	to	
New Material	to	
Seasonal Material	to	
No Consumption	to	
Negative consumption	to	
Forecast This Material	to	
Strategic material	to	
Gating Machine	to	
Prod./Purchasing principle	to	
Provisioning Acc. BOM Char	to	
Provisioning Acc. to Cap.	to	
Provisioning Acc. Reqmt	to	
Provisioning Acc. Rule Set	to	
Manual Provisioning	to	

Exception indicators (3)

Exception indicator 1	to	
Exception indicator 2	to	
Exception indicator 3	to	
Exception indicator 4	to	
Exception indicator 5	to	
Exception indicator 6	to	
Exception indicator 7	to	
Exception indicator 8	to	
Exception indicator 9	to	
Exception indicator 10	to	
Exception indicator 11	to	
Exception indicator 12	to	
Exception indicator 13	to	
Exception indicator 14	to	
Exception indicator 15	to	
Exception indicator 16	to	
Exception indicator 17	to	
Exception indicator 18	to	
Exception indicator 19	to	
Exception indicator 20	to	
Exception indicator 21	to	
Exception indicator 22	to	
Exception indicator 23	to	
Exception indicator 24	to	
Exception indicator 25	to	
Exception indicator 26	to	
Exception indicator 27	to	
Exception indicator 28	to	
Exception indicator 29	to	
Exception indicator 30	to	
Exception indicator 31	to	
Exception indicator 32	to	
Exception indicator 33	to	
Exception indicator 34	to	

In the following sections, the individual numbered areas are described in greater detail.

Related Information

The First Area of the General Tab [page 10]
The Second Area of the General Tab [page 10]
The Third Area of the General Tab [page 11]
The Fourth Area of the General Tab [page 11]
The Fifth Area of the General Tab [page 12]
The Sixth Area of the General Tab [page 13]

2.2.1 The First Area of the General Tab

In the first area, you specify the simulation type with which the **safety stock and buffer simulation** is to be performed. Three simulation types are available:

- Scenario simulation
- SL-optimization
- SL-optimization of exception group(s)

SL-optimization of exception group(s) is a special form of *SL-Optimization*. If you select this operating mode, the data records of the data source selected on the first tab are filtered based on the exception codes defined on the *SL-Optimization* tab (Type – Class – Characteristic Name – Characteristic Value). This means that only the data records that match the exception criteria are considered during SL-optimization.

2.2.2 The Second Area of the General Tab

In the second area of the *General* tab, you make the settings for the execution mode of the safety stock and buffer simulation. The following options are available:

- Execute simulation

Simulation runs can be executed both online and in the background. You can also choose whether to save the result of a simulation run. To do this, activate the corresponding option and you can also assign a name for the simulation result to be saved.

- Display result of a simulation

If you have saved the result of a simulation, you can use this selection option to load the result from the database and display it on the result screen of the respective simulation type.

- Delete a simulation result from the database

You can use this option to delete simulation results stored in the database.

2.2.3 The Third Area of the General Tab

In the third area of the *General* tab, you can define action flows that are to be executed during the execution of safety stock determination. Two points in time are available at which action flows can be triggered:

1. Before Safety Stock Determination
   This point in time is useful if the result of the executed actions is to be taken into account when determining the safety stock.
2. After Safety Stock Determination
   Action flows that are executed after the safety stock determination usually aim to execute certain actions based on the results of the safety stock determination.
   For more information on Action Flows, see the **comprehensive functions** documentation.

Related Information

Action Flows
Documentation on the **comprehensive functions**

2.2.4 The Fourth Area of the General Tab

The third area includes settings for the analysis mode. You can use an analysis that has already been saved. In this case, the scenario simulation and the SL-optimizing **safety stock and buffer simulation** (as well as SL-optimization of exception group(s)) are based on an analysis of the **MRP monitor** that was saved earlier. This analysis contains relevant key figures determined by the **MRP monitor**, such as the consumption of the material, which is used in the **safety stock and buffer simulation** as the basis for determining safety stock and reorder points.

> ⓘ Note
>
> To access a saved analysis, you require the **MRP monitor** consulting solution.

However, you can also perform your own analysis using the **safety stock and buffer simulation**. Here, you have three options:

1. **Consumption Analysis**: During the consumption analysis, past consumptions that have already taken place are analyzed.
2. **Requirements Analysis**: The requirements analysis considers planned requirements that lie in the future.
3. **Combined Analysis**: The combined analysis enables you to combine the consumption trends from the past with the demand trends in the future in an overall analysis.

First, you define the analysis period to be considered (periodicity, start, and length). You can then set the data source(s) for the analysis you selected:

In the consumption analysis, you choose whether the consumptions are to be determined on the basis of the material consumption table or on the basis of material documents. In the requirement analysis, you can restrict the scope of the selected requirements elements by specifying the MRP elements and segments to be

considered. In the combined analysis, both settings options are used, that is, the analysis takes into account both the settings for the consumption analysis and the settings for the requirements analysis.

> **Note**
>
> For the combined analysis, the analysis period is considered as follows: The consumption history is determined from the start of the analysis period to the current period. The demand flow is selected from the period following the current period to the end of the analysis period.

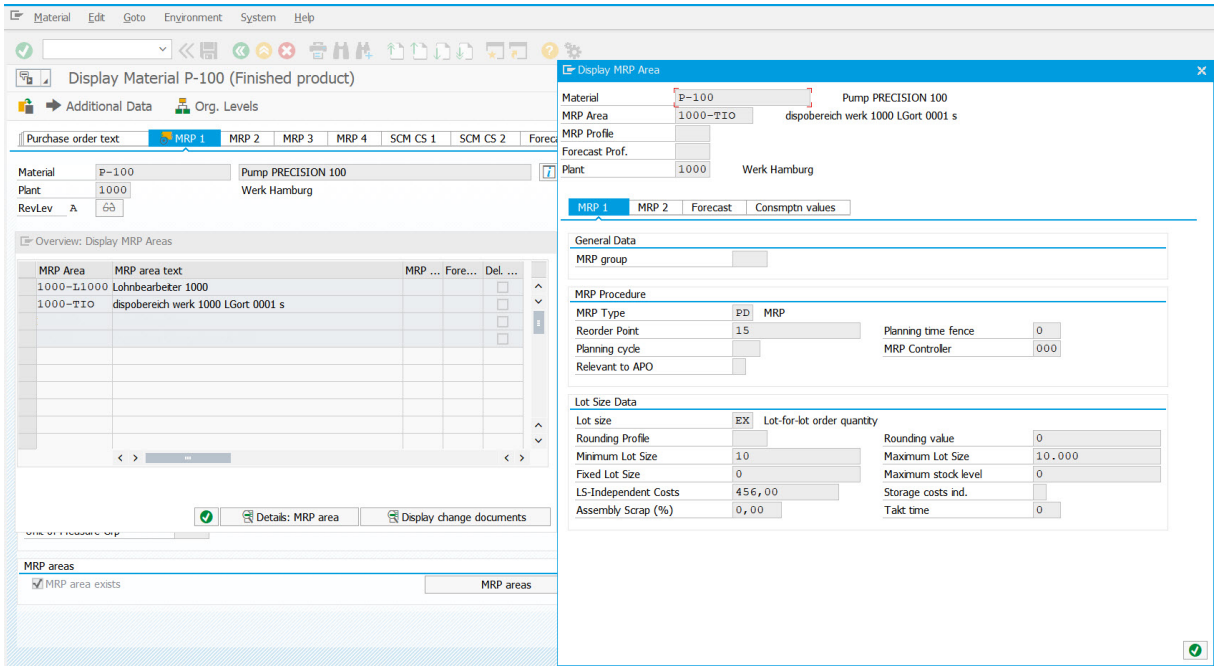
Related Information

MRP monitor Documentation

2.2.5 The Fifth Area of the General Tab

In the fourth area, you specify the analysis level. The levels *Plant*, *MRP Area*, and *Storage Location* are available for selection. For the *MRP Area* analysis level, the plant MRP areas are included as standard. However, you can also exclude the plant MRP areas from the selection by removing the checkmark from the *Display Plant MRP Area* option.

> **Note**
>
> The analysis level selected influences not only the determination of the results, but also the material master update. For example, if you select the MRP area as the analysis level, when the material master is updated, the parameters at MRP area level are updated, not the plant parameters:



Display MRP Area

2.2.6 The Sixth Area of the General Tab

The fifth area allows you to select data using parameters of the material master standard views. If you do not make any entries, all the data records available in the system are analyzed. Depending on the volume of data available, this can result in very long runtimes for the **safety stock and buffer simulation**.

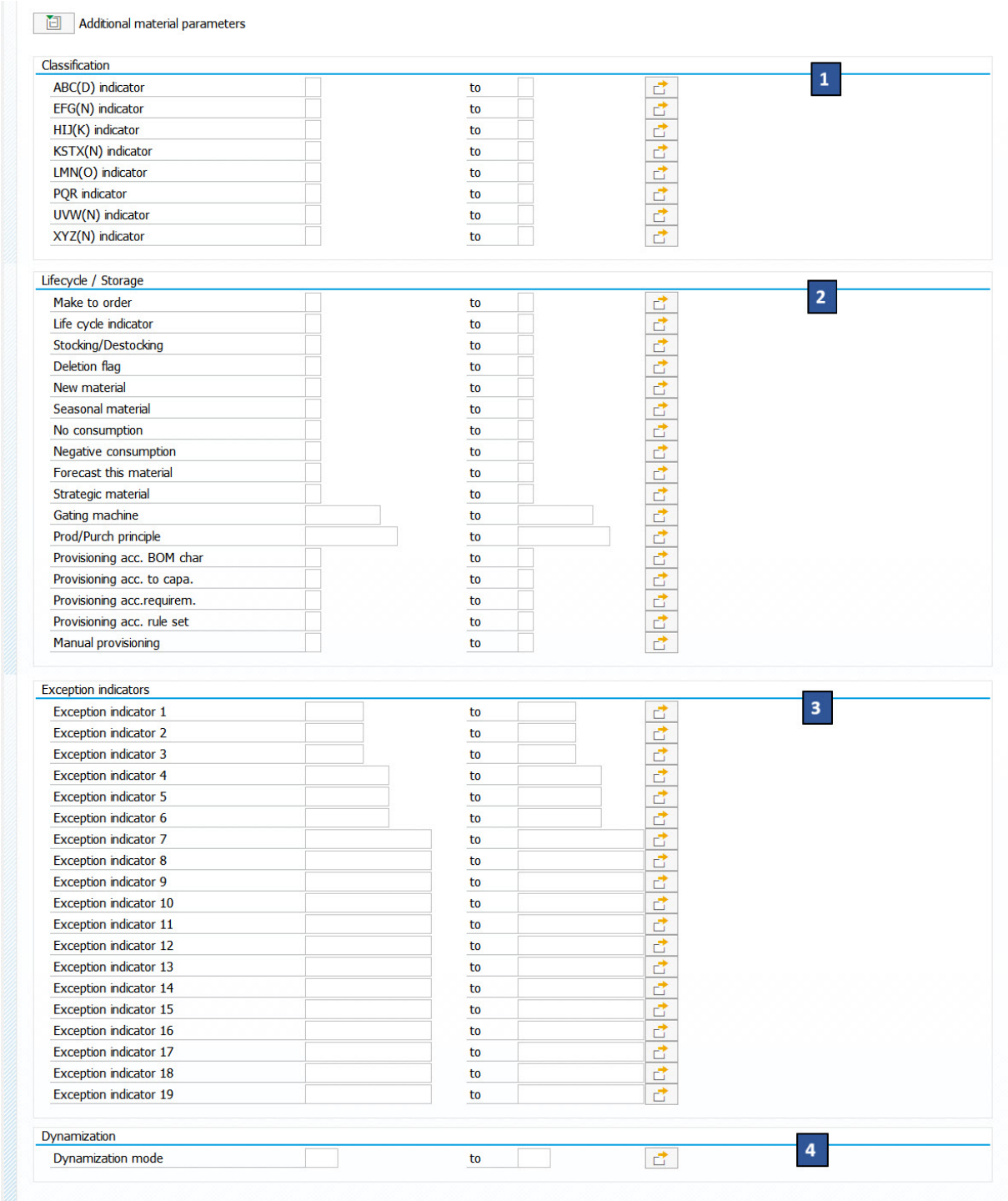
> **Note**
>
> It is therefore recommended that you make useful restrictions to the data selection.

2.2.7 The Seventh Area of the General Tab

In addition to the parameters of the standard views, there are additional selection parameters in the sixth area of the *General* tab page. In this area, parameters of the **enhanced material master view** are available to you as selection criteria. To display the selection criteria, you must choose the *Other Material Parameters* button. This displays the area with the additional selection parameters. If you choose the *Other Material Parameters* button again, this area disappears.

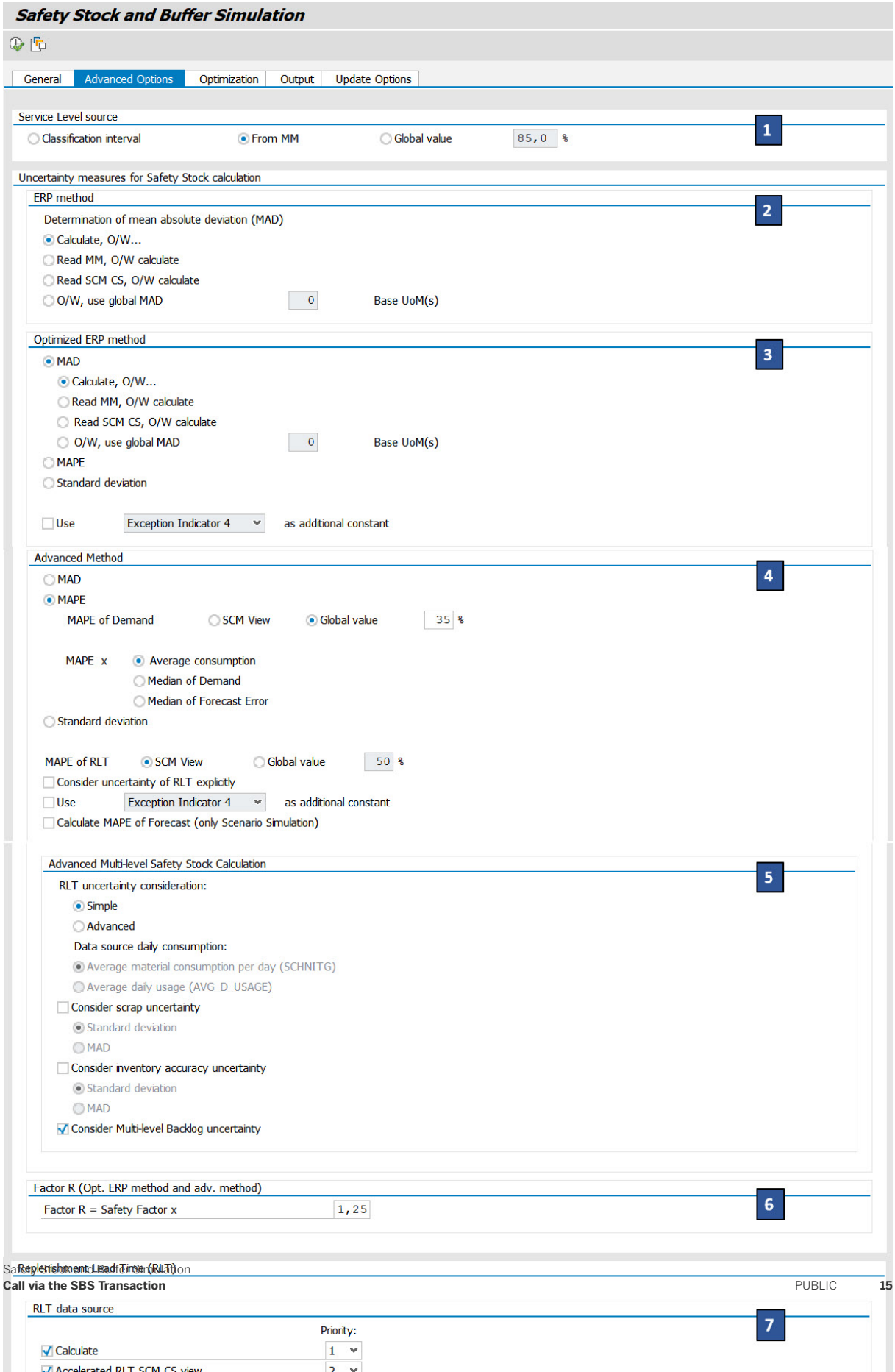
The selection parameters of the **enhanced material master view** are divided into four areas:

1. Classification
2. Lifecycle / Stockholding
3. Exception Indicators
4. Dynamic Modification



Selection Parameters of the SCM CS Material Master Tab

2.3 Advanced Options Tab



2.3.1 The First Area of the Advanced Options Tab

In the first area of the **Advanced Options** tab, the source for the service level is defined. The service level is a percentage that specifies which portion of the upcoming demand is to be covered by warehouse stock. The higher the service level, the higher the safety stock and reorder point quantities (and associated costs) generally are.

When specifying the service level, you can choose between three different sources:

- Classification interval

  > ⓘ Note
  >
  > When you choose the classification interval, the interval is specified by the system and depends on the ABC classification of the material. For A materials, an interval of 95–99% is simulated; for B materials, the interval is 90–98%; and for C materials it is 85%–95%. For materials with no ABC classification, a service level of 90% is simulated (no interval consideration).

- Transfer service level from material master
  If the *From MM* radio button is selected, the *Service level* field in the material master (view: MRP 2) is checked. If this field is maintained, the system uses the corresponding value in the calculation. However, if no value is found for the service level in the material master, the system uses the global value.
- Specification of a global value
  When specifying a global value, values between 50% and 99.9% are allowed.

2.3.2 The Second Area of the Advanced Options Tab

During the SL-optimization, the safety stocks and reorder points are calculated using only one method, in contrast to the scenario simulation. You select the method in the second area of the *Advanced Options* tab.

You can choose from three or four options, depending on the analysis level you select.

- *ERP Method*
- *Opt. ERP Method*
- *Advanced Method*
- *Maximum Period Consumption Method* (available only if the *storage location* analysis level is selected)

2.3.2.1 *ERP Method*

This is the standard method from the SAP ERP system.

2.3.2.2 *Opt. ERP Method*

The optimized ERP method is an enhanced version of the standard ERP method. In contrast to the standard ERP method, the optimized ERP method determines the safety factor more precisely. This is achieved by using a normal distribution table.

Related Information

Determination of the Safety Factor

2.3.2.3 *Advanced Method*

In addition to the absolute forecasting error values of the demand (MAD) mapped by the standard ERP method, the advanced safety stock method also includes relative forecasting error of demand as well as replenishment lead time (MAPE) in the calculation.

By so doing, it addresses a frequently expressed criticism of the standard ERP method; namely, the fact that the replenishment lead time with the standard ERP method is assumed to be a constant and not to be subject to uncertainty.

MAPE degrees of variation in demand and in replenishment lead time can be specified as percentages for the advanced method. This is useful for meeting the following requirements:

- Entry of externally determined degrees of variation, for example, from Excel sheets.
- Simultaneous simulation of many materials with very different consumption values, but similar degrees of variation.

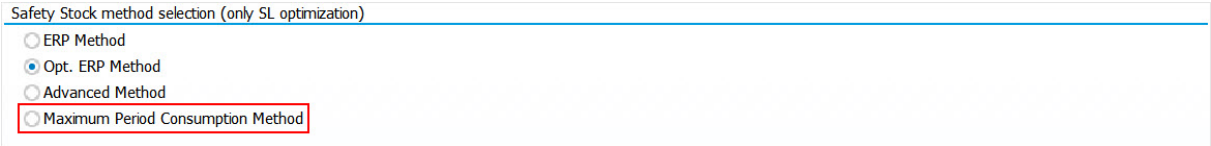
> ⓘ Note
>
> Relative forecasting error of demand and replenishment lead time (MAPE):
>
> The relative forecasting error (MAPE) for the demand considers relative changes in consumption during the last periods.
>
> The relative fluctuation of the replenishment lead time can be expressed by an additional MAPE value. As a result, the variance in the replenishment can be included in the calculation. The optional solution **Replenishment Lead Time Monitor** is used to determine realistic RLT values from actual documents.

Related Information

Documentation for Replenishment Lead Time Monitor

2.3.2.4 *Maximum Period Consumption Method*

The maximum period consumption method is visible for selection on the *Advanced Options* tab only if you have selected the analysis level *storage location* on the *General* tab.

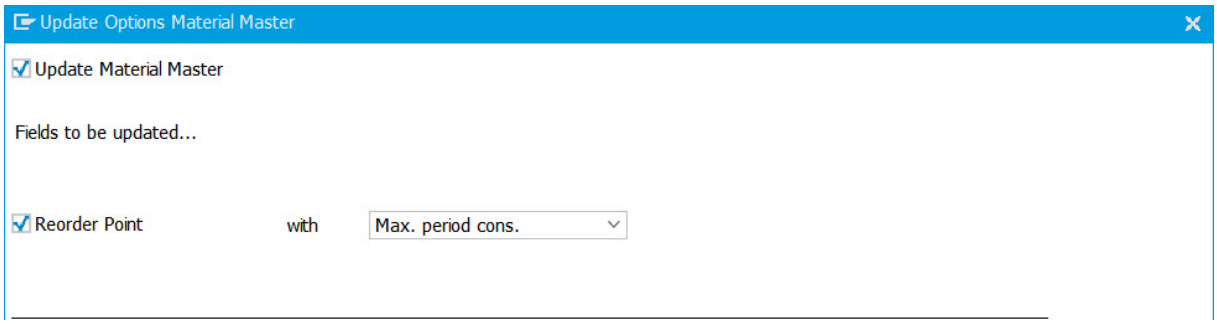


"Maximum Period Consumption Method" Selection Option

When the maximum period consumption method is used, the highest demand that has occurred during the analysis period is transferred to the result of the safety stock calculation as the reorder point.

If you want to save the result of the maximum period consumption method (maximum period consumption) in the scenario simulation, you need to select the corresponding option in the dialog box after choosing the *material master update* pushbutton.

> **Note**
>
> You can select the maximum period consumption method only if you have selected storage location as the analysis level.



Selection of the Maximum Period Consumption

2.3.3 The Third Area of the Advanced Options Tab

In the third area, you define how the dispersion measure that is used as a degree of uncertainty in the safety stock calculation according to the ERP method is to be determined. The dispersion measure, referred to as the MAD value (**M**ean **A**verage **D**eviation), deals with the dispersion of the demand of a material within the analysis period.

The deviation of demand is measured as an absolute forecasting error (MAD). The absolute forecasting error can be determined in four different ways:

- Calculate using consumption values of the select periods, otherwise search in material master.
- Search in material master, otherwise calculate using period values.
- Read the value from the **enhanced material master view** (*SCM CS*), otherwise, calculate using period values. (For more details, see the comprehensive functions documentation.)
- Using a fixed value

If the first three MAD determination rules do not yield a MAD value, the fixed MAD from the corresponding input field is used.

When calculating the MAD value using values of the selected periods (based on a constant model), the accrued consumption values are considered and a degree of variation is calculated from them. This fluctuation is then included in the safety stock calculation.

This calculation type is suitable for companies that do not use a forecast (and therefore have no MAD value defined in the material master). The constant model assumes that the consumption situation does not change.

Example

Calculation example:

Period	Usage/Period	Ø Usage/Period	Deviation/Period
2016-01	2112	2422	310
2016-02	3186	2422	764
2016-03	2085	2422	337
2016-04	2007	2422	415
2016-05	3996	2422	1574
2016-06	1210	2422	1212
2016-07	2588	2422	166
2016-08	3321	2422	899
2016-09	1131	2422	1291
2016-10	2480	2422	58
2016-11	2863	2422	441
2016-12	2085	2422	337
Sum	29064		7804
Average consumption	29064/12 = 2422		
Mean deviation/period	7804/12 = 650.33		

2.3.4 The Fourth Area of the Advanced Options Tab

In the fourth area, you make settings for the calculation of safety stocks according to the optimized ERP method.

You can choose the degree of uncertainty from the following options:

- MAD
- MAPE
- Standard deviation

You can also specify that a special case indicator is to be used as an additional constant in the formula for safety stock determination.

Related Information

Documentation of **SCM Consulting Solution comprehensive functions**
Documentation of SCM Consulting Solution replenishment lead time monitor
Formulas Used [page 76]

2.3.5 The Fifth Area of the Advanced Options Tab

In the fifth area, you make settings for the calculation of safety stocks using the enhanced method.

You can choose the degree of uncertainty from the following options:

- MAD
- MAPE
- Standard deviation

> **Note**
>
> The selection option described above refers to the consideration of an degree of uncertainty for the consumption/forecast values. To take the uncertainty of the replenishment lead time into account, the MAPE value of the replenishment lead time is always used as the uncertainty factor in the enhanced method. You can either use the value from the SCM CS view of the material or specify a fixed value.

> **Note**
>
> In addition to the degree of uncertainty, the fifth area contains further settings options. For example, you can take a special case indicator into account as an additional constant when calculating the safety stock. It is also possible to calculate the MAPE value of the forecast.
>
> The lower section of the fifth area also contains configuration options that are used to calculate safety stocks according to the advanced multilevel safety stock calculation. This is a further development of the

advanced (single-level) safety stock calculation, which can take into account other uncertainty factors such as scrap and stock accuracy, in addition to the multilevel nature of a product. Here, you define whether the replenishment lead time is to be taken into account on a simple or advanced basis (for details on the formula parameters used, see Formulas Used [page 76] (customer access only)), and whether other uncertainties are to be taken into account.

Related Information

Formulas Used [page 76]

2.3.6 The Sixth Area of the Advanced Options Tab

In the sixth area, you can enter a multiplier, which is multiplied by the safety factor to give the factor R. The default value for the multiplier is 1.25. The factor R is used with the advanced method and with the optimized ERP method to calculate the safety stocks (for details, see the **Formulas Used** chapter).

Related Information

Formulas Used [page 76]

2.3.7 The Seventh Area of the Advanced Options Tab

In the seventh area, you select the data source for the replenishment lead time (RLT). There are ten options:

- The RLT is calculated by the program using the material master data and the formulas from section Formulas Used [page 76].
- The value of the parameter *RLT Accelerated (KT)* in the **enhanced material master view** is used as the RLT.
- The RLT is read from the **enhanced material master view**.
- The decoupled RLT is read from the **enhanced material master view**.
- The source defined in the parameter *Source RLT* of the **enhanced material master view** is used for the RLT.
- The source defined in the parameter *Source Decoupled RLT* of the **enhanced material master view** is used for the RLT.
- The total replenishment lead time is taken from the material master.
- A predefined fixed global RLT is it used for materials.
- The minimum supplier RLT is used.
- The minimum of all RLTs from the sources 1–4 Is used as RLT for the safety stock/reorder point calculation.

Related Information

Documentation of **SCM Consulting Solution comprehensive functions**
Formulas Used [page 76]

2.3.8 The Eighth Area of the Advanced Options Tab

In addition to enabling you to select the source for the replenishment lead time, the eighth area gives you the option of including an ordering/production interval when determining the safety stocks/reorder points. Including an interval of this kind can be useful if, for example, you can only order a product at defined intervals, or if production of a product (in the case of in-house production) can only be performed at specific intervals.

> Example
>
> We consider a week with 7 days. Product A – which is produced in house – has an RLT of 2 days and can always be put into production on day 1 of the relevant week. If product A is put into production on day 1, then it is available on day three. If there is no demand for the product on day 1 of the current week, then the production slot is filled by another product (product B), and it is not possible to produce product A until day 1 of the following week.
>
> If you do not now include the ordering/production interval, the system may calculate a result in which the reorder point is reached on day 2 and the safety stock on day 4. On day 6, the stock threatens to run out. However, because day 1 was missed, you must wait another week and cannot put another batch into production until day 1 of the following week.

If the ordering/production interval is included, reorder points and safety stocks are dimensioned accordingly so that you can bridge an entire ordering/production interval cycle with no missing quantities.

If you decide to include an ordering/production interval, you therefore have two options for determining the interval:

Either it is read from the **enhanced material master view** of the material. Or you enter a global value directly, which can then be used in the calculation.

2.3.9 The Ninth Area of the Advanced Options Tab

For lot-size-dependent replenishment lead time, you can select one of three options for the data source in the ninth area:

1. Read the base quantity from the material master.
2. Read the lot size from the **enhanced material master view**

   > ⚠ Caution
   >
   > In the **enhanced material master view**, the *SSS relevant* checkbox must be set in the *Lot Size* area

3. You use a global value for the lot size.

2.3.10 The Tenth Area of the Advanced Options Tab

In the tenth area, you can specify consideration of interval limits for the safety stock that is to be updated. You have the option of considering both an upper (maximum) and a lower (minimum) limit for the safety stock.

This can make sense if you want to specify a particular corridor for the safety stock results.

> Example
>
> If you have activated consideration of the minimum safety stock, and the calculated result is below the minimum safety stock, then the result is set to the minimum safety stock when the update is performed.
>
> Similarly, the safety stock is set to the maximum safety stock if you have activated consideration of the maximum safety stock, and the calculated result is greater than the maximum safety stock.

As data sources for the upper and lower limit, you can specify the respective **enhanced material master view**. Or you can enter a globally valid value directly.

2.3.11 The Eleventh Area of the Advanced Options Tab

In the eleventh area, you make settings for the safety stock determination according to the demand-driven planning method. These settings are only relevant for scenario simulation. During the safety stock determination according to the demand-driven planning method, the three parameters **Lead Time Factor Green**, **Lead Time Factor Yellow**, and **Variability Factor** are used. For these three parameters, you can define in the tenth area whether the respective value of the parameter from the **enhanced material master view** of the material is read, or if a global value is to be used. When you use a global value, you enter the global value to be used for the calculation on the entry screen.

The green zone is determined using three initial values:

1. Yellow x lead time factor green
2. Average demand x purchase order/production interval
3. The minimum lot size

The largest value of these three initial values becomes the green zone. For the minimum lot size, you can intervene to control the determination. You can either adjust the value determined from the material master (absolute or percentage) or specify a global value.

Related Information

Formulas Used [page 76]

2.3.12 The Twelfth Area of the Advanced Options Tab

In the case of rolling RLT consumption, a window the length of the replenishment lead time is set over the analysis period. Starting from day 1, the window is gradually shifted by one (calendar) day at a time until the end of the analysis period has been reached. For each analysis step, you therefore receive the consumption in this analysis period. The system then sorts the consumptions in descending order and assigns a percentile value, which is calculated by determining the percentile value per day (100% / number of days) and then adding up the percentile values of the periods with a lower consumption and the percentile value of the particular period.

The percentile limit specified in the eleventh area determines which consumption is used to calculate safety stocks based on the rolling RLT consumption.

Example

Number of the time window	Start (CD of period)	End (CD of period)	Rolling RLT consumption	Cumulative period share in %
12	12	21	270	100.0%
13	13	22	261	94.7%
11	11	20	260	89.5%
14	14	23	252	84.2%
10	10	19	250	78.9%
15	15	24	243	73.7%
9	9	18	240	68.4%
8	8	17	230	63.2%
16	16	25	224	57.9%
7	7	16	210	52.6%
17	17	26	205	47.4%
6	6	15	190	42.1%
18	18	27	186	36.8%
5	5	14	170	31.6%
19	19	28	167	26.3%
4	4	13	160	21.1%
3	3	12	150	15.8%

2	2	11	140	10.5%
1	1	10	130	5.3%

Example

For a percentile limit of 80%, in the above example, a consumption of 252 would be used to calculate the safety stock based on the rolling RLT consumption.

2.3.13 The Thirteenth Area of the Advanced Options Tab

The thirteenth area contains the configuration options that are used when following a theory of constraints approach. Here you can extend the calculation of proposed adjustments within dynamic adjustment to include materials whose dynamic modification mode is set to *Manual* and/or whose dynamic modification horizon is still active.

2.3.14 The Fourteenth Area of the Advanced Options Tab

The fourteenth area focuses on specifying the source for the risk factor when calculating the safety time.

There are a total of two risk factors:

1. *RLT risk factor*
2. *MAD RLT risk factor*

When you select the source of the risk factor, you have the following options:

- *Plant specific:* You can configure the risk factors for each plant via the Customizing transaction */SAPLOM/SSS_SAFETIME*.
- *Material specific:* The risk factors can be defined in the **enhanced material master view**.
- *Global value:* You can also enter the risk factor directly as a global value on the screen.

In addition to selecting the source for the risk factor, you can also select the desired method for calculating the safety time. You have the choice between the RLT method, the safety time according to MAD RLT method, or the safety time according to the RoC method.

The formulas for calculating the safety time according to the respective methods are as follows:

Formula for Safety Time According to the RLT Method

Safety time according to the RLT method = RLT in calendar days * risk factor RLT / 100

Formula for Safety Time According to the MAD RLT Method

Safety time according to the MAD RLT method = MAD RLT * risk factor MAD RLT / 100

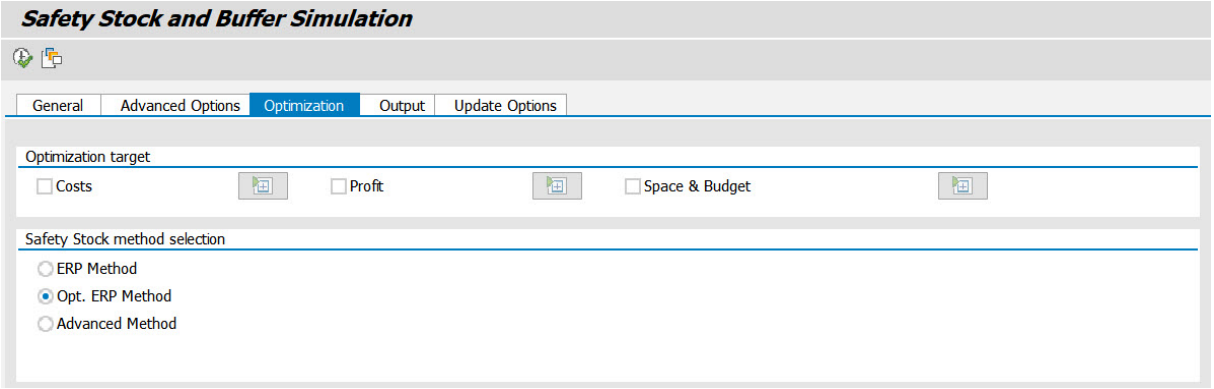
For the selection option **safety time according to the RoC method**, you can choose between the following methods:

- ToR demand-driven planning method
- ToY demand-driven planning method
- Safety stock ERP method
- Reorder point ERP method
- Safety stock optimized ERP method
- Reorder point optimized ERP method
- Safety stock advanced method
- Reorder point advanced method

2.3.15 The Fifteenth Area of the Advanced Options Tab

The fifteenth area includes the settings options for rounding. In addition to the results of the safety stock and reorder point calculation, there is also a separate settings option for the ADU (Average Daily Usage) value. The results (or the ADU value) can be rounded up, down, or to two decimal places.

2.4 Optimization Tab



Optimization Tab

The third tab (*Optimization*) includes the configuration options for SL optimization as well as for the SL optimization of exception groups. You can select the optimization goal according to which the service level is to be optimized.

Various configuration options are available for each optimization goal, which you can show and hide by choosing the button to the right of the optimization goal.

The optimization of exception groups is a special form of cost-based optimization. Therefore, when you select the simulation type "Optimization of Exception Groups" (on the "General" tab), the optimization goal "Costs" is preselected and cannot be changed.

2.4.1 Cost-Based Optimization

Configuration Options for Cost-Based Optimization

2.4.1.1 First Area of Cost-Based Optimization

In the first area, you can make various basic settings for the SL-optimization. You can always select between two alternatives in each case. For example, you can decide whether SL-optimization is to be performed using normal distribution or equal distribution. You can also choose whether the specification of the optimization corridors/target values should refer to main groups or subgroups. In addition to these and other basic settings, you can also define the incremental optimization and the tolerance value for the target service level.

2.4.1.1.1 Extreme and Uniform Distribution

In the first line, you have the option of deciding on one of the two service level (SL) distribution methods.

- The *Extreme Distribution* method aims to distribute the SL so as to achieve an inventory optimized effect.
- The *Uniform Distribution* method, in contrast, aims to distribute the SL so that they are distributed as uniformly as possible across the materials.

2.4.1.1.2 Main Groups and Subgroups

In the second line, you can choose optimization by *MainGroups* or *Subgroups*.

In the third line, you also have the option of choosing between optimization by *ABCD-MainGroup* or by *XYZN-MainGroup*. The settings in lines two and three are related and are always considered together.

Depending on the selection in the two lines, you enable either the *ABCD-/XYZN-MainGroup* or the *AX*, *BX*...*DC*, *DN* subgroups for entries.

2.4.1.1.2.1 Main Groups

Main group optimization is an optimization of the SL using groups A, B, C, D, or X, Y, Z, N. This means that, for each group, you must specify a target service level (*Target-SL*), a minimum service level (*Min-SL*), and, when you select the complex variation, a maximum service level (*Max-SL*). The system then selects all materials by group and internally links them to the target, minimum, and, if appropriate, maximum service level of the respective group.

2.4.1.1.2.2 Subgroups

Subgroup optimization is an optimization of the SL according to the groups AX, BX, CX, DX, AY, BY, CY, DY, AZ, BZ, CZ, DZ, AN, BN, CN, DN.

This means you must specify a target service level, a minimum service level, and, if you select the complex variation, a maximum service level for each group. The system then selects all materials by group and links them internally to the target, minimum, and, if appropriate, maximum service level of the respective group.

The advantage of the subgroup optimization is that it enables you to enter more precise service level intervals. However, the time and effort involved is greater than with main groups.

Within the groups, the SL-optimization is intended to ensure an average service level in the amount of the theoretical target service level. The target service level refers to the group. This target service level, as the average service level, is achieved by varying the service levels of individual materials above or below the target service level.

In the fourth line, you can choose between two optimization variants:

- Simple Variation
- Complex Variation

2.4.1.1.3 Simple Variation

In simple variation, the SL of a material can be increased only once by the value defined in Customizing (maximum step). If the increase results in the theoretical maximum SL of 99.9% being exceeded, the service level of the material cannot be increased further. In this case, and, in the event of the average SG not yet being reached, the SL of at least one other material must be increased. The variation ends once all the materials in a group have been processed.

2.4.1.1.4 Complex Variation

With complex variation, the Upper optimization limit is defined by the *Max.-SL* per group. This means that the service level of the lowest-priced material is increased using the value defined in Customizing until the *Max.-SL* or the average service level is reached.

If the *Max.SG* for the material has been reached, you must maintain the average SG for at least one other material within the group by increasing the SG using the step. For the last material to be optimized whose service level has been increased with the result that the average service level of the group is now exceeded, the increase is reduced by one percentage point at a time until the value is as close as possible to the average service level of the group. The variation ends once all the materials in a group have been processed.

In the fifth line, two ways of calculating the respective average service level are available:

2.4.1.1.5 Simple Averaging

Simple averaging is a simple calculation of the average between materials. Consequently, if one material has a service level of 96%, for example, and a second material has a service level of 90%, this yields an average of 93%. The consumption quantities of the materials are not relevant here.

2.4.1.1.6 Aggregation Using Consumption Quantities

Aggregation using consumption quantities uses the consumption quantities in the average calculation.

In the sixth line, you can specify the sort criterion within the variation. The sort criteria price and price * MAD are available for selection.

Related Information

Averaging [page 67]

2.4.1.1.7 Sort in Descending Order

Sorting in descending order is recommended for inventory-optimized distribution of the SL.

2.4.1.1.8 Sort in Ascending Order

Sort in ascending order is recommended for optimizing distribution of the SL by availability.

If you have selected uniform distribution in the first line (when choosing between extreme distribution and uniform distribution), you can choose two additional setting options in line 8 and line 9:

2.4.1.1.9 Step: Classification-Specific Maximum Step

The max. step is an indicator for the maximum number of iterations during the optimization process of uniform distribution.

The recommended value range for the maximum step is between 1 and 5.

You can define the maximum step in the system using transaction */SAPLOM/SSS_SL_CUST*:

Display View "Maintain Service Level Growth": Overview

Maintain Service Level Growth

ABC-XYZ indicator	ABC-XYZ indicator	SL growth	Max Steps	Tolerance SL
A		1	5,0	0,5
A	N	1	5,0	0,5
A	X	1	5,0	0,5
A	Y	1	5,0	0,5
A	Z	1	5,0	0,5
B		1	5,0	0,5
B	N	1	5,0	0,5
B	X	1	5,0	0,5
B	Y	1	5,0	0,5
B	Z	1	5,0	0,5
C		1	5,0	0,5
C	N	1	5,0	0,5
C	X	1	5,0	0,5
C	Y	1	5,0	0,5
C	Z	1	5,0	0,5
D		1	5,0	0,5
D	N	1	5,0	0,5
D	X	1	5,0	0,5
D	Y	1	5,0	0,5
D	Z	1	5,0	0,5
N		1	5,0	0,5
X		1	5,0	0,5
Y		1	5,0	0,5
Z		1	5,0	0,5

Customizing for Service Level Growth

2.4.1.1.10 Global Maximum Step

If you select the global maximum step, enter the value for the step directly on the screen.

2.4.1.1.11 Tolerance: Classification-specific Tolerance or Global Tolerance (only with Uniform Distribution)

The tolerance value is evaluated by the system after the SL distribution. If the group's target-SL plus/minus the tolerance value has not been reached, postprocessing is started.

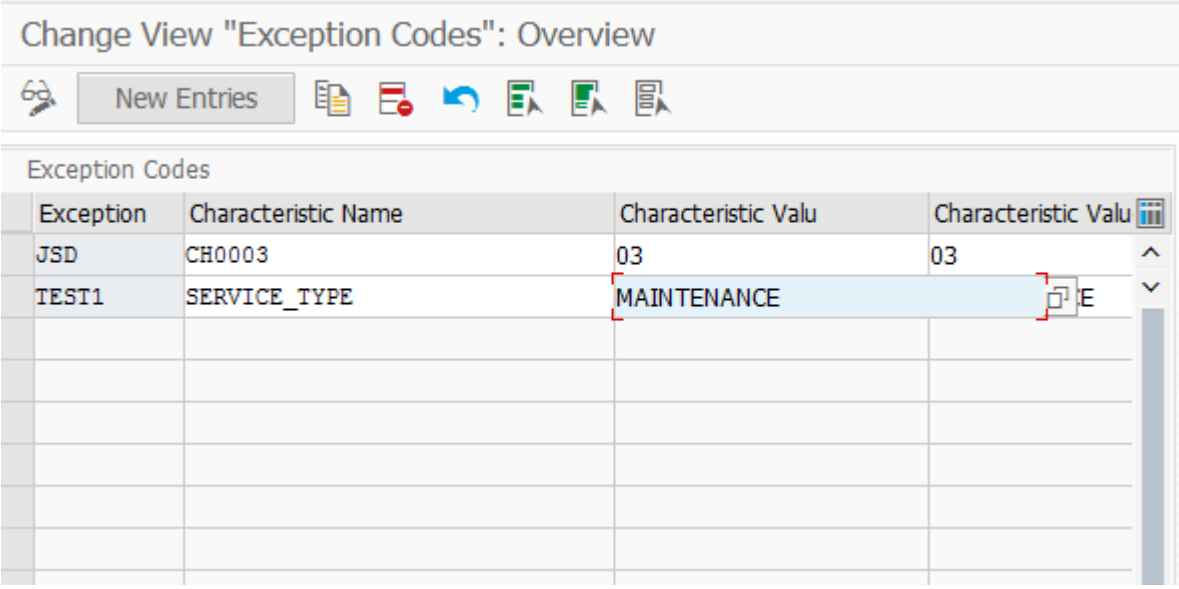
We recommend the following as a minimum value: 0.5.

You can also use transaction */SAPLOM/SSS_SL_CUST* to maintain classification-specific tolerance values.

2.4.1.2 Second Area of Cost-Based Optimization

The second area contains settings for the target corridor (minimum SL, maximum SL) and the target SL for the main groups and subgroups. Depending on the setting made in the basic settings, either the input fields for the main groups or the fields for the subgroups are ready for input.

In addition, you have the option of defining exception codes in the second area. An exception code consists of the attributes type – class – characteristic name, and characteristic value. To maintain exception codes, you must press the *Maintain Exceptions* button. This takes you to the following maintenance view:



Overview for Exception Codes

The individual columns of this maintenance view have interdependent F4 help options. This means that if you have selected class type "003", for example, the F4 help for the **Class** column displays only the classes belonging to this class type.

2.4.1.3 Third Area of Cost-Based Optimization

In the third area, you can now assign the exception codes that you maintained earlier to fixed service level values.

The data maintained in this way is then compared within the SL-optimization with the data stored in the *Classification* view of the material master (*MM03*).

In other words, all materials that correspond to an exception code entered in the Exceptions area are not optimized in a "normal" SL-optimization. Instead, a safety stock or reorder point value based on the fixed service level will be calculated.

In contrast, different system behavior is used for *SL-Optimization* of exception groups.

The results are filtered using the data source filter specification on the first tab as well as the exception codes, and are then optimized. The fixed serviced levels play no part here and are therefore not ready for user input.

2.4.1.4 Fourth Area of Cost-Based Optimization

In the fourth area, you finally select the forecast data source for the SL optimization. You can choose from the following data sources:

- Material forecast (table: *PROW*)
- Operations planning (table: *PGPL*)
- Planned independent requirements (table: *PBED*)

Because it cannot always be assumed that the selected forecast source includes values for every material, you can use the *If forecast values are missing use average consumption* checkbox to use the average consumption for simulation purposes in cases of this kind.

When you subsequently view the simulation result, the forecast source used is displayed for each material in the Forecast Value Source column, enabling you to also analyze which forecast source was actually used for the simulation.

> **Note**
>
> Before the SL-optimization can be started, you must maintain the service level growth table. You can maintain this table by calling transaction code */SAPLOM/SSS_SL_CUST*.

2.4.2 Profit-Based Optimization

Configuration Options for Profit-Based Optimization

The following configuration options are available for profit-based optimization:

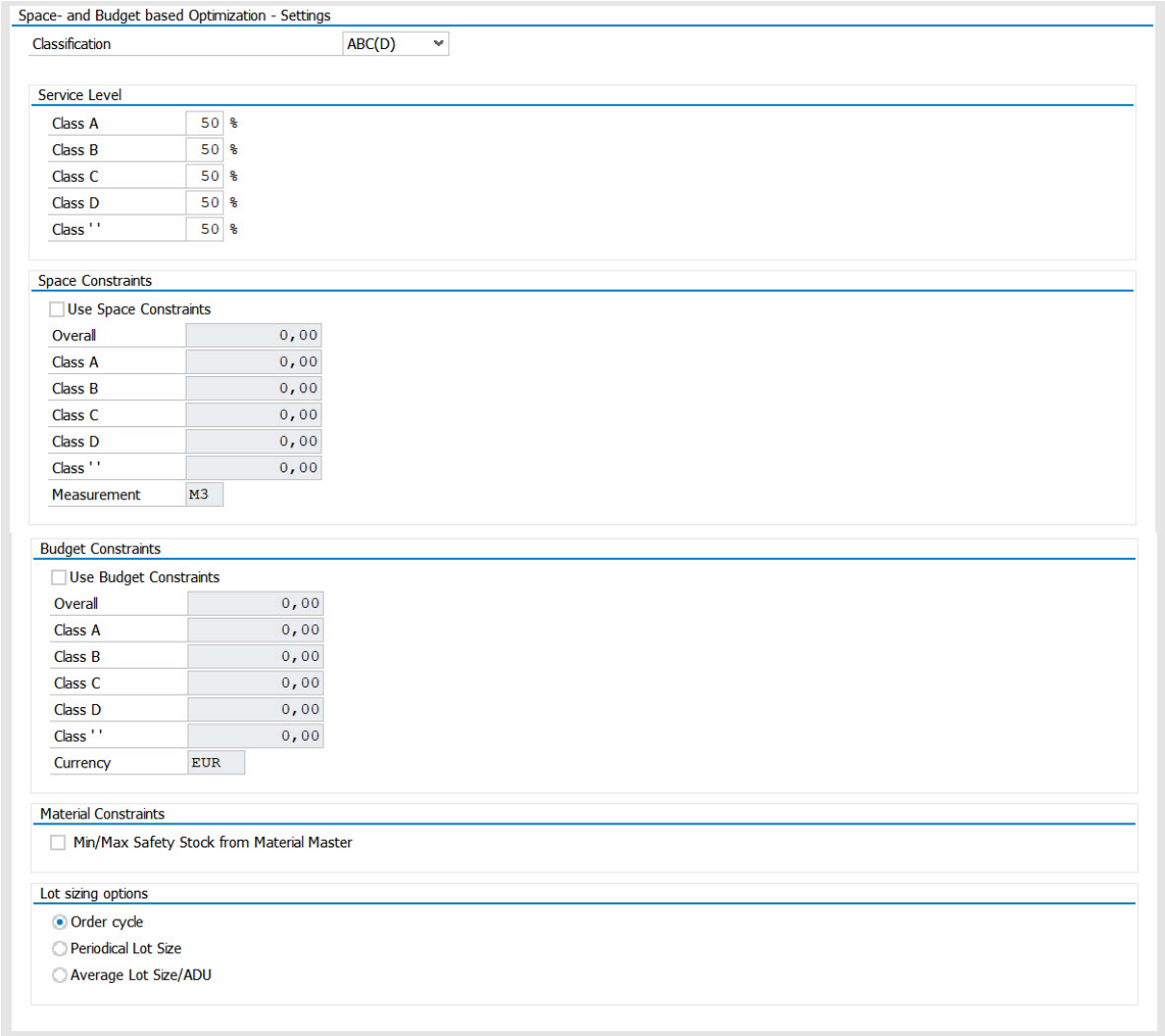
Calculation Method for Average Storage Duration

Here you can choose between the economic purchase order quantity and the average stock quantity.

Missing Quantity Multiplier

The missing quantity multiplier can either be read from the material master. Or you use a global value that you enter on the selection screen directly.

2.4.3 Space and Budget-Based Optimization



Configuration Options for Space and Budget-Based Optimization

The following configuration options are available for space and budget-based optimization:

Classification: The selected materials are divided into three or more groups for optimization. This can be done using the different classifications of the MRP monitor. For more information about the classification

backgrounds, see Classification 2 tab. For example, if the ABC(D) analysis is used, the selected materials are divided into five groups: A, B, C, D, and those materials with no value maintained for this classification in the material master.

Service Level: You can enter the desired service level for each group of materials.

Space Restrictions: These restrictions can be switched on and off. You can enter a general restriction and restrictions for individual groups. Also select the unit in which the restrictions are selected.

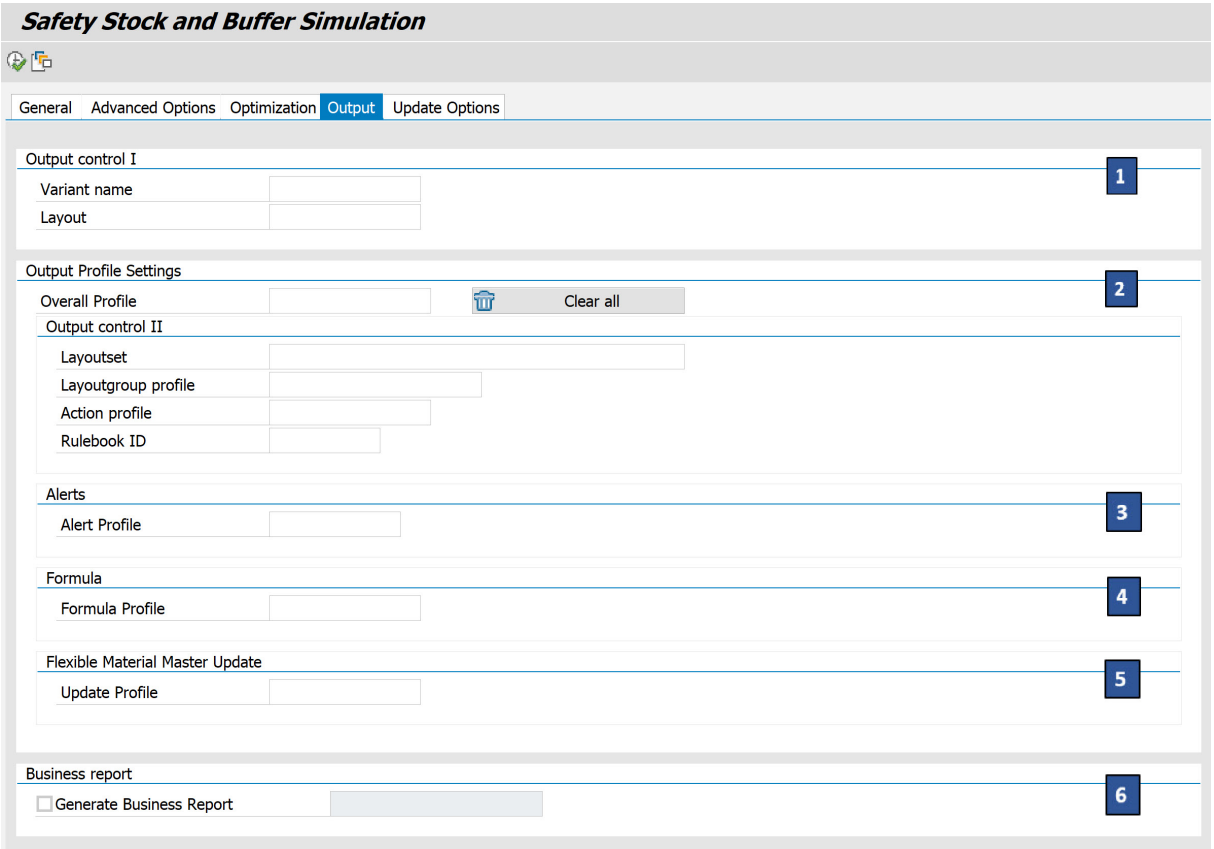
Budget Restrictions: These restrictions can be switched on and off. You can enter a general restriction and restrictions for individual groups. Also select the currency in which the restrictions are selected.

Material Restrictions: The minimum and maximum safety stock from the material master can be taken into account.

Lot Size Options: Choose between the options Order Cycle, Period Lot Size, and Average Lot Size/ADU.

2.5 Output Tab

Output options for safety stock and buffer simulation



Output Tab

2.5.1 The First Area of the Output Tab

The first area of the output tab contains the following output settings:

- Output variant
  If you have set the simulation type to *scenario simulation* on the *General* tab, you can specify an output variant for the result screen of the simulation scenario. If you have specified a variant for the output, the settings from this variant for the *General*, *Supply*, and *Demand* tabs are loaded from this variant and the corresponding settings on the result screen are preset according to the variant setting.
- Layout
  The layout refers to the results table of the result screen. If you have created a layout for this results table and saved it in the system, you can select it here. The results table is then displayed with the corresponding layout.

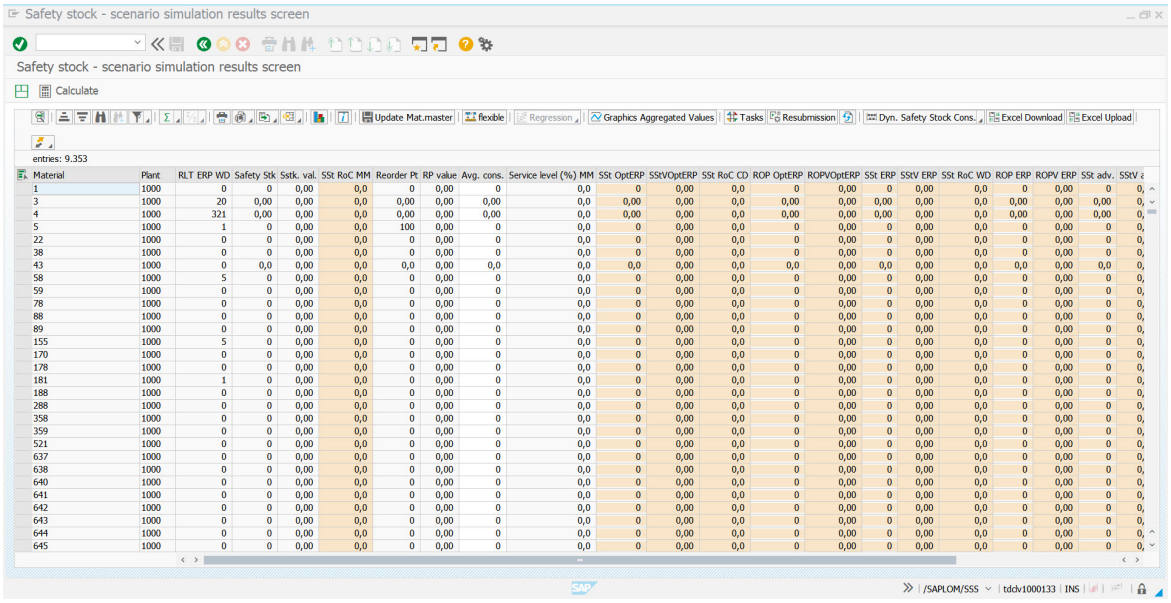
2.5.2 The Second Area of the Output Tab

Output Control

The second area of the tab includes settings options for output control that can either be set individually or all at once via an Output Profile. These settings options are relevant when you run the safety stock simulation and the buffer simulation online (or load an analysis that has been executed and saved previously).

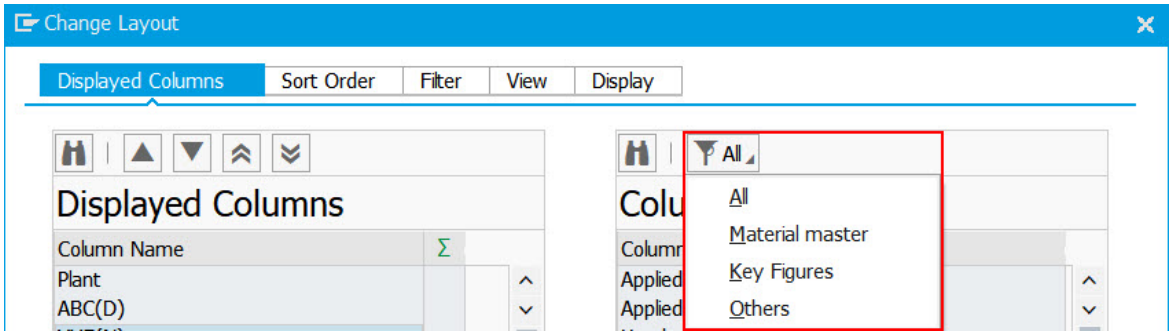
The following settings options are available:

- Layout set
  Layout sets are a grouping option for layouts. They are defined in the **comprehensive functions**. If you specify a layout set, a new area appears on the result screen along with the results table, in which the different layouts for the layout set are listed. You can then switch between different layouts easily by clicking the respective layout.



Result Screen of Scenario Simulation with Layout Sets

- Layout group profile
  Like the layout sets, the layout group profiles are also a function of the **comprehensive functions**. They are used to group together fields of the results table. If you have defined a layout group profile in the comprehensive functions, you can select it here.
  On the results screen, there is a button in the button toolbar that you can use to adapt the layout. If you select the option *Change Layout...*, a dialog box appears, which lists the displayed columns on the left and, on the right hand side, allows you to select columns from the column set that are also to be displayed.
  When you use a layout group profile, a dropdown list with the layout groups of the layout group profile appears on the right hand side above the column set. This allows you to switch quickly between groups and only display columns that belong to the selected group in the column set.



Change Layout Dialog Box with Layout Groups

- Action Profile
  The action profile defined here is applied to the results table of the results screen. For more information on the action profiles, see the comprehensive functions documentation.
- Rule Book ID
  The default system allows you to display specific information in the results table of the results screen. You define a rule book ID here for this purpose. For more information on Proposals Management, see the comprehensive functions documentation.

Related Information

Documentation on the **comprehensive functions**
Overview of **SCM Consulting Solutions**
Proposals Management

2.5.3 The Third Area of the Output Tab

In the third area of the Output tab, you can specify an alert profile. Alert profiles are a function of the **comprehensive functions**. For information about setting up an alert profile, see the comprehensive functions documentation.

If you have entered an alert profile in the corresponding input field, the safety stock and buffer simulation determines the alerts for this alert profile. The system outputs the alerts in the results table on the result screen.

Related Information

Documentation on the **comprehensive functions**
Overview of **SCM Consulting Solutions**

2.5.4 The Fourth Area of the Output Tab

In this area, you can enter a formula profile. Formula profiles are a function of the **comprehensive functions**. For information about setting up a formula profile, see the comprehensive functions documentation.

You can use formulas to calculate your own key figures within the safety stock and buffer simulation. You can then save the results of these calculations both in the standard parameters of the material master and in the SCM CS views.

Related Information

Documentation on the comprehensive functions

2.5.5 The Fifth Area of the Output Tab

On the results screen of the scenario simulation, you can choose the relevant button to call a flexible material master update dialog. Depending on the selected update profile, different update options are available. You can select the update profile in this area of the Output tab.

Related Information

Documentation on the Comprehensive Functions
General Report Folder

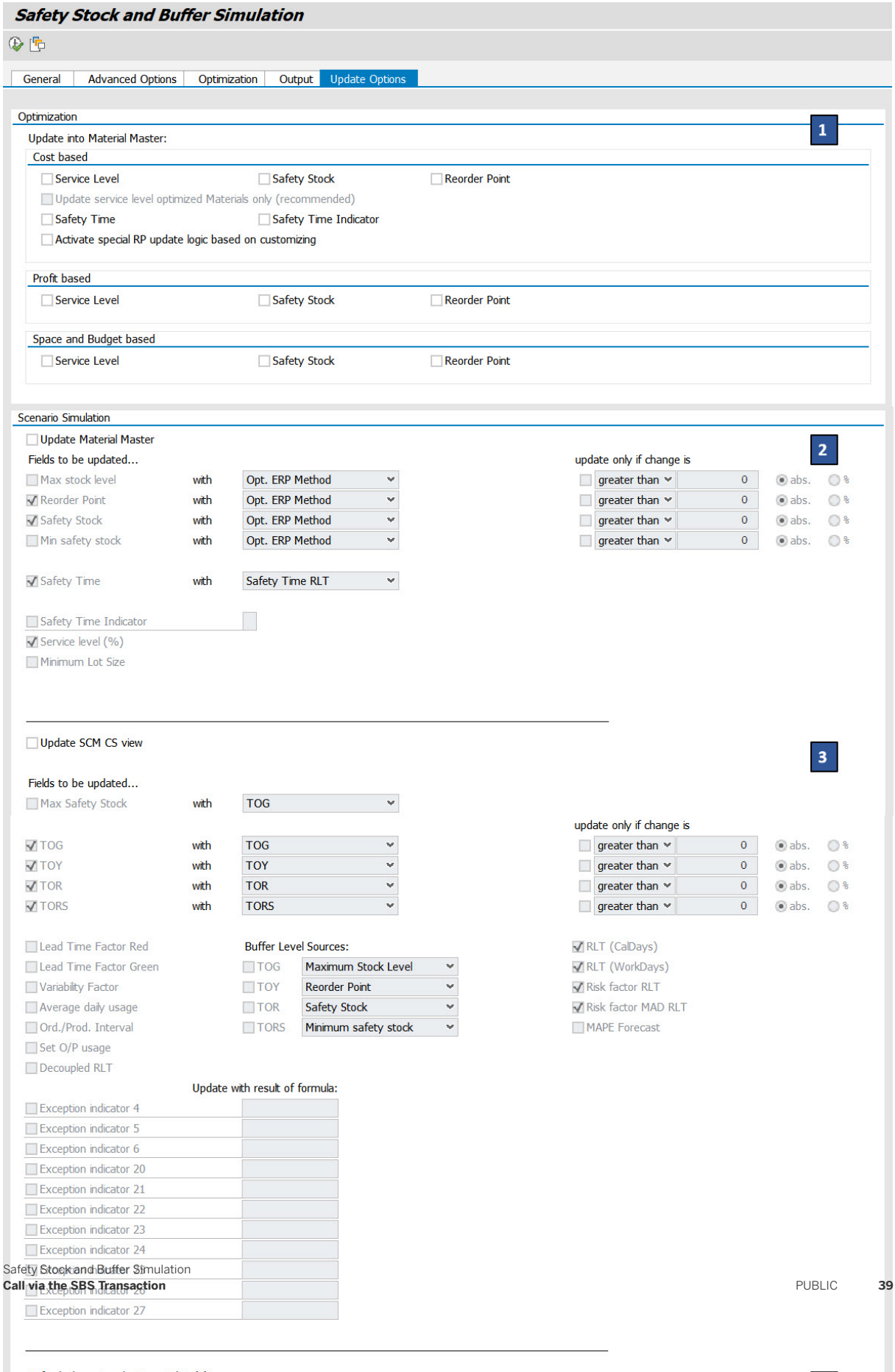
2.5.6 The Sixth Area of the Output Tab

If you want to store the result of the safety stock and buffer simulation in an Excel file, you can use the report folder function. In the fourth area, you activate report folder creation and enter the name of the report folder to be created. For more information on the report folder function, see the **comprehensive functions** documentation.

Related Information

Documentation on the Comprehensive Functions
General Report Folder

2.6 Update Options Tab



The fourth tab (*Update Options*) contains the configuration options for saving the results of the **safety stock and buffer simulation** in the material master and the SCM views.

2.6.1 The First Area of the Update Options Tab

The first area of the *Update Options* tab contains the settings options for updating parameters in the material master for the simulation type *SL-Optimization* or *SL-optimization of exception group(s)*.

Here you can decide whether you want to transfer the results calculated for the service level (table field: *MARC-LGRAD*) and/or on the basis of the reorder point and the safety stock (after the ERP method or advanced methods) in the material master as static reorder point or safety stock (table fields: *MARC-EISBE, MARC-MINBE*).

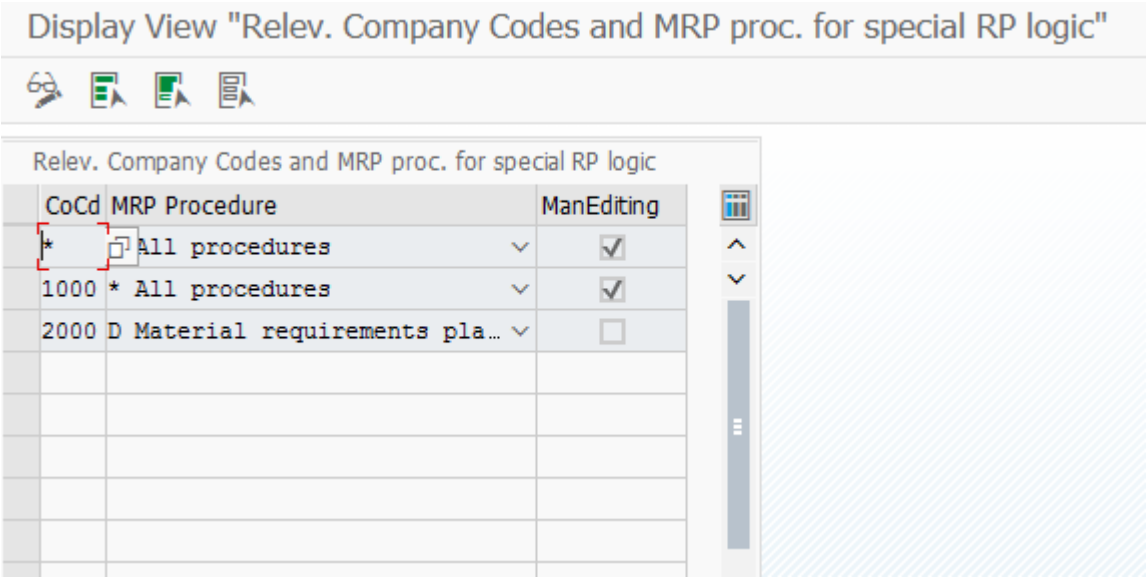
If you use cost-based optimization, you can also select that only the results for SL-optimized materials are to be transferred to the material master.

With cost-based optimization you also have the option of transferring the safety time calculated by the system as well as the safety time indicator to the material master.

The final setting in the sixth area relates to the special reorder point update logic that you can activate. This setting relates not only to the two SL-optimization options, But also to the scenario simulation and is therefore the exception mentioned above.

With the special reorder point update logic, the calculated reorder points are transferred to the material master as safety stocks; in other words, reorder point and safety stock have the same level in this case.

If this option is activated, the settings are read from a Customizing table. You can make the settings using transaction */SAPLOM/SSS_SPECRP*.



Calling up Transaction /SAPLOM/SSS_SPECRP

In the maintenance transaction, you can maintain the entries with company code and MRP procedure for which the special reorder point logic is to be used . You can select specific entries and wildcards (*) for both

parameters. If multiple table entries match a use case when the analysis is performed, the most specific table entry is always selected.

The third parameter in the table concerns manual editing. If this option is activated, the result screen of the scenario simulation includes the option (for the entries for which the table entry from the maintenance table has been used) of updating the material master using the special reorder point logic for the corresponding row (in the result table) via a selection parameter.

> ⓘ Note
>
> If you execute the SL-optimization in online operation, then in contrast to the scenario simulation, the settings you make here are implemented immediately and the corresponding results are saved. Further interaction by the user is not required.

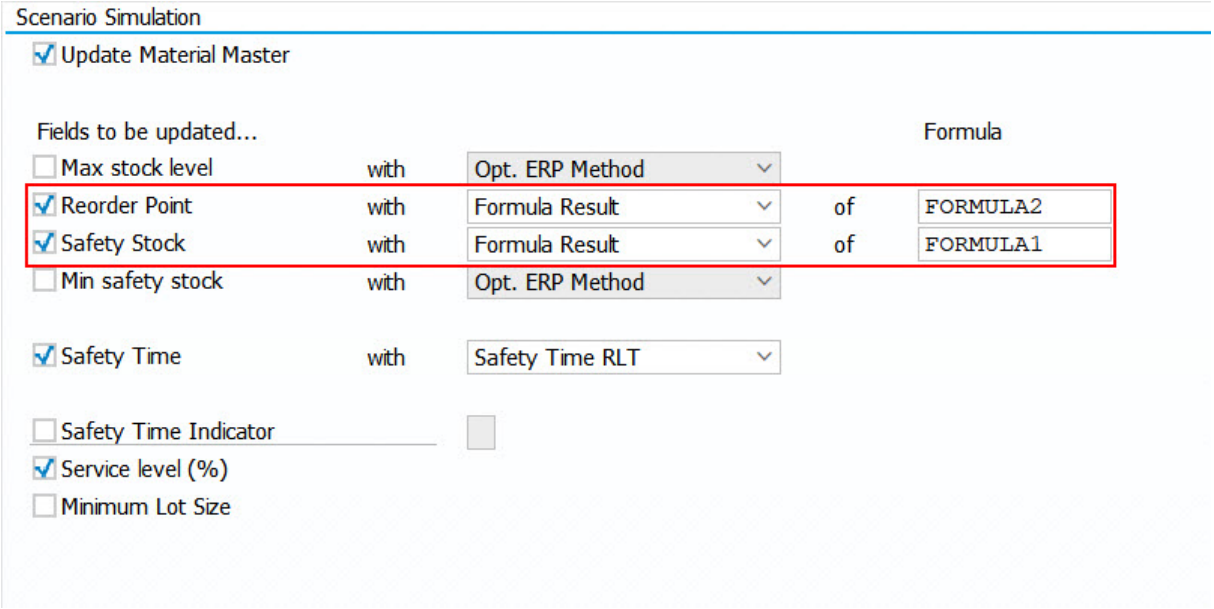
2.6.2 The Second Area of the Update Options Tab

In the second and third area of the Update Options tab, you specify which results of the scenario simulation are to be saved in which parameters of the material master and the SCM CS views when the safety stock and buffer simulation is executed in the background.

> ⓘ Note
>
> For some of the parameters, it is only possible to update changes to the parameter value if certain threshold values (absolute or percentage) are exceeded or not reached. If you want to use this option, activate this conditional update and set the threshold value as of which the corresponding parameter in the material master (or the SCM CS view) is updated if this value is exceeded or not reached.

The second area contains the configuration options for saving the results of the scenario simulation in the material master of the respective material.

> ⓘ Note
>
> For both the material master fields and the fields of the SCM CS views, you can update individual fields with the results of the formula calculation from the formula profile. First, select *Formula Result* in the selection options of the desired field. A new selection field is then displayed to the right of the selection field, in which you can specify the name of the formula whose result is to be written to the material master/SCM CS view field.
>
> Prerequisite: You have entered a formula profile in the *Formula profile* field on the *Output* tab.

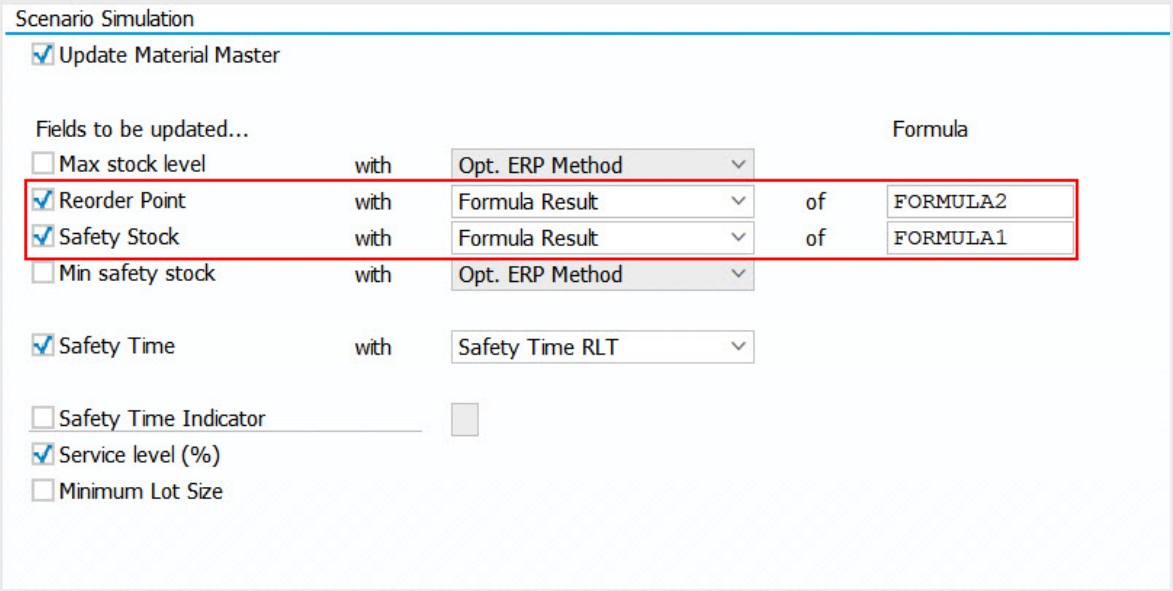


Example: Update of Safety Stock and Reorder Point with Formula Results

2.6.3 The Third Area of the Update Options Tab

The third area contains the configuration options for saving the results of the scenario simulation in the SCM views of the respective material.

> **Note**
>
> For both the material master fields and the fields of the SCM CS views, you can update individual fields with the results of the formula calculation from the formula profile. First, select *Formula Result* in the selection options of the desired field. A new selection field is then displayed to the right of the selection field, in which you can specify the name of the formula whose result is to be written to the material master/SCM CS view field.
>
> Prerequisite: You have entered a formula profile in the *Formula profile* field on the *Output* tab.



Example: Update of Safety Stock and Reorder Point with Formula Results

2.6.4 The Fourth Area of the Update Options Tab

In the fourth area, you define whether the start date values for the dynamic modification and the buffer level are to be updated during the dynamic adjustment. These settings apply to the update of material master parameters as well as to the update of parameters in the SCM CS views.

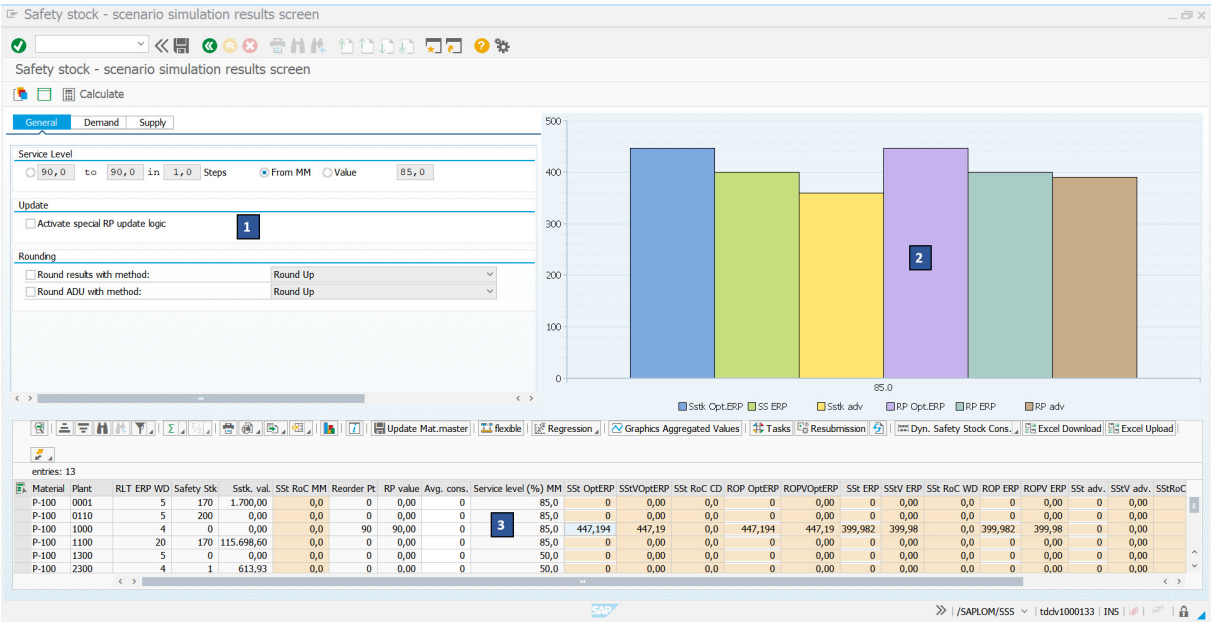
3 The Scenario Simulation

The scenario simulation gives you the option of performing the calculation of safety stocks and reorder points as well as various auxiliary key figures for different scenarios and checking the results on both the inventory and cost sides, without directly changing the safety stocks in the first step. The scenario simulation enables you to simulate the effects of various input values on the results of the safety stock calculation.

If you then find the appropriate input values, you can transfer the results of the simulation to the material master and/or the SCM CS views in a second step.

3.1 Structure of the UI of the Transaction

The result screen of the scenario simulation is divided into three areas: At the top left (area 1), there is an area in which you can influence various input values of the safety stock calculation. At the top right (area 2), the results of the safety stock calculation are displayed graphically. At the bottom of the screen (area 3), there is the tabular list of the results of the safety stock calculation.



Results for Safety Stock and Buffer Simulation

Related Information

First Area of Results for Safety Stock and Buffer Simulation [page 45]

Second Area of Results for Safety Stock and Buffer Simulation [page 45]

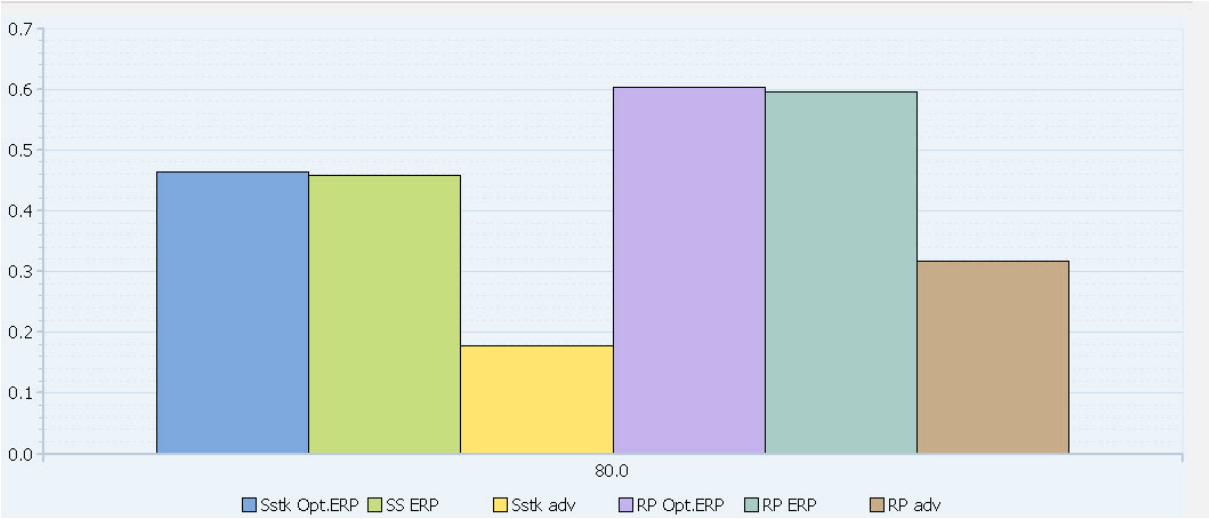
Third Area of Results for Safety Stock and Buffer Simulation [page 46]

3.1.1 First Area of Results for Safety Stock and Buffer Simulation

In the first area, you can use the three tabs *General*, *Demand*, and *Supply* to set the input data for the simulation.

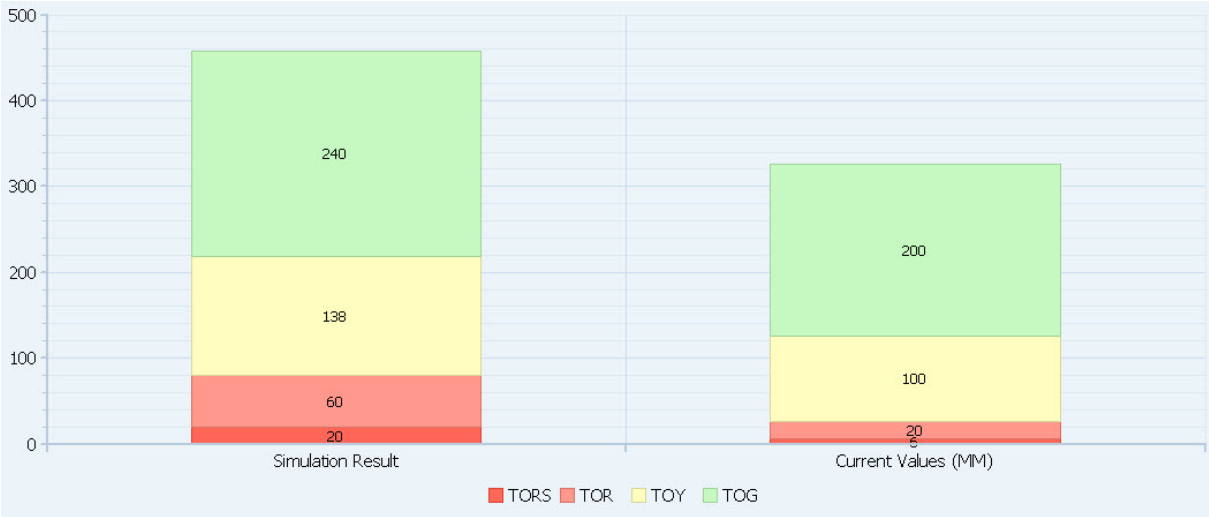
3.1.2 Second Area of Results for Safety Stock and Buffer Simulation

In the second area, the results of the safety stock calculation are displayed in graphical form. The results are displayed in graphical form, whenever required, for a line from area 3. To display the graphic, double-click a line in area 3. The simulation results for this line then appear as a bar chart.



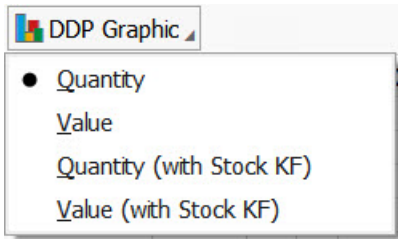
Safety Stock and Reorder Point Bar Chart

For materials whose MRP type is configured as relevant for demand-driven planning using the **Customized MRP Type** function, a stacked bar chart with the DDP key figures for this material appears instead of the simple bar chart.



Bar Chart: Top of.. Values (DDP)

You can switch between different display options for these graphics by choosing the *DDP Graphic* button.



DDP Graphic: Display Options

3.1.3 Third Area of Results for Safety Stock and Buffer Simulation

In the third area, the results of the scenario simulation are displayed in a table. In addition to the results calculated for e.g. the safety stock and the reorder point, other supporting key indicators such as the "safety days supply in days" are displayed for each of the calculated safety stocks and reorder points as well.

The key figure "safety days supply in days" provides an information on how high the days' supply of a calculated safety stock is. It is calculated by comparing the average consumption (or demand or other, depending on the data source) and static safety stock for the available safety stock methods.

A separate safety days' supply is calculated for each safety stock and displayed in a separate column .

In addition, the current safety days' supply is calculated based on the safety stock from the material master and displayed.

Some of the figures are directly editable in the table. Below you can find a list of the fields which are directly editable in the results table:

List of editable fields in the results table

Field description	Technical field name	Remark
Special Reord.Point Update	SPEC_RP_UPDATE	checkbox which can be set on line level for special reorder point update logic
Lead time factor green (%)	LFGGLV	
Lead time factor red (%)	LFRGLV	
Variability factor (%)	VAFGLV	
Minimum Lot Size	BSTMI	Only editable if options "Consider order/production interval" and "manual adjustment" are selected by user
Decoupled repl. lead time (CalDays)	WBZEKT	Only editable if option "manual adjustment" is selected by user
Ord./Prod. Interval	OPI	Only editable if options "Consider order/production interval" and "manual adjustment" are selected by user
Maximum Consumption	USG_MAX	Only visible and editable if "storage location" is selected as analysis level
Ø Consumption per Day	SCHNITG	
Safety Stock (Opt. ERP Method)	SBERP	
Reorder Point (Opt. ERP Meth.)	MBERP	
Safety Stock (ERP Method)	SB_SAPSTD	
Reorder Point (ERP Method)	MB_SAPSTD	
Safety Stock Advanced Method	SBAPO	
Reorder Point Acc. to Enhanced Method	MBAPO	
Safety Time RLT	BEDVORZEIT_WBZ	
Safety Time RLT MAD	BEDVORZEIT_WBZ_MAD	
Safety Time RoC Mtd	BEDVORZEIT_ROC	
Percentile (%)	PERCENTILE	

You can use the button with the disk icon in the header area of area 3 to save the results of the **safety stock and buffer simulation**.

When you choose the *Regression* button, regression analysis is performed for the material and the planning level of one of the rows you selected (and highlighted) earlier.

While the regression analysis always relates to one material/planning level combination, the *Graphics Aggregated Values* function gives you the option of considering multiple material/planning level combinations in aggregated form.

To do this, select one or more lines in area 3.

Pressing the *Graphics Aggregated Values* Button aggregates the safety-stock and reorder-point values of the selected rows and displays the results in a graphic.

Related Information

Regression Analysis [page 54]
Graphics Aggregated Values [page 57]

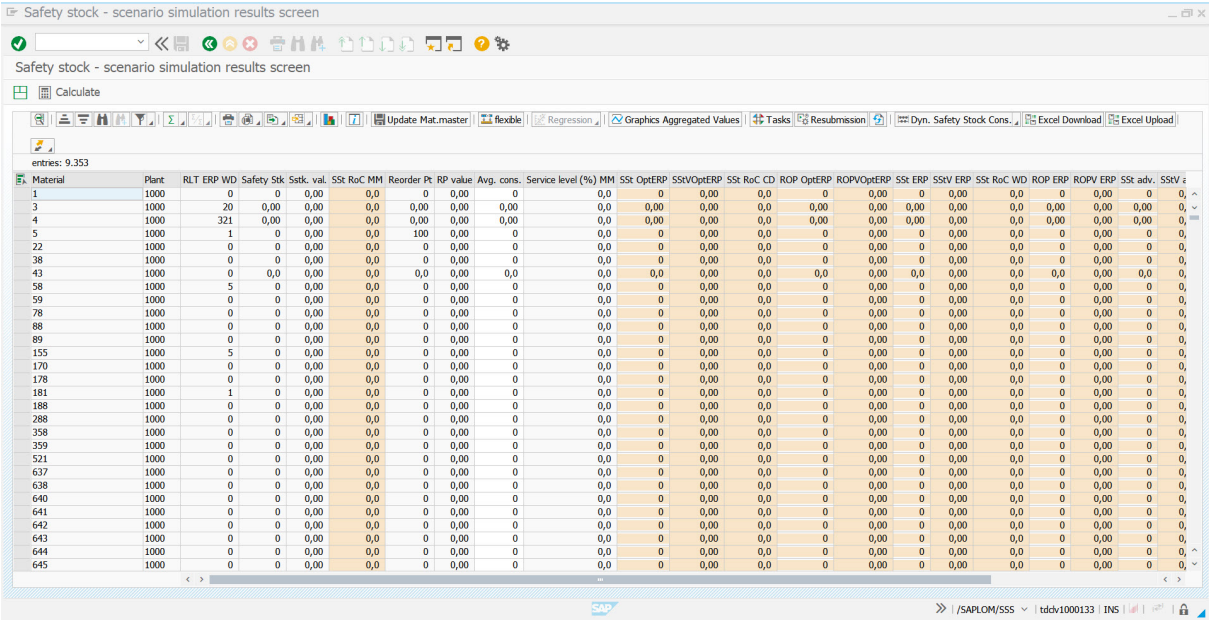
3.2 Performing a Simulation

The scenario simulation enables you to quickly and easily simulate different scenarios with various input parameters. The possible input parameters are spread across three tabs in the first area:

- *General*
- *Demand*
- *Supply*

If you have completed the parameterization of the input values, you can trigger a recalculation of the simulation results using the *Calculate* button in the button toolbar.

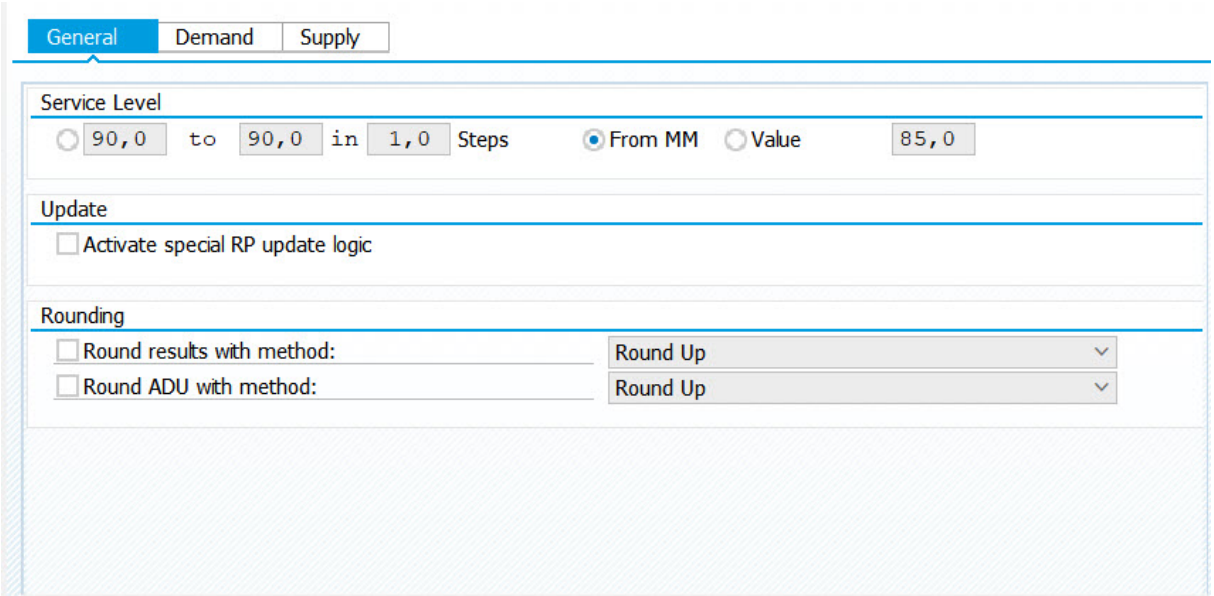
You can also switch to full-screen mode using the *Full Screen Mode* button, which is also in the toolbar. In full-screen mode, the results table is displayed on the entire screen. As a result, you see more entries on a screen. If you want to return to the normal screen, for example, to make further changes to the input values, choose *Normal Screen*.



Result Screen of Scenario Simulation Full-Screen Mode

3.2.1 General Tab

The *General* tab includes general settings.



General Tab

On the **General** tab, you can specify the source from which the service level is to be determined. You can either enter an interval, determine the service level from the material master, or specify a global value.

Automatic Preassignment of the Classification Interval

When the **safety stock and buffer simulation** is called via the **MRP monitor**, the service level is preassigned the following values, depending on the ABC indicator of the selected materials:

- A: 95-99
- B: 90-98
- C: 85-95

> **Note**
>
> The values are automatically preassigned only if materials that all have an identical *ABC indicator* were selected for the simulation. If the ABC indicators differ, 90% is used as the service level.

In addition to the service level, the automatic preassignment includes the MAPE of the demand. Depending on the XYZ indicators of the selected materials, the following values are used:

- X: 20
- Y: 30
- Z: 50

> **Note**
>
> The values are automatically preassigned only if materials that all have an identical *XYZ indicator* were selected for the simulation. If the *XYZ Indicators* differ, the MAPE of the demand is preassigned 35.

Further details of activating the special reorder point update logic can be found in section Saving the Simulation Results [page 59].

Rounding the Calculated Results

The final setting option on the *General* tab concerns the rounding of the calculated results and the average daily usage (ADU). If you decide to round the results and/or the ADU value, different rounding options are provided in the dropdowns.

Related Information

Saving the Simulation Results [page 59]

3.2.2 Demand Tab

On the *Demand* tab, make the settings for the degrees of uncertainty that are used in the individual methods for the safety stock calculation.

General | Demand | Supply

Uncertainty measures for Safety Stock calculation

ERP method

1

Determination of mean absolute deviation (MAD)

- (•) Calculate, O/W...
- ( ) Read MM, O/W calculate
- ( ) Read SCM CS view, O/W calculate
- ( ) Otherwise, use fixed MAD 0 Base UoM(s)

Optimized ERP method

2

- (•) MAD
  - (•) Calculate, O/W...
  - ( ) Read MM, O/W calculate
  - ( ) Read SCM CS view, O/W calculate
  - ( ) Otherwise, use fixed MAD 0 Base UoM(s)
- ( ) MAPE
- ( ) Standard deviation
- [ ] Use Exception Indicator 4 as additional constant

Advanced Method

3

- ( ) MAD
- (•) MAPE

MAPE of Demand (•) SCM View ( ) Global value 35 % ( ) Calculate

MAPE x
- (•) Average consumption
- ( ) Median of Demand
- ( ) Median of Forecast Error

- ( ) Standard deviation
- [ ] Use Exception Indicator 4 as additional constant

Advanced Multi-level Safety Stock Calculation

RLT uncertainty consideration:
- (•) Simple
- ( ) Advanced

Data source daily consumption:
- (•) Average material consumption per day (SCHNITG)
- ( ) Average daily usage (AVG_D_USAGE)

- [ ] Consider scrap uncertainty
  - (•) Standard deviation
  - ( ) MAD
- [ ] Consider inventory accuracy uncertainty
  - (•) Standard deviation
  - ( ) MAD
- [x] Consider Multi-level Backlog uncertainty

Factor R (Opt. ERP method and adv. method)

4

Factor R: Safety Factor x 1,25

In the ERP method, the MAD value is always used as the degree of uncertainty. You can define how this value is determined in the first area.

The second area offers you selection options for the degree of uncertainty that is used for the optimized ERP method.

Finally, the third area contains the setting options for the degree of uncertainty that is used in the enhanced method.

In area 4 you can also enter the factor that results in factor R when multiplied by the safety factor.

3.2.3 Supply Tab

The *Supply* tab contains the settings options for the replenishment lead time and the setting for determining the minimum lot size when calculating the green zone (demand-driven planning).

General | Demand | Supply

RLT SSt & ROP

RLT Source

1

Source:	Priority:
☑ Calculate	1
☑ Accelerated RLT SCM CS view	2
☑ SCM CS view	3
☑ Decoupled RLT	4
☑ Source RLT SCM CS view	5
☑ Source decoupled RLT SCM CS view	6
☑ Total RLT MM	7
☑ Minimum Supplier RLT	8
☑ Minimum of all available RLTs	9
☐ Fixed RLT 0 Day(s)	10

☐ Manual adjustment

Deviation of RLT ◉ Day(s) ○ %

Ordering/Production Interval

2

☐ Include Ordering/Production Interval (Opt. ERP; Advanced Meth.; DDP)

◉ Read SCM CS, O/W...

○ Manual adjustment

○ Use Global Value 7 ◉ abs. ○ %

Lot-size source for Lot-size dependent RLT:

3

◉ Read MM (Base quan.), O/W...

○ Read SCM CS, O/W...

○ O/W, use Global value 0

☐ Consider goods receipt processing time for inhouse production

RLT Settings for Advanced Method

4

MAPE of RLT ◉ SCM View ○ Global value 50 %

☐ Consider uncertainty of RLT explicitly

RLT Risk Factor & Safety Time

5

Risk factor:

◉ Plant specific

○ Material specific

○ Global value 0,0 %

Safety time:

◉ Safety Time RLT method

○ Safety Time MAD RLT method

○ Safety Time RoC method ToR DD Plg...

Demand-Driven Planning

6

Minimum Lot Size for calculation of Green Zone:

◉ Read MM

Adjustment Minimum Lot Size ◉ abs. ○ %

○ Manual adjustment

○ Use global value 0,000

To determine the replenishment lead time, you can choose from a total of 10 different sources in the first area.

The replenishment lead time (RLT) determined is always assumed to be constant. If you want to influence the RLT determined (for example, to take into account certain fluctuations in replenishment lead time or because you have not yet made certain adjustments in your master data), you have the option of using *Deviation of RLT* to enter a fixed number of days or a percentage value that influences the RLT determined.

If you enter a number of days, these are added to the RLT (positive value) or subtracted from it (negative value). If you enter a percentage, the RLT is multiplied by the percentage value; in other words, an entry of a 100 (%) does not influence the RLT. Entering a value greater than 100% results in a longer RLT; entering less than 100% shortens the RLT accordingly.

In the second area you can adjust the settings for taking the ordering/production interval into account.

Areas three (lot-size-dependent RLT), four (MAPE of the RLT), and five (risk factor and safety time) also concern settings options for the replenishment lead time.

In the sixth area you define the settings for calculating the green zone – a key figure in demand-driven planning.

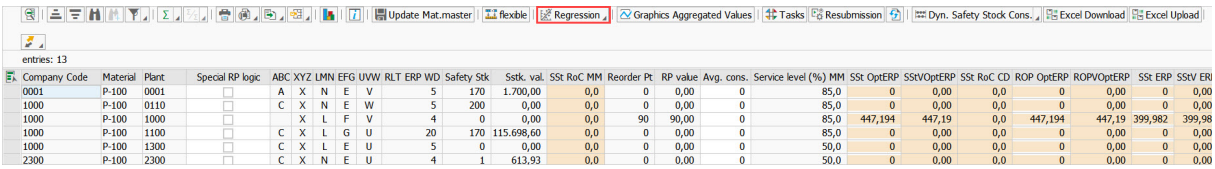
For more information about the settings options, see chapters General Tab [page 9] and Advanced Options Tab [page 15].

Related Information

General Tab [page 9]
Advanced Options Tab [page 15]

3.3 Regression Analysis

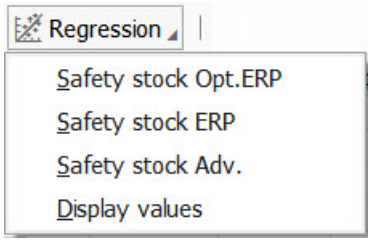
To perform a regression analysis, all you have to do is select a row and then press the *Regression* button.



Company Code	Material	Plant	Special RP logic	ABC	XYZ	LMN	EFG	UVW	RLT	ERP WD	Safety Stk	Sstk. val.	SSt RoC MM	Reorder Pt	RP value	Avg. cons.	Service level (%) MM	SSt OptERP	SStVOptERP	SSt RoC CD	ROP OptERP	ROPVOptERP	SSt ERP	SStV ER
0001	P-100	0001		A	X	N	E	V	5		170	1.700,00	0,0	0	0,00	0	85,0	0	0,00	0,0	0	0,00	0	0,00
1000	P-100	0110		C	X	N	E	W	5		200	0,00	0,0	0	0,00	0	85,0	0	0,00	0,0	0	0,00	0	0,00
1000	P-100	1000			X	L	F	V	4		0	0,00	0,0	90	90,00	0	85,0	447,194	447,19	0,0	447,194	447,19	399,982	399,98
1000	P-100	1100		C	X	L	G	U	20		170	115.698,60	0,0	0	0,00	0	85,0	0	0,00	0,0	0	0,00	0	0,00
1000	P-100	1300		C	X	L	E	U	5		0	0,00	0,0	0	0,00	0	50,0	0	0,00	0,0	0	0,00	0	0,00
2300	P-100	2300		C	X	N	E	U	4		1	613,93	0,0	0	0,00	0	50,0	0	0,00	0,0	0	0,00	0	0,00

Tabular Results Display with Regression Pushbutton

When you press the *Regression* button, a drop-down list appears.



Regression Analysis Options

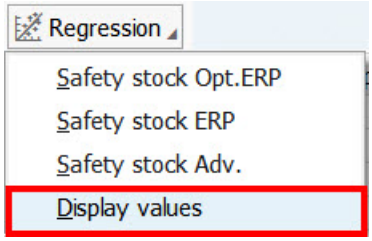
From this list, select the safety stock method you want to use to perform a regression analysis. Once you have selected the method, the system performs a regression analysis and then shows a line chart in area 2 (as described in section Structure of the UI of the Transaction [page 44]).

Line Chart for Regression Analysis

During the regression analysis, the following steps are performed:

1. The safety stock for the service levels from 50–99 are simulated and displayed (green dots) for the selected material in accordance with the method selected
2. The safety stock in the material master is determined, and a horizontal is drawn (above example: safety stock MM = 65)
3. If the above-mentioned line intersects with the mean, the X value of the intersection yields a theoretical service level (above example: TSL% = 76.0)
4. The increase in the safety stock is specified as a percentage and output as a number next to the green point in the line chart (example above: if there is an increase in the service level of 89% to 90%, the safety stock increases by 4%)

After you call up the graphic, you also have the option of displaying the simulated values:



Regression Selection to Display Values

Selecting the *Display values* menu item displays a table with the calculated values.

Regression values

Material	Plant	Safety Stock	Reorder Point	Sim. SL	SSt (Opt. ERP)	SStVal(Opt. ERP)
P-100	1000	0,770	1,209	50,0	0,000	0,00
P-100	1000	0,770	1,209	51,0	0,038	0,04
P-100	1000	0,770	1,209	52,0	0,076	0,08
P-100	1000	0,770	1,209	53,0	0,114	0,11
P-100	1000	0,770	1,209	54,0	0,152	0,15
P-100	1000	0,770	1,209	55,0	0,190	0,19
P-100	1000	0,770	1,209	56,0	0,229	0,23
P-100	1000	0,770	1,209	57,0	0,267	0,27
P-100	1000	0,770	1,209	58,0	0,306	0,31
P-100	1000	0,770	1,209	59,0	0,344	0,34
P-100	1000	0,770	1,209	60,0	0,384	0,38
P-100	1000	0,770	1,209	61,0	0,423	0,42
P-100	1000	0,770	1,209	62,0	0,462	0,46
P-100	1000	0,770	1,209	63,0	0,502	0,50
P-100	1000	0,770	1,209	64,0	0,543	0,54
P-100	1000	0,770	1,209	65,0	0,583	0,58
P-100	1000	0,770	1,209	66,0	0,624	0,62
P-100	1000	0,770	1,209	67,0	0,666	0,67
P-100	1000	0,770	1,209	68,0	0,708	0,71
P-100	1000	0,770	1,209	69,0	0,751	0,75
P-100	1000	0,770	1,209	70,0	0,794	0,79
P-100	1000	0,770	1,209	71,0	0,838	0,84
P-100	1000	0,770	1,209	72,0	0,882	0,88
P-100	1000	0,770	1,209	73,0	0,928	0,93
P-100	1000	0,770	1,209	74,0	0,974	0,97
P-100	1000	0,770	1,209	75,0	1,021	1,02
P-100	1000	0,770	1,209	76,0	1,069	1,07
P-100	1000	0,770	1,209	77,0	1,118	1,12
P-100	1000	0,770	1,209	78,0	1,169	1,17
P-100	1000	0,770	1,209	79,0	1,221	1,22
P-100	1000	0,770	1,209	80,0	1,274	1,27
P-100	1000	0,770	1,209	81,0	1,329	1,33
P-100	1000	0,770	1,209	82,0	1,386	1,39

Regression Result List

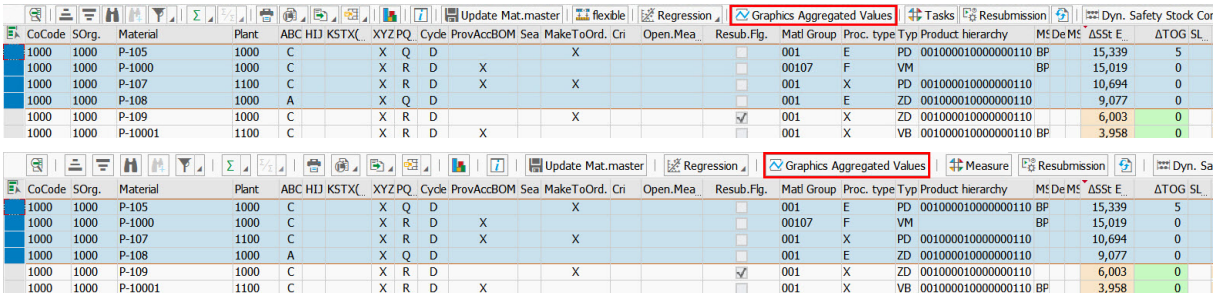
In the tabular display, the simulated safety stocks (and values) are displayed as well as the safety stock and reorder point.

Related Information

Structure of the UI of the Transaction [page 44]

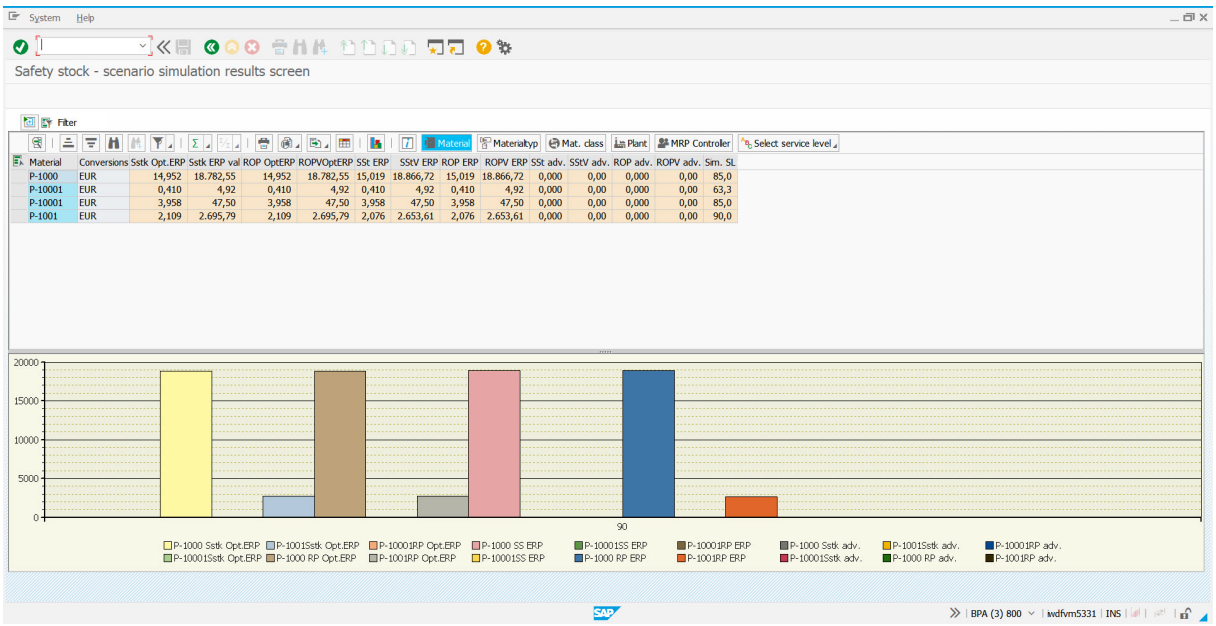
3.4 Graphics Aggregated Values

The *Graphics Aggregated Values* button enables you to call up the aggregation function. To do this, you must first select one or more rows.



Tabular Results Display with Graphics Aggregated Values Pushbutton

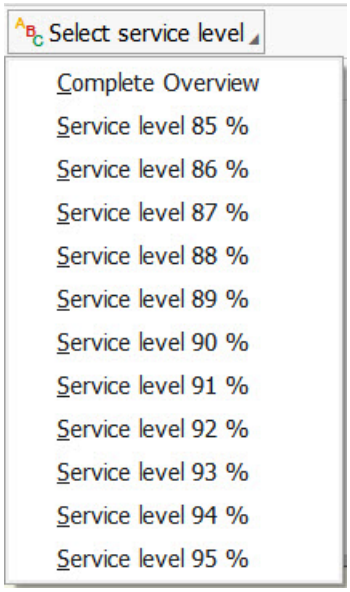
After you press the button, the aggregation button is displayed.



Result List with the Aggregation Graphic

Here, you have various options for gaining an overview of aggregated (cumulated) stock values.

The data basis for this is the calculations in the previous results screen of the **safety stock and buffer simulation**. You can use the *Select service level* button to set the graphic to certain service levels:



Select Service Level

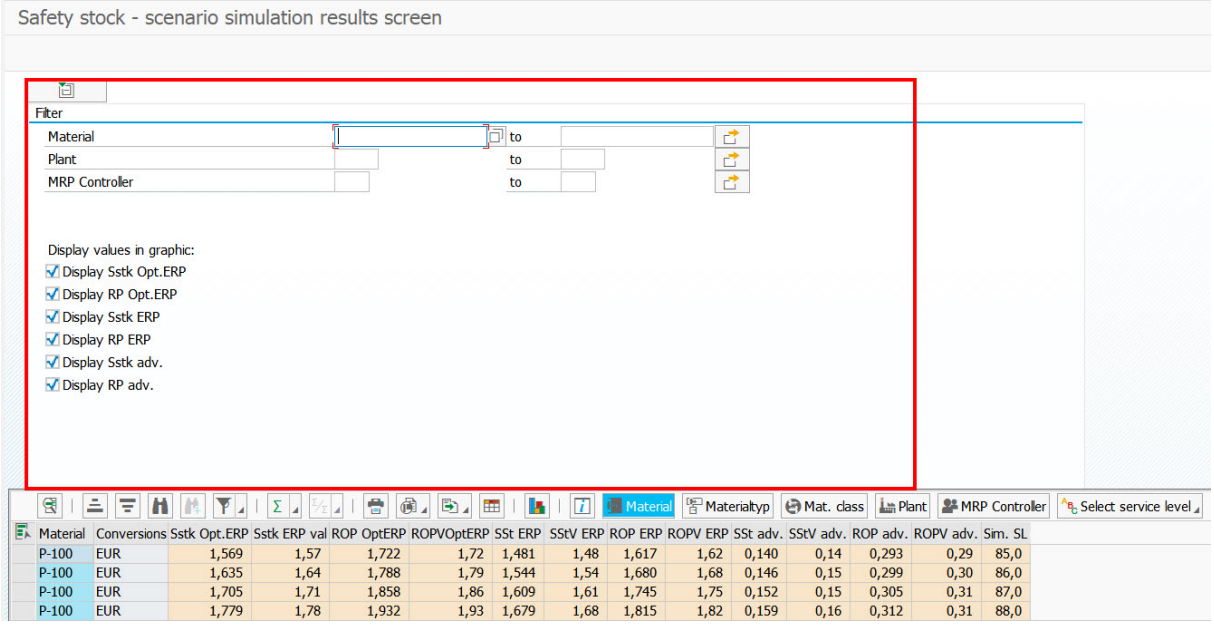
To choose between multiple service levels in this dialog, you must have performed the scenario simulation with an interval for the service level.

If you have entered or determined a particular value for the service level, the dropdown list will also include only this one service level (and also the entry Complete Overview).

As standard, when the graphic with aggregated stock values is first called up, the aggregation is performed by material number. You can change the aggregation and, therefore, the display accordingly using the *Material*, *Materialtyp*, *Mat. class*, *Plant*, and *MRP Controller* buttons:

Aggregation Options

In addition, an expandable filter is available, which you can use to further specify the aggregation/display by entering *Material*, *Plant*, and/or *MRP Controller*:



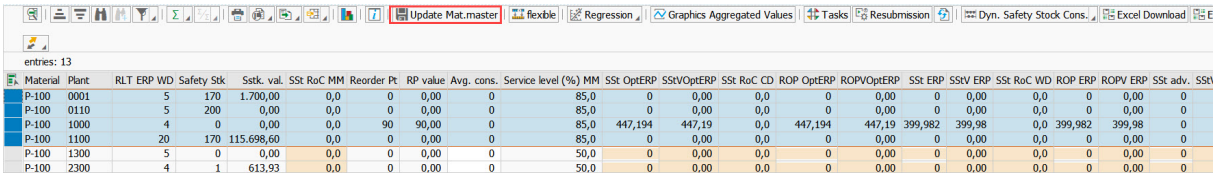
Filter Options and Display Settings

It is also possible to display or hide individual results using this filter.

> ⚠ Caution
>
> The changes to the filter settings become effective when you collapse the filter again.

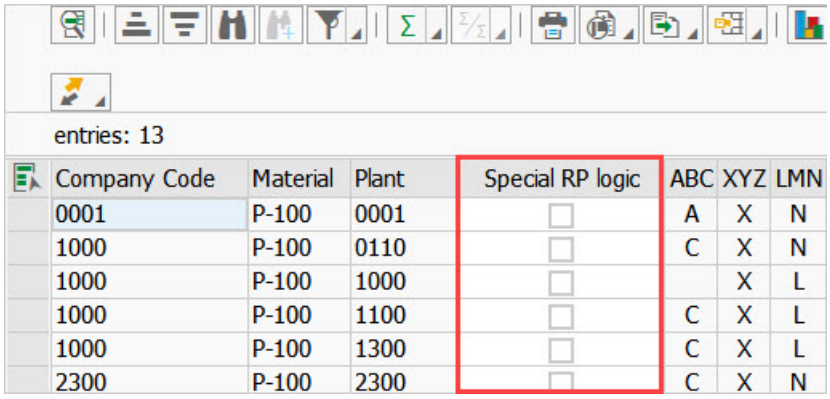
3.5 Saving the Simulation Results

Once the simulation has been performed you can use the *material master update* button to save the calculated values in the material master in the standard views or in the **enhanced material master view**.



Tabular Results Display with Pushbutton for Material Master Update

If the special RP update logic was selected on the first tab of the selection screen or in the first area of the result screen, an additional column is added to the result screen:



entries: 13

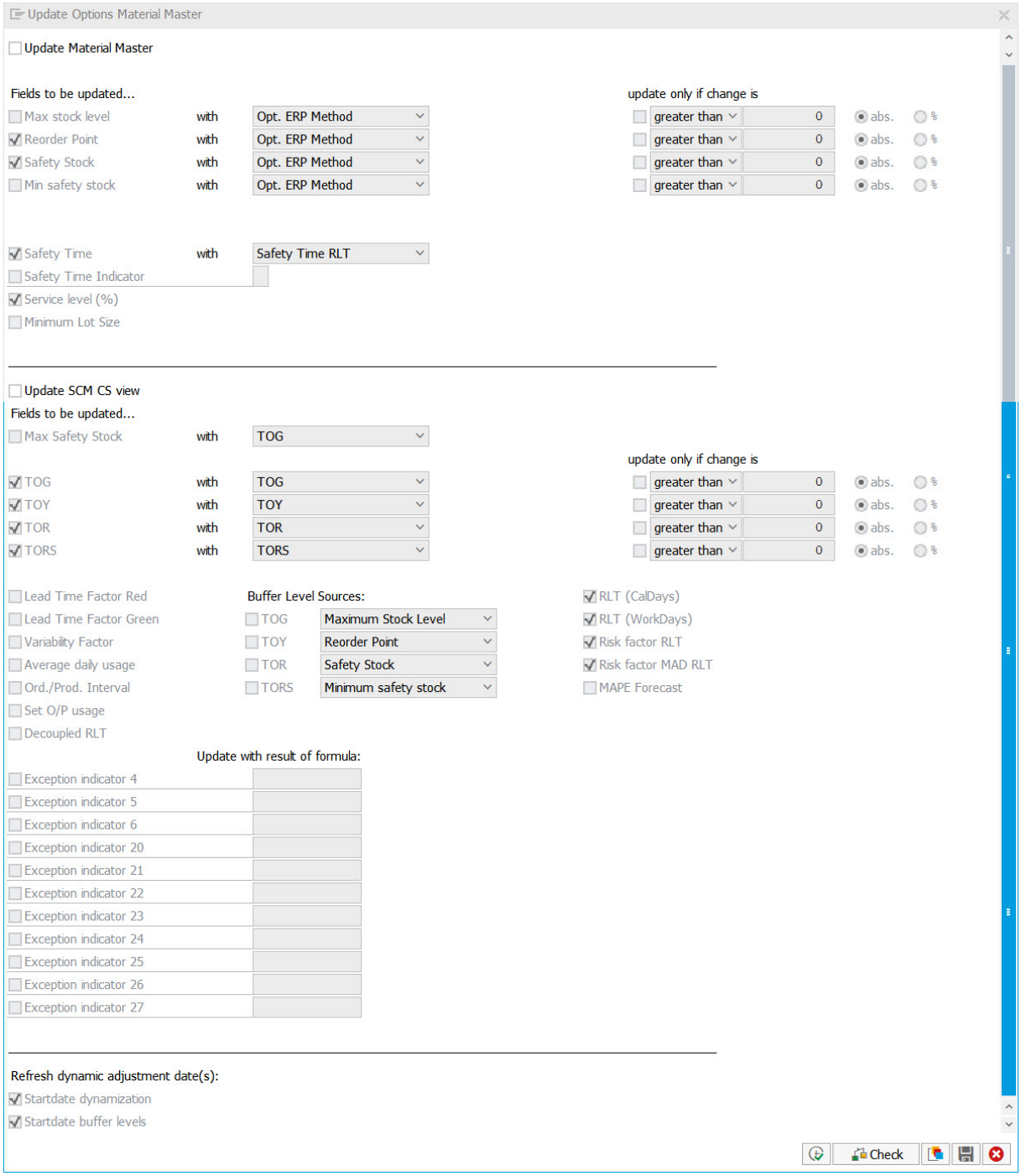
Company Code	Material	Plant	Special RP logic	ABC	XYZ	LMN
0001	P-100	0001	☐	A	X	N
1000	P-100	0110	☐	C	X	N
1000	P-100	1000	☐		X	L
1000	P-100	1100	☐	C	X	L
1000	P-100	1300	☐	C	X	L
2300	P-100	2300	☐	C	X	N

Special RP Update Logic in Tabular Results Display

This column with the name *Spec. RP Logic* shows which of the material/plant combinations correspond to the rules maintained in Customizing. Because a service level interval was used in this example, multiple material/plant combinations are displayed. In the rules that do not allow manual changes to the logic, the checkbox is grayed out and therefore not ready for input.

If you activate the special reorder point update logic, the calculated reorder point is also adopted as the safety stock.

If you now want to update one or more material/plant combinations, select the corresponding rows and then choose the *Material Master Update* pushbutton. The following popup dialog box now appears:



Settings for Updating the Material Master

You can now decide which values you want to transfer to the material master or the **enhanced material master view**.

> **⚠ Caution**
>
> You have the option of editing safety stocks and reorder points directly in the ALV grid (area 3). In other words, you can manually modify the values determined by the system. The value in the corresponding field of the ALV grid is then transferred to the material master during the transfer.

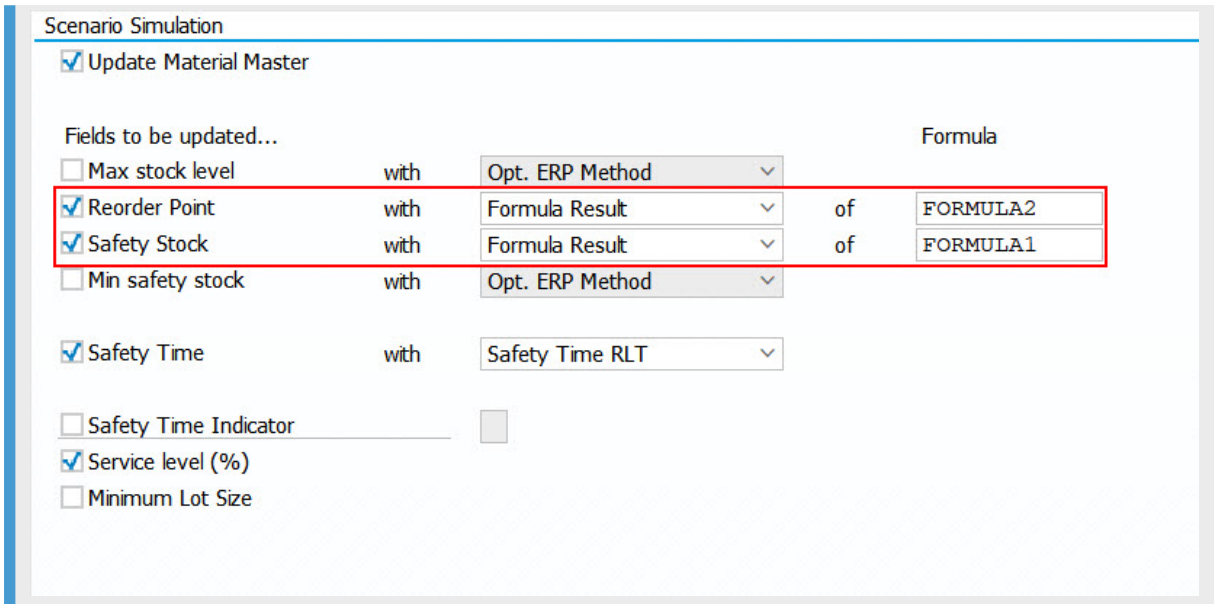
When updating the material master fields, you can choose whether you want to update the *Minimum safety stock*, *Safety Stock*, *Reorder Point*, and *Maximum Stock Level* fields. For each field, you can also select the method whose result is to update the corresponding target field. In addition to the above parameters, you can also update the *safety time*.

To update the safety time, you can choose between the RLT, the RLT MAD, and the RoC method. If you also want to update the safety time indicator, you must activate the corresponding checkbox and enter the required indicator.

Finally, you also have the option of updating the service level in the material master.

Various update options are also available for the fields of the **enhanced material master view**. For example, you can update the TORS, TOR, TOY, and the TOG value in the **enhanced material master view** with the result of a selected method.

> **ⓘ Note**
>
> For both the material master fields and the fields of the SCM CS views, you can update individual fields with the results of the formula calculation from the formula profile. First, select *Formula Result* in the selection options of the desired field. A new selection field is then displayed to the right of the selection field, in which you can specify the name of the formula whose result is to be written to the material master/SCM CS view field.
>
> Prerequisite: You have entered a formula profile in the *Formula profile* field on the *Output* tab. This allows you to use the update of parameters of the material master and/or the SCM CS views with results from formula calculations only if you use the separate transaction (/SAPLOM/SSS) to call safety stock simulation and buffer simulation. If you use the MRP monitor to call the safety stock simulation and buffer simulation, it is not possible to save formula results in the parameters of the material master and/or the SCM CS views.



Example: Update of Safety Stock and Reorder Point with Formula Results

The lower area of the *material master update* dialog contains two update options for date values in the **enhanced material master view**: The "Dynamic Modification Start Date" and the "Buffer Level Start Date". You have these two update options available for updating material master fields, as well as for updating fields of the **enhanced material master view**. This means that as soon as you select an update of either the material master fields and/or the fields of the **enhanced material master view**, you have these two update options available.

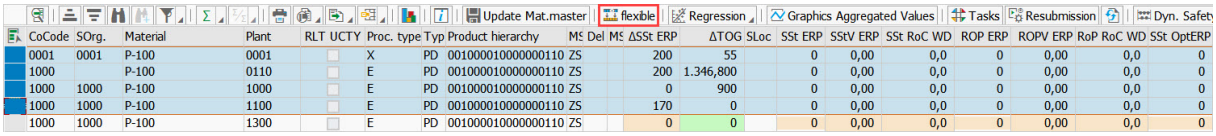
Information About the Material Master Update

If you confirm this dialog by with *Yes*, the master data for the selected materials is updated. Change documents are created automatically (in the background).

If you choose to update the fields of the **enhanced material master view**, then in addition to the fields that you have selected to be updated, the following additional fields are updated automatically:

- Average consumption
- Period indicator
- Fiscal year variant
- Safety days' supply in calendar days
- Safety stock days' supply in working days

In addition to the static material master update with its predefined update options, it is possible to use a flexible material master update in online mode to update certain material master parameters:



CoCode	SOrg.	Material	Plant	RLT	UCTY	Proc. type	Typ	Product hierarchy	MS	Del	MS	ΔSSt ERP	ΔTOG	SLoc	SSt ERP	SStV ERP	SSt RoC WD	ROP ERP	ROPV ERP	RoP RoC WD	SSt OptERP
0001	0001	P-100	0001		X		PD	001000010000000110	ZS			200	55		0	0,00	0,0	0	0,00	0,0	0
1000		P-100	0110		E		PD	001000010000000110	ZS			200	1.346,800		0	0,00	0,0	0	0,00	0,0	0
1000	1000	P-100	1000		E		PD	001000010000000110	ZS			0	900		0	0,00	0,0	0	0,00	0,0	0
1000	1000	P-100	1100		E		PD	001000010000000110	ZS			170	0		0	0,00	0,0	0	0,00	0,0	0
1000	1000	P-100	1300		E		PD	001000010000000110	ZS			0	0		0	0,00	0,0	0	0,00	0,0	0

In the case of a flexible material master update, the available update options depend on the update profile that can be selected on the Output tab of the initial screen for the safety stock simulation and buffer simulation.

Related Information

Documentation on the comprehensive functions

4 Optimization

You can use the "Optimization" simulation type to determine an optimized service level according to an optimization goal that you have selected.

4.1 Cost-Based Optimization

A prerequisite for using cost-based service level optimization is an ABC/XYZ classification of your materials, which you have performed using the **MRP monitor** consulting solution, for example.

If you have opted for cost-based optimization, specify target corridors (minimum SL, maximum SL) and a target service level for the individual classes (or possible combinations of these). The system then optimizes each class/class combination on the basis of the selected method (extreme distribution or equal distribution) and the other basic settings, and ideally tries to achieve the target service level specified for this class/class combination, taking minimum material costs into account.

4.1.1 SL Distribution Methods

When selecting SL distribution methods, you have two options:

- Extreme distribution
- Uniform distribution

4.1.1.1 Flow Logic of Extreme Distribution

In the following, the procedure (steps 1 and 2 alternately) is described:

1. Upper materials in the classification groups are assigned the minimum service level.
2. Depending on the variation setting (simple or complex), lower materials are always assigned the target service level plus the step from Customizing only once (--> increase and continue to next material) or multiple times (--> increase up to Max.-SL and only then continue to the next material).

> ⚠ Caution
>
> Attention: Step increase is designed only for extreme distribution. For uniform distribution, there is a dedicated parameter: Max. step

1. After each distribution step from step 1 and step 2, the system checks whether the required average service level for the group been exceeded or if there are still materials to be optimized.

2. If it has not been reached, the target service levels for materials from the lower area are increased using the step either once or multiple times, depending on the variation setting (simple or complex).
3. If it has been exceeded, the target service levels for materials from the upper area are increased using the step either once or multiple times, depending on the variation setting (simple or complex).
4. If no more materials for optimization are found, the extreme distribution of the service levels is completed.
5. The safety stocks and reorder points are then calculated.

4.1.1.2 Flow Logic of Uniform Distribution

When extreme distribution is used, SL-optimized materials are often assigned either the minimum service level or a service level increased by several percentage points. This results lower Safety stock/reorder points. However, the distribution of service levels (SL) is very irregular.

The uniform distribution methodology was therefore developed for a more even distribution of the service levels from the intervals.

The procedure for the distribution is as follows:

1. First, the deltas between Max.-SL and Target-SL, and Min.- SL and Target-SL are determined.
2. Then, the number of materials from the upper and lower half are determined.
3. The distribution keys are determined as follows:
   - The upper distribution key = number of materials upper half / upper delta
   - Lower distribution key = number of materials lower half / lower delta
4. Service levels from the upper interval are distributed using the upper distribution key to the materials from the upper half.
5. Service levels from the lower interval are distributed using the lower distribution key to the materials from the lower half.
6. The system checks whether the specified average service level +/ - the tolerance value for the group has been reached.
   - If it has been reached, the distribution is completed and no further optimization is required.
   - If it has not been reached, the target service level of the materials is increased depending on the variation setting (simple or complex), starting from the lowest material and with a step of 1, either once or several times until either the specified average service level +/ - the tolerance value for the group has been reached (and the optimization is therefore closed), or until the Max.-SL for the respective material has been reached (allowing a jump to the next material), or the maximum step has been reached.
   - If it is exceeded, the target service level of the materials is decreased depending on the variation setting (simple or complex), starting from the highest material and with a step of 1, either once or several times until either the specified average service level +/ - the tolerance value for the group has been reached (and the optimization is therefore closed), or the Max.-SL for the respective material has been reached (allowing a jump to the next material), or the maximum step has been reached. The maximum step is also an indicator for the maximum number of optimization iterations required.

4.1.2 Averaging

When you select averaging, you have two options:

- Simple Averaging
- Aggregation by Forecast Values (Potential Consumption Quantities)

4.1.2.1 Simple Averaging

Simple averaging starts by determining the average service level that results within the group after all special cases have been considered. The exception groups can potentially be in a main group or subgroup. Consequently, they must be taken into consideration during averaging but may not be changed with regard to their service level. They are therefore removed from the list for the service level variation but continue to be taken into account in the list for the averaging.

Formula for service level by simple averaging:

Average service level by simple averaging = sum of all material-related service levels of a group / number of all materials of a group

The service levels determined are rounded to one decimal place.

> Example
>
> A material 4711 is not a special case
>
> A material 4712 is not a special case
>
> A material 4713 is a special case defined in the selection, because a corresponding characteristic is assigned here
>
> Target service level as a percentage for A materials: 96
>
> Minimum service level as a percentage for A materials: 80
>
> Service level exception group as a percentage: 99
>
> Average service level, simple averaging = (96 + 96 + 99) / 3 = 97

4.1.2.2 Aggregation by Forecast Values (Potential Consumption Quantities)

Formula for average service level (aggregated by consumption quantities):

Average service level aggregation using consumption quantities = sum across all materials (forecast quantity * service level as a percentage) / sum (consumption quantities)

The service levels determined are rounded to one decimal place.

Example

Material	Forecast quantity	Service level
4711	1000	96
4712	100	98
4713	200	80
4714	50	96
4715	2000	96

Average service level aggregation using consumption quantities =
((1000x96)+(100x98)+(200x80)+(50x96)+(2000x96))/ (1000+100+200+50+2000) = 95.1

The forecast quantity is calculated as follows:

Formula for forecast quantity:

Formula = forecast value of the current period + MAD

4.1.3 Service Level Calculation

After the service levels have been optimized, the service level must be calculated in the next step.

In the selected group, the service levels are initially selected so as to achieve the optimized service level. This is done using the following formula, which must be performed for each material.

Formula for Optimized Service Level

Optimized service level = (forecast value of the current period + MAD of the current period) * (optimized service level as a percentage/100)

Example

Forecast value for March 2012 in the base units of measure: 1000

MAD: 50

SL as a percentage: 96 (1000+50) * (96/100) = 1008

The safety stock that the above service level would enable must now be determined using the relevant safety stock method. For this purpose, the level of the safety stock is first determined using the following formula:

Formula for Optimized Safety Stock Quantity

Optimized safety stock quantity = optimized service level – forecast value of the current period

Example

1008 – 1000 = 8

The service levels enabled by this safety stock must now be determined for the respective safety stock methods, ERP method and advanced method.

For this purpose, the relevant formula is expanded according to the safety factor, and the relevant values (MAD, RLT factor, and MAPE as well as the safety stock determined with the ERP method, corresponding RLT factor, and the safety stock determined with the advanced method) are entered so as to enable the required safety factor to be determined. The target service level is determined using the corresponding table.

For example, the formula for the safety stock quantity with the ERP method by working days is as follows:

Formula for the Safety Stock Quantity:

Safety stock quantity according to the ERP method by working days = MAD * RLT factor * safety factor

Conversion according to the safety factor yields the formula according to the safety factor.

Formula for the Safety Factor:

Safety factor ERP method by working days = safety stock quantity / (MAD * RLT factor)

RLT Factor and MAD here correspond to the values used in the earlier safety stock simulation. The formula for the advanced method is converted in a similar way.

Next, the relevant optimized service level must be calculated from the safety factor (inverse service-level determination) using the corresponding table (normal distribution table, see section 'Formulas Used' → 'Determination of the Safety Factor').

For the relevant exception groups, the service level that defines the target service level of the exception group must be determined in a similar way.

4.1.4 Determining the Total Service Level

The total service level across all groups is determined in accordance with the method selected. To achieve this, a simple average is formed across all groups.

Formula:

Total service level = sum of service levels of all materials (incl. exception groups) / number of materials.

4.1.5 Result View for SL Optimization

The result of the SL optimization shows you various information from the material master as well as values calculated by the **safety stock and buffer simulation**:

SL-optimized Safety Stock Simulation

Number of selected Materials 439
Number of updated Materials 0
Number of not updated Materials 439
Total Service Level 94,9

Material	Plant	ABC	XYZ	LM	EFG	UVW	Cycle	AchTargSL	SL opt.	SSt OptE	SSV OEM	ROP OptERP	ROPVOptE	St/	Ex. ind. 1	Ex. ind. 2	SL	MakeToOrd.	SOrg.	MRPC	MTyp	Matl Group	Proc. type	Ex. ind. 3	Typ	Product hierarchy	MS	MS	SPT	I/C	BUn
P-113	1000	C	X	L	E	U	D	90,0	✓	82,819	46.476,37	82,819	46.476,37		MK1	MK2		X	1000	101	FERT	001	E	MK3	99						PC
P-101-TIO2	1000	A	X	N	F	V	L	96,0	✓	0,763	1,53	0,763	1,53		MK1	MK2			1000	001	HALB	001	X		VB	001000010000000110	BP				PC
P-102_HALB	1000	A	X	N	E	W	D	96,0		0	0,00	0	0,00		MK1	MK2		X	1000	001	HALB		X		PD		BP	ZS			PC
P-10001	1000	A	X	N	E	V	D	96,0		0	0,00	0	0,00		MK1	MK2			1000	007	FERT	001	X		LG	001000010000000110	BP		11		PC
P112	1000	A	X	L	E	U		96,0		0	0,00	0	0,00			Cover4			1000	770	ROH	001	F	EXI3	LG				01		GAU
P-102	1000	A	X	L	F	U	D	96,0	✓	0	0,00	0	0,00		EXI1				1000	001	FERT	0001	X		PD	001000010000000110	BP	BP	80		PC
P-108	1000	A	X	L	F	U	D	96,0		0	0,00	0	0,00		MK1	MK2			1000	101	FERT	001	E	MK3	ZD	001000010000000110					PC
P-104	1000	A	2	3	6	5	8	96,0	✓	0	0,00	0	0,00	T	MK1			X	1000	001	FERT	00120	X	MK3	ND	001000010000000110	BP	AL			PC
P-100_SUB	1000	A	X	N	G	U	D	96,0		0	0,00	0	0,00		MK1	MK2			1000	007	HAWA	001	F		LG	001000010000000110	BP		30		PC
P-100_COPY	1000	A	X	N	F	U	D	97,0		0	0,00	0	0,00		MK1	MK2		X	1000	007	FERT	001	E		LG	001000010000000110	BP				PC
P-400	1000	A	X	L	E	U	D	90,0		0	0,00	0	0,00		MK1	MK2		X	1000	004	FERT	001	E	MK3	PD	001000010000000110	AL				PC
P-200	1000	A	X	L	F	U	D	90,0		0	0,00	0	0,00		MK1			X	1000	101	FERT	002	E	MK3	99	001000010000000110					PC
P-1001	1000	A	X	M	F	U	D	90,0		0	0,00	0	0,00		MK1	MK2			1000	007	HIBE	00107	F		PD			BP			PC
P-101	1000	A	X	L	E	U	D	90,0	✓	0	0,00	0	0,00						1000	004	FERT	001	F		LG	001000010000000110	BP	BP			PC
P-106	1000	B	X	L	G	U	D	90,0	✓	0	0,00	0	0,00		MK1	MK2			1000	007	FERT	001	E	MK3	VB	001000010000000110					PC
PPP01-1-202	1100	C	X	N	E	W	D	96,0		0	0,00	0	0,00					X	1000		ROH	004									KG
PPP01-1-203	1100	C	X	N	E	W	D	96,0		0	0,00	0	0,00					X	1000		ROH	004									KG
PPP01-1-205	1100	C	X	N	E	W	D	96,0		0	0,00	0	0,00					X	1000		ROH	004									KG
PPP01-1-206	1100	C	X	N	E	W	D	96,0		0	0,00	0	0,00					X	1000		ROH	004									KG
PPP02-1-182	1100	C	X	N	E	W	D	96,0		0	0,00	0	0,00					X	1000		FERT	004									KG
PPP02-1-182A	1100	C	X	N	E	W	D	96,0		0	0,00	0	0,00					X	1000		FERT	004									KG
PPP02-1-182B	1100	C	X	N	E	W	D	96,0		0	0,00	0	0,00					X	1000		FERT	004									KG
PPP02-1-182C	1100	C	X	N	E	W	D	96,0		0	0,00	0	0,00					X	1000		FERT	004									KG
PPP02-1-192	1100	C	X	N	E	W	D	96,0		0	0,00	0	0,00					X	1000		FERT	004									KG
PPP02-1-201	1100	C	X	N	E	W	D	96,0		0	0,00	0	0,00					X	1000		ROH	004									KG

Result View for SL Optimization

The columns with a green background in the results view show the calculated safety stocks and orders point in terms of both quantities and values. These results are updated when a material master update is required.

Forecast values play an important role in SL-optimization. If neither forecast values nor an average consumption can be determined for a material, SL-optimization cannot be performed for this material. This is shown by the missing checkmark in the *SL opt. (optimized)* column on the one hand and by N/A (Not Available) in the *Forecast source* column on the other.

In addition, the difference between the optimized target service level (column *AchTrgt SL*) and the target service level entered (column *AltTrgt SL*) enables you to recognize a material for which SL optimization has been performed successfully. If both values are identical, the material has been assigned the entered (non-optimized) target service level. The reorder point and safety stock are then calculated based on this service level.

4.2 Profit-Based Optimization

The goal of profit-based optimization is to determine the optimum service level to maximize profit.

4.3 Optimizing by Space and Budget

Optimization by space and budget allows you to optimize the safety stock in terms of space and budget. To do this, you can classify the selected materials and assign restrictions for space and budget for the individual

groupings. Optimization is only carried out if the previously calculated safety stock quantity contradicts the entered restrictions. For the optimization, the GENIOS solver is used to solve linear optimization problems.

Selection on the Selection Screen: To use the optimization by space and budget, select Optimization on the "General" tab page in the Simulation Type area. On the Optimization tab page, set the checkmark under "Space and Budget". To set the parameters to be used, open this area by clicking the button next to the "Space and Budget" selection. You can now set the classification type, the respective service level, and the space, budget, and material restrictions. There are also different lot-size options and safety stock methods available. It is possible to update the safety stock and the reorder point in the material master based on the optimization. You can find this option on the "Update Options" tab under "Optimization" > "Space and Budget based".

Classification: The selected materials are divided into three or more groups for optimization. This can be done using the different classifications of the MRP monitor. For more information about the classification backgrounds, see Classification 2 tab. For example, if the ABC(D) analysis is used, the selected materials are divided into five groups: A, B, C, D, and those materials with no value maintained for this classification in the material master.

Service Level: Set the desired service level for the relevant classes here.

Space Restrictions: To use these restrictions, you must select the "Use Space Constraints" checkbox. Under "General" you can enter an overall maximum value for all materials, and you can enter the maximum values per class underneath. The values are evaluated in the configured measurement unit. To be able to use this function, you must maintain the fields for volume and volume unit in the material master (table `MARA`, fields `VOLUM` and `VOLEH`).

Budget Restrictions: To use these restrictions, you must select the "Use Budget Constraints" checkbox. Under "General" you can enter an overall maximum value for all materials, and you can enter the maximum values per class underneath. The values are evaluated in the configured currency and used based on the price control indicator (table `MBEW` field `VPRSV`).

Material Restrictions: If this checkbox is set, the minimum and maximum safety stocks from the material master are taken into account.

Lot Size Options:

- Order Cycle: For the expected cycle stock, the product of the average consumption per day and the order/production interval is used. You can find both fields in the material master on the SCM CS view.
- Period Lot Size: This method is not yet available.
- Average Lot Size/ADU: For the expected cycle stock, the average lot size of the material master of the SCM CS view is used.

Safety Stock Method: In the first step, the method selected here calculates the desired safety stock for each material. Optimization by space and budget is only executed if the result of this method does not meet the conditions entered.

Results View: The result of the optimization by space and budget is displayed in the result view, together with various information from the material master. If multiple optimization methods are selected, all results can be displayed side by side. The columns "Safety Stock (Space & Budget Optimization)" and "Reorder Point (Space & Budget Optimization)" are filled by optimization by space and budget.

5 Call Via the MRP Monitor

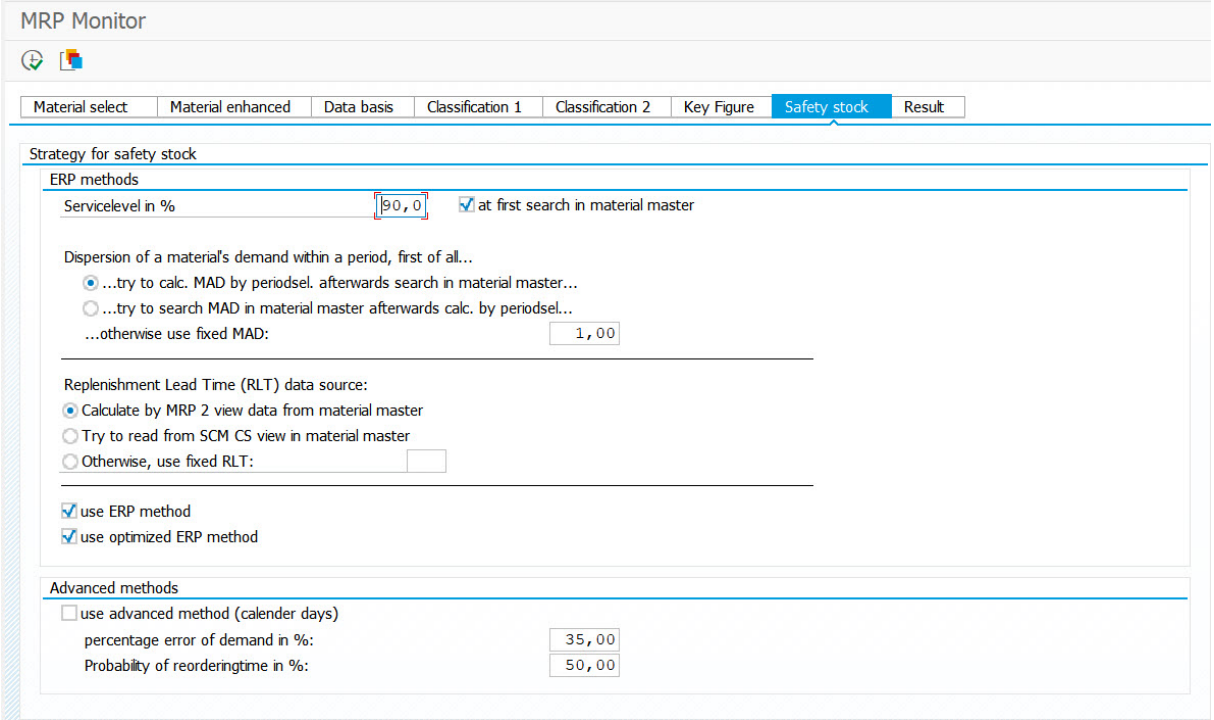
The **safety stock and buffer simulation** can be used either as an independent tool or can be called via the **MRP monitor**. In this case, the simulation is called using transaction code */SAPLOM/SSS*.

> ⓘ Note
>
> The same parameters and formulas are used in both variants.

> ⚠ Restriction
>
> However, when the simulation is called via the MRP monitor, there is the restriction that only the scenario simulation can be called. The SL-optimization is not available if the simulation is called from the **MRP monitor**. A separate safety stock and buffer calculation (without using the **safety stock and buffer simulation**) is integrated into the **MRP monitor**). This safety stock calculation offers neither an update option for the material master nor a graphical analysis of the results, as is possible in the **safety stock and buffer simulation**.

5.1 Calculation of the Safety Stocks in the MRP Monitor Analysis Run

The safety stock calculation can be set for all materials in the **MRP monitor** in the selection screens under the *Safety stock* tab.

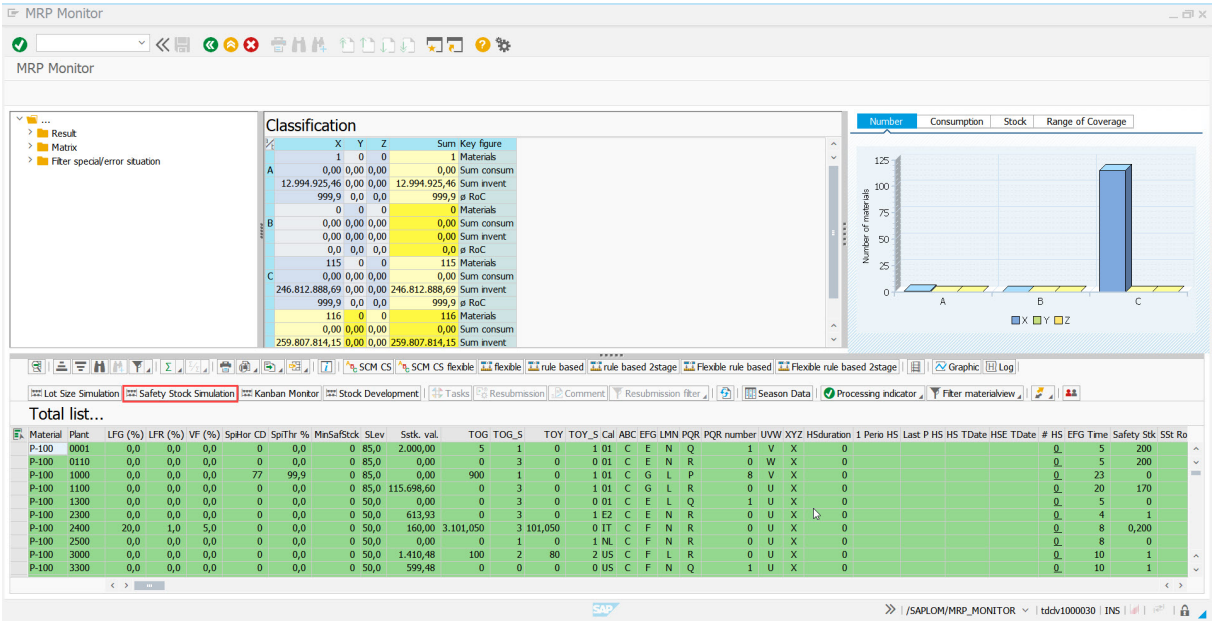


Configuration Options for Safety Stock Calculation in the MRP Monitor

The input parameters required for the calculation of the safety stock and reorder points of already been described in section Advanced Options Tab [page 15] and can be consulted there.

5.2 Calling the safety stock and buffer simulation from the results screen of the MRP monitor

You can call the **safety stock and buffer simulation** from the results screen of the **MRP monitor** for individually selected materials.



Results screen MRP monitor with option to jump to safety stock and buffer simulation (scenario simulation)

You can then set the parameters of the simulation and execute the simulation in a separate interface. You can save the results of the simulation n the material master of the selected materials.

6 Calculation of Dynamic Safety Stock

The safety stock and buffer simulation enables you to calculate static safety stock, and to simulate and compare the effects of different methods and parameter values.

You can use the **dynamic safety stock and buffer consideration** to manage dynamic safety stocks and the associated key figures.

Related Information

Documentation for the consulting solution **dynamic safety stock and buffer consideration**

7 Formulas Used

For more information regarding the formulas used, see SAP note: 0001626578.

> **Note**
>
> Note the detailed information in the PDF documentation that is provided with the software.

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