Optimizer Settings

Purpose
This documentation describes which settings are available on the Optimizer Settings.

Overview
The Optimizer Settings can be assigned to the Planning Profile and it is used during the VSR Optimization. The following sections are available:

- General Data
- Transportation Proposal Settings
- Transportation Proposal Preferences
- Optimizer Runtime
- Rough Planning and Capacity Constraints
- Transshipment Locations
- Default Routes

General Data

Planning Strategy
The planning strategy defines the planning steps that the system have to perform when the VSR optimizer is called. Each planning strategy comprises one or more methods that represent the individual planning steps. The following planning strategies are available:

- **VSR_DEF**
  This is the standard strategy of VSR optimization and it works as a basis of strategy VSR_1STEP. In the customizing (SAP TM Customizing -> SCM Basis -> Process Controller -> Assign Methods to Strategy) you can check the assigned methods and the sequence in which the methods need to be performed. In standard VSR_DEF contains the following methods: VSR_PRE, VSR_PRE_DG, VSR_OPT and VSR_POST.

- **VSR_1STEP**
  This strategy is based on the default VSR_DEF strategy. This performs a carrier selection at the end of the optimizer run therefore the additional method VSR_TSPS is incorporated into the strategy.

- **VSR_BOOK**
  The VSR_BOOK strategy for VSR optimization consists of Route/Schedule Preprocessing, Booking Selection and Schedule Posting. This planning strategy selects booking based on schedules.

- **VSR_ROUONL**
  The VSR_ROUONL strategy for VSR optimization finds and posts a default route. The strategy consists of Route/Schedule Preprocessing, Find Default Route, and Post Default Route methods.

- **VSR_ROUSCH**
  The VSR_ROUSCH strategy for VSR optimization finds and posts default route as well as finds and post a corresponding schedule. This strategy contains the following methods: Route/Schedule Preprocessing, Find Default Route, Post Default Route, Find Schedule, and Schedule Posting.

- **VSR_ROUTE**
The VSR_ROUTE strategy for VSR optimization finds and posts default route. Then, it selects a corresponding schedule and a booking. This strategy contains the following methods: Route/Schedule Preprocessing, Find Default Route, Post Default Route, Find Schedule, and Find Booking for Schedule, and Schedule Posting.

**FO Building Rule**

The Freight Order Building Rule decides how freight orders are structured. The following options are available:

- **New Freight Order when Resource is Empty**
  The FO is created when the resource is empty. This means that no freight units and no trailer units are assigned to the resource.

- **New Freight Order when Resource is Empty and Depot Location Reached**
  The FO is created when the resource is empty (as above) and the resource has reached the depot location.

**Incremental Planning**

With this functionality you can specify whether the VSR optimizer can delete existing freight documents or only enhance them. The following options are available:

- **No**
  The VSR optimizer does not plan incrementally but deletes existing freight documents and automatically creates new ones.

- **Freight Units Fixed**
  The VSR optimizer cannot delete existing freight documents. Instead, the VSR optimizer adds the capacities and the locations of the freight units you want to assign to the existing freight documents. If the new locations do not fit into the location sequence of the existing freight documents or there is not enough capacity to add the new freight units to the existing freight documents, the system creates new freight documents.

- **Freight Units and Location Sequence Fixed**
  The system only adds freight units to existing freight documents if there is enough capacity to do so. Additionally, the system only adds freight units to existing freight documents if the new freight units have the very same location sequence as the existing freight documents. If this is not the case, the system creates new freight documents.

Please note that SAP Note 1929303 need to be implemented to be able to use this functionality.

**Transportation Proposal Settings**

**Accept Transp. Prop.**

When you use the optimizer to generate a transportation proposal, you can specify whether the system is to accept only the proposed route or the proposed route and associated freight documents. In this field, you have the following options:

- **Save Route Only**
  Only the freight unit stages are saved when the system accepts the route that you have chosen.

- **Save Route and Freight Documents**
  Freight unit stages and freight documents are saved by the system.

- **Not Defined**
  You can specify on a case-by-case basis whether the system is to save only freight unit stages or also the associated freight documents.

**Planning Strategy for Transp. Prop.**

This strategies are the same as it is described in Planning Strategies.

**Max. Number of Trans. Proposals**

Specifies the maximum number of transportation proposals that the system is to generate.

**Do Not Create Transp. Prop. Immediately**

You will see this option if you click on ‘Advanced Settings’ on the Optimizer Settings.
If this checkbox if selected, after choosing a planning specific FU and a capacity resource in the cockpit and then clicking on ‘Transportation Proposal’ button, the system does not give a result at first. This is caused because the system does not perform the automatic transportation proposal generation because of the assign planning profile. However it is possible to change the proposal settings on the Transportation Proposal layout if the relevant button is activated. To do so, one has to accomplish the following prerequisites:

1. Go to the personalization of the Transportation Proposal Layout.
   SAP NetWeaver Business Client, choose Application Administration -> Planning General Settings -> Page Layouts -> Page Layouts for Transportation Proposal
2. On the ‘Visibility Pushbutton’ area, select checkboxes ‘Calculate’ and ‘Change Proposal Settings’.
Now if you click on Transportation Proposal button on the cockpit, after selecting the personalized Transportation Proposal Layout, you will see the new buttons.

Then, it is possible to adjust planning settings for planning specific freight units by selecting, first, Change Proposal Settings and then Calculate.

### Transportation Proposal Preferences

In the Advanced Settings of Transportation Proposal Preferences one can adjust transportation proposal preferences even more in detail by using differentiation parameters for desired optimal results. For this reason, it is possible to weight ("a measure of difference of solutions") this differentiation parameters according to the scale – Use Defaults/Not Relevant/Low/Medium/High. Use Defaults option, in this scale, means a robust weight defined with respect to specific user/planner preferences.

The following parameters for transportation proposals variation are available in the system:

- Route Variation
- Carrier Variation
  - (The weighting of carrier variations is applied to the main-carriage stage, that is, those carriers assigned to schedules and bookings.)
- Departure Date Variation
- Time Relevance
- Cost Relevance

### Optimizer Runtime

In this section the followings can be set:

- **Maximum Number of Parallel Processing**
  - You can indicate the maximum number of parallel processes that are to be started by the VSR optimizer (VSR = Vehicle Scheduling and Routing).
- **Maximum Runtime (Seconds)**
  - This determines the overall time the VSR optimizer runs and performs its work. This setting defines the amount of time the VSR optimizer algorithm is to use to find and calculate the best possible result.
- **Maximum Time Without Improvement (Seconds/Freight Unit)**
  - With this setting, if the VSR optimizer does not improve the best solution within the specified amount of time per freight unit, then it is automatically terminated before the defined maximum runtime.
- **Automatic Runtime Regulation**
  - allows the VSR optimizer to automatically regulate its operating time during the optimization process according to the specific planning needs.

You can read more about this settings in the 'More Field Help' of each fields.

### Rough Planning and Capacity Constraints

Rough planning and capacity constraints deal with exact or rough duration determination in planning (rough planning) and whether vehicle capacities should impose a constraint for planning with the VSR optimizer. For many business processes, it is not important to plan complete, end-to-end transportation in deal. For example, it may be important to find the right flights, but it is known that the airport can be reached within a predefined time interval, and planning for this stage of the journey won’t require the same degree of precision. The assignment of a transshipment location to a transportation lane (that is, an entry or exit point into a transportation network) can be used to allow planners to specify a duration that can be used for rough planning instead of the exact distance and duration determination based on transportation lanes. This means the a detailed transportation network (transportation lanes) is not required for the pre/on-carriage in this kind of scenario.
Rough Planning

This specifies whether rough planning or detailed planning is to be used for your optimizer runs. The following options can be selected:

- **Do Not Use Rough Planning**
  Rough Planning is not considered in the optimizer run.

- **Use Rough Planning Where Defined**
  For all stages between a location and the assigned transshipment location, for which a rough planning duration greater than 0 is defined, the optimizer delivers rough planning results. For the other stages the optimizer delivers the detailed planning results.

- **Prefer Detailed planning Over Rough Planning**
  If the necessary vehicle-specific or means-of-transport-specific information is available, the optimizer delivers detailed planning results. If the detailed information is not available, the optimizer delivers rough planning results.

Please note that in the transshipment location assignment, you have to define a rough planning duration greater than 0. For more information please see SAP NetWeaver Business Client -> Master Data -> Transportation Network -> Location -> Transshipment Location -> Define Transshipment Location Assignments.

Consider Capacities During Optimization

This option determines whether or not resource capacities are considered during the VSR optimization.

- **Yes**
  The capacities are considered during the optimization. This setting works only if at least one of the **Ignore Capacities** (Road/Rail/Sea/Air/DG ADR) is selected. In case of multimodal transportation, Ignore Capacities (Road/Rail/Sea/Air/DG ADR) option allows to ignore or use resource capacities at some stages depending on what capacities are to be considered during VSR optimization.

- **No**
  Resource capacities are not considered in the optimizer run. Even though resource capacities are exceeded, the VSR optimizer returns transportation proposals using defined means of transport with overloaded.

Note: You will see the ‘Ignore’ options if you click on ‘Advanced Settings’. The 'Ignore Capacity DG ADR' option is available from TM 9.1.

Transshipment Locations

The parameters for transshipment locations influence the complexity of the transportation network and therefore have a signification impact on the amount of the required to calculate a responsible planning result.

**Maximum No. of Transshipment Loc.**

This field determines the number of transshipment locations is to be used in a transportation route for planning specific freight units which corresponds to the number of times the freight units is being reloaded to another resource. This should be as small as possible to limit the number of paths in the transportation network that the VSR optimizer has to consider as possible alternatives.

**Search Depth for Transshipment Locations**

This field specifies the maximum number of subsequent transshipment locations that the system determines starting from the source and destination location. For example, the value of Maximum No. of Transshipment Loc. setting is 6, and the Search Depth for Connection is 3. In this case, the system is limited to find the first three transshipment locations from the source and the last three - from the destination.

**Search Depth for Connections**

This setting looks for connections including locations of a schedule (also freight orders and freight bookings) which are not explicitly defined as transshipment locations.

**Automatic Connection Determination**

This field specifies whether or not the setting described below are to be used.

**Ignore Schedules/Ignore Freight Orders/Ignore Freight Bookings**

This settings specify which object are to be ignored in the connection determination process, in case the setting is ticked.

For more information about the Transshipment Locations settings please see the ‘More Field Help’ of the fields.
**Default Routes**

The Default Routes settings are available from TM 9.1. With this section you can set the default routes which are considered when the routes are generated for the freight units, railcar units and container units during VSR optimization. In the optimizer settings you can specify how the default routes are used in freight unit, railcar unit and container unit processing during the VSR optimization. The following options are available:

- **Only Consider Default Routes**
  The optimizer only searches for default routes as possible routes.

- **Prefer Default Routes**
  The optimizer searches for default routes and generates alternative routes, too. If a default route is found as a possible route, it is automatically selected.

- **Also Consider Default Routes**
  The optimizer searches for default routes and generates alternative routes as possible routes. Then that route is selected which has the lowest transportation charges.

- **Do Not Consider Default Routes**
  The optimizer does not search for default routes as possible routes.

For more information about the default routes, please check the 'More Field Help' of the fields.

**Related Content**

**Related Documents**

- Planning Profile
- One-Step Planning
- VSR Optimization
- Generation of Transportation Proposals
- Freight Order Building Rule
- Incremental Planning
- Use of Default Routes in VSR Optimization
- Rough-Cat Planning

**Related SAP Notes/KBAs**

- SAP Note 1929303: Incremental Planning
- SAP Note 1969165: Incremental Planning 4
- SAP Note 2047935: Incremental planning of freight order not working
- SAP Note 1262709: RCCF: Information about reserving slots and destinations
- SAP Note 1520433: Whitepapers about SAP VSR-Optimizer
- SAP Note 1769077: Explanation of an optimization result
- SAP Note 2264823: Program termination in VSR optimization with default routes
- SAP Note 2174069: Default route not considered in automatic planning
- SAP Note 2166090: Default route not considered in automatic planning
- SAP Note 2043442: Dump in autom. planning with FU stages from default routes

- SAP KBA 2206990: Optimizer Planning runs for a long time [VIDEO]
- SAP KBA 2301678: No valid route only default routes are considered
- SAP KBA 2256626: Error during Optimizer run: "All planning-relevant transportation demands are fixed"