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Application Help for SAP Transportation Resource Planning

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Content

1 Document History

Please see the following table for major changes and enhancements of this document.

> **i** Note
>
> Before you start, make sure that you have the latest version of this document that is available at http://help.sap.com/trp500.

Version	Date	Change
1.4	2023-03-03	Updated the following topics for the 5.0.4 release: • SAP Transportation Resource Planning [page 10]: Updated the release number and date. • Creating Extended Columns [page 256]: Added information to the *Prerequistites* section.
1.3	2022-11-28	Updated the following topics for the 5.0.3 release: • SAP Transportation Resource Planning [page 10]: Updated the release number and date.

Version	Date	Change
1.2	2022-06-21	Updated the following topics for the 5.0.2 release: • SAP Transportation Resource Planning [page 10]: Updated the release number and date. • Creating Balancing Simulations [page 179]: Added details of the new cost adjustment determination rule. • Scenarios and Activities [page 183]: Added details of the new cost adjustment determination rule. • Making Location Assignments [page 166]: Added details of new date range filter. • Fields for Suggested Locations and Triangulations [page 172]: Added details of the new cost adjustment determination rule.
1.1	2022-03-29	Updated the following topics for the 5.0.1 release: • SAP Transportation Resource Planning [page 10]: Updated the release number and date.
1.0	2022-02-18	First release

2 SAP Transportation Resource Planning

Product Information

Product	SAP Transportation Resource Planning
Release	5.0.4
Based On	SAP HANA 2.0 SPS 05
Documentation Published	March 2023

SAP Transportation Resource Planning is a solution for planning, managing, and optimizing the use of your transportation resources. As an application that can integrate with a central logistics system such as SAP Transportation Management, SAP Transportation Resource Planning gives you access to highly detailed data and statistics about your resources. This helps you ensure that the right resource is available at the right time and in the right place.

Features

SAP Transportation Resource Planning helps you do the following:

- Monitor the current stock and status of your resources according to type and location
- Obtain forecasts of your supply and demand situation
- Track and monitor key performance indicators (KPIs) related to your resources
- Optimize the locations and dates for the pick-up and return of your transportation resources
- Make the best decision for correcting and preventing resource imbalances

Software Architecture

SAP Transportation Resource Planning uses a microservices-based architecture that provides the following advantages:

- Higher service availability
- Scalability (horizontal scale-out/in)
- Maintainability (smaller modular services)
- Cloud native development
- Performance
- Business domain-oriented data organization

The key objectives of this architecture are as follows:

- Convert a large, homogeneous structure into small pieces of programs
- Provide greater flexibility (fine-grained control of system resource allocation to individual business applications)
- Allow systematic data organization (by business domains)
- Allow highly-scalable applications
- Provide application programming interfaces (APIs) that are compatible with existing Web and database artifacts
- Enable asynchronous operations

Browser Support

SAP Transportation Resource Planning requires one of the following browsers:

On Windows Desktop and Mac OS

- Google Chrome: Latest version
- Microsoft Edge: Latest version

> **i** Note
>
> Use of Google Chrome at desktop resolutions with a minimum width of 1024 pixels is highly recommended for optimal display.

You can use SAP Transportation Resource Planning with no public internet access in an intranet environment.

3 Getting Started

The topics listed here describe some general aspects to consider before you start working with SAP Transportation Resource Planning.

Related Information

Logging On and Off [page 12]
Your User Profile [page 13]
Visibility of Planning Objects [page 14]
Searching and Filtering [page 15]
Configuring Table Layout [page 15]
Personalizing Views [page 17]
Overview of User Interface Features [page 18]
Notifications [page 20]

3.1 Logging On and Off

You log on to SAP Transportation Resource Planning with your user name and password. If you are using an initial password, you must reset your password after logging on for the first time.

Home Dashboard

After you have logged on, the *Home* dashboard opens. When you start working with SAP Transportation Resource Planning, you can set up this dashboard area to show information about stock levels, supply and demand forecasts, alert information, and KPIs relating to the locations and transportation resources for which you are responsible.

Resource Category

When you log on, you can also select the resource category that you want to work with in the upper right-hand corner. For example, this might be a resource category type for containers. The selected resource category determines which work centers are available and also affects the fields shown in some cases.

The identifier for the currently selected resource category remains visible at the upper right. To change the category, click the identifier and choose another resource category in the dropdown list.

> **i Note**
>
> Resource category is not relevant for work centers that are only available for administrators. The dropdown list for choosing a resource category is not available if you are using the *Administration* work center or the *Data Protection Privacy* work center.

Logging Off

To log off, choose  > *Sign Out* .

Related Information

Using the Home Dashboard [page 92]
Resource Categories [page 232]
Selecting a Resource Category [page 21]

3.2 Your User Profile

Your user profile allows you to set preferences for display formats, units of measurement, the appearance of the application, and your language and region.

Accessing and Modifying Your User Profile

To access your user profile, choose  > *Settings* in the upper-right corner of the SAP Transportation Resource Planning screen. The following settings are available:

- **User Account**
  You can choose your preferences for the following settings:
  - Date Format
  - Time Format
  - Decimal Notation
  - Temperature Unit
  - Distance Unit

    - Weight Unit
    - Volume Unit
- **Appearance**
  You can choose a theme for the appearance of the application.
- **Language and Region**
  You can choose your language and region. The following languages are available:
    - Browser Language

      > **i** Note
      >
      > If no language is selected, the application uses the same language as your browser. You can also choose *Browser Language* as your preference.

    - English
    - German
    - Spanish
    - French
    - Japanese
    - Portuguese
    - Russian
    - Chinese
    - English (Jamaica)

Related Information

Users and Roles [page 245]

3.3 Visibility of Planning Objects

Each main object in SAP Transportation Resource Planning has a visibility level. This makes it possible to limit access to objects.

Visibility Levels

The visibility can be set to one of the following levels:

- *Global*
  Objects with this visibility setting can be seen by everyone.
- *Personal*
  Objects with this visibility setting can only be seen by the user who created them and by the system administrator.

Changing the Visibility Level

The visibility level of an object can only be changed by the user who created it or by the system administrator.

3.4 Searching and Filtering

Search Fields

All work centers and selection dialogs provide a basic search function.

Sorting and Filtering in Tables

All work centers and selection dialogs allow you to sort and filter their content. This works as follows:

- You can display the additional filters available for the columns in a table.

  To do this, choose  at the upper left of the table.
  You can choose one or several criteria to use for filtering the results in a table.
- You can also sort and filter each column in the list individually.
  To do this, click a column header and select *Sort Ascending* or *Sort Descending* or use the *Filter* field, if available for the column.

3.5 Configuring Table Layout

Configure the table layout in a view by deciding which fields you want to display. You can choose from all standard fields and any available custom fields.

Prerequisites

If you want to display custom fields in a view, they must first be defined under *Administration* > *Extended Columns*.

Context

The table layout can be configured in the following views:

- In *Resource Visibility*:
  - *Resources*
  - *Moving Stock* > *Freight Bookings/Orders*
  - *Transportation Demand*
- In *Pick-Up and Return*:
  - *Location Assignment*

> **i** Note
>
> Some key fields are essential for correct display of data in a view. These fields cannot be hidden as part of table configuration.

Procedure

1. In the respective view, choose  *Configure Table Layout* in the toolbar.
2. In the dialog, select the fields that you want to display in the view.

   The *Static Columns* section shows all standard fields. The *Extended Columns* section shows any available custom fields. You can use the *Select All* option to select or deselect all columns at once in each section. If the checkbox for a field is selected and display-only, the field cannot be hidden.
3. Choose *OK* to make your changes effective.

Results

Your selections are immediately available in the view. To remove any table layout configuration, choose the *Restore to Default* option in the dialog.

Related Information

Creating Extended Columns [page 256]

3.6 Personalizing Views

Adjust the layout of a view and then save your preferences as a personalized view that you can use again.

Prerequisites

If you want to display custom fields in a view, they must first be defined under *Administration* > *Extended Columns*.

Context

You can personalize the layout of following views:

- *Transportation Units* under *Pick-Up and Return* > *Location Assignment*
- *Planned Activities* under *Resource Balancing* > *Simulation Balance*

This feature allows you to create multiple personalized views to suit different query and reporting purposes. For example, you can hide unnecessary columns and adjust the order of the columns so that the most important columns are displayed first. You can switch between your personalized views and you can change the settings of your saved personalized views. You can set one of your personalized views as the default view, so that it is automatically displayed each time you return to SAP Transportation Resource Planning. You can also make your personalized views available to other SAP Transportation Resource Planning users. At any time, you can return to the default layout by selecting the *Standard* view.

To personalize a view, you can make the following changes to the layout:

- Hide or unhide columns
- Change the order of the columns
- Adjust the width of columns

Procedure

1. In the respective view, choose  (*Configure Table Layout*) in the toolbar.
2. In the dialog, select the columns that you want to display in the view.

   The *Static Columns* section shows all standard fields. The *Extended Columns* section shows any available custom fields. You can use the *Select All* option to select or deselect all columns at once in each section. If the checkbox for a field is selected and display-only, the field cannot be hidden.
3. Choose *OK* to make your changes effective.
4. In the respective view, drag and drop the columns to achieve the desired column order.

5. In the toolbar, choose to display the *My Views* dialog.

   All of your existing views are listed here. If you have not created any other personalized views before, only the *Standard* view is listed.
6. Choose one of the following options:
   - *Save*: Choose this option to save your changes to the currently displayed view. This option is only available if the current view is a personalized view. You cannot change the *Standard* view.
   - *Save As*: Choose this option to save your changes to a new view.
7. If you choose *Save As*, a dialog is displayed where you can enter a name for your view and specify the following settings:
   - *Set as Default*: Select this checkbox to make this the default view.
   - *Public*: Select this checkbox to make this view available to other users.
8. Save your entries.

Results

Your personalized view is saved and is listed in the *My Views* dialog when you choose . You can switch between your saved views by choosing and then selecting the relevant view name. You can also adjust the settings of your personalized views by choosing  .

Related Information

Making Location Assignments [page 166]
Adding Activities to a Scenario [page 187]

3.7 Overview of User Interface Features

The user interface for SAP Transportation Resource Planning provides some basic functions for accessing selection dialogs, different views of planning data, and so on. The following table provides an overview of these functions and the buttons used to access them.

Button	What It Does
	Opens a selection dialog. Shown in fields in which you can make single or multiple selections.

Button	What It Does
	Opens a set of filters. Each filter provides a different way to narrow down the list. Shown for tabular lists.
	Opens a map view. Shown when data can also be displayed in a map view.
	Opens a table view. Shown when data can also be displayed in a table view.
	Opens a chart view. Shown when data can also be displayed in a bar chart view.
	Enables the editing of the object next to it, such as a pick-up or return date for a transportation unit or a scenario in a balancing simulation.
	Removes the object next to it, such as an assigned geographic object, resource type, or role.
	Opens a dialog box for configuring the layout of the current table to show only the columns that you are interested in. This command is available in the following views: • The *Resources*, *Moving Stock*, and *Transportation Demand* views in the *Resource Visibility* work center • The *Location Assignment* view in the *Pick-Up and Return* work center
	Switches to expert mode in the *Plan Execution* panel in the *Supply and Demand* work center. This shows a flow graph version of the calculation model for a plan. This is a detailed graphic view of the calculations used to compute the forecasted results for the plan.
	Switches to simple mode in the *Plan Execution* panel in the *Supply and Demand* work center. This shows a simple version of the calculation model for a plan. This mode provides a button for each result type included in the plan, for example, *Supply*.

Button	What It Does
	Opens a full-size view of the flow graph for a calculation model after switching to expert mode in the *Plan Execution* panel in the *Supply and Demand* work center, or a full-size view of the *Simulated Supply and Demand Status* panel in the *Resource Balancing* work center.
	In the *Home* dashboard, this sets the tile layout to two tiles in each row.
	In the *Home* dashboard, this sets the tile layout to three tiles in each row.

3.8 Notifications

Notifications are messages to inform you about the completion of any long-running, background processes that you have triggered. You can check your notifications at any time by choosing *Notifications* in the top-right corner of the SAP Transportation Resource Planning window.

Notifications can be created while you are working in SAP Transportation Resource Planning or even while you are logged out. Your notifications are saved and remain visible in the *Notifications* list until you close them by choosing one of the following options:

- *Navigate*: Choose this option to go directly to the source of the notification. The notification is then marked as read and is removed from the list.
- *Mark All As Read*: Choose this option to clear all your notifications at once.
-  : Choose the close icon for an individual notification to mark it as read and remove it from the list.

Notifications for Resource Balancing Activities

In the *Resource Balancing* work center, notifications are created for any long-running processes that the application performs in the background. For example, when you create a new simulation, or change the settings for an existing simulation, a network model is generated, which can take some time. While the process is running, you can continue work on something else, or even log out. Once the process has completed, a notification is created.

Related Information

Network Models [page 200]

4 Preparing for Resource Planning

Before you begin working with SAP Transportation Resource Planning, some fundamental elements must be in place. This section describes how to set up and work with each of these items.

Related Information

Selecting a Resource Category [page 21]
Location Groups [page 23]
Location Filters [page 25]
Resource Groups [page 28]
Resource Filters [page 31]
Cost Datasets [page 33]
Cost Models [page 42]
Network Setting Groups [page 45]
Multi-Attribute Filters [page 55]
Alert Rule Groups [page 58]
Time Filters [page 61]
Safety Stock Thresholds [page 65]
Depot Handling Capacity [page 67]

4.1 Selecting a Resource Category

A resource category is used to distinguish between the usage types of different classes of transportation resources. For example, if you have a resource category for containers, you use this category to organize different container types at a higher level.

Prerequisites

The resource category that you want to select must have been created and enabled by a system administrator for SAP Transportation Resource Planning.

Context

Before you can start planning and managing your resources in SAP Transportation Resource Planning, you must select a resource category, which determines what transportation resources you are going to work with and what work centers and views are available.

> **i** Note
>
> After you log on to SAP Transportation Resource Planning, a default resource category is already selected. The name of the current resource category is shown in the top-right corner of the window. If this is the resource category that you want, you can skip this task. Otherwise, follow the below steps to select a resource category.

Procedure

1. In the top-right corner of the SAP Transportation Resource Planning window, choose  (the *Resource Category* icon).

   > **i** Note
   >
   > The *Resource Category* icon is not available in the *Administration* or *Data Protection Privacy* work center. If you are in either of these two work centers, switch to another work center.

2. From a list of the available resource categories, choose the one that you want.

Results

The *Resource Category* changes to show the selected resource category type and name. Work centers and views are also refreshed according to what is defined in the selected resource category. You can now start working with the resources defined in the resource category.

Related Information

Resource Categories [page 232]

4.2 Location Groups

A location group is a set of geographic objects, including locations or regions. Each location group contains only one type of geographic object. Each location group has a primary location. This determines the position of the location group when you access it in a map view.

Location groups in SAP Transportation Resource Planning help you to organize and structure the geographical places and areas that you want to monitor for resource planning.

Use

You can use location groups to create a location filter. This is a way of grouping together locations that you use most frequently.

Managing Location Groups

To work with location groups, go to ▶ *Locations* ▶ *Location Groups* ▶. This opens the work center in which you manage location groups.

Related Information

Creating Location Groups [page 23]
Modifying Location Groups [page 24]
Deleting Location Groups [page 25]

4.2.1 Creating Location Groups

Prerequisites

Before you can create a location group, locations or regions must be available. These geographic objects are either retrieved from your logistics system or created in SAP Transportation Resource Planning.

> **i** Note
>
> Each location group can only contain one type of geographic object (locations or regions), but not a combination of the two.

Procedure

1. Go to *Locations* > *Location Groups*.
2. Choose *Create Group* and the type of group.
3. Enter a name and select the visibility level. If you choose *Personal*, only you and the system administrator can see the location group. If you choose *Global*, all users can see and use your location group.
4. Add the locations or regions to your group.
5. Select a primary location for the location group.

   This is used when displaying the location group in a map view.
6. Choose *OK*.

Results

The location group can now be used in location filters in SAP Transportation Resource Planning.

4.2.2 Modifying Location Groups

Prerequisites

A location group can only be modified by the user who created it or by the system administrator.

> **i Note**
>
> Before you modify a location group, you can check the *Where-Used* list for an overview of all of the location filters in which the group is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to *Locations* > *Location Groups*.
2. When you have found the location group that you want to change, click it to open the detailed view.
3. Choose *Edit*.

   You can use the *Add* and  options to adjust the geographic objects in the group. You can also change the primary location by selecting a geographic object in the *Primary Location* tab.

   > **i Note**
   >
   > You cannot remove the primary location of a location group if the group is used in a location filter, and the filter is already used in a balancing simulation that has not been finalized.

4. Make your changes and save your entries.

Results

If you change a location group that is used in a location filter, and the location filter is already used in a scheduled plan, the execution results for the plan become obsolete. You can execute the plan again manually or wait until the next execution to get the latest results. This also affects any virtual plans in which the scheduled plan is included.

4.2.3 Deleting Location Groups

Prerequisites

- A location group can only be deleted by the user who created it or by the system administrator.
- You cannot delete a location group if it is used in a location filter.

> **i** Note
>
> Before you delete a location group, you can check the *Where-Used* list for an overview of the location filters in which the group is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to *Locations* > *Location Groups*.
2. When you have found the group that you want to delete, click it to open the detailed view.
3. Choose *Edit*.
4. Choose *Delete*.

4.3 Location Filters

A location filter is a set of geographic objects or location groups. You create a location filter to save your frequently used geographic objects or location groups as a single item for selection.

Each location filter can only contain one type of geographic objects (locations, location groups, regions, or region groups), but not a combination of different types.

Use

Location filters in SAP Transportation Resource Planning help you to organize and structure the geographical places and areas that you want to monitor for resource planning. You use location filters when creating a plan to determine the geographic scope for your plan results.

Managing Location Filters

To work with location filters, go to *Locations* > *Location Filters*. This opens the work center in which you manage location filters.

Related Information

Creating Location Filters [page 26]
Modifying Location Filters [page 27]
Deleting Location Filters [page 28]

4.3.1 Creating Location Filters

Prerequisites

Each location filter can only contain one type of geographic object (locations, location groups, regions, or region groups), but not a combination of them.

> **i** Note
>
> If you create location filters containing location groups, the added location groups should not have any overlapping locations.

Procedure

1. Go to *Locations* > *Location Filters*.
2. Choose *Create Filter* and the type of filter.
3. Enter a name and select the visibility level. If you choose *Personal*, only you and the system administrator can see the location filter. If you choose *Global*, all users can see and use your location filter.
4. Add the geographic objects to your filter.

5. Choose *OK*.

Results

The location filter can now be used in plans in SAP Transportation Resource Planning.

4.3.2 Modifying Location Filters

Prerequisites

A location filter can only be modified by the user who created it or by the system administrator.

> **i** Note
>
> Before you modify a location filter, you can check the *Where-Used* list for an overview of all of the plans in which the filter is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to *Locations* > *Location Filters*.
2. When you have found the location filter that you want to change, click it to open the detailed view.
3. Choose *Edit*.

   You can use the *Add* and  options to adjust the geographic objects in the filter.
4. Make your changes and choose *Save*.

Results

If you change a location filter that is already used in a plan, the execution results for the plan become obsolete. You can execute the plan again manually or wait until the next execution of the plan to get the latest results. This also affects any virtual plans in which the plan is included.

If the plan with the modified location filter is already used in a balancing simulation, you need to synchronize the network datasets in the *Resource Balancing* work center.

4.3.3 Deleting Location Filters

Prerequisites

- A location filter can only be deleted by the user who created it or by the system administrator.
- You cannot delete a location filter if it is used in a plan.

> **i** Note
>
> Before you delete a location filter, you can check the *Where-Used* list for an overview of the plans in which the filter is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to *Locations* > *Location Filters*.
2. When you have found the filter that you want to delete, click it to open the detailed view.
3. Choose *Edit*.
4. Choose *Delete*.

4.4 Resource Groups

A resource group is a set of resource types. You can use resource groups to organize your transportation resources according to your business needs. For example, you can set up different groups according to resource size. Resource groups can then be used in resource filters.

Use

You can use resource groups to create a resource filter. This is a way of grouping together resource types that you use most frequently in resource planning.

Managing Resource Groups

To work with resource groups, go to *Resources* > *Resource Groups*. This opens the work center in which you manage resource groups.

Related Information

Creating Resource Groups [page 29]
Modifying Resource Groups [page 29]
Deleting Resource Groups [page 30]

4.4.1 Creating Resource Groups

Prerequisites

Before you can create a resource group, resource types must be available. These resource types are retrieved from your logistics system.

Procedure

1. Go to *Resources* > *Resource Groups*.
2. Choose *Create Group*.
3. Enter a name and select the visibility level. If you choose *Personal*, only you and the system administrator can see the resource group. If you choose *Global*, all users can see and use your resource group.
4. Add resource types to your group.
5. Choose *OK*.

Results

The resource group can now be used in resource filters in SAP Transportation Resource Planning.

4.4.2 Modifying Resource Groups

Prerequisites

A resource group can only be modified by the user who created it or by the system administrator.

> **i** Note
>
> Before you modify a resource group, you can check the *Where-Used* list for an overview of all of the resource filters in which the group is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to *Resources* > *Resource Groups*.
2. When you have found the resource group that you want to change, click it to open the detailed view.
3. Choose *Edit*.

   You can use *Add* and  to adjust the resource types in the group.
4. Make your changes and save your entries.

Results

If you change a resource group that is used in a resource filter, and the resource filter is already used in a scheduled plan, the execution results for the plan become obsolete. You can execute the plan again manually or wait until the next execution to get the latest results. This also affects any virtual plans in which the scheduled plan is included.

4.4.3 Deleting Resource Groups

Prerequisites

- A resource group can only be deleted by the user who created it or by the system administrator.
- You cannot delete a resource group if it is used in a resource filter

> **i** Note
>
> Before you delete a resource group, you can check the *Where-Used* list for an overview of the resource filters in which the group is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to *Resources* > *Resource Groups*.
2. When you have found the group that you want to delete, click it to open the detailed view.
3. Choose *Edit*.
4. Choose *Delete*.

4.5 Resource Filters

A resource filter is a set of resource types or resource groups. You create a resource filter to save your frequently used resource types or groups as a single item for selection.

Each resource filter can only contain resource types or resource groups, but not a combination of the two.

Use

You use resource filters when creating a plan to determine which resources to include in your plan results.

Managing Resource Filters

To work with resource filters, go to *Resources* > *Resource Filters*. This opens the work center in which you manage resource filters.

Related Information

Creating Resource Filters [page 31]
Modifying Resource Filters [page 32]
Deleting Resource Filters [page 33]

4.5.1 Creating Resource Filters

Prerequisites

Before you can create resource filters, resource types and resource groups must be available in your SAP Transportation Resource Planning system.

> **i Note**
>
> Each resource filter can only contain resource types or resource groups, but not a combination of the two.

Procedure

1. Go to *Resources* > *Resource Filters*.
2. Choose *Create Filter* and the type of filter.
3. Enter a name and select the visibility level. If you choose *Personal*, only you and the system administrator can see the resource filter. If you choose *Global*, all users can see and use your resource filter.
4. Add the resource types or resource groups to your filter.
5. Choose *OK*.

Results

The resource filter can now be used in plans in SAP Transportation Resource Planning.

4.5.2 Modifying Resource Filters

Prerequisites

A resource filter can only be modified by the user who created it or by the system administrator.

> **i** Note
>
> Before you modify a resource filter, you can check the *Where-Used* list for an overview of all of the plans in which the filter is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to *Resources* > *Resource Filters*.
2. When you have found the resource filter that you want to change, click it to open the detailed view.
3. Choose *Edit*.

   You can use *Add* and  to adjust the resource types or resource groups in the filter.
4. Make your changes and save your entries.

Results

If you change a resource filter that is already used in a plan, the execution results for the plan become obsolete. You can execute the plan again manually or wait until the next execution to get the latest results. This also affects any virtual plans in which the plan is included.

4.5.3 Deleting Resource Filters

Prerequisites

- A resource filter can only be deleted by the user who created it or by the system administrator.
- You cannot delete a resource filter if it is used in a plan.

> **i** Note
>
> Before you delete a resource filter, you can check the *Where-Used* list for an overview of the plans in which the filter is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to *Resources* > *Resource Filters*.
2. When you have found the filter that you want to delete, click it to open the detailed view.
3. Choose *Edit*.
4. Choose *Delete*.

4.6 Cost Datasets

A cost dataset is an object that includes cost information for calculating transportation, handling, or storage costs. Each dataset has a currency setting based on which costs are calculated.

Use

Cost datasets help you to determine costs such as transportation, storage, or handling of resources. You use cost datasets to create a cost model. A cost model can contain multiple cost datasets of any type. A cost dataset can have a different currency setting to the cost model in which it is used. During the cost calculation, the cost dataset is converted to the cost model currency.

Cost Dataset Types

You can use the following types of cost datasets in cost models:

- *Distance-Based Costs*
  Used to calculate transportation costs based on means of transport, resource type, and carrier. It reads cost data from your logistics system or a prepared cost file in CSV format, or both.
  You can specify for which carriers a distance-based cost dataset is applicable. If no carrier is specified, it applies to all carriers.
- *Location-Based Costs*
  Used to calculate transportation costs based on pairs of from and to locations, means of transport, resource type, and carrier. It reads cost data from your logistics system or a prepared cost file in CSV format, or both.
  You can specify for which carriers a location-based cost dataset is applicable. If no carrier is specified, it applies to all carriers.
- *Handling Costs*
  Used to calculate handling costs based on location, resource type, handling type, and the means of transport involved. It can only read cost data from a prepared cost file in CSV format.
- *Time-Based Storage Costs*
  Used to calculate storage costs based on resource type, storage location, and the time that the resources are stored. It can only read cost data from a prepared cost file in CSV format.
- *Quantity-Based Storage Costs*
  Used to calculate storage costs based on resource type, storage location, and the quantity of resources that are stored. It can only read cost data from a prepared cost file in CSV format.

> **i Note**
>
> For a distance-based or location-based dataset that retrieves data from your logistics system, you must manually refresh the retrieved data in the dataset to make sure that the latest data from the logistics system is used. For more information, see Refreshing Data in Cost Datasets [page 40].
>
> The data retrieved from the logistics system takes precedence over the data in the prepared cost file in CSV format.

Managing Cost Datasets

To work with cost datasets, go to *Costs* > *Cost Datasets*.

Related Information

Preparing Cost Files [page 35]
Creating Cost Datasets [page 39]
Refreshing Data in Cost Datasets [page 40]
Modifying Cost Datasets [page 40]

Deleting Cost Datasets [page 41]

4.6.1 Preparing Cost Files

Cost files are used to provide cost data to a cost dataset. If your cost dataset reads data entirely or partly from cost files, you must prepare these files before creating the cost dataset.

All of the cost files must be in CSV (comma-separated values) format. This format contains a column header line (first line) that defines the fields and subsequent lines containing values for the fields.

CSV files can be created from most spreadsheet programs.

The following describes the cost files used in SAP Transportation Resource Planning. You must follow the listed file format, especially the sequence of the columns.

> ⚠ Caution
>
> For handling cost datasets and storage cost datasets, ensure that all possible cases are covered for cost determination. You can use the asterisk as a wildcard (to mean that the cost applies for all) where appropriate. Note that if the system cannot find any results from the cost model, incorrect results may be proposed in the *Pick-Up and Return* work center and in the *Resource Balancing* work center.

Distance-Based Transportation Costs

This file defines per kilometer transportation costs for different resource types based on means of transport and carrier. The fields in the header line are as follows:

- *Means of Transport*: The transportation means defined in your logistics system. You can use either a specific means of transport ID or an asterisk as a wildcard here.
- *Type*: The resource type for which the cost applies. You can use the asterisk as a wildcard here. You can enter a specific type only when the *UoM* field is **PCs**. The cost in PCs takes priority over the cost in TEU.
- *Carrier*: The carrier for which the cost applies. You can use the asterisk as a wildcard here, meaning the cost applies for all carriers.
- *UoM*: The unit of measure of the cost amount. For example, **PCs** defines the cost per piece per kilometer, and **TEU** defines the cost per twenty-foot equivalent unit per kilometer.
- *Amount*: The amount of the transportation cost.

Sample File: Distance-Based Transportation Costs

Means of Transport	Type	Carrier	UoM	Amount
0001	40RF	12345	PCs	2,5
0001	20*	11345	PCs	2,2
0002	*	12366	TEU	2,8

> **i Note**
>
> Ensure that you maintain the *Means of Transport* correctly as in your logistics system, for example, 0001 - Truck, 0002 - Rail, and so on.

Location-Based Transportation Costs

This file defines transportation costs for different resource types based on means of transport, source location, destination location, and carrier. The fields in the header line are as follows:

- *From Location*: Source location of the transportation
- *To Location*: Destination of the transportation
- *Means of Transport*: The transportation means defined in your logistics system. You can use either a specific transportation means ID or an asterisk as a wildcard here.
- *Resource Type*: The resource type for which the cost applies. You can use the asterisk as a wildcard here.
- *Carrier*: The carrier for which the cost applies. You can use the asterisk as a wildcard here, meaning the cost applies for all carriers.
- *UoM*: The unit of measure of the cost amount. For example, **PCs** defines the cost per piece, and **TEU** defines the cost per twenty-foot equivalent unit.
- *Amount*: The amount of the transportation cost

Sample File: Location-Based Transportation Costs

From Location	To Location	Means of Transport	Resource Type	Carrier	UoM	Amount
AAAA	BBBB	0001	40RF	12345	PCs	20,5
AAAA	BBBB	0001	20*	11345	PCs	18,8
BBBB	CCCC	0002	*	12366	TEU	10,5

> **i Note**
>
> Ensure that you maintain the *Means of Transport* correctly as in your logistics system, for example, 0001 - Truck, 0002 - Rail, and so on.

Handling Costs File

This file defines gate-in/gate-out charges at storage locations between means of transport. The fields in the header line are as follows:

- *Location*: The location where the handling occurs. You can use the asterisk as a wildcard here.
- *Handling Type*: Type of handling tasks. You can use the asterisk as a wildcard here.

- *From Means of Transport*: The means of transport before the handling. You can use either a specific transportation means ID or an asterisk as a wildcard here.
- *To Means of Transport*: The means of transport after the handling. You can use either specific transportation means ID or an asterisk as a wildcard here.
- *Resource Type*: The resource type for which the cost applies. You can use the asterisk as a wildcard here.
- *UoM*: Unit of measure of the handling cost. For example, **PCs** defines the cost per piece, and **TEU** defines the cost per twenty-foot equivalent unit.
- *Amount*: The amount of the handling cost

Sample File: Handling Costs

Location	Handling Type	From Means of Transport	To Means of Transport	Resource Type	UoM	Amount
AAAA	UNLOAD	0001	*	40RF	PCs	2,5
AAAA	LOAD	*	0002	20*	PCs	2,2
BBBB	LOAD	0002	*	*	TEU	2,8

> **i** Note
>
> Ensure that you maintain the *From Means of Transport* and the *To Means of Transport* correctly as in your logistics system, for example, 0001 - Truck, 0002 - Rail, and so on.

Quantity-Based Storage Costs

This file defines the quantity-based storage costs for different resource types at different locations. The fields in the header line are as follows:

- *Resource Type*: The resource type for which the cost applies. You can use the asterisk as a wildcard here.
- *Location*: Storage location. You can use the asterisk as a wildcard here.
- *Free Pool Type*: The resource quantity in a storage location always changes. When the storage cost is calculated based on quantity, the storage cost level needs to be adjusted from time to time. This field specifies the frequency to adjust the cost level. For example, if the frequency is weekly, the storage cost level is adjusted every week.
- *Start At*: The specific day to adjust the storage cost level. For example, if free pool type is weekly, and the *Start At* field is set as Tuesday, the storage cost level is adjusted every Tuesday according to the resource quantity on that day.
- *Start Time*: The specific time in a day to adjust the storage cost level. For example, if free pool type is weekly, the day to start on is Tuesday, and start time is 8:00 AM, then the storage cost level is adjusted every Tuesday at 8:00 AM according to the resource quantity at that time.
- *Threshold From*: The lower threshold of the quantity range
- *Threshold To*: The upper threshold of the quantity range
- *Per Diem Cost*: The storage cost per day for the quantity range specified by *Threshold From* and *Threshold To*

- *UoM*: Unit of measure of the storage cost. For example, **PCs** defines the cost per piece, and **TEU** defines the cost per twenty-foot equivalent unit.

Sample File: Quantity-Based Storage Costs

Resource Type	Location	Free Pool Type	Starts At	Start Time	Threshold From	Threshold To	Per Diem Cost	UoM
40HC	AAAA	Weekly	1	08:00:00 AM	1	200	3	PCs
40HC	AAAA	Weekly	1	08:00:00 AM	201	500	2	PCs
40HC	AAAA	Weekly	1	08:00:00 AM	501		1,5	PCs
20*	AAAA	Weekly	1	08:00:00 AM	1	100	1	PCs
20*	AAAA	Weekly	1	08:00:00 AM	101		0.8	PCs

Time-Based Storage Costs

This file defines the time-based storage costs for different resource types at different locations. The fields in the header line are as follows:

- *Resource Type*: The resource type for which the cost applies. You can use the asterisk as a wildcard here.
- *Location*: Storage location. You can use the asterisk as a wildcard here.
- *From Day*: The day from which the specified cost applies
- *To Day*: The day until which the specified cost applies
- *Per Diem Cost*: The storage cost per day during the time period specified by *From Day* and *To Day*
- *UoM*: Unit of measure of the storage cost. For example, **PCs** defines the cost per piece, and **TEU** defines the cost per twenty-foot equivalent unit.

Sample File: Time-Based Storage Costs

Resource Type	Location	From Day	To Day	Per Diem Cost	UoM
10HC	AAAA	1	7	0	PCs
10HC	AAAA	8	56	5	PCs
10HC	AAAA	57		7	PCs
20*	AAAA	1	10	0	PCs

Resource Type	Location	From Day	To Day	Per Diem Cost	UoM
20*	AAAA	11	100	7	PCs
20*	AAAA	101		9	PCs

4.6.2 Creating Cost Datasets

Prerequisites

- If you want your cost dataset to read cost data entirely or partly from a cost file in CSV format, you must create the file in advance. For more information, see Preparing Cost Files [page 35].
- You can configure datasets of distance-based and location-based costs to retrieve cost data from your logistics system. In order to do this, you need to know the cost profile ID or the purchase organization ID based on which the cost information can be retrieved.

Procedure

1. Go to *Costs* > *Cost Datasets*.
2. Choose *Create Dataset* and the type of dataset.
3. Enter a name and description.
4. Enter the currency of the cost amount.
5. If you are creating a dataset of distance-based or location-based costs, do the following:
   a. Decide on the data source by selecting a connector type under *Cost Connector Setting*.
      - Select *None* if you do not want the dataset to retrieve cost data from your logistics system.
      - Select *Cost Profile*, *Custom*, or *Purchase Organization* if you want the dataset to retrieve cost data from your logistics system. Then specify the cost profile, and/or purchase organization from which the dataset retrieves required cost data.

        > **i Note**
        >
        > If your logistics system is SAP TM, the cost profile you specify should match the ID of the transportation cost setting in SAP TM.

      - If your connector type is not *None*, make an entry in the *Refresh Data Older Than* field. Later on when you manually refresh the retrieved data in the dataset, only records older than the specified time are updated. For more information on refreshing this data, see Refreshing Data in Cost Datasets [page 40].
   b. Specify carriers by choosing *Add* under *Carriers* and selecting the carriers in the list. The cost data in the dataset only applies to the carriers that you specify. If no carrier is specified, then the dataset is applicable for all carriers.

c. Specify a CSV files by choosing *Upload CSV*. A CSV file is required if your connector type is *None*, and optional for other connector types.

6. If you are creating a dataset of handling or storage costs, upload a CSV file by choosing *Upload CSV*.
7. Save your entries.

Results

The cost dataset can now be added to cost models.

4.6.3 Refreshing Data in Cost Datasets

Prerequisites

- The cost datasets are either of distance-based transportation costs or location-based transportation costs.
- The connector types for the cost datasets are not *None*, which means they retrieve cost data from your logistics system.

Procedure

1. Go to *Costs* > *Cost Datasets*.
2. When you have found the cost dataset that you want to change, click it to open the detailed view.
3. Choose in the *Cost Connector Setting* area.

Results

The cost data in the dataset is updated by the latest data retrieved from your logistics system. The entry that you made in the *Refresh Data Older Than* field determines the scope of the action. Only records that are older than the date specified here are updated when you trigger a refresh.

4.6.4 Modifying Cost Datasets

Prerequisites

A cost dataset can only be modified by the user who created it or by the system administrator.

Procedure

1. Go to *Costs* > *Cost Datasets*.
2. When you have found the cost dataset that you want to change, click it to open the detailed view.
3. Choose *Edit*, and make your changes.

   > **i Note**
   >
   > When uploading a new CSV file, you can either choose *Overwrite* to remove all the old records and replace them with new records in the new file, or choose *Append* to keep the old records and just add new and updated ones.
   >
   > You can also download the current CSV file by choosing *Download CSV* and use it as the basis for creating a new CSV file.

4. Save your changes.

Results

If you have already added the cost dataset to a cost model, and the model is used in a pick-up/return ruleset or a balancing simulation as part of a network setting group, the results of the ruleset execution or balancing simulation become obsolete.

4.6.5 Deleting Cost Datasets

Prerequisites

- A cost dataset can only be deleted by the user who created it or by the system administrator.
- You cannot delete a cost dataset if it is used in a cost model.

  > **i Note**
  >
  > Before you delete a cost dataset, you can check the *Where-Used* list for an overview of the cost models in which the dataset is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to *Costs* > *Cost Datasets*.
2. When you have found the cost dataset that you want to delete, click it to open the detailed view.
3. Choose *Edit*.

4. Choose *Delete*.

4.7 Cost Models

A cost model consists of one or more cost datasets, which can have different currencies. The cost datasets are arranged in an ordered list. When the cost model is used for cost calculation, the datasets in the list are queried in order until the cost data is found or the end of the list is reached. If the currency defined in the cost dataset is different to the cost model currency, it is converted to the cost model currency during the cost calculation.

In a cost model, each dataset of distance-based or location-based transportation costs has additional filters for means of transport and carriers to specify where to look for specific costs.

> **i Note**
>
> A dataset of distance-based or location-based transportation costs has its own carrier setting. When setting the carrier filter for such a dataset in a cost model, make sure that the filter setting of the dataset itself covers the carriers specified in the carrier filter of the dataset in the cost model. For example, if the carrier setting for a cost dataset is A, B, and C, its carrier filter in the cost model must be a subset of A, B, and C.
>
> A dataset's carrier filter in the cost model cannot be empty unless its own carrier setting is empty, which means the dataset is applicable for all carriers.

Use

Cost models help you to calculate costs such as transportation, storage, or handling of resources. You use cost models in network setting groups to support what-if analysis and decision-making.

When you create a network setting group, you must select a main cost model and an optional secondary cost model. The main cost model must include at least one distance-based cost dataset, which specifies the cost for a certain length of distance.

After you apply a network setting group in a balancing simulation, the simulation uses the distance-based cost data in the main cost model to calculate the costs for multi-stage paths, and uses both the main model and the secondary model, if available, to calculate the costs for routes.

> **i Note**
>
> The relevant costs (transportation, storage, or handling costs) are calculated in the cost model currency. If the currency defined in the cost dataset is different to the cost model currency, then the costs are converted to the cost model currency automatically. The exchange rates are maintained in SAP Transportation Management master data and must be replicated to the SAP Transportation Resource Planning database using SAP Landscape Transformation Replication Server.

Managing Cost Models

To work with cost models, go to *Costs* > *Cost Models*.

Related Information

Creating Cost Models [page 43]
Modifying Cost Models [page 44]
Deleting Cost Models [page 45]

4.7.1 Creating Cost Models

Prerequisites

Before you can create a cost model, the cost datasets that you need for the model must be available.

Procedure

1. Go to *Costs* > *Cost Models*.
2. Choose *Create Model*.
3. Enter a name and description.
4. Specify a currency.
5. Under *Cost Datasets*, choose *Add* and add the cost datasets to your model.

   > **i** Note
   >
   > You can assign cost datasets with different currencies to a cost model. The costs from the different cost datasets are converted to the currency defined in the cost model during the cost calculation for pick-up and return as well as resource balancing.

6. Adjust the order of the datasets in the list by selecting a dataset and choosing *Move Up* or *Move Down*.
7. For each dataset of distance-based or location-based transportation costs, click the link text in the *Means of Transport* and *Carrier Filter* columns to add the means of transport and carriers for which the cost data is applicable.

   > **i** Note
   >
   > A dataset of distance-based or location-based transportation costs has its own carrier setting. When setting the carrier filter for such a dataset in a cost model, make sure that the filter setting of the dataset itself covers the carriers specified in the carrier filter of the dataset in the cost model. For

example, if the carrier setting for a cost dataset is A, B, and C, its carrier filter in the cost model must be a subset of A, B, and C.

A dataset's carrier filter in the cost model cannot be empty unless its own carrier setting is empty, which means the dataset is applicable to all carriers.

8. Save your entries.

Results

The cost model can now be used in network setting groups.

4.7.2 Modifying Cost Models

Prerequisites

A cost model can only be modified by the user who created it or by the system administrator.

> **i** Note
>
> Before you modify a cost model you can check the *Where-Used* list for an overview of all of the network setting groups in which the cost model is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to *Costs* > *Cost Models*.
2. When you have found the cost model that you want to change, click it to open the detailed view.
3. Choose *Edit*.

   You can use *Add* and  to adjust the cost datasets in the model.
4. Make your changes and save your entries.

Results

If you change a cost model that is already used in a pick-up or return ruleset or a balancing simulation through the use of network setting group, the results of the ruleset execution or balancing simulation become obsolete.

4.7.3 Deleting Cost Models

Prerequisites

- A cost model can only be deleted by the user who created it or by the system administrator.
- You cannot delete a cost model if it is used in a network setting group.

> **i** Note
>
> Before you delete a cost model, you can check the *Where-Used* list for an overview of the objects in which the model is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to *Costs* > *Cost Models*.
2. When you have found the cost model that you want to delete, click it to open the detailed view.
3. Choose *Edit*.
4. Choose *Delete*.

4.8 Network Setting Groups

A network setting group consists of one or two cost models and a set of network settings that can be assigned as a whole to a balancing simulation.

The currency unit of a network setting group comes from the currency setting of the included cost model. If two cost models, a main model and a secondary model, are included in a network setting group, they must have the same currency setting.

The main cost model in a network setting group must contain the distance-based cost information, which specifies the cost for a certain length of distance.

Use

You use network setting groups in pick-up or return rulesets and balancing simulations for running resource balancing.

When a network setting group is used in a pick-up/return ruleset, only the main cost model in the network setting group is used. The secondary cost model (if available) and network settings are not used.

When a network setting group is used in a balancing simulation, the simulation uses the distance-based cost data in the main cost model to calculate the costs for multi-stage paths, and uses both the main model and the

secondary model (if available) to calculate the costs for routes. The network settings in the group are used to control the process for generating multi-stage paths and routes, as well as for running automatic balancing.

Managing Network Setting Groups

To work with network setting groups, go to *Costs* > *Network Setting Groups*.

Related Information

Network Settings [page 46]
Creating Network Setting Groups [page 53]
Modifying Network Setting Groups [page 54]
Deleting Network Setting Groups [page 55]

4.8.1 Network Settings

SAP Transportation Resource Planning integrates different algorithms for generating network models, routes, and proposing empty repositioning activities in automatic balancing. Each algorithm can have specific execution settings, such as the maximum number of paths and routes, the maximum automatic balancing runtime, and so on.

To apply the specific execution settings, you must specify network settings in network setting groups. The table shows the available network settings and detailed descriptions. The usage of each setting is defined as follows:

- *Path*: The setting is used for generating multi-stage paths in a network model.
- *Route*: The setting is used for generating routes.
- *Optimization*: The setting is used for automatic resource balancing, such as proposing empty repositioning activities.

> **i Note**
>
> Some settings are required and must have values. Some are optional, and default values are applied if you do not specify them.

Setting	Type	Usage	Value	Description
Maximum Number of Multi-Stage Paths	Required	*Path*	At least **1**	Maximum number of multi-stage paths to be generated in a network model.

Maximum Number of Transshipments	Optional	*Path*	**0** or greater Default: **2**	Maximum number of transshipments allowed in a multi-stage path.
Use Dynamic Maximum Transshipments	Optional	*Path*	*Yes* or *No* Default: *No* (unmarked checkbox)	When this field is set to *No*, the maximum number of transshipments allowed in a multi-stage path is determined by the value of the *Maximum Number of Transshipments* setting. When this field is set to *Yes*, the maximum number of transshipments is a dynamic value calculated by the value of *Maximum Number of Transshipment* multiplying the transshipments number of the shortest path.
Use Single-Stage Path Only Once	Optional	*Path*	*Yes* or *No* Default: *Yes* (marked checkbox)	When this field is set to *Yes*, a single-stage path can only be used once in each multi-stage path.
Use Transshipment Location Only Once	Optional	*Path*	*Yes* or *No* Default: *Yes* (marked checkbox)	When this field is set to *Yes*, a transshipment location can only be used once in each multi-stage path.
Allow Circular Single-Stage Paths	Optional	*Path*	*Yes* or *No* Default: *Yes* (marked checkbox)	When this field is set to *Yes*, a multi-stage path can include circular single-stage paths. For example, a single-stage path from A to B and from B to A can appear in the same multi-stage path.

Criteria for Path Generation	Required	*Path*	*Cost*, *Distance*, and/or *Duration* Default: *Cost*	Specifies the criteria for generating multi-stage paths. For example, when this field is set to *Cost*, then the multi-stage paths with lowest costs are generated first. You can select more than one option.
Thread Number for Path Generation	Optional	*Path*	At least **1** Default: **1**	Thread number for path generation.
Allow Contiguous Lanes	Optional	*Path*	*Yes* or *No* Default: *No*	When this field is set to *Yes*, a multi-stage path can contain contiguous lanes.
Maximum Number of Routes	Required	*Route*	Default: **1** Recommended Range: **5** to **10**	Maximum number of routes to be generated. ⚠ Caution If you set this field to a value greater than 10, it could impact the application's performance.
Criteria for Route Generation	Required	*Route*	*Cost*, *Distance*, and/or *Duration* Default: *Cost*	Specifies the criteria for generating routes. For example, when this field is set to *Cost*, then the routes with least costs are generated first. You can select more than one option.
Thread Number for Route Generation	Optional	*Route*	At least **1** Default: **1**	Thread number for route generation.

Time Threshold for Indicating Roll-Over	Optional	*Route*	**0** or greater (in minutes) Default: **0**	A transportation resource, such as a container, might be unloaded from and loaded on again to the same vehicle for convenience of loading or uploading other resources. If the time between the arrival of the previous schedule and the departure of the next schedule is within the specified value, the assumption is that no transshipment takes place. The default value is **0**, meaning the transshipment takes place anyway. Note that the previous schedule and next schedule must be scheduled departures, not lanes without schedules.
Maximum Runtime	Optional	*Optimization*	At least **1** (in seconds) Default: **100**	Maximum time for running automatic balancing. When this time is reached, the algorithm stops running, even if no solution is found.

Optimization Type	Optional	*Optimization*	*Large Scale* or *Extremely Large Scale* Default: *Large Scale*	The two optimization types use different methods to run automatic resource balancing. The *Large Scale* optimization type is faster when data volume is less than 10^6. The *Extremely Large Scale* type is faster when data volume is greater than 10^6.
Time Limit for Path and Route Generation	Optional	*Route and Path*	At least **0** (in seconds) Default: **600**	Specifies the time limit for generating paths and routes. When the specified time is reached, the system stops the generation even if the maximum number of paths or routes is not reached. Setting this field to **0** disables the time limit.

Factor for Cost/ Distance/Duration Threshold	Optional	*Route and Path*	At least **0** (in seconds) Default: **10**	Controls when the path or route generation stops even if the maximum number of paths or routes or the time limit is not reached. This setting works according to the *Criteria for Path Generation* and *Criteria for Route Generation* settings. For example, if this field is set to **5**, and *Criteria for Path Generation* is set to *Cost*, the path generation first generates a path with the lowest cost, and then the paths with higher costs. The generation stops when the cost of a path exceeds **5** times of the lowest cost. If this field is set to **3**, and the *Criteria for Route Generation* field is set to *Distance*, the route generation stops when the distance of a route exceeds **3** times of the shortest distance.

Base Resource Type	Read-only	*Path and Route and Optimization*		Specifies the representative resource type used for calculating resource-related costs with TEU as the unit of measure using an SAP TM service. The base resource type is read from the relevant resource category settings. You cannot change it in the Network Setting Group dialog box. If a valid base resource type is not available, a warning icon is shown. You can click the icon to view details.
Handling Capacity	Optional	*Optimization*	*Yes* or *No* Default: *No*	When this field is set to *Yes*, the handling capacity constraint is applied.
Exclude in Handling Capacity	Optional	*Optimization*	*ON-OFF HIRE*, *MAINTENANCE AND REPAIR*, and *OVERDUE ACTIVITIES*	Specifies the types of activities to exclude from the handling capacity consumption. For example, if you choose the *ON-OFF HIRE* setting, then the handling capacity is not consumed by on-off hire activities.

TM and TRP with 1:1 Relationship	Optional	*Optimization*	*Yes* or *No* Default: *No*	Specifies the relationship between the quantity in SAP Transportation Resource Planning resource simulation activities and SAP TM TRQ documents. For example, if you choose *Yes*, activities with a quantity larger than one will be split into multiple activities with only one piece (pc) each. Therefore, the TRQ documents created in SAP TM will only consist of a one pc resource.

4.8.2 Creating Network Setting Groups

Prerequisites

Before you can create a network setting group, the cost models that you want to use in the group must be available. The main cost model in a network setting group must contain the distance-based cost information, which specifies the cost for a certain length of distance.

Procedure

1. Go to go to *Costs* > *Network Setting Groups*.
2. Choose *Create*.
3. Enter a name and description.
4. Select a main cost model.

   The main cost model must contain a distance-based cost dataset.
5. If necessary, select a secondary cost model.

   The currency units of the main and secondary cost models must be the same.
6. Specify the network settings.

   For detailed description of each network setting, see Network Settings [page 46].

7. Choose *Save*.

Results

The network setting group can now be used in pick-up or return rulesets and balancing simulations.

Related Information

Network Settings [page 46]

4.8.3 Modifying Network Setting Groups

Prerequisites

A network setting group can only be modified by the user who created it or by the system administrator.

> **i** Note
>
> Before you modify a network setting group, you can check the *Where-Used* list for an overview of all of the pick-up or return rulesets and balancing simulations in which the group is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to ▶ *Costs* ▶ *Network Setting Groups* ▶.
2. When you have found the network setting group that you want to change, click it to open the detailed view.
3. Choose *Edit*.
4. Make your changes and save your entries.

Results

If the changed network setting group is already used in a balancing simulation that has not been finalized or in a ruleset for pick-up or return, the results of the balancing simulation or ruleset execution become obsolete.

4.8.4 Deleting Network Setting Groups

Prerequisites

- A network setting group can only be deleted by the user who created it or by the system administrator.
- You cannot delete a network setting group if it is used in a balancing simulation that has not been finalized or in a ruleset for pick-up or return.

> **i** Note
>
> Before you delete a group, you can check the *Where-Used* list for an overview of the objects in which the group is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to *Costs* > *Network Setting Groups*.
2. When you have found the network setting group that you want to delete, click it to open the detailed view.
3. Choose *Edit*.
4. Choose *Delete*.

4.9 Multi-Attribute Filters

A multi-attribute filter is a set of attributes. Each attribute consists of the following:

- The attribute name and category
- An operator text, such as *is* or *is not*
- One or more values for the attribute

The filter finds all resources that meet the criteria that you have entered for the attributes and their values. Each attribute can be added once to a multi-attribute filter. If you enter more than one value for an attribute, the filter finds resources that have any one of the entered values.

Use

Multi-attribute filters provide an additional means of filtering your transportation resources. In addition to filtering by resource type, with multi-attribute filters you can filter according to specific attributes and attribute values. You can group together resource attributes that you use frequently in a multi-attribute filter.

You can then apply the filters in the following views in the *Resource Visibility* work center in SAP Transportation Resource Planning:

- *Stock*
- *Resources*

You can also use multi-attribute filters in supply and demand plans. This allows you to supplement the resource filters used in the plans and filter more exactly to find the transportation resources that you are responsible for.

Managing Multi-Attribute Filters

To work with these filters, go to *Resources* > *Multi-Attribute Filters*. This opens the work center in which you manage multi-attribute filters.

Related Information

Creating Multi-Attribute Filters [page 56]
Modifying Multi-Attribute Filters [page 57]
Deleting Multi-Attribute Filters [page 58]

4.9.1 Creating Multi-Attribute Filters

Prerequisites

If you want to use extended columns in your multi-attribute filter, ensure they have been created by a user with the role of administrator.

Procedure

1. Go to *Resources* > *Multi-Attribute Filters*.
2. Choose *Create Filter*.
3. Enter a name and select the visibility level. If you choose *Personal*, only you and the system administrator can see the filter. If you choose *Global*, all users can see and use your filter.
4. Select a usage as follows:
   - Choose *Resource Stock* to use the multi-attribute filter in the *Stock* and *Resources* views in the *Resource Visibility* work center.
   - Choose *SD Plan* to use the multi-attribute filter when you create supply and demand plans.
5. Choose *Add*.

   This opens a dialog in which you select the attribute, operator, and values

6. Open the selection dialog in the *Attribute* field.

   This shows all of the available attributes. You can add each attribute type once.
7. Select an operator.

   The attribute category determines which operators are available here.
8. Select a value.
9. Choose *OK* in the attribute dialog and then save your filter.

Results

You can now use your filter to obtain more specific results in the *Stock* or *Resources* view or in supply and demand plans.

4.9.2 Modifying Multi-Attribute Filters

Prerequisites

A multi-attribute filter can only be modified by the user who created it or by the system administrator.

Procedure

1. Go to *Resources* > *Multi-Attribute Filters*.
2. When you have found the filter that you want to change, click it to open the detailed view.
3. Choose *Edit*.

   You can use *Add* to add new attributes, and use  and  in the *Actions* column to adjust the existing attributes in the filter.
4. Make your changes and save your entries.

Results

If you change a multi-attribute filter that is already used in a plan, the execution results for the plan become obsolete. You can execute the plan again manually or wait until the next execution to get the latest results. This also affects any virtual plans in which the plan is included.

4.9.3 Deleting Multi-Attribute Filters

Prerequisites

- A multi-attribute filter can only be deleted by the user who created it or by the system administrator.
- You cannot delete a multi-attribute filter if it is used in a plan.

> **i** Note
>
> Before you delete a filter, you can check the *Where-Used* list for an overview of the plans in which the filter is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to ▶ *Resources* ▶ *Multi-Attribute Filters* ▶.
2. When you have found the filter that you want to delete, click it to open the detailed view.
3. Choose *Edit*.
4. Choose *Delete*.

4.10 Alert Rule Groups

An alert rule group is a set of alert rules.

There are two types of alert rule groups:

- Supply and demand alert rule groups are for triggering alerts for resource surpluses and deficits.
- KPI alert rule groups are for triggering KPI alerts.

Use

You add an alert group as a whole to a plan. The alert rule group is used to determine what conditions cause alerts, such as resource surpluses, deficits, or KPI issues.

- When you create a supply and demand plan, you must select a supply and demand alert rule group.
- When you create a scheduled KPI plan, you must select a KPI alert rule group.

Managing Alert Rule Groups

To work with alert rule groups, go to *Plans* > *Alert Rule Groups*. This opens the work center in which you manage these groups.

Related Information

Creating Alert Rule Groups [page 59]
Modifying Alert Rule Groups [page 60]
Deleting Alert Rule Groups [page 60]

4.10.1 Creating Alert Rule Groups

Prerequisites

Before you can create alert rule groups, the alert rules must have been defined during the configuration of your SAP Transportation Resource Planning system. For detailed configuration information, see *Configuring Business Rules* in the master guide for SAP Transportation Resource Planning. This guide is available at http://help.sap.com/trp500

> **i Note**
>
> You cannot add two or more rules of the same category to a rule group. For example, your rule group can contain a supply rule, a demand rule, and a supply and demand rule, but it cannot contain two supply rules.

Procedure

1. Go to *Plans* > *Alert Rule Groups*.
2. Choose *Create Group* with the *Supply and Demand Alerts* or *KPI Alerts* option.
3. Enter a name and set the visibility level.

   If you choose *Personal*, only you and the system administrator can see the group. If you choose *Global*, all users can see and use your group.
4. Choose *Add* with a rule category option.

   This opens a dialog that lists all available alert rules for the selected category.
5. Select an alert rule and choose *OK*.
6. If needed, repeat Step 4 and 5 to add more alert rules.
7. Save your entries.

Results

The alert rule group can now be used in supply and demand plans or scheduled KPI plans.

4.10.2 Modifying Alert Rule Groups

Prerequisites

An alert rule group can only be modified by the user who created it or by the system administrator.

> **i** Note
>
> Before you modify an alert rule group, you can check the *Where-Used* list for an overview of all of the plans in which the group is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to *Plans* > *Alert Rule Groups*.
2. When you have found the alert rule group that you want to change, click it to open the detailed view.
3. Choose *Edit*.

   You can add or remove rules as required in the filter.
4. Make your changes and save your entries.

Results

If you change an alert rule group that is already used in a plan, the execution results of the plan become obsolete. You can execute the plan again manually or wait until the next execution to get the latest results. This also affects any virtual plans in which the plan is included.

4.10.3 Deleting Alert Rule Groups

Prerequisites

- An alert rule group can only be deleted by the user who created it or by the system administrator.
- You cannot delete an alert rule group if it is used in a plan.

> **Note**
>
> Before you delete a group, you can check the *Where-Used* list for an overview of the plans in which the group is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to *Plans* > *Alert Rule Groups*.
2. When you have found the group that you want to delete, click it to open the detailed view.
3. Choose *Edit*.
4. Choose *Delete*.

4.11 Time Filters

A time filter is a group of settings that determine the time horizon for the plans used to calculate and display planning data in SAP Transportation Resource Planning.

Use

Whenever you create a plan, you must select a time filter. You use time filters to determine the time frame for which you want to calculate data using a plan. This time frame can be in the past or in the future.

Past Time Filters

Past time filters are used in scheduled KPI plans. You use these plans to analyze the past performance history for locations, regions, and region groups.

Note the following about past time filters:

- You can create only one time interval for past time filters, but you can have multiple recurrences.
- You must select one time unit for past time filters: hours, day, weeks, or months.

Future Time Filters

Future time filters are used in supply and demand plans. These plans set out your planning horizon for making forecasts about the future supply and demand situation for locations, regions, and region groups.

Note the following about future time filters:

- You can create up to three time intervals for future time filters, each with multiple recurrences.
- You can use different time units in future time filters: hours, day, weeks, or months.

Managing Time Filters

To work with time filters, go to *Plans* > *Time Filters*.

Related Information

Configuring Time Filters [page 62]
Creating Time Filters [page 63]
Modifying Time Filters [page 64]
Deleting Time Filters [page 65]

4.11.1 Configuring Time Filters

What You Can Configure

When you configure a time filter, you decide on the following aspects:

- The resource category
  As of version 4.1.0 of SAP Transportation Resource Planning, time filters are defined based on resource category, which means they can only be used in the specified resource category.

  > **i Note**
  >
  > In previous versions of SAP Transportation Resource Planning, time filters were defined as global master data, which applied across all resource categories.

- The time interval
  This determines how long the time periods are. You can use hours, days, weeks, or months.
- The number of recurrences
  This determines how many individual time periods are marked out by the time filter, either in the past or in the future.
- Whether you want to offset the start time of your time filter
  For example, for a time filter covering a monthly interval, you can specify that each time period should always begin on the first day of the month.
  If you do not specify a time offset, the time filter uses the plan execution date as its point of reference. The starting point of the first time interval is then the same as the execution time stamp of the plan.

For example, if you configure a future time filter with a time interval of one week with four recurrences, your time filter covers four time periods, each of one week in length. When you look at the results of your plan in

the *Supply and Demand* work center, the table shows four sets of calculated results. Each column in the table corresponds with each time interval specified in the time filter.

When you are working with a time filter after saving it or before switching to edit mode, you can see a preview of the defined time intervals and periods starting from now. This preview shows the time horizon relevant to the current actual date and time and not in relation to any plan.

> **i** Note
>
> When a time filter without a time offset is saved, the time interval values are displayed as per the UTC+0 time zone.

Plan Execution and Time Offset

Time filters are used in KPI plans and supply and demand plans that belong to the same resource category. This means that there is a dynamic relationship between the time intervals configured in the time filter and the actual execution time of the plan in which the filter is being used.

This relationship has an effect on the first interval shown when you are looking at plan results in the *KPI* work center or the *Supply and Demand* work center.

Time Filter with No Time Offset

If you are not using a time offset, the most recent execution time stamp is used as the starting point. All of the subsequent time periods are computed based on that date and time. When you look at execution results in the *Supply and Demand* or *KPI* work centers, the starting date and time for the first set of results is the same as the execution time stamp shown for the plan.

Time Filter Using Time Offset

If you have specified a time offset in a filter, the first time interval shown may have to bridge a gap between the time stamp for the execution results and the time offset.

For example, your plan was last executed on a Friday, but you have a future time filter that specifies weekly intervals that always start on Monday. This means that the first time interval must be adjusted in the *Supply and Demand* work center. The first time interval shows the time from the execution on Friday up until Monday. The subsequent weekly time periods shown will always start on a Monday.

4.11.2 Creating Time Filters

Procedure

1. Go to *Plans* > *Time Filters*.
2. Choose *Create Filter* with the *Past Filter* or *Future Filter* option.
3. Enter a name and set the visibility level. If you choose *Personal*, only you and the system administrator can see the filter. If you choose *Global*, all users can see and use your filter.

4. Decide whether you need a time offset:

   If you choose *No*, then you can go on to the next step.

   If you choose *Yes*, then you can specify an offset for the time zone, day, week, or month.
5. Specify a time interval, time unit, and the number of recurrences.

   For example, in a past time filter, if you want to see calculation results for a KPI at weekly intervals for the last 4 weeks, you must enter a **1** in the *Time Interval* field, set the time unit to weeks, and then enter **4** in the *Number of Recurrences* field.
6. Save your entries.

Results

You can then check the preview for your time filter. The intervals and time periods are shown in table form. The time periods are calculated starting with the current time and date. This preview gives you an idea of the time periods that are relevant for a KPI or supply and demand plan that uses the time filter. Execution results are generated for each of the time periods.

4.11.3 Modifying Time Filters

Prerequisites

A time filter can only be modified by the user who created it or by the system administrator.

> **i** Note
>
> Before you modify a time filter, you can check the *Where-Used* list for an overview of all of the plans in which the filter is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to ▶ *Plans* ▶ *Time Filters* ▶.
2. When you have found the past or future time filter that you want to change, click it to open the detailed view.
3. Choose *Edit*.
4. Make your changes and save your entries.

Results

If you change the configuration of a time filter that is already used in a plan, the execution results for the plan become obsolete. You can execute the plan again manually or wait until the next execution to get the latest results. This also affects any virtual plans in which the plan is included.

4.11.4 Deleting Time Filters

Prerequisites

- A time filter can only be deleted by the user who created it or by the system administrator.
- You cannot delete a time filter if it is used in a plan.

> **i** Note
>
> Before you modify a time filter, you can check the *Where-Used* list for an overview of the plans in which the filter is used. You can choose  to make sure that the results are up to date.

Procedure

1. Go to *Plans* > *Time Filters*.
2. When you have found the time filter that you want to delete, click it to open the detailed view.
3. Choose *Edit*.
4. Choose *Delete*.

4.12 Safety Stock Thresholds

For each location, region, or location group in SAP Transportation Resource Planning, you can set safety stock threshold by resource type or resource group. The specified thresholds are used by the stock alert rule to determine whether the stock levels for resources are critical.

You can specify the following safety stock thresholds:

- Maximum and minimum safety stock
  These two thresholds specify the safety stock range for a location, a region, or a location group.
  For a location, you can also specify whether the minimum safety stock threshold should be considered during the equipment availability check (EAC).
- Maximum capacity
  This threshold specifies the maximum stock capacity for a location. This setting is not available for regions and location groups.

- Handling capacity
  This threshold specifies the handling capacity for a location in pieces (PC) per day. This setting is not available for regions and location groups.

You set overall thresholds and thresholds for specific resource types and resource groups.

Related Information

Setting Safety Stock Thresholds [page 66]
Equipment Availability Check Configuration [page 258]

4.12.1 Setting Safety Stock Thresholds

Context

You can set safety stock thresholds for locations, regions, and location groups. Within these geographic areas, you can also set thresholds for specific resource types and resource groups. The specified thresholds are used by the stock alert rule to determine whether the stock levels for resources are critical.

You can make stock settings in the following places:

- For locations, regions, or location groups, go to *Resource Visibility* > *Stock*. Select a location filter and resource filter, and then open the table view. Click a geographic object in the table at the right.
- For locations, go to *Resources* > *Stock Settings for Locations* and click a location.
- For regions, go to *Resources* > *Stock Settings for Regions* and click a region.
- For location groups, go to *Resources* > *Stock Settings for Location Groups* and click a location group.

After you have opened the detailed view of a location, region, or location group using any of the above methods, you can proceed to set safety stock thresholds.

Procedure

1. In the detailed view for a location, region, or location group, choose *Edit*.
2. Enter or modify the values in the *Min. Safety Stock* and *Max. Safety Stock* fields.
3. For locations, enter or modify the values in the *Max. Capacity* and *Handling Capacity* fields.
4. To consider the minimum safety stock threshold in the equipment availability check (EAC) for a location, select the *Enable Minimum Safety Stock in EAC* checkbox.

   If you enable this option, then the output of the demand field in the EAC API will include the minimum safety stock. This means that the minimum safety stock is reserved. There is no change to the values displayed in the *Supply and Demand* view.

> **Note**
>
> When a new location is replicated from SAP Transportation Management (SAP TM) to SAP Transportation Resource Planning, the *Enable Minimum Safety Stock in EAC* checkbox is deselected by default. You need to manually select the checkbox to enable this option.

5. If necessary, you can continue to set thresholds for individual resource types or resource groups as follows:
   a. Choose *Add*.
   b. In the selection dialog box, specify *Type* and select the resource types or resource groups for which you want to set individual safety stock thresholds. Then choose *OK*.
   c. Specify the thresholds by directly entering values in the *Min. Safety Stock*, *Max. Safety Stock*, and *Max. Capacity* (only available for locations) columns.
6. Save your entries.

Results

The specified thresholds are shown in tiles for stock data in the *Home* dashboard and in the *Stock* view when you have selected the corresponding location, region, or region group.

You can modify the settings directly in each detailed view. If you want to remove a threshold for a resource type or group, choose  in the *Actions* column for the target resource type or resource group.

4.13 Depot Handling Capacity

You can set the depot handling capacity thresholds for locations under *Resources* > *Stock Settings for Locations*.

The defined handling capacity is used by the pick-up and return and the resource balancing optimization processes to ensure the planned handling activities of the day do not exceed the maximum handling capacity.

Related Information

Setting Depot Handling Capacity [page 68]
Depot Handling Capacity Constraint [page 68]
Remaining Handling Capacity Calculation [page 69]
Remaining Handling Capacity in Pick-Up and Return [page 70]
Remaining Handling Capacity in Resource Balancing [page 71]

4.13.1 Setting Depot Handling Capacity

You use this procedure to set the depot handling capacity thresholds for locations.

Procedure

1. Go to *Resources* > *Stock Settings for Locations*.
2. Choose the location.
3. In the detailed view for the location, choose *Edit*.
4. Enter a value in the *Handling Capacity* field.

   > **i Note**
   >
   > The handling capacity is entered in PCs per day.

5. Save your changes.

Next Steps

You can enable or disable the handling capacity constraints for pick-up and return and resource balancing activities in the corresponding network settings group.

Related Information

Depot Handling Capacity [page 67]
Depot Handling Capacity Constraint [page 68]
Remaining Handling Capacity Calculation [page 69]
Remaining Handling Capacity in Pick-Up and Return [page 70]
Remaining Handling Capacity in Resource Balancing [page 71]
Network Settings [page 46]

4.13.2 Depot Handling Capacity Constraint

You can enable or disable the depot handling capacity constraint for pick-up and return and resource balancing activities in the corresponding network settings group. Also, you can specify whether the overdue, on-off hire,

and maintenance and repair activities should be excluded or not when calculating the remaining handling capacity.

If you have enabled the depot handling capacity constraint, then the system considers it during pick-up and return and resource balancing optimization. This is to ensure that the planned handling activities do not exceed the maximum handling capacity of the depot for each business day.

You configure these settings on the *Network Settings* tab under *Costs* > *Network Setting Groups*.

Related Information

Network Settings [page 46]
Creating Network Setting Groups [page 53]
Setting Depot Handling Capacity [page 68]

4.13.3 Remaining Handling Capacity Calculation

The remaining handling capacity is calculated by considering all of the handling capacity consumable activities that flow in and out of the depot.

> **i Note**
>
> In the network setting group, you can define whether the overdue, on-off hire, and maintenance and repair activities are excluded when calculating the remaining handling capacity.

The remaining handling capacity is calculated as follows:

Remaining Handling Capacity = Depot Handling Capacity – (∑ in + ∑ out)

> **Example**
>
> For Depot A, the defined handling capacity is 100 PCs per day. On 1st September, there are 15 containers regardless of container type that are planned to flow into this depot, and there are 20 containers regardless of container type that are planned to flow out of this depot. The remaining handling capacity for depot A on 1st September is calculated as 100 – (15 + 20) = 65 PCs.

For the present day, the depot handling capacity for the location needs to be calculated based on the location's current time and the handling capacity value in the safety stock settings for the location. For all other days, it remains as defined in the stock settings. The depot handling capacity for the present day is calculated as follows:

Depot Handling Capacity = Depot Handling Capacity * (24 – Hour in 24-hour format) / 24

> **Example**
>
> For Depot A, the defined handling capacity is 100 PCs per day. At 15:40, the depot handling capacity for the present day is calculated as 100 * (24 – 15) / 24 = 37.5 = Approximately 37.

> **Note**
>
> - The time zone must be assigned to the supply and demand plan's location filter, and the locations in that location filter must be in the same time zone.
> - The supply and demand plan's recurrence under *Scheduling* must be *Days* to consider handling capacity in both pick-up and return and resource balancing.

Related Information

Depot Handling Capacity [page 67]
Setting Depot Handling Capacity [page 68]
Depot Handling Capacity Constraint [page 68]
Remaining Handling Capacity in Pick-Up and Return [page 70]
Remaining Handling Capacity in Resource Balancing [page 71]
Network Settings [page 46]

4.13.4 Remaining Handling Capacity in Pick-Up and Return

The *Remaining Handling Capacity* field is displayed in the *Suggested Locations* table in the *Pick-Up and Return* work center. It shows the latest remaining handling capacity value of the requested pick-up or return date.

When you manually assign a pick-up or return depot, the remaining handling capacity is recalculated to reflect the latest remaining handling capacity. If the remaining handling capacity is exceeded, a warning message is displayed in the message list. For automatic pick-up and return optimization, the handling capacity is considered as a constraint to ensure that the total newly assigned container quantity does not exceed the remaining handling capacity.

> **Note**
>
> If the optimization setting is *Location Determination Rule*, then you can add rules depending on handling capacity and *SUPPLY_DEMAND* (supply and demand), but the depots can exceed their handling capacity. To consider both the location determination rule and the handling capacity, you should choose *Location Determination Rule and Automatic Optimization* as the optimization setting.

Related Information

Depot Handling Capacity [page 67]
Setting Depot Handling Capacity [page 68]
Depot Handling Capacity Constraint [page 68]
Remaining Handling Capacity Calculation [page 69]
Remaining Handling Capacity in Resource Balancing [page 71]

4.13.5 Remaining Handling Capacity in Resource Balancing

The remaining handling capacity is considered for both the source depot and the destination depot of the balancing activities.

For the source depot, the planned balancing quantity must not exceed the remaining handling capacity of the planned departure date. For the destination depot, the planned balancing quantity must not exceed the remaining handling capacity of the planned arrival date. When you manually create an activity, an error message is shown in the message list if the remaining handling capacity is exceeded.

For automatic resource balancing optimization, the handling capacity of both the source depot and the destination depot are considered as a constraint to ensure that the total quantity of the proposed activities does not exceed the remaining handling capacity.

Related Information

Depot Handling Capacity [page 67]
Setting Depot Handling Capacity [page 68]
Depot Handling Capacity Constraint [page 68]
Remaining Handling Capacity Calculation [page 69]
Remaining Handling Capacity in Pick-Up and Return [page 70]

5 Working with Plans

SAP Transportation Resource Planning uses plans to calculate the data that you use to make your planning decisions. Whether you are monitoring supply and demand data, stock data, or KPIs, the data you see comes from a calculation that is based on a plan.

A plan always consists of the following:

- One or more locations, specified in a location filter.
  For more information, see Location Filters [page 25].
- One or more resource types, specified in a resource filter for resource types or resource groups.
  For more information, see Resource Filters [page 31].
- A time filter for a time period in the future or in the past, such as the next seven days or the last three months. Future time filters are used in supply and demand plans. Past time filters are used in KPI plans.
  For more information, see Time Filters [page 61]
- A calculation model that provides the algorithm for calculating the current stock or supply and demand quantities for the locations and resource types or the KPI data.
  For more information, see the master guide available at http://help.sap.com/trp500.

Scheduled Plans

Scheduled plans are automatically executed on a regular basis for a set of parameters. For example, you may have a scheduled plan that routinely calculates the stock and supply and demand situation for a certain resource type in one region on a weekly basis. Another scheduled plan may regularly report the import/export balance for a location or set of locations. A time stamp indicates when the plan was last executed.

There are two types of scheduled plans:

- Supply and demand
  You can access results for these plans in the *Supply and Demand* work center.
- KPI
  You can access results for these plans in the *KPI* work center.

Instant Supply and Demand Plans

You can create instant plans for calculating supply and demand data. Instant plans are only executed manually and can be executed in the *Supply and Demand* work center whenever you want.

After working with your instant plan, you may decide that you would like to schedule it so that it can be executed automatically. If you decide to schedule an instant plan, it is saved as a scheduled plan.

.

Virtual Plans

You can use virtual plans to group together scheduled supply and demand plans or scheduled KPI plans. You can then view and compare the results of more than one plan in a single view.

Managing Plans

To work with plans, go to *Plans* > *Plan Configuration*. This opens the work center in which you can work with all plan types.

Related Information

Supply and Demand Plans [page 73]
Scheduled KPI Plans [page 78]
Virtual Plans [page 83]

5.1 Supply and Demand Plans

These plans are executed to generate forecasted data about the supply and demand situation in a location or set of locations for a resource type or set of resource types over a specific period of time. Once a plan has been executed, you can see the results in the *Supply and Demand* work center.

Supply and demand plans can be either scheduled or instant. Scheduled supply and demand plans are executed automatically based on their scheduling settings. Instant supply and demand plans are executed manually.

Each plan is defined by the following:

- Location filter
  Specifies the locations that you see in the plan execution results.
- Resource filter
  Specifies the resource types that you see in the plan execution results.
- Time filter
  Specifies the time intervals that are used for the plan, for example, the next seven days. Scheduled supply and demand plans always use future time filters.
- Calculation model
  A mathematical model used to compute supply and demand quantities. The model also contains alert rules to trigger alerts when supply and demand are not balanced. You need to register the calculation model and specify whether it is real-time enabled for instant execution.
- Alert rule group
  Specifies the alerts that can be triggered for the plan.

> **Note**
>
> For instant supply and demand plans, you need to execute the plan first, and then you can view the alerts in the *Supply and Demand* work center.

Use

You use supply and demand plans to generate and view forecasted data in the following places:

- In the *Supply and Demand* work center
- As part of a balancing simulation in the *Resource Balancing* work center
- In the *Home* dashboard when defining a tile for supply and demand

Managing Scheduled Supply and Demand Plans

To create and maintain these plans, go to *Plans* > *Plan Configuration*.

Related Information

Creating Supply and Demand Plans [page 74]
Forecasting Supply and Demand [page 128]
Resource Balancing [page 178]

5.1.1 Creating Supply and Demand Plans

Prerequisites

Before you can create a supply and demand plan, the following must be available in your SAP Transportation Resource Planning system:

- Location filter
  Determines which locations or sets of locations are included in the calculation of supply and demand data.
- Resource filter
  Determines which resource type or group of resource types are included in the calculation of supply and demand data.
- Time filter
  Specifies the time span and intervals for which supply and demand data is calculated. For supply and demand plans, this is a future filter.

- Calculation model
  This is the mathematical algorithm used to generate the supply and demand forecast.

  > **i Note**
  >
  > For instant supply and demand plans, the *Real-Time Enabled* checkbox must selected when the calculation model is registered.

- Alert rule group
  Determines which alerts can be triggered for the plan.

Procedure

1. Go to ▶ *Plans* ▶ *Plan Configuration* ▶.
2. Choose *Create Plan* and then *Supply and Demand Plan*.
3. Enter a name for your plan and select the visibility level. If you choose *Personal*, only you and the system administrator can see the plan. If you choose *Global*, all users can see and use your plan.
4. Make entries in the required fields.
5. Optionally, you can select a multi-attribute filter. This allows you to use additional resource attributes to filter the calculation results for your plan.

   > **i Note**
   >
   > The *Multi-Attribute Filter* field is only enabled when the selected calculation model is a real-time enabled calculation model.

6. Specify the number of execution runs to keep.

   The value defaults to 100, but you can enter any number between 1 and 99,999,999. For example, if you enter 10 only the latest ten execution runs are saved. You can leave this field blank to keep all execution runs.

   > **i Note**
   >
   > If you leave this field blank, the number of saved execution runs can increase quickly over time, and this can impact the performance of the system. Therefore, it is recommended that you specify this setting carefully and do not leave it blank.

7. Select a plan usage.

   The plan usage is mandatory and is used to manage privileges. The following options are available:
   - *EAC / Ruleset*
   - *Generic S&D Plan*
   - *Resource Balancing*
   - *Any other categories for extension*

8. Optionally, you can select the *Disable Intermediate Node* checkbox.

If you select this checkbox, the intermediate node-related data is not saved to the database during the execution of the supply and demand plan. This means that only the `SUPPLY_DEMAND` node data is displayed in the plan execution result.

9. If you are creating a scheduled supply and demand plan, choose the *Scheduling* tab to set up an execution schedule for your plan.

   You must make the following settings here:

   - *Time Zone*
     Specifies the time zone for the scheduling execution time. For example, if you choose the time zone *Beijing, Chongqing, Hong Kong, Urumqi*, the scheduling time will be executed based on the time zone for China.
   - *Recurrence*
     Determines the frequency of your plan execution. Choose *Minutes*, *Hours*, *Days*, *Weeks*, or *Months*.
   - *Execute Every*
     Determines how often the plan should be executed. For example, if your recurrence is weekly, you could execute the plan every two weeks.
   - *Start Scheduling*
     Specifies when the execution of the plan should begin.
   - *End Scheduling*
     Specifies when executions for the plan should stop.
   - *Execute in Working Hours*
     Only available when you select *Minutes* or *Hours* as the recurrence frequency. Specifies that the plan should only be executed during your working hours. If you select this checkbox, you must also specify the start time and the end time of your working hours.

10. Save your entries.

Results

You can now execute your plan manually, or for a scheduled plan, you can wait until the first automatic execution has completed. After your plan has been executed, you can check the results in the *Supply and Demand* work center.

Related Information

Multi-Attribute Filters [page 55]
List of Time Zones [page 307]

5.1.2 Modifying Supply and Demand Plans

Context

> **i Note**
>
> If a supply and demand plan is assigned to one or more virtual plans, and any of these virtual plans contains more than one supply and demand plan, then you cannot change the following fields:
>
> - *Location Filter*
> - *Resource Filter*
> - *Time Filter*
> - *Calculation Model*
> - *Plan Usage*
> - *Disable Intermediate Node*
> - *Time Zone*
> - *Recurrence*
> - *Recurrence Interval*
> - *Recurrence Day*
>
> The supply and demand plans contained in a virtual plan must have the same scheduling details (*Start Scheduling Date* and *End Scheduling Date*) and *Plan Usage*.

Procedure

1. Go to *Plans* > *Plan Configuration*.
2. When you have found the plan that you want to change, click it to open the detailed view.
3. Choose *Edit*.
4. Make your changes and save your entries.

Results

When you change the configuration of a plan, the execution results of the plan become obsolete. The plan must be executed again before any results can be displayed in the *Supply and Demand* work center. This also affects the following:

- Any virtual plans in which the plan is included
- Any balancing simulations that use the plan

You can check the *Where-Used* list for the plan to get an overview of all of the balancing simulations and virtual plans in which the plan is used. Choose  to make sure that the results are up to date.

Related Information

Creating Supply and Demand Plans [page 74]
Deleting Supply and Demand Plans [page 78]

5.1.3 Deleting Supply and Demand Plans

Prerequisites

- A plan can only be deleted by the user who created it or by the system administrator.
- A plan can also not be deleted if it is used in the following:
  - Balancing simulation
  - Virtual plan

> **i Note**
>
> Before you delete a plan, you can check the *Where-Used* list for an overview of the objects that are using the plan. You can choose  to make sure that the results are up to date.

Procedure

1. Go to *Plans* > *Plan Configuration*.
2. When you have found the plan that you want to delete, click it to open the detailed view.
3. Choose *Edit*.
4. Choose *Delete*.

5.2 Scheduled KPI Plans

Scheduled KPI plans are executed automatically to generate data about the performance of a location or set of locations for a resource type or set of resource types over a specific period of time in the past.

Each plan is defined by the following:

- Location filter
  Specifies the locations that you see in the plan execution results.
- Resource filter
  Specifies the resource types that you see in the plan execution results.
- Time filter

Specifies the time intervals that are used for the plan, for example, the past seven days. KPI plans always use past time filters.

- Calculation model
  A mathematical model used to compute key performance indicators.
- Alert rule group
  Specifies the alerts that can be triggered for the plan.

KPI Types

The following KPI types are available:

- Average idle rate
  This is the average amount of days that a transportation resource has spent in a location between two customer orders during a specific time period. You can see the overall average idle time for all resources in a location or set of locations and also according to resource type.
  Note that time that a transportation resource spends in maintenance and repair is not considered idle time.
- Import/export balance
  For a specific location or set of locations, this number represents the difference between the number of transportation resources of a specific type that have come in and the number of resources that have left the location during a specific time period.
  Note that this KPI statistic only takes movements of laden resources into account. It does not consider the return, pick-up, and repositioning of empty transportation resources.

Managing KPI Plans

To create and maintain these plans, go to *Plans* > *Plan Configuration*.

Related Information

Creating Scheduled KPI Plans [page 80]
Modifying Scheduled KPI Plans [page 81]
Deleting Scheduled KPI Plans [page 82]
Executing Scheduled KPI Plans [page 148]
Monitoring KPIs [page 146]

5.2.1 Creating Scheduled KPI Plans

Prerequisites

Before you can create a scheduled KPI plan, the following must be available in your SAP Transportation Resource Planning system:

- Location filter
  Determines which locations or sets of locations are included in the calculation of KPI data.
- Resource filter
  Determines which resource type or group of resource types are included in the calculation of KPI data.
- Time filter
  Specifies the time span and intervals for which KPI data is calculated. For KPI plans, this is a past filter.
- Calculation model
  A mathematical model used to compute KPIs. Your choice of calculation model determines the KPI type for your plan: idle rate or import/export balance.
- Alert rule group
  Determines which alerts can be triggered for the plan.

Procedure

1. Go to *Plans* > *Plan Configuration*.
2. Choose *Create Plan* and then *Scheduled KPI Plan*.
3. Enter a name for your plan and select the visibility level. If you choose *Personal*, only you and the system administrator can see the plan. If you choose *Global*, all users can see and use your plan.
4. Make entries in the required fields.
5. Optionally, you can select a multi-attribute filter. This allows you to use additional resource attributes to filter the calculation results for your plan.
6. Select the plan usage.

   The plan usage is mandatory and is used to manage privileges. Only one option is available for scheduled KPI plans, and that is *Generic KPI Plan*.
7. Choose the *Scheduling* tab to set up an execution schedule for your plan.

   You must make the following settings here:
   - *Time Zone*
     Specifies the time zone for the scheduling execution time. For example, if you choose the time zone *Beijing, Chongqing, Hong Kong, Urumqi*, the scheduling time will be executed based on the time zone for China.
   - *Recurrence*
     Determines the frequency of your plan execution: hourly, daily, weekly, or monthly.
   - *Execute Every*
     Determines how often the plan should be executed. For if your recurrence is weekly, you could execute the plan every two weeks.

- *Start Scheduling*
  Specifies when the execution of the plan should begin.
- *End Scheduling*
  Specifies when executions for the plan should stop.

8. Save your entries.

Results

You can now execute your plan manually or wait until the first automatic execution has completed. After your plan has been executed, you can check the results in the *KPI* work center.

Related Information

Multi-Attribute Filters [page 55]

5.2.2 Modifying Scheduled KPI Plans

Context

> **i** Note
>
> If a KPI plan is assigned to one or more virtual plans, and any of these virtual plans contains more than one KPI plan, then you cannot change the following fields:
>
> - *Location Filter*
> - *Resource Filter*
> - *Time Filter*
> - *Calculation Model*
> - *Plan Usage*
> - *Time Zone*
> - *Recurrence*
> - *Recurrence Interval*
> - *Recurrence Day*
>
> The KPI plans contained in a virtual plan must have the same scheduling details (*Start Scheduling Date* and *End Scheduling Date*) and *Plan Usage*.

Procedure

1. Go to *Plans* > *Plan Configuration*.
2. When you have found the plan that you want to change, click it to open the detailed view.
3. Choose *Edit*.
4. Make your changes and save your entries.

Results

When you change the configuration of a plan, the execution results of the plan become obsolete. The plan must be executed again before any results can be displayed in the *KPI* work center. This also affects any virtual plans in which the plan is included.

You can check the *Where-Used* list for the plan to get an overview of all of the virtual plans in which the plan is used. Choose  to make sure that the results are up to date.

5.2.3 Deleting Scheduled KPI Plans

Prerequisites

- A plan can only be deleted by the user who created it or by the system administrator.
- A KPI plan can also not be deleted if it is used in a virtual plan.

> **i** Note
>
> Before you delete a plan, you can check the *Where-Used* list for an overview of objects using the plan. You can choose  to make sure that the results are up to date.

Procedure

1. Go to *Plans* > *Plan Configuration*.
2. When you have found the plan that you want to delete, click it to open the detailed view.
3. Choose *Edit*.
4. Choose *Delete*.

5.3 Virtual Plans

Virtual plans allow you to group together a set of scheduled supply and demand plans or scheduled KPI plans. You can then work with and compare their data in one view in the *Supply and Demand* or *KPI* work center.

To create and maintain these plans, go to *Plans* > *Plan Configuration*.

Related Information

Creating Virtual Plans [page 83]
Modifying Virtual Plans [page 84]
Deleting Virtual Plans [page 84]

5.3.1 Creating Virtual Plans

Prerequisites

Before you can create a virtual plan, you need supply and demand plans or KPI plans that can be included in the virtual plan. When you choose the location filter and resource filter for the virtual plan, this determines which plans are available for use in the virtual plan.

> **i** Note
>
> Instant supply and demand plans cannot be used in virtual supply and demand plans.

The time filter for the virtual plan is also taken from the included supply and demand or KPI plans.

You must also make sure that at least one of the calculation nodes in the calculation models used in the included plans exists in all of the relevant calculation models.

Procedure

1. Go to *Plans* > *Plan Configuration*.
2. Choose *Create Plan* and then *Virtual Supply and Demand Plan* or *Virtual KPI Plan*.
3. Enter a name for your plan and select the visibility level. If you choose *Personal*, only you and the system administrator can see the virtual plan. If you choose *Global*, all users can see and use your plan.
4. Select a location filter and a resource filter.
5. Choose *Add* to select the scheduled supply and demand plans or KPI plans that you want to add to the virtual plan.

6. Save your entries.

Results

You can now execute your plan manually or wait until the first automatic execution has completed. After your plan has been executed, you can check the results in the *Supply and Demand* work center or in the *KPI* work center, depending upon the type of plan.

Related Information

Forecasting Supply and Demand [page 128]
Monitoring KPIs [page 146]

5.3.2 Modifying Virtual Plans

Procedure

1. Go to ▶ *Plans* ▶ *Plan Configuration* ▶.
2. When you have found the virtual plan that you want to change, click it to open the detailed view.
3. Choose *Edit*.
4. Make your changes and save your entries.

Results

The effects differ depending upon what you change:

- If you change the location filter or resource filter, you may also need to assign new plans to your virtual plan.
- If you add or remove plans for the virtual plan, you must execute them again to get results for the virtual plan. You can use *Execute All* in the detailed view of the virtual plan to do this.

5.3.3 Deleting Virtual Plans

Prerequisites

A virtual plan can only be deleted by the user who created it or by the system administrator.

Procedure

1. Go to *Plans* > *Plan Configuration*.
2. When you have found the virtual plan that you want to delete, click it to open the detailed view.
3. Choose *Edit*.
4. Choose *Delete*.

6 Alert Framework

SAP Transportation Resource Planning provides an alert framework that allows you to determine when warnings should be issued for critical situations. Alert parameters are configured as part of alert rule groups.

You can access alert information from the following work centers:

- *Home*
  You can configure an *Alerts* tile here.
- *Supply and Demand*
  Alert information is shown in the main table and map views. You can also choose the *Alerts* tab to display all alert notifications.
- *KPI*
  Alert information is shown in the main table and map views. You can also choose the *Alerts* tab to display all alert notifications.
- *Resource Balancing*
  Alert information is shown when working in a balancing simulation.
- *Stock* in the *Resource Visibility* work center
  Alert information is shown in the map view. You can also choose the *Alerts* tab to display all alert notifications.

Related Information

Alert Rule Groups [page 58]
Accessing Alert Information for KPI or Supply and Demand Plans [page 86]
Accessing Alert Information for Stock Levels [page 89]
Using the Home Dashboard [page 92]

6.1 Accessing Alert Information for KPI or Supply and Demand Plans

When SAP Transportation Resource planning executes a supply and demand or KPI plan, alerts may also be triggered as part of the calculation results. The alert rule group specified in the plan determines what conditions cause an alert. Alerts warn you about upcoming critical situations, such as surpluses and deficits for transportation resources.

You can access alerts in several places:

- Using the *Alerts* panel in the *Supply and Demand* or *KPI* work center.
- In the map and table views available in the *Supply and Demand* or *KPI* work center.

- In the *Home* dashboard.
  You can display alert information for several plans at once here. For more information, see Using the Home Dashboard [page 92].

Alert Notifications

In addition to the actual text describing the situation and the critical parameters, each alert notification provides the following information:

Field Shown	What It Means
Alert Score	A score on a scale of 0 to 100 that indicates how critical the alert is. The score level corresponds directly with the severity of the alert. A very high score signals a very critical alert situation.
Location	The location, location group, region, or region group where the alert has occurred.
Time	For supply and demand data, this is the time when the situation described in the alert will take place. For KPI data, this is the time in the past when the situation became critical.
Owner	The regional planner who is responsible for the location where the alert occurs. For example, if the alert occurs in a region or region group, the regional planner whose role covers that region is the owner. An alert can also have more than one owner.

The Alerts Panel

The *Alerts* panel lists all of the alerts triggered by the current plan execution. By default, the list is ordered by the alert score that indicates the severity of an alert. You can also order the alerts list by location, time, or owner.

To view alerts in the *Alerts* panel, proceed as follows:

1. In the *Supply and Demand* or *KPI* work center, make sure that a plan has been selected and executed.
2. Choose the *Alerts* tab at the right edge of the work center.
   The *Alerts* panel opens, listing all the alerts by score. The first line of each alert notification shows the location, time, owner, and score of the alert, followed by the alert text.
3. To change the order of the list, select the option that you want in the *Sort By* dropdown list.

> **Note**
>
> You can click the location shown in the alert notification to access the current stock data for the location.

Displaying Alerts in Table Views

In the table view of the *Supply and Demand* or *KPI* work center, alerts are shown with red numbers and warning signs.

To view alerts in the table view, proceed as follows:

1. In the *Supply and Demand* or *KPI* work center, make sure that a plan has been selected and executed.
2. Change to the table view by choosing  at the left of the *Plan* field.
   The table view lists the supply and demand quantities or KPI data by location, resource type, and time.
   You can click the warning symbol to get details about what has caused the alerts.

Displaying Alerts in Map Views

In the map view of the *Supply and Demand* or *KPI* work center, you can view alerts at the location or region level.

To view alerts in the map view, do the following:

1. In the *Supply and Demand* or *KPI* work center, make sure that a plan has been selected and executed.
2. Choose  at the left of the *Plan* field.
   The map view shows the situation for the time shown in the *Time* dropdown list at the right in the map view.
   You can select another time.
3. Place your cursor over a dot or polygon area to view the name of the location or location group.
4. Choose an alert-colored dot or a polygon area with an alert number greater than zero.
   This opens a dialog box that lists all of the alert notifications related to the selected location in the *Alerts* tab. The alerts are ordered by alert score.

You can zoom in and out of the map view to focus on alerts in a particular area. The data is displayed differently in the map depending on the type of location filter that you are using.

If the filter uses **locations**, the following applies:

- The color of the dots shows the alert status. A gradient color from yellow to red represents the alert priority from low to high. Green means that there are no alerts.
- If a location or group is not selected in the location filter, it is shown as a gray dot.
- For location groups, the primary location specified for the group determines its position on the map.

If the filter uses **regions or region groups**, the following applies:

- For each region or region group, the map view shows a polygon area enclosing all of the included locations.
- A red number in or near the polygon indicates the number of alerts in that region.

6.2 Accessing Alert Information for Stock Levels

Stock alerts warn you about critical stock situations for the specified resource types and locations, for example, if the stock exceeds the maximum safety stock.

Stock alerts are triggered by an embedded stock alert rule in SAP Transportation Resource Planning. The alert rule compares your stock levels with the safety stock thresholds that you have specified in the *Resource Settings* work center, and determines whether an alert should be triggered.

> **i Note**
>
> The stock alert rule used in SAP Transportation Resource Planning is configured during the application implementation process. You cannot change the rule in the user interface. For more information, see the master guide for SAP Transportation Resource Planning available at http://help.sap.com/trp500.

You can access stock alerts in the following places:

- The *Alerts* panel in the *Stock* view in the *Resource Visibility* work center
- The table and map views in the *Stock* view in the *Resource Visibility* work center
- In the *Home* dashboard.
  For more information, see Using the Home Dashboard [page 92].

Alert Notifications

In addition to the actual text describing the situation and the critical parameters, each alert notification provides the following information:

Field Shown	What It Means
Alert Score	A score on a scale of 0 to 100 that indicates how critical the alert is. The score level corresponds directly with the severity of the alert. A very high score signals a very critical alert situation.
Location	The location, location group, region, or region group where the alert has occurred.
Time	The time when the situation described in the alert took place.

The Alerts Panel

The *Alerts* panel lists all of the alerts triggered by the embedded stock rule. By default, the list is ordered by the alert score that indicates the severity of an alert. You can also order the alerts list by location or time.

To view alerts in the *Alerts* panel, proceed as follows:

1. In the *Resource Visibility* work center, open the *Stock* view.
2. Select a location filter and a resource filter. You can also apply a multi-attribute filter if you want.
3. Choose the *Alerts* tab at the right edge of the work center.
   The *Alerts* panel opens, listing all the alerts by score. The first line of each alert notification shows the location, time, and score of the alert, followed by the alert text.
4. To change the order of the list, select the option that you want in the *Sort By* dropdown list.

> **i Note**
>
> You can click the location shown in the alert notification to access the current stock data for the location.

Displaying Alerts in Map Views

In the map view of the *Stock* view in the *Resource Visibility* work center, you can view alerts at the location or region level.

To view alerts in the map view, do the following:

1. In the *Resource Visibility* work center, open the *Stock* view.
2. Locate your stock data using a location filter and resource filter or the search option.
3. Choose  at the left of the *Location Filter* field.
   The map view shows the situation for the location shown in the *Locations* dropdown list at the right in the map view. You can select another location.
4. Place your cursor over a dot or polygon area to view the name of the location or location group.
5. Choose an alert-colored dot or a polygon area with an alert number greater than zero.
   This opens a dialog box that lists all of the alert notifications related to the selected location in the *Alerts* tab. The alerts are ordered by alert score.

You can zoom in and out of the map view to focus on alerts in a particular area. The data is displayed differently in the map depending on the type of location filter that you are using.

If the filter uses **locations**, the following applies:

- The color of the dots shows the alert status. A gradient color from yellow to red represents the alert priority from low to high. Green means that there are no alerts.
- If a location or group is not selected in the location filter, it is shown as a gray dot.
- For location groups, the primary location specified for the group determines its position on the map.

If the filter uses **regions or region groups**, the following applies:

- For each region or region group, the map view shows a polygon area enclosing all of the included locations.
- A red number in or near the polygon indicates the number of alerts in that region.

Related Information

Safety Stock Thresholds [page 65]

7 Using the Home Dashboard

The *Home* dashboard opens first when you log on to SAP Transportation Resource Planning. This central dashboard gives you an overview of current information about your transportation resources.

You can configure the tiles in the dashboard to show the information that you want to monitor. You can show the following information here:

- Stock
  Shows the current stock situation for a selected location and set of resource types.
- Supply and demand
  Shows the forecasted supply and demand situation based on the selected scheduled supply and demand plan. This gives you an overview of the supply-demand balance for the locations and resource types for which you are responsible.
- Alerts
  Allows you to monitor alerts related to selected scheduled supply and demand and KPI plans.
- KPIs
  Shows the current trend for key performance indicators such as idle rate and import/export balance.

You can choose *Go* on a particular tile to load only the specific data for that tile. Alternatively, you can choose *Go* in the toolbar to load the data for all your configured tiles.

Adding Tiles

When you log on for the first time, there are no tiles in the *Home* dashboard. You must first choose what kind of information you want to see here.

To add a tile in the dashboard, do the following:

1. Choose *Add a Tile* and select the type of tile that you want to display.
   Depending upon the type, you must make different settings to configure the tile.
2. Save your entries.
3. Continue to add additional tiles as necessary by choosing *Add a Tile*.

> **i Note**
>
> You can add up to 16 tiles in the dashboard.

Removing Tiles

To remove a tile from the *Home* dashboard, do the following:

1. Choose  at the upper-right corner of the tile that you want to delete.

2. Choose *Delete*.
3. Confirm your deletion.
   The tile is removed.

Changing Tile Layout and Sequence

You can also decide how many tiles you want to see in each row and in what order they should appear in the dashboard.

Tile Layout

To do this, use the corresponding buttons for two-column and three-column layout in the toolbar for the *Home* dashboard. Save your settings when you have finished. You can change these settings any time.

Tile Sequence

You can also move a tile to a specific position in the dashboard. To do this, choose *Move* in the dropdown list shown for  at the upper-right corner of the tile. This opens a dialog in which you can specify a position number for the tile. After you confirm your choice, the tiles are rearranged accordingly.

Related Information

Stock Data in the Home Dashboard [page 93]
Supply and Demand Data in the Home Dashboard [page 94]
Alerts in the Home Dashboard [page 95]
KPI Data in the Home Dashboard [page 97]

7.1 Stock Data in the Home Dashboard

When you add a *Stock* tile to the *Home* dashboard, you select a location filter and a resource filter. A location filter consists of a set of locations (depots), location groups, or regions. A resource filter can consist of one or more resource types or one or more resource groups. These selections determine the data shown in the tile.

What the Tile Shows

For each location included in the filter, the tile shows the current stock quantity in pieces for the resource types included in the resource filter. This information is shown as a bar chart. To see the exact number of available or unavailable resources, place your cursor over a section of the bar chart.

This chart tells you the following about the stock situation:

- How many transportation resources (in pieces) are available at a location
- How many transportation resources (in pieces) are currently unavailable at each location
- If available, the maximum and minimum safety stock thresholds are also shown.
  For more information, see Setting Safety Stock Thresholds [page 65].

Filtering Locations

You can use the *Location* field to select one location at a time and check the different levels of resource types at each location. The field shows all locations included in the selected location filter.

Pie Chart View

You can also click a bar in the chart to open a dialog box with details about each stock status in pie chart form.

You can then choose *View in Stock* to open the *Stock* view in the *Resource Visibility* work center. This view allows you to compare data for multiple locations and also provides a map view. For more information, see Monitoring the Stock Situation [page 101].

7.2 Supply and Demand Data in the Home Dashboard

When you add a *Supply and Demand* tile to the *Home* dashboard, you select a supply and demand plan. Each plan consists of a location filter and a resource filter. Choose a plan that covers the locations and resource types that you want to monitor.

By default, only supply and demand plans with the plan usage *Resource Balancing* or *Generic S&D Plan* are shown in the search help. To view supply and demand plans with a different plan usage, choose  > *Plan Usages* , and then select the checkboxes for the required plan usages.

> **i Note**
>
> Sometimes the execution results for a supply and demand plan may no longer be up to date. This happens, for example, if the configuration for a plan changes and it has not yet been executed again. In this case, no automatic warning is shown on the tile.
>
> To check the current status for a supply and demand plan, you can use the selection dialog for the tile.

What the Tile Shows

When you have selected a supply and demand plan for the tile, the plan's execution data is shown in chart form. The supply and demand forecast curves show the trend for the plan for one location. To see the exact number

of resources that will be available or needed at each point in time, place your cursor on a point in the supply or demand curve in the tile. This displays a text with details.

Time Intervals

The underlying scheduled supply and demand plan is executed for a time filter that consists of a set of time intervals in the future, for example, the next seven days. The points in time shown in the chart on the tile correspond with the time intervals defined for the selected plan. The chart shows the supply and demand forecast for one location over this time period.

Filtering for Resource Types and Choosing Locations

Initially, the tile displays data for all resource types included in the plan's resource filter. If you are interested in the forecast for one specific resource type, you can use the *Resource Type* field to select a type.

If you want to show data for any of the other locations included in the plan, use the *Location* field in the tile.

Pie Chart View

You can click any point shown on the graph to open a pie chart view of the data. This chart gives you a visual breakdown of the current supply and demand statistics.

You can then choose *View in Supply and Demand* to open the *Supply and Demand* work center. This work center provides a full hierarchical view by location and resource type and also provides a map view. For more information, see Forecasting Supply and Demand [page 128]

7.3 Alerts in the Home Dashboard

When you add an *Alerts* tile to the *Home* dashboard, you select one or more supply and demand plans or scheduled KPI plans. By default, only supply and demand plans with the plan usage *Resource Balancing* or *Generic S&D Plan* are shown in the search help. To view supply and demand plans with a different plan usage, choose  *Plan Usages*, and then select the checkboxes for the required plan usages.

Alerts are triggered based on the alert rule group for each plan. The tile displays any alerts for the locations and resource types included in the selected plans.

What the Tile Shows

Each alert notification in the tile gives you the following information:

- The alert score
  This alert score is displayed in red digits and indicates how critical the alert situation is. The higher the number, the more critical the situation is.
- The underlying scheduled supply and demand or KPI plan and the associated alert rule group
- The regional planner who is the owner of the alert
- The location or location group for which the alert has occurred
- The forecasted time when the critical situation will arise
- A description of the situation that has triggered the alert

Sorting Alerts and Searching

You can also decide in what order you want to sort the alerts. By default, they are sorted by alert score. You can choose from the following options in the *Sort By* field:

- *Alert Score*
- *Location*
- *Time*
- *Ownership*

You can also use the search function in the tile to filter alerts.

Links to Other Work Centers

The plan name in each alert notification provides a link to the *Supply and Demand* or the *KPI* work center. You can use this link to access more detailed information about the critical situations associated with a plan execution, for example, how many resources are involved in a supply and demand imbalance in the locations or location groups.

Related Information

Alert Framework [page 86]

7.4 KPI Data in the Home Dashboard

When you add a *KPI* tile to the *Home* dashboard, you select a scheduled KPI plan. This gives you an overview of KPIs such as idle rate or import/export balance and allows you to analyze the past performance of locations.

The KPI plans must all have the same resource filter, location filter, and time filter. When you add the first plan to your KPI tile, this works as a filter for any further plans that you want to add. You can select up to 5 plans for a single tile.

> **i** Note
>
> Sometimes the execution results for a KPI plan may no longer be up to date. This happens, for example, if the configuration for a plan changes and it has not yet been executed again. In this case, no automatic warning is shown on the tile.
>
> To check the current status for a KPI plan, you can use the selection dialog for the tile.

What the Tile Shows

When you have selected a KPI plan for the tile, the plan's execution data is shown in chart form. The tile displays the KPI data in chart form. You can use the dropdown lists to choose a location or resource type.

Links to Other Work Centers

Each KPI plan name in the tile provides a link to the *KPI* work center. This work center provides a full hierarchical view by location and resource type. You can also view your KPI data in chart or map view. For more information, see Monitoring KPIs [page 146].

8 Core Data Model

The core data model (CDM) is a simplified data model for SAP Transportation Resource Planning applications, which holds all of the transportation-relevant master data and transaction data in an SAP Transportation Resource Planning database.

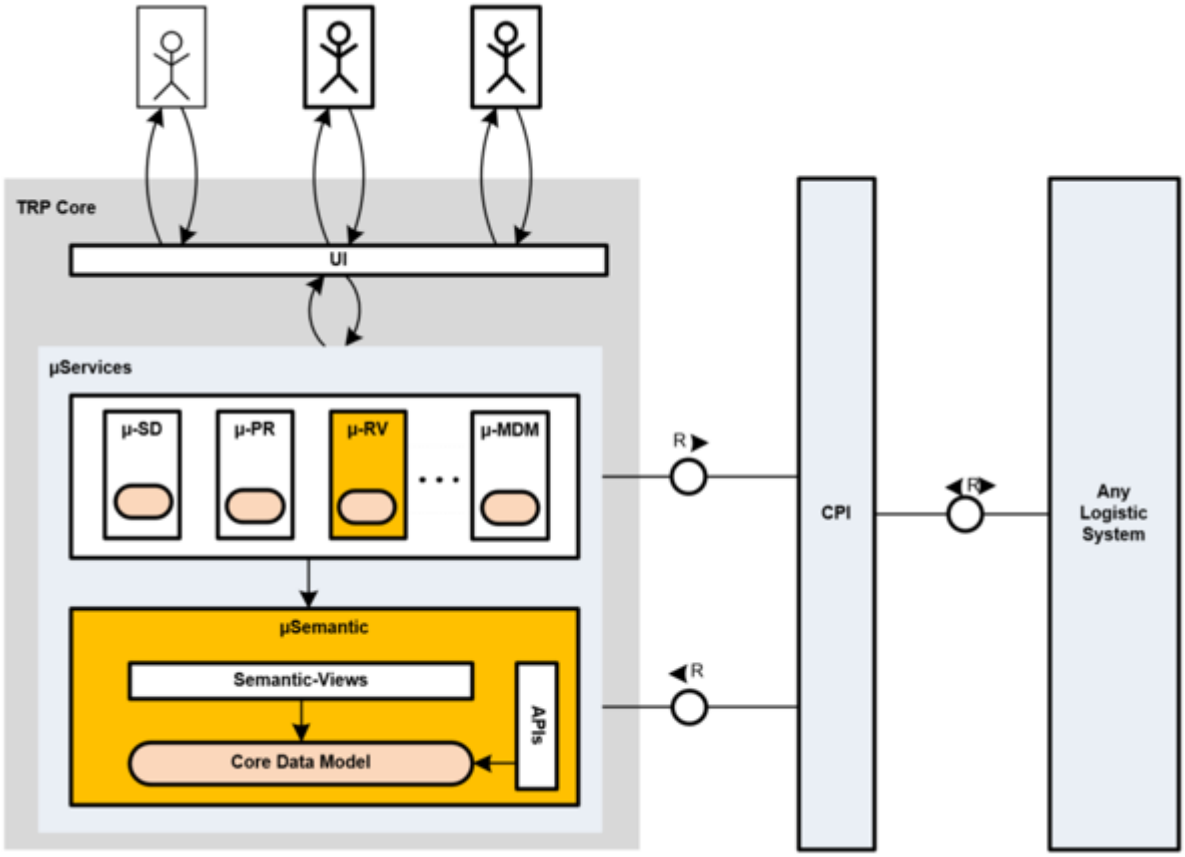
Using the CDM, any type of logistics system (SAP Transportation Management (SAP TM) or a non-SAP logistics system) can be integrated with SAP Transportation Resource Planning through the provided application programming interfaces (APIs). Then the CDM becomes the single data source for SAP Transportation Resource Planning applications.

> **i** Note
>
> Currently, the CDM can only be implemented for resource visibility (see the *CDM Resource Visibility* work center). Implementation is optional.

The CDM is designed purely based on the SAP Transportation Resource Planning business process. It does not leverage any of the existing SAP TM data model. This means that only the data that is required to support SAP Transportation Resource Planning business processing is stored in the CDM. Thus the data volume and data flow can be controlled better by SAP Transportation Resource Planning.

Architecture of the Core Data Model (CDM)

The following figure illustrates the overall system architecture of the CDM for SAP Transportation Resource Planning:



Architecture of the Core Data Model (CDM)

The architecture of the CDM has the following features:

- Data flows into the CDM through the exposed service APIs.
- The CDM is the single data source for all of the SAP Transportation Resource Planning microservices.
- The CDM is a generic data model for any potential logistics system. This means that any logistics system can be integrated with SAP Transportation Resource Planning by leveraging the exposed APIs.

Related Information

CDM-Based Resource Visibility [page 99]

8.1 CDM-Based Resource Visibility

Resource visibility is used as the pilot application to evaluate and verify the technical feasibility and performance improvement for the core data model (CDM). You access the CDM-based resource visibility features through the *CDM Resource Visibility* work center.

The following design principles have been applied for CDM-based resource visibility:

- As many data objects as possible are involved.
- The functionality is the same as the traditional *Resource Visibility* work center.
- The *CDM Resource Visibility* work center has the same look and feel as the *Resource Visibility* work center.

> **i** Note
>
> Implementation of the CDM is optional. When the CDM is implemented, you can access the resource visibility features through the *CDM Resource Visibility* work center.

Related Information

Monitoring the Stock Situation [page 101]
Managing Resources [page 107]
Viewing Lease Contract Information [page 114]
Monitoring Moving Stock [page 115]
Managing Transportation Demand [page 122]

9 Resource Visibility

The *Resource Visibility* work center (or *CDM Resource Visibility* work center if using the core data model) is your starting point for detailed information about your transportation resources.

This work center provides real-time data about the status and location of your resources and allows you to check the corresponding stock levels and safety thresholds for specific locations. You can also use this work center to obtain an overview of current lease contracts and empty resources that have not yet been booked.

> **i Note**
>
> Optionally, you can implement a simplified data model, known as the core data model (CDM). If the CDM has been implemented, you can access your resource visibility data through the *CDM Resource Visibility* work center.

The work center provides the following views:

- *Stock*
- *Resources*
- *Change History*
- *Lease Contracts*
- *Moving Stock*
- *Transportation Demand*

Related Information

Monitoring the Stock Situation [page 101]
Managing Resources [page 107]
Using the Change History for Resources [page 113]
Viewing Lease Contract Information [page 114]
Monitoring Moving Stock [page 115]
Managing Transportation Demand [page 122]
Core Data Model [page 98]

9.1 Monitoring the Stock Situation

To get detailed information about the current stock levels for resource types in specific locations, go to ▶ *Resource Visibility* > *Stock* ◀ (or ▶ *CDM Resource Visibility* > *Stock* ◀ if using the core data model).

You can use this view to keep track of safety stock thresholds and the maximum storage capacity for locations, also according to resource type. You have the following different ways of looking at your stock data:

- Table view
- Chart view
- Map view

Accessing Alert Information

You can also access information about any alerts that have been triggered for the stock situation in the locations included in the selected location filter. To view alerts for a particular location, click the warning symbol in the *Alerts* column. You can also open the *Alerts* panel at the right of the view. This panel shows you all alerts for selected locations and allows you to sort notifications and search.

Each alert notification gives you the following information:

- The alert score
  This alert score is displayed in red with a warning sign and indicates how critical the alert situation is. The higher the number, the more critical the situation is.
- The location or location group for which the alert has occurred
- The forecasted time when the critical situation will arise
- A description of the situation that has triggered the alert

Exporting Stock Data to a CSV File

If you want to export your stock data to a comma-separated values (CSV) file, you can choose *Export to CSV*. This generates a file containing the data shown in the table.

Stock Data in the Home Dashboard

You can also configure a tile in the *Home* dashboard for showing stock data. For more information, see Using the Home Dashboard [page 92].

Related Information

Table View for Stock [page 103]
Chart View for Stock [page 105]
Map View for Stock [page 106]

9.1.1 Table View for Stock

You can monitor your stock of transportation resources in table form.

Using the Table View

If you want to switch to this view, choose the  symbol under *Resource Visibility* > *Stock* (or *CDM Resource Visibility* > *Stock* if using the core data model).

You have two options for finding stock data to display:

- *Use Filters*
  When you select this option, your selected filters are used to find stock data. You must enter a location filter and resource filter. You can also use a multi-attribute filter. The attributes defined for the filter are then shown with their respective values.
- *Search*
  You can use this option to find any location or resource type in your system. You must enter a location. The resource type field is optional.

After you have selected a location filter and a resource filter or found a location and resource type, the *Stock* view lists the locations in the panel at the left and shows the relevant stock data for a selected location in table form at the right. You can narrow down the data using the available filters. Choose  at the upper-left corner of the table to see the filter criteria.

You can use the *Locations* area as follows:

- Select one location in the list to display the current stock data in the table on the right.
- Show the stock data for multiple locations by pressing *Ctrl* and selecting additional locations in the list at the left in the view. This allows you to compare the stock levels for different locations in the table.
- You can expand each location shown in the table at the right to see the stock breakdown according to resource type.
- Each location ID in the table is a link. You can use this link to open a dialog for setting the safety stock thresholds for a location.
- The first entry in the table shows the cumulative results for all selected locations.

You can use the *View By* field to switch between two views of your data: by location or by resource. This determines whether locations or resource types are shown as nodes in the *Location/Resource* column in the table.

The following fields are available in this view:

Field Shown	What It Means
Location/Resource	The current location and resource type for the stock data depending upon the selected location filter and resource filter or the selected location and resource type. Each location is shown as a node in the table that you can expand to show the resource types. If you set the *View By* field to *Resource*, the field name changes to *Resource/Location*. Each resource type is shown as a node in the table. Each location is shown as a link. You can click this link to access and modify safety threshold settings. For more information about these thresholds, see Safety Stock Thresholds [page 65].
Alerts	Shows a warning sign if any alerts have been triggered for a location. Click the symbol for details. You can also access alert information in the *Alerts* panel at the right.
By Resource Filter (PCs)	Shows the amount of each resource type for each location in pieces (PCs). Each amount is shown as a link. You can click this link to navigate to the *Resources* tab and view the relevant resources in more detail. For more information, see Managing Resources [page 107].
By Resource Filter (TEU)	Shows the amount of each resource type for each location in twenty-foot equivalent units (TEU).
By Multi-Attribute Filter (PCs)	Shows the amount of each resource type for each location in pieces (PCs) according to a multi-attribute filter. If you are not using a multi-attribute filter, this number is always the same as the number shown in the *By Resource Filter (PCs)* column. Each amount is shown as a link. You can click this link to navigate to the *Resources* tab and view the relevant resources in more detail. For more information, see Managing Resources [page 107].
By Multi-Attribute Filter (TEU)	Shows the amount of each resource type for each location in twenty-foot equivalent units according to a multi-attribute filter. If you are not using a multi-attribute filter, this number is always the same as the number shown in the *By Resource (TEU)* column.

Field Shown	What It Means
Total Stock (TEU)	The total number of transportation resources for a location. This amount is shown in twenty-foot equivalent units (TEU).
Percentage Above/Below Safety Stock (%)	Shows the percentage by which a resource type in a particular location is above or below the minimum and maximum safety thresholds. • If the total number of pieces exceeds the safety threshold, a positive percentage is shown. • If the total number is below the safety threshold, a negative percentage is shown. If no minimum and maximum safety thresholds have been defined for a location, this field is empty.
Quantity Above/Below Safety Stock	Shows you the quantity of resources that is above or below the minimum and maximum safety thresholds. At location level, this is shown in twenty-foot equivalent units (TEU). At resource type level, the quantity is shown in pieces.
Min. Safety Stock	The minimum number of pieces of a resource type that should be in stock in a location at any time. If no minimum safety threshold has been defined for a location, this field is empty.
Max. Safety Stock	The maximum number of pieces of resource type that should be in stock in a location at any time. If no maximum safety threshold has been defined for a location, this field is empty.
Max. Capacity	The maximum capacity for stock of a particular type at a location. This is shown overall for the entire location and according to resource type.

9.1.2 Chart View for Stock

You can monitor your stock of transportation resources in bar chart form.

Using the Chart View

If you want to switch to this view, choose the  symbol under *Resource Visibility* > *Stock* (or *CDM Resource Visibility* > *Stock* if using the core data model).

The chart view shows you the following for the selected location filter and resource filter or location and resource type:

- A bar chart view showing the stock quantity data for each location.
- The respective safety thresholds for the resource type, if any are defined.
- You can place your mouse cursor over a bar or click a bar to view details.

You can also show the stock data for multiple locations. To do this, press *Ctrl* and select additional locations in the list at the left in the view. You can use this to compare the stock levels for different locations in the table.

You can also display the stock breakdown according to resource type. To do this, choose *Resource Details*. This adds the resource types to each location that you have selected in the *Locations* area at the left.

You can use the *View By* field to switch between two views of your data: by location or by resource. Note the following about this setting:

- If you view your data by location, you can toggle between the *Overview* and *Resource Details* views.
- If you view your data by resource type, the *Resource Details* button is automatically activated.

9.1.3 Map View for Stock

You can monitor your stock of transportation resources in a map view.

Using the Map View

If you want to see the stock situation from a geographic perspective, you can use the map view under *Resource Visibility* > *Stock* (or *CDM Resource Visibility* > *Stock* if using the core data model). After entering a location filter and a resource filter, choose the  symbol at the upper-left corner. The map shows each location that you have selected in the *Locations* area in the *Stock* view. The map shows you the following information:

- The color of the location shows whether the stock situation is within the safety range, above the maximum stock threshold, or below the minimum stock threshold.
- If the selected location filter uses location groups, the primary location specified for each group determines its position on the map.
- If the selected location filter uses regions or region groups, the map shows a polygon area enclosing all of the included locations.
- You can zoom in and out of the map view to focus on a particular area.
- You can also select locations in the overview of all locations at the left. The map then repositions to show the location.

> **i Note**
>
> If some locations cannot be shown, the *Show Invalid Locations* is available. You can click this button to view a detailed error message.

The map view allows you to focus on alerts, status, and details.

Alerts

If you choose *Alerts* in the map view, the following applies:

- The number of alerts is shown for each location, location group, or area.
- The color of the dots shows the alert status. A gradient color from yellow to red represents the alert score level from low to high. Green means that there are no alerts.
- You can choose the location or alert symbol to access more details about any alerts that have been triggered.

Status

If you choose *Status* in the map view, the following applies:

- Bubble charts show the surplus and deficit status for each location or location group.
- The relative size and color of each chart shows whether there is surplus or deficit situation, or whether the situation is normal.
- You can place your mouse cursor over any segment of a chart to see detailed statistics.

Details

If you choose *Details* in the map view, the following applies:

- Charts show the detailed breakdown of the stock quantities.
- You can see the exact percentage and quantity of each stock type in the detailed breakdown.
  To do this, place your cursor on a segment in the chart.
- You can click the center area of a chart to access more details about any alerts that have been triggered.

9.2 Managing Resources

To track and monitor your transportation resources, go to *Resource Visibility* > *Resources* (or *CDM Resource Visibility* > *Resources* if using the core data model).

Finding Resources

You can find resources as follows:

- Choose the *Use Filters* option.
  Then enter a location filter and resource filter. Location filters are used to group together locations or regions. A resource filter can consist of certain resource types or resource groups. You can also use a multi-attribute filter. The attributes defined for the filter are then shown with their respective values.
- Choose the *Search* option.
  This allows you to search across all resources in your SAP Transportation Resource Planning system.
- Display the additional filters available for the columns in the list.

  To do this, choose  at the upper left of the list.

- Sort and filter each individual column in the list.
  To do this, click a column header and select *Sort Ascending* or *Sort Descending* or use the *Filter* field.

Accessing Resource Details

When you have obtained a list of transportation resources in the *Resources* view, you can then access more details about each listed resource. Each resource identifier in the list opens a detailed view of the resource attributes. Choose the tabs to move from one set of attributes to another.

> **i** Note
>
> The fields shown in the *Additional Attributes* tab are individually configured fields defined to meet your business needs. These fields must be configured and added as extended columns before they can be shown here. You can choose to display such fields by using the  button.

Configuring Table Layout

You can configure the layout of this table to show only those columns that you are interested in. To do this, choose  at the left of the main search field. This opens a dialog in which you can select the columns to be shown or hidden in the *Resources* view.

Exporting Resource Data to a CSV File

If you want to export your resource data to a comma-separated values (CSV) file, you can choose *Export to CSV*. This generates a file containing the data shown in the table.

Related Information

Fields for Resources [page 109]
Using the Change History for Resources [page 113]
Configuring Table Layout [page 15]

9.2.1 Fields for Resources

The table below provides descriptions of the fields that are available for transportation resources under *Resource Visibility* > *Resources* (or *CDM Resource Visibility* > *Resources* if using the core data model). Note that the selected resource category also determines which fields are available in the view.

The detailed view of each resource also shows these attributes on one of the following tabs:

- *Dynamic Attributes*
- *Static Attributes*
- *Reefer Information*

Field	What It Means
Axle Spacing	Distance between axles.
Cargo Body Spacing	Distance between the start of the loading space and the front of the vehicle.
Connector Distance	Distance between the trailer coupling of the box truck and the front of the vehicle.
Couple Style	Method used to couple together vehicle equipment.
Controlled Atmosphere	Shows whether a resource uses computer systems to monitor and control the atmosphere within the resource.
Cooling Unit Manufacturer	Manufacturer of the cooling unit used for the resource.
Cooling Unit Model	Type of cooling unit used for the resource.
Current Location	Current location of the resource.
Current Responsible TU	This is the last *in-execution* transportation unit assigned to the resource with the latest plan and actual time.
Current Responsible TU Type	The transportation unit type.
Date of Manufacture	The date that the resource was produced.
Dehumidify	Shows whether the resource has a dehumidification system.
Door Height	How high the door of the resource is.
Door Width	How wide the door of the resource is.
Draft Gear Type	The type of draft gear used for the resource.
Equivalent TEUs	The twenty-foot equivalent units for the resource.
Final Destination	The final destination of the resource.

Field	What It Means
Flower Bulb Arrangement	Shows whether the resource meets the criteria necessary for transporting flower bulbs.
Food Grade	Indicates whether the resource can be used for the transportation of foodstuffs.
IATA-Compliant	Shows whether the resource is compliant with International Air Transport Association (IATA) requirements.
Idle Days	Number of days that a resource has been available and awaiting use at the current or selected location.
Inside Height	How high the interior of the equipment is.
Inside Length	How long the area within the resource is.
Inside Width	How wide the area within the resource is.
King Pin Distance	Distance between the king pin and the front of the trailer.
Last Assigned Order	Tracking information for the transportation order that was executed by the resource.
Last Cargo	The kind of cargo that was last transported in the resource.
Last Location	The last location of the resource.
Lease Contract ID	The contract for leasing the resource from a vendor. This entry is a link. You can click it to view detailed information about a lease contract.
Lease Contract Type	The type of lease contract.
Load Opening Length	The opening length for cargo loading.
Load Opening Width	The opening width for cargo loading.
Loading Status	Shows whether the resource is empty or laden.
Max. Axle Weight	Maximum weight for each axle group.
Max. Cargo Weight	Maximum allowed weight of the cargo that can be carried in the resource.
Max. Controlled Temperature	Maximum temperature allowed in a resource with controlled atmosphere.
Max. Gross Weight	Maximum allowed weight of the resource together with the laden goods.

Field	What It Means
Max. Height	Maximum allowed height of the cargo.
Max. Length	Maximum allowed length of the cargo.
Max. Payload Weight	Maximum weight that can be loaded onto the railcar.
Max. Trailing Load	Maximum load that can be towed by the vehicle including the empty weights of the vehicle and their loads.
Max. Weight on Connector	Maximum weight that may be applied to the connector.
Max. Weight on King Pin	Maximum weight that may be applied to the king pin of a semi-trailer.
Max. Weight on Split Deck	Maximum weight that may be applied to the upper deck of the split deck in a double-deck vehicle.
Max. Width	Maximum allowed width of the cargo.
Min. Controlled Temperature	Minimum temperature allowed in a resource with controlled atmosphere.
Movement Status	Current movement status for a resource. This can be one of the following: • *IT* - the resource is in transit • *NIT* - the resource is not in transit
Movement Status Description	Corresponding description of a resource's movement status. This can be one of the following: • *In Transit* • *Not in Transit*
Next Stop	The next planned stop for the resource.
Number of Axles	The number of axles for the resource.
Off-Hire Date	The date that the resource was off-hired.
Off-Hire Period End	The date that the resource off-hire period ended.
Off-Hire Period Location	The location for the resource off-hire period.
Off-Hire Period Start	The date that the resource off-hire period started.
On-Hire Date	The date that the resource was on-hired.
On-Hire Period End	The date that the resource on-hire period ended.

Field	What It Means
On-Hire Period Location	The location for the resource on-hire period.
On-Hire Period Start	The date that the resource on-hire period started.
Ownership	The type of ownership that applies for a resource. For example, a resource might be leased or owned by the shipper.
Planning Block Status	Current status of the resource.
Platform Height	Required height of the railway platform for loading and unloading.
Resource Condition	A grade that indicates the overall condition of the resource. Low grades are used for carrying commodities that may more easily damage the container, such as recyclable materials, minerals, and so on. High grades are used for high value, clean cargo, such as electronics, garments, foodstuffs, and so on.
Resource Height	Outside height of the resource.
Resource Name	The unique identifier for a transportation resource. This entry is a link. You can click it to drill down to detailed information about a resource.
Resource Type	The resource type.
Resource Type Description	An additional standard description of the resource.
Resource Vessel	The last vessel assigned to the last ocean booking that loaded this resource and completed its sea trip.
Shipper-Owned	Indicates whether the resource is owned by the shipper.
Split Deck Position	Position in the trailer at which you have added the split deck.
Special Instructions	Any special instructions relevant for handling the resource. For example, this may indicate that a resource is to be sold or off-hired.
Tare Weight	The weight of the resource when empty.
Top Deck Height	Height of the top deck in a split deck.
ULD Classification	The unit loading device classification for the resource.
USDA	Shows whether the resource is USDA certified.
Ventilated	Indicates whether the resource has a ventilation system.

Field	What It Means
Volume	Volume of the resource.
Wheel Bearing Type	Type of wheel bearing used for the resource.
Wheel Diameter	Diameter of the wheel bearing used for the resource.

9.2.2 Using the Change History for Resources

To keep an overview of important status changes for your transportation resources, go to *Resource Visibility* > *Change History* (or *CDM Resource Visibility* > *Change History* if using the core data model). This view provides tracking information about events that have affected your transportation resources.

You can find resources as follows:

- Choose the *Use Filters* option.
  Then enter a location filter and resource filter. Location filters are used to group together locations or regions. A resource filter can consist of certain resource types or resource groups. You can also use a multi-attribute filter. The attributes defined for the filter are then shown with their respective values.
- Choose the *Search* option.
  This allows you to search across all resources in your SAP Transportation Resource Planning system.
- Display the additional filters available for the columns in the list.
  To do this, choose  at the upper left of the list.
- Sort and filter each individual column in the list.
  To do this, click a column header and select *Sort Ascending* or *Sort Descending* or use the *Filter* field.

> **i Note**
>
> You can also open the change history for a resource directly. To do this go to *Resource Visibility* > *Resources*, open the detailed view for a resource, and then choose the *Change History* tab.

The view provides the following fields:

Field Shown	What It Means
Resource	Identifies the transportation resource.
Location	The location of the transportation resource.
Time of Change	Shows when the change took place.
Changed Field	Identifies the change that occurred.
Old Value	Shows the value before the change.

Field Shown	What It Means
New Value	Shows the value after the change.

Exporting Change History Data to a CSV File

If you want to export your change history data to a comma-separated values (CSV) file, you can choose *Export to CSV*. This generates a file containing the data shown in the table.

9.3 Viewing Lease Contract Information

For an overview of the current leasing situation, such as contract terms, on-hire and off-hire quotas, and per diem costs, go to *Resource Visibility* > *Lease Contracts* (or *CDM Resource Visibility* > *Lease Contracts* if using the core data model). You can use this view to find out when and where additional resources will be available by means of leasing.

You can filter the list according to the start and end dates of the lease contracts.

> **i** Note
>
> You can only view lease contract data here. Any modifications to this data must be made in the respective system that was integrated with SAP Transportation Resource Planning during implementation. For more information, see the master guide available at http://help.sap.com/trp500.

The following fields are available in this view:

Field Shown	What It Means
Lease Contract	Identifies the lease contract.
Lessor	Identifies the person or company who is providing the resources to be leased.
Lease Contract Type	The type of lease contract can be *Long Term*, *Short Term*, or *One-Way*.
On-Hire Location	Shows the location at which a resource was initially on-hired.
Start of Lease	Shows when a lease contract begins.
End of Lease	Shows when a lease contract ends.
Max. Quota	Shows the maximum allowed quota of transportation resources within the lease period.

Field Shown	What It Means
Cumulative On-Hired (PCs)	Shows how many transportation resources have been on-hired so far within the lease period.

Lease Contract Details

Each entry in the list of lease contracts includes a link to detailed information. When choosing the identifier for a lease contract, you can access the following details:

- Additional information about terms and statistics for each resource type included in the lease
  - *On-Hired (PCs)*: When you click on the hyperlinked number, a list of on-hired resources is displayed.
  - *Off-Hired (PCs)*: When you click on the hyperlinked number, a list of off-hired resources is displayed.
- Details about the on-hire and off-hire terms specified in the lease contract
- Detailed statistics about individual transportation resources

9.4 Monitoring Moving Stock

When working with your transportation resources, you need to keep track of the current stock levels at fixed locations. In addition, you must be able to track the current location of transportation resources that are moving from one location to another on board transportation vehicles. To do this, go to *Resource Visibility* > *Moving Stock* (or *CDM Resource Visibility* > *Moving Stock* if using the core data model).

Using the Moving Stock View

The view provides two tabs: one for freight bookings and freight orders and one for planned loading and discharging activities.

- The *Freight Bookings/Orders* tab gives you an overview of freight bookings and freight orders, filtered by location and resource type.
- The *Load and Discharge* tab provides a different view of this data according to the loading and discharging activities for each location and resource type. The information shown here is based on freight bookings from your logistics system.

Configuring Table Layout

You can configure the layout of the tables to show only those columns that you are interested in. To do this, choose  above the tables. This opens a dialog in which you can select the columns to be shown or hidden in the tables.

Using the Map View

You can also display your data in a map view. To switch to the map view, choose the  symbol. Each freight order or booking is shown as a dot on the map. You can click each item shown on the map to display details. The vehicle is shown at the last location visited.

Related Information

Working with Freight Bookings/Orders [page 116]
Displaying Planned Stops for a Freight Booking or Freight Order [page 121]
Loading and Discharging Activities [page 122]

9.4.1 Working with Freight Bookings/Orders

When you select the *Freight Bookings/Orders* tab, you must first select a location filter and a resource filter to specify the locations and resource types that you want to monitor. Location filters are used to group together locations or regions. A resource filter can consist of certain resource types or resource groups.

After you have entered a resource filter and a location filter, the list shows you the relevant freight bookings and freight orders. This shows you all moving resources heading for the locations included in the location filter.

You can narrow down the number of freight bookings and orders shown as follows:

- Use the search field available at the upper-right corner of the list.
- Display the additional filters available for the columns in the list.

  To do this, choose  at the upper left of the list.
- Sort and filter each individual column in the list.
  To do this, click a column header and select *Sort Ascending* or *Sort Descending* or use the *Filter* field, if available.
- Use the *Filter By* field to narrow down your results according to departure time or planned arrival time. You can also use the *From* and *To* fields to specify a time period.

The table below shows the fields available in this view:

> **i Note**
>
> You can configure the layout of the *Freight Bookings/Orders* view to show only those columns that you are interested in. To do this, choose  in the toolbar. This opens a dialog in which you can select the columns to be shown or hidden in the view.

Field Shown	What It Means
Address of Destination Location	Shows the street address of the destination location, if available.
Address of Source Location	Shows the street address of the source location, if available.
Arrival Time	The planned arrival time at the final destination. This is the final location in the schedule.
Carrier	Any person or entity name who in a contract of carriage undertakes to perform or to procure the performance of carriage.
Carrier's MBL No.	The carrier's master bill of lading.
Compliance Status	Result of a trade compliance check for a freight document. The status can be: • *Not Relevant* • *Not Checked* • *Compliant* • *Not Compliant*
Consignee	The party who is to receive the shipment.
Creation Type	This can be one of the following for a freight document: • *Manual Creation* • *Created from Planning* • *Bill of Lading Creation* • *Creation from ERP Shipment* • *Creation of Pick-Up/Delivery Freight Order from Booking* • *Creation from a Customer Pick-Up/Self-Delivery Stage* • *Manually Created Booking* • *Import Booking Automatically Created from Export Booking* • *Freight Units Created from Export or Import Processing* • *Creation from Service TransportationOrderGenericRequest_In* • *Creation of Initial Freight Unit*

Field Shown	What It Means
Cross-Document Check Status	Shows the result of a check performed to see if there are time conflicts between a business document and its predecessor or successor business documents. This can be one of the following: • *Last Cross-Document Check with Red Traffic Light* • *Last Cross-Document Check with Green Traffic Light* • *Last Cross-Document Check with Yellow Traffic Light* • *Not Yet Checked*
Customs Status	If a customs relevance check is performed for a business document, the system displays a customs status that reflects the result of the check as follows: • *Initial* • *Relevant* • *Customs Clearance Cancellation Requested* • *Customs Clearance Requested* • *Customs Clearance Approved* • *Customs Clearance Cancelled* • *Not Relevant* • *Opening Transit Procedure Requested* • *Opening Transit Procedure Approved* • *Canceling Transit Procedure Requested* • *Unloading Requested* • *Unloading Approved* • *Canceling Unload Requested* • *Closing Transit Procedure Requested* • *Closing Transit Procedure Approved*
Departure Time	When the transportation resource is planning to depart for the freight order or freight booking.
Destination Location	The final destination location for the freight order or freight booking.
Document	Identifies a freight booking or freight order.
Document Check Status	This can be on one of the following: • *Last Check with Errors* • *Last Check Without Errors or Warnings* • *Last Check with Warnings* • *Not Yet Checked*

Field Shown	What It Means
Document Type	Shows the business document type.
ERP Shipment	Identifies the ERP shipment if one has been used to create the freight document.
ERP Shipment Logistics System	Shows the logistics system from which the ERP shipment originates.
ERP Shipment Type	Shows the ERP shipment type assigned to the freight document.
Execution Status	The execution status of the transportation unit in your logistics system. This can be one of the following: • *Not Relevant* • *Not Started* • *In Execution* • *Executed* • *Interrupted* • *Canceled* • *Ready for Transportation Execution* • *Not Ready for Transportation Execution* • *Loading in Process* • *Capacity Planning Finished*
First Activity	Shows the first activity's date/time scheduled in a freight booking or freight order.
Last Activity	Shows the last activity's date/time scheduled in a freight booking or freight order.
Life Cycle Status	The life cycle status of the transportation unit in your logistics system. This can be one of the following: • *Draft* • *New* • *In Process* • *Completed* • *Canceled*
Maximum Utilization	Planned maximum utilization for a resource.
Maximum Utilization Mass	Planned maximum utilization mass for a resource.
Means of Transport	The means of transport for the freight document.

Field Shown	What It Means
Next Location	Shows the next planned location in the freight booking or freight order. Note that the date and time on which you logged on is used as the point of reference for determining what is shown here.
Partner Reference Number	The partner reference number for the freight document.
Person Responsible	Person responsible for the freight document.
Previous Location	The previous planned location in the freight booking or freight order. Note that the date and time on which you logged on is used as the point of reference for determining what is shown here.
Purchase Organization	The purchase organization assigned to the freight document.
Purchasing Group	The purchasing group assigned to the freight document.
Schedule	The schedule assigned to the freight document. This determines the stops involved.
Shipper	Identifies the shipper.
Source Location	The original starting location for the freight document.
Stock	Shows the number of transportation resources in a freight booking or freight order. Note that the date and time on which you logged on is used as the point of reference for determining what is shown here. You can use the link provided here to view resource details.
Train Num.	A departure for a train that is generated from a schedule with transportation mode *Rail*.
Transportation Mode	Shows the relevant transportation mode for a freight document.
Vessel	Shows the vessel assigned to a freight booking.
Voyage	A departure for a vessel that is generated from a schedule.

9.4.2 Displaying Planned Stops for a Freight Booking or Freight Order

You can display a full list of planned stops for each freight booking or freight order in the *Moving Stock* view.

This information is shown in the list below the main search results.

> **i Note**
>
> This table shows all of the information relevant for a selected booking or order. The location and resource filter selected for the overall *Moving Stock* view does not apply for the stock information shown here.

To show the stops, select an entry in the list of freight bookings and freight orders. The planned stops and relevant resource types are shown in the lower table. You can expand a location in the list to see the resource types involved and the number of empty or laden resources loaded or discharged at each stop. Where relevant, a link is provided for accessing resource details. Note that the selected resource category also determines which fields are available in the view.

The following fields are available in the list:

> **i Note**
>
> You can configure the layout of this list to show only those columns that you are interested in. To do this, choose  in the toolbar. This opens a dialog in which you can select the columns to be shown or hidden.

Field Shown	What It Means
Arrival Time	The arrival time at each stop.
Departure Time	The departure time from each stop.
Empty Resources Discharged	The number of empty resources discharged. You can expand the location to see the quantities for each resource type involved.
Empty Resources Loaded	The number of empty resources loaded. You can expand the location to see the quantities for each resource type involved.
Empty Stock	Shows the total stock of empty transportation resources.
Laden Resources Discharged	The number of laden resources discharged. You can expand the location to see the quantities for each resource type involved.
Laden Resources Loaded	The number of laden resources loaded. You can expand the location to see the quantities for each resource type involved.

Field Shown	What It Means
Laden Stock	Shows the total stock of laden transportation resources.
Schedule	The schedule assigned to the freight document, if applicable.
Stop/Resource Type	Shows the relevant stop and resource type.
Vehicle ID	Shows the assigned vehicle, if applicable.
Vessel	Shows the vessel assigned to a freight booking.
Voyage	A departure for a vessel that is generated from a schedule.

9.4.3 Loading and Discharging Activities

The *Moving Stock* also allows you to monitor loading and discharging activities.

You can choose the *Load and Discharge* tab to display a list of loading and discharging activities by location.

As in the list of freight bookings and freight orders, the locations are shown according to the specified location filter and resource filter. You can also use the *Filter By* field to narrow down the number of activities shown according to departure time, planned arrival time, and the current time. You can also use the *From* and *To* fields to specify a time period.

9.5 Managing Transportation Demand

To monitor booking orders for transportation resources, go to *Resource Visibility* > *Transportation Demand* (or *CDM Resource Visibility* > *Transportation Demand* if using the core data model). These bookings are shown as transportation units.

You can also quickly access the stock overview for a source location shown in the list. Each source location is shown as a link. Choosing this link opens the *Stock* view for the location filter. You can then see the current overall stock levels for all locations included in the filter. For more information about how to work with this view, see Monitoring the Stock Situation [page 101].

Filtering Transportation Units

When you open the view, you must first select a location filter and a resource filter. Location filters are used to group together locations or regions. A resource filter can consist of certain resource types or resource groups. You must also use the *From* and *To* fields to set a time period.

After you have filled the required fields, choose *Go* to display the relevant transportation units. You can narrow down your results as follows:

- Use the search field available at the upper-right corner of the list.
- Display the additional filters available for the columns in the list.

  To do this, choose  at the upper left of the list.
- Sort and filter each individual column in the list.
  To do this, click a column header and select *Sort Ascending* or *Sort Descending* or use the *Filter* field.
- Use the *Filter By* field to narrow down your results according to the planned start or end of transport or the booking date.

Configuring Table Layout

You can configure the layout of this table to show only those columns that you are interested in. To do this, choose  in the toolbar. This opens a dialog in which you can select the columns to be shown or hidden in the *Transportation Demand* view.

Related Information

Fields for Transportation Demand [page 123]
Configuring Table Layout [page 15]

9.5.1 Fields for Transportation Demand

The table below shows the fields available in *Resource Visibility* > *Transportation Demand* (or *CDM Resource Visibility* > *Transportation Demand* if using the core data model). Note that the selected resource category also determines which fields are available in the view.

> **i Note**
>
> You can configure the layout of the *Transportation Demand* view to show only those columns that you are interested in. To do this, choose  in the toolbar. This opens a dialog in which you can select the columns to be shown or hidden.

Field Shown	What It Means
Action	This link allows you to view the transportation unit directly in your logistics system using a browser.

Field Shown	What It Means
Assigned Resource	Shows the identifier for an assigned resource. You can click this entry to open a detailed view of the resource attributes. If more than one resource is assigned, you can click the number shown to access resource details.
Booking Date	Shows when the order was accepted and the booking was created.
Booking Reference	A reference number for the booking.
Carrier for Station of Loading	Assigned carrier for the station where cargo is loaded.
Consignee	The party who is to receive the shipment.
Customer Name	Name of the customer who requested the booking.
Destination Location	The transport destination.
Discharge Location	A location where the train is unloaded.
Execution Status	Execution status of the transportation unit in your logistics system. This can be one of the following: • *Not Relevant* • *Not Started* • *In Execution* • *Executed* • *Interrupted* • *Canceled* • *Ready for Transportation Execution* • *Not Ready for Transportation Execution* • *Loading in Process* • *Capacity Planning Finished*
Haulage Type	Haulage type for a transportation unit. Here, this is always *Carrier Haulage*, as this is relevant for planning.
Last Location	Current location for a single resource. If a TU includes several resources, this column is empty.
Lease Contract	Relevant lease contract for a resource, if applicable.
Lease Contract Type	Type of lease contract used, for example, short term.

Field Shown	What It Means
Life Cycle Status	Life cycle status of the transportation unit in your logistics system. This can be one of the following: • *New* • *In Process* • *Completed* • *Canceled*
Loading Location	A location where cargo is loaded.
Loading Location Carrier	Assigned carrier for the location where cargo is loaded.
Means of Transport	Shows the means of transport for the main transportation stage of the transportation unit.
Order Date	Date on which the order was accepted
Order Reference	Reference number for the order.
Pick-Up Date	This is the planned pick-up date for an empty provisioning TU.
Pick-Up Location	This is the planned pick-up location for an empty provisioning TU.
Planned Arrival Time	This is the planned arrival time at the last stop of a TU.
Planned Departure Time	This is the planned departure time from the first stop of a TU.
Planned End of Transport	This is the latest time planned on the last stop for a TU.
PoD Carrier	Shows the carrier for the port of discharge in the last sea stage. This is taken from the main TU.
PoL Carrier	Shows the carrier for the port of loading in the first sea stage. This is taken from the main TU.
Port of Discharge	A port where the vessel is unloaded.
Port of Loading	A port where cargo is loaded aboard the vessel.
Quantity	The number of transportation resources involved.
Resource Number	Shows an identifier for a single resource. If a TU involves several resources, this column is empty.
Resource Type	Shows the type of transportation resource involved.
Return Location	The planned return location for an empty return TU.

Field Shown	What It Means
Shipper	Identifies the shipper.
Source Location	Shows the original location of the resource.
Special Instructions	Shows any special instructions relevant for handling the resource. For example, this may indicate that a resource is to be sold or off-hired.
Station of Discharge	Station where the train is unloaded.
Station of Loading	Station where cargo is loaded.
Train Arrival Date	Date by which the train arrives.
Train Cut-Off Date	Date by which cargo must be loaded on the train.
Train ID for Station of Discharge	Assigned train ID for the station where the train is unloaded.
Train ID for Station of Loading	Assigned train ID for the station where cargo is loaded.
Train Name for Station of Discharge	Assigned train name for the station where the train is unloaded.
Train Name for Station of Loading	Assigned train name for the station where cargo is loaded.
Transportation Unit	Identifies the transportation unit.
TU Type	Shows the type of transportation unit.
Vehicle Arrival Date	Date by which the vehicle arrives.
Vehicle Cut-Off Date	Date by which the cargo must be loaded on the vehicle.
Vehicle ID for Discharge Location	Assigned vehicle ID for the station where the train is unloaded.
Vehicle ID for Loading Location	Assigned vehicle ID for the station where cargo is loaded.
Vehicle Name for Discharge Location	Assigned vehicle name for the station where the train is unloaded.
Vehicle Name for Loading Location	Assigned vehicle name for the station where cargo is loaded.
Vessel Arrival Date	Shows when the vessel arrives at the port of discharge.
Vessel Cut-Off Date	The date by which the cargo must be loaded on the vessel.
Vessel Name for PoD	Identifies the vessel arriving at the port of discharge, according to the assigned schedule.

Field Shown	What It Means
Vessel Name for PoL	Identifies the vessel leaving the port of loading location, according to the assigned schedule.
Voyage ID for PoD	Identifies the voyage for the port of discharge.
Voyage ID for PoL	Identifies the voyage for the port of loading.

10 Forecasting Supply and Demand

In the *Supply and Demand* work center, you can calculate and forecast the supply and demand quantities of transportation resources based on a supply and demand plan.

Once you have obtained the calculation results for a plan, you can display them in a table view or a map view. The supply information about transportation resources includes the actual stock and the planned activities that will increase the stock in the future. The demand information about transportation resources includes the quantity of unavailable resources in the future.

Supply and Demand Plans

Supply and demand plans are used to calculate and forecast supply and demand quantities and identify imbalance issues. Each plan is defined by the following:

- Plan type
  - *Supply and Demand*: A supply and demand plan can be either scheduled or instant.
    - Scheduled: These plans are executed automatically at regular intervals according to the plan's execution schedule.
    - Instant: These plans must always be executed manually and are intended for obtaining immediate calculation results.
  - *Virtual Supply and Demand*: These plans allow you to work with the calculation results of several scheduled supply and demand plans at once in the *Supply and Demand* view.
- Calculation model
  A mathematical model used to compute supply and demand quantities.
- Location filter
  Specifies the locations that you see in the plan execution results.

  > **i Note**
  >
  > You can select a maximum of 300 locations.
- Resource filter
  Specifies the resource types that you see in the plan execution results.
- Time filter
  Specifies the time intervals that are used for the plan, for example, the next seven days.

Alert Information

This work center also shows alert information for the executed plan. The supply and demand situation may have imbalance issues. For example, the forecast may show that the stock of a certain resource type will fall below the minimum safety stock in a location or that the supply quantity will be much less than the forecasted

demand. In such cases, alerts are triggered so that you know ahead of time where problems will occur and can take steps to prevent the issues.

Alerts are triggered based on the alert rule group specified in a scheduled plan. The alert rule group is a set of rules that determines when an alert is triggered. You can view alerts in the *Alerts* panel, or in the table and map views of the *Supply and Demand* work center.

Supply and Demand Data in the Home Dashboard

You can also configure a tile in the *Home* dashboard for showing data for a supply and demand plan. For more information, follow the appropriate link below.

Related Information

Executing Supply and Demand Plans [page 129]
Results for Scheduled Supply and Demand Plans [page 132]
Results for Instant Supply and Demand Plans [page 138]
Results for Virtual Supply and Demand Plans [page 135]
Alert Framework [page 86]
Using the Home Dashboard [page 92]

10.1 Executing Supply and Demand Plans

The forecasted data that you view in the *Supply and Demand* work center results from the execution of a plan. When a plan is executed, the location filter and resource filter determine the geographical areas and type of resources involved. The time filter determines the time intervals for which results are calculated. The calculation model is used to compute the supply and demand quantities, and alerts are triggered based on the assigned alert rule group.

Automatic Execution

Scheduled plans are usually executed automatically according to the schedule that you set up when creating and configuring the plan. After execution, the plan results are then immediately available in the *Supply and Demand* work center or in the *Home* dashboard if you have added a tile for monitoring this supply and demand plan.

A virtual plan consists of scheduled plans. The plans are usually executed automatically according to their schedule. All included plans have the same time filter, but they may have different execution schedules. If the status for each included plan is OK and results are available, you can view them in the *Supply and Demand* work center.

Manual Execution

You can execute your supply and demand plans manually if required. When you execute your plan manually, the results are generated immediately. If your plan is complex and involves a lot of data, the execution may take a while.

Related Information

Manually Executing Scheduled Supply and Demand Plans [page 130]
Manually Executing Virtual Supply and Demand Plans [page 131]
Executing Instant Supply and Demand Plans [page 132]

10.1.1 Manually Executing Scheduled Supply and Demand Plans

Context

If you want immediate results, you can also execute a plan manually.

> **i** Note
>
> If your plan is complex and involves a lot of data, execution may take a while.

Procedure

1. Open your plan in one of the following work centers:
   - In *Supply and Demand* using the *Plan* field
   - In ▶ *Plans* > *Plan Configuration* ▶
2. Choose *Execute*.

   In the *Supply and Demand* work center, you must open the *Plan Execution* area. In the *Plan Configuration* view, open the detailed view of your plan.
3. Check the new results for your plan. To do this, you must be in the *Supply and Demand* view or have a tile for your plan in the *Home* dashboard.

Results

The following happens when a plan is executed automatically or manually:

- Forecasted data is generated for your plan according to the location filter, resource filter, and future time filter selected for the plan.
- Any relevant alerts are triggered according to the assigned alert rule group.
- The overall status for your plan execution is set. You can find the execution log in the *Scheduling* tab when you open your plan details in the *Plan Configuration* view.

10.1.2 Manually Executing Virtual Supply and Demand Plans

Context

If you want immediate results for your virtual plan or if the configuration of an included plan has changed, you can also execute all of the plans included in a virtual plan at once manually.

> **i** Note
>
> If your plan is complex and involves a lot of data, execution may take a while.

Procedure

1. To execute all included plans manually, open your virtual plan in one of the following work centers:
   - In *Supply and Demand* using the *Plan* field
   - In ▶ *Plans* > *Plan Configuration* ◪
2. Choose *Execute All*.

   In the *Supply and Demand* work center, you must open the *Plan Execution* area. In the *Plan Configuration* view, open the detailed view of your plan.
3. Check the new results for your plan. To do this, you must be in the *Supply and Demand* work center.

Results

The following happens when the plans included in a virtual plan are executed automatically or manually:

- Forecasted data is generated for all included plans according to the relevant location filters, resource filters, and future time filter.
- Any relevant alerts are triggered according to the assigned alert rule group for each included plan.
- The overall status for your plan execution is set.

10.1.3 Executing Instant Supply and Demand Plans

Instant plans do not have any scheduling, so you need to execute an instant plan manually to generate results.

Context

> **i Note**
>
> If your plan is complex and involves a lot of data, execution may take a while.

Procedure

1. Go to the *Supply and Demand* work center.
2. Use the *Plan* field to find and select your instant plan.
3. Choose *Go*.

   For instant plans, the *Execution Run* field defaults to *Instant Result*.

   Forecasted data is generated for your plan according to the location filter, resource filter, and future time filter selected for the plan.
4. Check the results in the *Supply and Demand* work center.

> **i Note**
>
> You can also execute instant plans in the following ways:
> - In the *Supply and Demand* work center, open the *Plan Execution* tab and choose *Execute*.
> - In the *Plans* work center, open the instant plan details and choose *Execute*.

Results

If you decide that you want an instant plan to be executed automatically on a regular basis, you can add scheduling. This changes it into a scheduled supply and demand plan.

10.2 Results for Scheduled Supply and Demand Plans

You use scheduled plans to calculate forecasts for supply and demand quantities and identify possible imbalance issues in the future. These plans are executed periodically based on the scheduling settings made as part of the plan configuration.

Displaying Results for a Scheduled Plan

When you open the *Supply and Demand* work center, the system defaults to the plan that was selected in the previous session. You can use the *Plan* field to select a different plan as required. Choose *Go* to display the data for the selected plan. For scheduled supply and demand plans, the data from the latest execution run is displayed.

You can view the forecasted supply and demand information by location, resource type, and time, based on the plan's location filter, resource filter, and time filter. Initially, the work center shows results for a selected plan in the table view. You can also display your supply and demand forecast data in a map view.

> **i Note**
>
> If the location filter in the plan consists of location groups instead of separate locations, the work center only shows the supply and demand information for each location group. You cannot drill down to the details for each location in the group. Similarly, if the resource filter consists of resource groups, information for separate resource types is not available.

The forecasted results are shown for a series of time periods in the view. The time filter used for the plan determines how many intervals are shown and which time periods they reflect. For example, if the time interval of the time filter is specified as daily with seven recurrences, the supply and demand table shows calculation results for each of the next seven days.

Plan Status

When you select a plan in the *Supply and Demand* view, the selection dialog shows the current status of each available plan. If no execution results are available for a scheduled plan, if the last execution of the plan failed, or if the plan configuration has changed, the dialog shows a warning symbol and a notification.

The plan status is also displayed at the right of the *Plan* field in the work center.

Show Overview, Details, or Available Stock

You can use the *Show* field to switch between supply and demand data in overview form or including details or available stock. When you choose *Details*, the table shows the categories defined for supply and demand. The categories shown depend upon the nodes defined for the calculation model used for the plan. You can access a graph view of the calculation model on the *Plan Execution* tab.

When you choose *Available Stock*, the table shows the exact availability of the stock by subtracting the demand from the supply of the selected locations. The graph view of the calculation model on the *Plan Execution* is not visible in this mode.

View by Location or Resource

You can use the *View By* field to switch between two views of your data: by location or by resource. This determines whether locations or resource types are shown as nodes in the *Location/Resource* column in the table at the right.

Selecting Execution Runs

The *Execution Run* field provides a dropdown list that lets you choose any of the past execution runs for a plan. The status of the execution runs is also shown. You can also choose the *Show All* option. This opens a dialog box that allows you to filter and search for execution runs.

Selecting a Time Zone

The *Time Zone* field provides a dropdown list that lets you choose an alternative time zone. By default, the time zone of the supply and demand plan's time filter is selected. The time periods are calculated as follows:

- The start time of the first time period is the time of the execution run.
- The start times of the subsequent time periods match the start time provided in the time filter.
- The end times of the time periods match the end times provided in the time filter.

If you select an alternative time zone from the dropown list, the time intervals are fetched from the saved execution run and displayed based on the selected time zone. The supply and demand data does not change.

Forecasted Data and Actual Data

For scheduled supply and demand plans, you can also display actual data to compare it with the forecasted data. To do this, mark the *Forecasted and Actual* checkbox in the *Supply and Demand* view. If actual data is available for past execution runs, it is shown in a separate column for each time interval in the execution run.

Exporting Data to a CSV File

If you want to export your supply and demand data as a comma-separated values (CSV) file, you can choose *Export to CSV*. This generates a file containing the data shown in the table.

> **i** Note
>
> This option is only available if you set the *Show* field to *Details*.

> **i Note**
>
> If you open the CSV file in Microsoft Excel, then format the *START_TIME* and *END_TIME* cells with the custom format `dd/mm/yyyy hh:mm:ss AM/PM`.

Calculation Model

Depending on the underlying calculation model for a plan, the results of the plan execution may include one or more information types, such as stock, supply, and demand. You can view all results simultaneously or view one type at a time using the calculation model. You can access the calculation model in the *Plan Execution* tab.

Forward Navigation

SAP Transportation Resource Planning supports forward navigation from the *Supply and Demand* view to other views. If forward navigation is configured, the supply, demand, and stock figures for each location are hyperlinks, which you can use to drill down to more detailed information. Depending on your configuration, the forward navigation opens the relevant view, such as the *Transportation Demand* view or the *Resources* view.

Alternatively, your system may be configured to display a pie chart. This pie chart shows all the planned activities (for example, empty pick-up and empty return) from the previous time intervals and stock. For example, if the pie chart is for time interval 5, then the planned activities from time interval 1 to time interval 4 and stock are shown in the pie chart. Then you can navigate to the *Resources* view or the *Transportation Demand* view from the pie chart.

Related Information

Table View for Supply and Demand Data [page 141]
Map View for Supply and Demand Data [page 142]
Using the Calculation Model [page 143]
Supply and Demand Plans [page 73]

10.3 Results for Virtual Supply and Demand Plans

You can also display results for virtual plans in the *Supply and Demand* work center. Virtual plans allow you to group together scheduled plans and see their results in a consolidated view. The plans grouped in a virtual plan all have the same time filter. Their location filters and resource filters must also overlap.

Plan Details

You can access more information about the virtual plan from the *Supply and Demand* work center. To do this, choose the *Plan Execution* tab. You can do the following here:

- Choose *View Details*. This opens a dialog box that shows you which scheduled plans are included in the virtual plan.
- Use the links provided to navigate to the location filter, resource filter, or time filter used in the included plans.

Displaying Results for a Virtual Plan

When you select a virtual plan to be displayed in the *Supply and Demand* work center, a tree structure is shown at the left in the table view. Depending upon the nature of the locations included in the plan, the tree may have hierarchical levels. This structure includes the locations in the supply and demand plans that are part of the virtual plan.

Note the following about using this tree structure:

- You can drill down in the hierarchy to display forecast results according to location and resource type.
- You can show the results for more than one location at a time to compare them.
  To do this, press *Ctrl* and select the locations from the tree structure. The calculation results for each location are then displayed in the table view at the right.
- You can also select all of the locations at once to compare their results.
  To do this, select the first location in the tree. Then press and hold the *Shift* key and select the last location displayed. This selects all locations and displays their forecasted supply and demand data in the table at the right.
- The first entry in the table shows the cumulative results for all selected locations.

> **i** Note
>
> The first column of the table does not include a time stamp. This is because the first execution time of the included plans may differ. The first column always shows the first plan execution results for the selected location.

View by Location or Resource

You can use the *View By* field to switch between two views of your data: by location or by resource. This determines whether locations or resource types are shown as nodes in the *Location/Resource* column in the table.

Selecting Execution Runs

The *Execution Run* field provides a dropdown list that lets you choose any of the past execution runs for a plan. The status of the execution runs is also shown. You can also choose the *Show All* option. This opens a dialog box that allows you to filter and search for execution runs.

Selecting a Time Zone

The *Time Zone* field provides a dropdown list that lets you choose an alternative time zone. When you choose an alternative time zone the data is redisplayed from the perspective of the selected time zone. The default option is *Automatic*, which retrieves the plan data using your current time zone.

Alert Information

Alerts are triggered based on the alert rule group specified in the scheduled supply and demand plans included in the virtual plan. The alert rule group is a set of rules that determines when an alert is triggered. You can view alerts for virtual plans in the *Alerts* panel, or in the table and map views of the *Supply and Demand* work center.

Exporting Data to a CSV File

If you want to export your supply and demand data to a comma-separated values (CSV) file, you can choose *Export to CSV*. This generates a file containing the data shown in the table.

> **i Note**
>
> This option is only available if you set the *Show* field to *Details*.

> **i Note**
>
> If you open the CSV file in Microsoft Excel, then format the *START_TIME* and *END_TIME* cells with the custom format `dd/mm/yyyy hh:mm:ss AM/PM`.

Forward Navigation

SAP Transportation Resource Planning supports forward navigation from the *Supply and Demand* view to other views. If forward navigation is configured, the supply, demand, and stock figures for each location are hyperlinks, which you can use to drill down to more detailed information. Depending on your configuration, the forward navigation opens the relevant view, such as the *Transportation Demand* view or the *Resources* view.

Alternatively, your system may be configured to display a pie chart. This pie chart shows all the planned activities (for example, empty pick-up and empty return) from the previous time intervals and stock. For

example, if the pie chart is for time interval 5, then the planned activities from time interval 1 to time interval 4 and stock are shown in the pie chart. Then you can navigate to the *Resources* view or the *Transportation Demand* view from the pie chart.

Related Information

Map View for Supply and Demand Data [page 142]
Virtual Plans [page 83]
Alert Framework [page 86]

10.4 Results for Instant Supply and Demand Plans

You can use instant plans to obtain immediate calculation results for supply and demand in the *Supply and Demand* work center. Unlike scheduled plans, which are executed automatically at regular intervals, you must execute instant plans manually.

Displaying Results for an Instant Plan

When you open the *Supply and Demand* work center, the system defaults to the plan that was selected in the previous session. You can use the *Plan* field to select a different plan as required. If the selected plan is an instant plan, the plan is executed when you choose *Go* and the data is displayed. The execution run defaults to *Instant Result*.

You can view the forecasted supply and demand information by location, resource type, and time, based on the location filter, resource filter, and time filter for the plan. Initially, the work center shows results for the plan in the table view. You can also display your forecasted data in a map view.

> **i** Note
>
> If the location filter in the plan consists of location groups instead of separate locations, the work center only shows the supply and demand information for each group. You cannot drill down to the details for each location in the group.
>
> Similarly, if the resource filter consists of resource groups, information for separate resource types is not available.

The forecasted results are shown for a series of time periods in the view. The time filter used for the plan determines how many intervals are shown and which time periods they reflect. For example, if the time interval of the time filter is specified as daily with seven recurrences, the supply and demand table shows calculation results for each of the next seven days.

Plan Status

When you select a plan in the *Supply and Demand* view, the selection dialog shows the current status of each available plan. If no execution results are available for a scheduled plan, if the last execution of the plan failed, or if the plan configuration has changed, the dialog shows a warning symbol and a notification.

The plan status is also displayed at the right of the *Plan* field in the work center.

Show Overview or Details

You can use the *Show* field to switch between supply and demand data for a selected plan in overview form or including details. When you choose *Details*, the table shows the categories defined for supply and demand. The categories shown depend upon the nodes defined for the calculation model used for the plan. You can access a graph view of the calculation model in the *Plan Execution* tab.

View by Location or Resource

You can use the *View By* field to switch between two views of your data: by location or by resource. This determines whether locations or resource types are shown as nodes in the *Location/Resource* column in the table.

Selecting Execution Runs

The *Execution Run* field provides a dropdown list that lets you choose any of the past execution runs for a plan. If the instant plan has been executed before, then the selection defaults to the latest execution run. If the instant plan has not been executed before, then the selection defaults to *Instant Result*. The status of the execution runs is also shown. You can choose the *Show All* option to open a dialog box that allows you to filter and search for execution runs.

Selecting a Time Zone

The *Time Zone* field provides a dropdown list that lets you choose an alternative time zone for displaying your data. When you choose *Go* for an *Instant Result*, the data is calculated and the start and end times of the time periods are displayed as follows:

- The start time of the first time period is the current time for the selected time zone.
- The start times of the subsequent time periods match the start time specified in the time filter for the plan.
- The end times of the time periods match the end time specified in the time filter for the plan.

By default, the time zone of the time filter is used. If you select an alternative time zone from the dropown list, the plan data is recalculated. The start time of the first time period changes to the current time for the newly

selected time zone. All other start times and end times remain the same, as they are based on the time defined in the time filter for your plan.

> **i Note**
>
> If you choose a saved execution run in the *Execution Run* field, the saved data is displayed. The start and end times of the time periods are adjusted to reflect the selected time zone.

Exporting Data to a CSV File

If you want to export your supply and demand data to a comma-separated values (CSV) file, you can choose *Export to CSV*. This generates a file containing the data shown in the table.

> **i Note**
>
> This option is only available if you set the *Show* field to *Details*.

> **i Note**
>
> If you open the CSV file in Microsoft Excel, then format the *START_TIME* and *END_TIME* cells with the custom format `dd/mm/yyyy hh:mm:ss AM/PM`.

Calculation Model

Depending on the underlying calculation model for a plan, the results of the plan execution may include one or more information types, such as stock, supply, and demand. You can view all results simultaneously or view one type at a time using the calculation model. You can access the calculation model in the *Plan Execution* tab.

Forward Navigation

SAP Transportation Resource Planning supports forward navigation from the *Supply and Demand* view to other views. If forward navigation is configured, the supply, demand, and stock figures for each location are hyperlinks, which you can use to drill down to more detailed information. Depending on your configuration, the forward navigation opens the relevant view, such as the *Transportation Demand* view or the *Resources* view.

Alternatively, your system may be configured to display a pie chart. This pie chart shows all the planned activities (for example, empty pick-up and empty return) from the previous time intervals and stock. For example, if the pie chart is for time interval 5, then the planned activities from time interval 1 to time interval 4 and stock are shown in the pie chart. Then you can navigate to the *Resources* view or the *Transportation Demand* view from the pie chart.

Related Information

Table View for Supply and Demand Data [page 141]
Map View for Supply and Demand Data [page 142]
Using the Calculation Model [page 143]

10.5 Table View for Supply and Demand Data

When you open the *Supply and Demand* work center, the data for a selected supply and demand plan is first shown in the table view. The table view shows the supply and demand quantities by location or location group and time, and shows any alerts. If you want to switch to this view, choose the  symbol.

Using the Locations Area

You can use the *Locations* area at the left to check the results for specific locations.

- You can show the results for more than one location at a time to compare them.
  To do this, press *Ctrl* and select the locations at the left. The calculation results for each location are then displayed in the table view at the right.
- You can also select all of the locations at once to compare their results.
  To do this, select the first location in the area at the left. Then press and hold the *Shift* key and select the last location displayed. This selects all locations and displays their forecasted supply and demand data in the table at the right.
- The first entry in the table shows the cumulative results for all selected locations.

Additional Details

- In the *Location/Resource Type* column, you can expand the plus sign in front of each location or location group to drill down further.
- Each quantity in the table is shown as a link.
  Choosing a link displays a pie chart. The chart shows the detailed breakdown of the selected supply or demand quantity. In the pie chart, you can place your cursor over any segment for exact numbers, for example, how many resources will be in maintenance and repair within the time frame specified for the executed plan.
  The categories shown in the chart depend upon the nodes defined for the calculation model used for the plan.
- If alerts have been triggered, red numbers and warning signs are shown for the location and time interval. You can click the warning symbol to get details about what has caused the alerts.

Related Information

Results for Scheduled Supply and Demand Plans [page 132]
Using the Calculation Model [page 143]

10.6 Map View for Supply and Demand Data

Using the Map View

If you want to look at the supply and demand situation from a geographic perspective, you can use the map view. To switch to this view, choose the  symbol at the upper-left corner after you have selected a supply and demand plan. The map shows each location that you have selected in the *Locations* area in the *Supply and Demand* view. The map shows you the following:

- If the location filter in the plan uses location groups, the primary location specified for each group determines its position on the map.
- If the location filter in the plan uses regions or region groups, the map shows a polygon area enclosing all of the included locations.
- You can zoom in and out of the map view to focus on a particular area.
- You can also select locations in the overview of all locations at the left. The map then repositions to show the location. You can also use the *Locations* and *Time* fields to narrow down the data shown. When you enter all or part of a location name in the *Locations* field, autocomplete helps you find locations in the location filter to be displayed on the map.
- If you have selected a virtual supply and demand plan, the map provides a location hierarchy that allows you to move from level to level of the locations or regions included in the virtual plan.

> **i Note**
>
> If some locations cannot be shown, the *Show Invalid Locations* is available. You can click this button to view a detailed error message.

The map view allows you to focus on alerts, status, and details.

Alerts

If you choose *Alerts* in the map view, the following applies:

- The number of alerts is shown for each location, location group, or area.
- The color of the dots shows the alert status. A gradient color from yellow to red represents the alert priority from low to high. Green means that there are no alerts.
- You can choose the location or alert symbol to access more details about the overall forecasted supply and demand situation and any alerts that have been triggered.
- If you have selected a virtual supply and demand plan, this is shown for each location, location group, or area included in the virtual plan.

Status

If you choose *Status* in the map view, the following applies:

- Bubble charts show the supply and demand status for each location or location group.
- The relative size and color of each chart shows whether there is surplus or deficit situation, or whether the situation is normal.
- You can place your mouse cursor over any segment of a chart to see detailed statistics.
- You can click a chart or location to access more details about the supply and demand trend along the time filter and any alerts that have been triggered.
- If you have selected a virtual supply and demand plan, the charts show the supply and demand status for each location or location group included in the virtual plan.

Details

If you choose *Details* in the map view, the following applies:

- Charts show the detailed breakdown of the supply and demand quantities.
  For example, this may be the forecasted number of resources that is planned for outbound repositioning. These charts are shown if the map view contains less than six locations or location groups, or if you have zoomed into the map to that level.
- You can see the exact percentage and quantity of each category in the detailed breakdown.
  To do this, place your cursor on a segment in the chart.
- You can click the center area of a chart to access more details about the supply and demand trend along the time filter and any alerts that have been triggered.
- If you have selected a virtual plan, the charts show the detailed breakdown of the supply and demand quantities for each area included in the virtual plan.

10.7 Using the Calculation Model

The results shown for a supply and demand plan are determined based on a calculation model. Each calculation model consists of a set of calculation nodes that are used to collect or calculate sets of data. The *Calculation Output* column in the table view for the *Supply and Demand* work center shows the current result type. By default, both the supply and demand information are shown together. However, if you are interested in the calculation results for one type, for example, only supply information, you can use the calculation model to show only a single type.

To access the underlying calculation model in *Supply and Demand* work center, choose the *Plan Execution* tab at the right. This opens a panel showing detailed information about both the plan and its calculation model. In the *Calculation Model* area, each node defined for the model is shown in diagram form. You can use these nodes to filter supply and demand result types.

Filtering Result Types

To select a result type for a supply and demand plan, proceed as follows:

1. In the *Supply and Demand* work center, select a plan in the *Plan* field.
   Check the execution time stamp for the plan at the top of the results list.
2. Choose the *Plan Execution* tab at the right edge of the work center.
3. If the plan has not been executed, you can choose *Execute* or *Execute All* at the lower right of the panel. The command shown depends upon whether you have selected a plan or a virtual plan.
   After execution, the final node in the calculation model diagram is highlighted. This means that the view is showing calculated output for both supply and demand.
4. To filter result types, choose the node that represents the output result information that you want to view.
   All of the maps, tables, and charts in the *Supply and Demand* work center are refreshed to show only the selected output result type.

Working in Expert Mode

If you need a detailed view of the calculation model used for a plan, you can switch to expert mode in the *Plan Execution* panel. This view provides a flow graph that shows you the various elements used in the calculation model.

To switch to expert mode, proceed as follows:

1. Make sure that you have selected a plan and that the plan has been executed.
2. Switch to expert mode by choosing  at the right in the *Plan Execution* panel.
3. Choose  to view the entire graph diagram.
4. Choose a result type in the diagram to display the results in the work center.
   Each result type, such as supply or demand, is shown as a node in the flow graph.
   All of the maps, tables, and charts in the *Supply and Demand* work center are refreshed to show only the selected output result type.

Configuring Parameters for Overdue Activities

The calculation of overdue data is based on configurable parameters, which allow you the flexibility to define different time thresholds for various activities such as empty return and empty pick-up. You configure the parameters for overdue activities per resource category.

To configure the parameters for overdue activities, proceed as follows:

1. Go to *Administration* > *Resource Categories*.
2. Click on the relevant resource category to open the detailed view.
3. Choose *Edit*.
4. Under *Variable Parameters*, specify a value for each of the relevant parameters.
   The following variable parameters are relevant for overdue calculations in supply and demand:

- Overdue Empty Return
- Overdue Inland Repositioning In
- Overdue Maritime Repositioning In
- Overdue Empty Pick-Up
- Overdue Inland Repositioning Out
- Overdue Maritime Repositioning Out

5. Save your entries.

10.8 Alerts for Supply and Demand Plans

Alert Information

Alerts are triggered based on the alert rule group specified in a plan. For virtual plans, the alert rule groups for the included scheduled supply and demand plans take effect.

An alert rule group is a set of rules that determines when an alert is triggered. You can view alerts in the following places in the *Supply and Demand* work center:

- In the table view
- In the map view
- In the *Alerts* panel

Related Information

Table View for Supply and Demand Data [page 141]
Map View for Supply and Demand Data [page 142]
Alert Framework [page 86]

11 Monitoring KPIs

You use the *KPI* work center to monitor and analyze the performance history of a location or set of locations according to a key performance indicator. The results shown in the work center are calculated based on a scheduled KPI plan, meaning that the results are calculated regularly according to the execution schedule for the plan. KPI plans are always executed for a specific location or set of locations, resource type, or group of resource types, and for a specific time period in the past. You can also use a virtual KPI plan to group together the KPI results for several scheduled KPI plans.

Once you have obtained the calculation results for a KPI plan, you can display them in table form, as a bar chart, or on a map in the *KPI* work center.

KPI Types

SAP Transportation Resource Planning provides the following KPI types:

- Average idle rate
  This is the average amount of days that a transportation resource has spent in a location between two customer orders during a specific time period. You can see the overall average idle time for all resources in a location or set of locations and also according to resource type.
  Note that time that a transportation resource spends in maintenance and repair is not considered idle time.
- Import/export balance
  For a specific location or set of locations, this number represents the difference between the number of transportation resources of a specific type that have come in and the number of resources that have left the location during a specific time period.
  Note that this KPI statistic only takes movements of laden resources into account. It does not consider the return, pick-up, and repositioning of empty transportation resources.

Scheduled KPI Plans

Scheduled KPI plans are used to calculate and display the past performance for locations. Each plan is defined by the following:

- Plan type
  This can be scheduled or virtual.
  Scheduled plans are executed automatically at regular intervals. You can use virtual plans to work with the calculation results of several KPI plans.
- Plan name
- KPI type
  This can be either average idle rate or export/import balance.
- Calculation model

A mathematical model used to compute KPIs.

- Location filter
  Specifies the locations that you see in the plan execution result.

  > **Note**
  >
  > A warning is shown if you select more than 300 locations.

- Resource filter
  Specifies the resource types that you see in the plan execution result.
- Time filter
  Specifies the time intervals that are used for the plan, for example, the last seven days.

For an overview of these details, choose the *Plan View* tab at the right of the work center. When you have selected a KPI plan in the *Plan* field, the work center shows the results of the last successful execution for the KPI plan. The execution time stamp is shown at the right of this field in the work center.

> **Note**
>
> The execution stamp also changes if the execution of a plan fails. You can access more details about a plan, including an execution log, under *Plans* > *Plan Configuration*.

Alert Information

The *KPI* work center also shows alert information for the executed plan. The results may show that a KPI level has become critical. For example, the plan execution results may show that the idle rate for transportation resources at a certain location or set of locations has become too high.

Alerts are triggered based on the alert rule group specified in a scheduled plan. The alert rule group is a set of rules that determines when an alert is triggered. You can view alerts in the *Alerts* panel, or in the table and map views of the *KPI* work center.

KPI Data in the Home Dashboard

You can also configure a tile in the *Home* dashboard for showing data for KPI plans. For more information, follow the appropriate link below.

Related Information

Executing KPI Plans [page 148]
Results for Scheduled KPI Plans [page 150]
Results for Virtual KPI Plans [page 151]
Alert Framework [page 86]
Using the Home Dashboard [page 92]

11.1 Executing KPI Plans

The data that you view in the *KPI* work center results from the execution of a scheduled KPI plan. When a plan is executed, the location filter and resource filter determine the geographical areas and type of resources involved. The past time filter determines the time intervals for which results are calculated. The calculation model is used to compute KPIs, and alerts are triggered based on the assigned alert rule group.

Automatic Execution

Scheduled KPI plans are usually executed automatically according to the schedule that you set up when creating and configuring the plan. After execution, the plan results are then immediately available in the *KPI* work center or in the *Home* dashboard if you have added a tile for monitoring this KPI plan.

A virtual plan consists of scheduled plans. The plans are usually executed automatically according to their schedule. All included plans have the same time filter, but they may have different execution schedules. If the status for each included plan is *OK* and results are available, you can view them in the *KPI* work center.

Manual Execution

For scheduled KPI plans and virtual KPI plans, you have the option to execute them manually, if necessary.

Related Information

Manually Executing Scheduled KPI Plans [page 148]
Manually Executing Virtual KPI Plans [page 149]

11.1.1 Manually Executing Scheduled KPI Plans

Context

If you want immediate results, you can also execute a KPI plan manually.

> **i Note**
>
> If your plan is complex and involves a lot of data, execution may take a while.

Procedure

1. Go to *Plans* > *Plan Configuration*.
2. When you have found the plan that you want to execute, click it to open the detailed view.
3. Choose *Execute*.
4. Check the new results for your plan. To do this, you must be in the *KPI* view or have a tile for your plan in the *Home* dashboard.

Results

The following happens when a plan is executed automatically or manually:

- KPI data is generated for your plan according to the location filter, resource filter, and past time filter selected for the plan.
- Any relevant alerts are triggered according to the assigned alert rule group.
- The overall status for your plan execution is set. You can find the execution log in the *Scheduling* tab when you open your plan details in the *Plan Configuration* view.

11.1.2 Manually Executing Virtual KPI Plans

Context

If you want immediate results for your virtual KPI plan or if the configuration of an included plan has changed, you can also execute all of the plans included in a virtual plan at once manually.

> **i Note**
>
> If your plan is complex and involves a lot of data, execution may take a while.

Procedure

1. Go to *Plans* > *Plan Configuration*
2. When you have found the virtual KPI plan, click it to open the detailed view.
3. Choose *Execute All*.
4. Check the new results for your plan. To do this, you must be in the *KPI* work center.

Results

The following happens when the plans included in a virtual plan are executed automatically or manually:

- Data is generated for all included plans according to the relevant location filters, resource filters, and past time filter.
- Any relevant alerts are triggered according to the assigned alert rule group for each included plan.
- The overall status for your plan execution is set.

11.2 Results for Scheduled KPI Plans

You use the KPI plans to monitor and analyze the performance history of a location or set of locations according to a key performance indicator. These plans are executed periodically based on the scheduling settings made as part of the plan configuration.

Displaying Results for a Scheduled KPI Plan

When you open the *KPI* work center, the system uses the plan that was selected in the previous session and shows the calculation results in the table view. To select a different plan, open the selection dialog in the *Plan* field.

When a KPI plan is executed, you can view the KPI results by location, resource type, and time, based on the location filter, resource filter, and time filter specified in the plan. Initially, the work center shows the results in table form when you have selected a KPI plan.

> **i** Note
>
> If the location filter in the plan consists of location groups instead of separate locations, the work center only shows the KPI information for each location group. You cannot drill down to the details for each location in the group.
>
> Similarly, if the resource filter consists of resource groups, information for separate resource types is not available.

The KPI results are shown for a series of time periods in the work center. The past time filter used for the plan determines how many intervals are shown and which time periods they reflect. For example, if the time interval for the time filter is specified as daily with seven recurrences, the table view shows calculation results for each of the last seven days.

You can use the *Plan* field to select a KPI plan. You can view your KPI results in table, chart, or map form.

Plan Status

When you select a plan in the *KPI* view, the selection dialog shows the current status of each available plan. If no execution results are available for a plan, if the last execution of the plan failed, or if the plan configuration has changed, the dialog shows a warning symbol and a notification.

The plan status is also displayed at the right of the *Plan* field in the work center.

View By Location or Resource

You can use the *View By* field to switch between two views of your data: by location or by resource. This determines whether locations or resource types are shown as nodes in the *Location/Resource* column in the table.

Related Information

Table View for KPI Data [page 153]
Chart View for KPI Data [page 153]
Map View for KPI Data [page 153]
Scheduled KPI Plans [page 78]

11.3 Results for Virtual KPI Plans

You can also use virtual plans in the *KPI* work center. Virtual plans allow you to group together scheduled KPI plans and see their results in a consolidated view. The plans grouped in a virtual plan all have the same past time filter. Their location filters and resource filters must also overlap.

Plan Details

You can access more information about the virtual plan from the *KPI* work center. To do this, choose the *Plan View* tab. You can do the following here:

- Choose *View Details*. This opens a dialog box that shows you which scheduled KPI plans are included in the virtual plan.
- Use the links provided to navigate to the location filter, resource filter, or time filter used in the included plans.

Displaying Results for a Virtual Plan

When you select a virtual plan to be displayed in the *KPI* work center, a tree structure is shown in the table view. Depending upon the nature of the locations included in the plan, the tree may have hierarchical levels. This structure includes the locations in the KPI plans that are part of the virtual plan.

Note the following about using this structure:

- You can drill down in the hierarchy to display KPI results according to location and resource type.
- You can show the results for more than one location at a time to compare them.
  To do this, press *Ctrl* and select the locations from the tree structure. The calculation results for each location are then displayed in the table view at the right.
- You can also select all of the locations at once to compare their results.
  To do this, select the first location in the tree. Then press and hold the *Shift* key and select the last location displayed. This selects all locations and displays their KPI data in the table view at the right.

> **i** Note
>
> The first column of the table does not include a time stamp. This is because the first execution time of the included plans may differ. The first column always shows the first execution results for the selected location.

View by Location or Resource

You can use the *View By* field to switch between two views of your data: by location or by resource. This determines whether locations or resource types are shown as nodes in the *Location/Resource* column in the table.

Alert Information

Alerts are triggered based on the alert rule group specified in the scheduled KPI plans included in the virtual plan. The alert rule group is a set of rules in the calculation model that determines when an alert is triggered. You can view alerts for virtual plans in the *Alerts* panel, or in the table and map views of the *KPI* work center.

Related Information

Table View for KPI Data [page 153]
Chart View for KPI Data [page 153]
Map View for KPI Data [page 153]
Virtual Plans [page 83]
Alert Framework [page 86]

11.4 Table View for KPI Data

When you open the *KPI* work center, the data is initially shown in the table view. The table view shows the KPI results by location or location group and time, and shows any alerts with red numbers and warning signs. If you want to switch to this view, use the *Plan* field to choose a plan and then choose the  symbol.

Note the following about working with data in the table view:

- In the *Location/Resource Type* column, you can expand the plus sign in front of each location or location group to drill down further.
- You can use the *View By* field to show your data according to location or resource type.
- If alerts have been triggered, red numbers and warning signs are shown for the location and time interval. You can click the warning symbol to get details about what has caused the alerts.

11.5 Chart View for KPI Data

If you want to look at your KPI data in bar chart form, choose the  symbol after you have selected a plan. The chart view shows the KPI results for all locations or location groups and time intervals.

You can do the following in this view:

- If you want to display details about resource types, choose *Resource Details* at the upper-left corner in the view.
  To hide the resource details, choose *Overview*.
- You can use the checkboxes for locations or location groups and time intervals shown at the right in the view to select data for comparison. Select or deselect an item to show or hide its data in the chart.

11.6 Map View for KPI Data

Using the Map View

If you want to look at the KPI situation from a geographic perspective, you can use the map view. To switch to this view, choose the  symbol after you have selected a KPI plan. The map shows each location that you have selected in the *Locations* area in the *KPI* view. The map shows you the following:

- If the location filter in the plan uses location groups, the primary location specified for each group determines its position on the map.
- If the location filter in the plan uses regions or region groups, the map shows a polygon area enclosing all of the included locations.
- You can zoom in and out of the map view to focus on a particular area.

- You can also use the *Locations* and *Time* fields to narrow down the data shown. When you enter all or part of a location name in the *Locations* field, autocomplete helps you find locations in the location filter to be displayed on the map.
- If you have selected a virtual KPI plan, the map provides a location hierarchy that allows you to move from level to level of the locations or regions included in the virtual plan.

> **i Note**
>
> If some locations cannot be shown, the *Show Invalid Locations* is available. You can click this button to view a detailed error message.

The map view allows you to focus on alerts, status, and details.

Alerts

If you choose *Alerts* in the map view, the following applies:

- The number of alerts is shown for each location, location group, or area.
- The color of the dots shows the alert status. A gradient color from yellow to red represents the alert priority from low to high. Green means that there are no alerts.
- You can choose the location or alert symbol to access more details about the overall KPI situation and any alerts that have been triggered.
- If you have selected a virtual KPI plan, alerts are shown for each location, location group, or area included in the virtual plan.

Status

If you choose *Status* in the map view, the following applies:

- Bubble charts show the KPI status for each location or location group.
- The relative size and color of each chart shows whether the situation is normal or critical.
- You can place your mouse cursor over any segment of a chart to see detailed statistics.
- If you have selected a virtual KPI plan, the status is shown for each location or location group included in the virtual plan.

Details

If you choose *Details* in the map view, the following applies:

- Charts show the detailed breakdown of the KPI data. For example, this shows the import/export balance according to resource type.
- You can see the exact percentages and quantities in the detailed breakdown.
  To do this, place your cursor on a segment in the chart.
- If you have selected a virtual KPI plan, charts show the KPI data for each area included in the virtual plan.

> **i Note**
>
> The *Details* option is not applicable for the idle rate KPI.

12 Optimizing Pick-Up and Return

You use the *Pick-Up and Return* work center in SAP Transportation Resource Planning to find the optimal pick-up and return location assignments for your transportation resources. This helps prevent imbalances and ensures that your resources are available where they are needed.

For each empty-repositioning or empty-return transportation unit, you can either directly assign new pick-up or return locations for them, or use triangulation to optimize the assignments. Triangulation combines a request for empty provisioning and a request for empty return to save transportation charges.

Rulesets are used as the basis for evaluating and determining pick-up or return locations or triangulation assignments. As part of a ruleset, you can use both location determination rules and automatic optimization to support decisions concerning location or triangulation assignments. In addition, when using automatic optimization, you can decide whether aspects of costs or balancing or a combination of both are more important for your decisions.

This work center provides the following views:

- *Location Assignment*
- *Pick-Up/Return Rulesets*
- *Pick-Up/Return Ruleset Schedule Groups*
- *Ruleset Execution History*
- *Settings*

Related Information

Pick-Up/Return Rulesets [page 155]
Pick-Up/Return Ruleset Schedule Groups [page 164]
Making Location Assignments [page 166]
Using the Ruleset Execution History [page 175]

12.1 Pick-Up/Return Rulesets

You use pick-up/return rulesets to do the following:

- Determine which transportation units should be selected for optimization, according to location, status, when they are due for pick-up or return, and optionally, resource type.
- Set the parameters for how optimization should take place, whether using location determination rules, automatic optimization, or a combination of both.

Manual and Scheduled Execution

Rulesets can be executed manually or scheduled for automatic execution. The differences are as follows:

- If you are using a manual ruleset, you can modify the transportation units in the *Location Assignment* view directly, either manually or using the automatic optimization function. You then send your changes to your underlying logistics system.
- If you are using a scheduled ruleset, the manual options in the *Location Assignment* view are not available. All optimization of pick-up and return assignments is completed automatically in the background. You can monitor the results in the *Rule Execution History*.

> **i Note**
>
> The scheduled execution does not support triangulation assignments. Triangulations can only be assigned manually.

Managing Pick-Up/Return Rulesets

To work with these rulesets, go to *Pick-Up and Return* > *Pick-Up/Return Rulesets*.

Related Information

Creating Rulesets for Pick-Up and Return [page 156]
Fields for Pick-Up/Return Rulesets [page 160]
Making Location Assignments [page 166]
Using the Ruleset Execution History [page 175]

12.1.1 Creating Rulesets for Pick-Up and Return

Prerequisites

- Before you can create rulesets, the following must be available:
  - Location filters to specify the relevant locations for transportation units.
    Transportation units with locations that are included in this filter are selected for display in the *Location Assignment* view.
  - A supply and demand plan or a virtual supply and demand plan with a corresponding calculation model.
    The location filter used in the plan must cover more locations than the location filter used in the pick-up or return ruleset.
  - A network setting group that includes cost models for calculating the respective costs for transportation and handling, and so on.

- To filter TUs based on a particular date field, you must register the date selection criteria under *Administration* > *Object Registration*.

Procedure

1. Go to *Pick-Up and Return* > *Pick-Up/Return Rulesets* and choose *Create*.
2. Enter a name, select a ruleset type, and set the visibility level.

   If you choose *Personal*, only you and the system administrator can see the ruleset. If you choose *Global*, all users can see and use your ruleset.
3. Select a location filter.

   When you use a ruleset to select pick-up or return TUs, the ruleset finds TUs with source locations or destination locations that are included in this location filter.

   If the TU's source location or destination location is empty in your logistics system, then the ruleset uses the location of the port of loading (for pick-up) or port of discharge (for return). If this location is included in this location filter, the TU is also selected.
4. Specify a due-in time for the planned pick-up or return.

   > **i Note**
   >
   > The due-in time is normally calculated from the current time. If you want to query historical data, for example, finding the transportation units that are due in 7 days since 100 days ago, you can ask the administrator to change your time offset setting from **`0`** to **`-100`** by executing the following script:
   >
   > ```
   > insert into "<schema_name>"."sap.tm.trp.db.stock::t_start_time_for_user"
   > values(<username>,-100);
   > ```
   >
   > Note that the time offset is entered as a negative value in the script.
   >
   > `<Schema_name>` is the name of the schema you provided in the MTA extension file corresponding to the resource `trp_hdi_db_core` during deployment.
5. Optional: Specify a resource filter, if necessary.
6. Decide whether processed transportation units should be excluded.

   If you select the *Exclude Processed TUs* checkbox, then transportation units that have already been processed by a ruleset are not selected again.
7. Optional: Specify an exclusion rule to exclude certain TUs, if necessary.
8. Optional: Specify a date selection if you want to filter the TUs based on a particular date field.

   By default, the TUs are filtered by the planned departure time in the pick-up scenario and by the planned arrival time in the return scenario.
9. Select a supply and demand plan or a virtual supply and demand plan.

   > **i Note**
   >
   > - Make sure that the supply and demand plan has a calculation model that includes calculation nodes for both supply and demand.

- By default, only supply and demand plans with the plan usage *EAC/Ruleset* or *Generic S&D Plan* are shown in the search help. To view supply and demand plans with a different plan usage, choose  *Plan Usages*, and then select the checkboxes for the required plan usages.

10. Select a network setting group.
11. Make optimization settings. You have the following choices:
    - *Location Determination Rule*
      Only location determination rules are used to optimize locations.
    - *Automatic Optimization*
      Optimization is performed using additional aspects such as costs and balancing. You can decide whether you want to focus on costs or both costs and balancing.
    - *Location Determination Rule and Automatic Optimization*
      Uses both approaches, including the option to focus on costs or both costs and balancing.

      > **i Note**
      >
      > In empty pick-up and return optimization scenarios, you might need to consider not only the supply and demand balance with the minimum cost from the depots, but also other impacted weights all together. This optimization option provides more flexibility to adjust the total cost of each location and consider the supply and demand balance at the same time. Thus, the solver can make better location proposals according to the specific business strategy.
      >
      > You can model the location determination rule in the decision table of the business rule framework. The output parameter `LOC_RANK` is regarded as the cost adjustment. The cost adjustment can be a positive or a negative value. It is added to the total cost of each location for the location suggestions for empty pick-up or return.
      >
      > The lower the total cost calculated for each location, the higher the ranking for TUs. At the same time, the supply and demand balance of each location is considered in the proposals for all TUs. For example, in the empty pick-up case, once the supply and demand balance of the location at the time duration is lower than the minimum safety stock, the ruleset does not suggest a pick-up resource from the location.

      > **→ Tip**
      >
      > Although the cost adjustment provides the flexibility to adjust additional costs through the location determination rule, it might not be sufficient for all business needs. SAP Transportation Resource Planning provides enhancements for customer projects to build a customized procedure for the cost adjustment logic. The name of the procedure must match the naming convention for customized procedures with the prefix `p_user_exit_pr_adjustment_cost`.

    - *None*
      No automatic optimization is performed.
12. Select manual or scheduled execution.

    If you choose *Manual*, when you use the ruleset in the *Location Assignment* view, you can modify the transportation units directly, either manually or using the automatic optimization function. You then send your changes to your underlying logistics system.

If you choose *Scheduled*, the manual options in the *Location Assignment* view are not available. All optimization of pick-up and return assignments is completed automatically in the background. You can monitor the results in the *Rule Execution History*.

Note that scheduled execution does not support triangulation assignments because triangulation can only be assigned manually.

If you choose *Scheduled* execution, you later assign the rulesets to ruleset schedule groups.

13. For scheduled rulesets, decide whether to exclude transportation units that have no proposals or no ranking.

    If you select the *Exclude TUs Without Proposals* checkbox, then transportation units that have no proposals or no ranking are excluded from the scheduled executions.

14. Specify the number of execution runs to keep.

    The value defaults to 100, but you can enter any number between 1 and 99,999,999. For example, if you enter 10 only the latest ten execution runs are saved. You can leave this field blank to keep all execution runs.

    > **i** Note
    >
    > If you leave this field blank, the number of saved execution runs can increase quickly over time, and this can impact the performance of the system. Therefore, it is recommended that you specify this setting carefully and do not leave it blank.

15. Set triangulation parameters if you want to use triangulations to optimize pick-up and return.
16. Save your entries.

    > **→** Tip
    >
    > To ensure good performance for admin users working with a limited number of locations, try to use the same filters in the pick-up/return ruleset as in the supply and demand plan.

Results

You can now select the ruleset when working in the *Location Assignment* view.

Next Steps

If you have selected scheduled execution, you must go to the *Pick-Up/Return Ruleset Schedule Groups* tab and assign the ruleset to schedule groups – one of type *Fetch TU* and one of type *Optimize TU*.

Related Information

Pick-Up/Return Ruleset Schedule Groups [page 164]

Making Location Assignments [page 166]
Fields for Pick-Up/Return Rulesets [page 160]
Object Registration [page 250]
List of Time Zones [page 307]

12.1.2 Fields for Pick-Up/Return Rulesets

The settings shown below are available for configuring rulesets for pick-up and return that are used for the assignment of locations to resources in *Pick-Up and Return* > *Pick-Up/Return Rulesets*.

Field Shown	What It Means
Ruleset Type	Shows whether the ruleset is used for pick-up or return of transportation resources. When you use the ruleset in the *Location Assignment* view, the pick-up rulesets filter for transportation units (TUs) of the type *Empty Provisioning*. Return rulesets filter for TUs of the type *Empty Return*.
Due for Pick-Up/Return In	Shows in how many hours, days, or weeks a transportation resource is due for pick-up or return. **Note** The due-in time is normally calculated from the current time. If you want to query history data, for example, finding the transportation units that are due in 7 days since 100 days ago, you can ask the administrator to change your time offset setting from **0** to **100** by executing the following script: `insert into "<schema_name>"."sap.tm.trp.db.stock::t_start_time_for_user" values(<username>,100);` `<Schema_name>` is the name of the schema you provided in the MTA extension file corresponding to the resource `trp_hdi_db_core` during deployment.

Field Shown	What It Means
Location Filter	Specifies the location filter used to filter transportation units in the *Location Assignment* view. When you use a ruleset to select pick-up or return TUs, the ruleset finds TUs with source locations or destination locations that are included in this location filter. If the TU's source location or destination location is empty in your logistics system, then the ruleset uses the location of the port of loading (for pick-up) or port of discharge (for return). If this location is included in this location filter, the TU is also selected.
Resource Filter	Specifies the resource filter used to filter transportation units in the *Location Assignment* view.
Exclude Processed TUs	Determines whether or not already processed transportation units should be excluded. If you select this checkbox, then transportation units that have already been processed by a ruleset are not selected again.
Exclusion Rule	Specifies a rule that allows you to exclude certain transportation units from the *Location Assignment* view. These TUs are not shown.
Date Selection	Specifies the date used to filter the TUs. By default, the TUs are filtered by the planned departure time in the pick-up scenario and by the vessel arrival date in the return scenario.
Execution	Specifies whether execution of the ruleset is to be manual or scheduled. The setting made here affects how location assignments are made: • For manual execution, you can use the *Location Assignment* view to obtain ranked suggestions for optimal assignment. You then make assignments manually in the view • For scheduled execution, the optimization activities are done automatically in the background. No manual selections are necessary in the *Location Assignment* view You can use manual execution to test your ruleset and see if you are satisfied with its results. You can then switch to scheduled ruleset execution and have the optimization performed automatically.

Field Shown	What It Means
Exclude TUs Without Proposals	Determines whether or not to include transportation units that have no proposals or no ranking. If you select this checkbox, then transportation units that have no proposals or no ranking are excluded from the scheduled executions.
Fetch TU Group	Displays the name of the *Fetch TU* ruleset schedule group that the ruleset is assigned to. This ruleset schedule group determines the scheduling settings for the fetch step of the optimization process. This field is display only. To change the ruleset schedule group, go to the *Pick-Up/Return Ruleset Schedule Groups* tab.
Optimize TU Group	Displays the name of the *Optimize TU* ruleset schedule group that the ruleset is assigned to. This ruleset schedule group determines the scheduling settings for the optimization and update step of the optimization process. This field is display only. To change the ruleset schedule group, go to the *Pick-Up/Return Ruleset Schedule Groups* tab.
Time Zone	Specifies the time zone for the ruleset execution when the execution is scheduled.
Keep X Latest Execution Runs	Specifies the number of execution runs to save. Defaults to 100, but you can specify any number between 1 and 99,999,999. If you leave this field blank, all execution runs are saved. **i Note** If you leave this field blank, the number of saved execution runs can increase quickly over time, and this can impact the performance of the system. Therefore, it is recommended that you specify this setting carefully and do not leave it blank.
Supply and Demand Plan	Specifies a supply and demand plan used for forecasting the surplus and deficit situation for certain resources types in a set of locations over a period of time. You can specify a scheduled supply and demand plan or a virtual supply and demand plan.
Network Setting Group	The network setting group that you select provides the main cost model used for pick-up or return. The cost model consists of a currency and any number of cost datasets used to calculate different types of costs.

Field Shown	What It Means
Optimization Setting	Specifies how optimization is performed using the ruleset. You have the following options: • *Location Determination Rule* Only location determination rules are used to optimize locations. • *Automatic Optimization* Optimization is performed using additional aspects such as costs and balancing. You can decide whether you want to focus on only costs or both costs and balancing. • *Location Determination Rule and Automatic Optimization* Uses both approaches, including the option to focus on costs or both costs and balancing. • *None* No location determination rule is used and no automatic optimization is performed.
Automatic Optimization	If you choose *Automatic Optimization* in the setting above, you can then specify which criteria should be used when performing optimization. You have the following options: • *Cost-Based* Cost is used as the sole factor for optimizing the pick-up and return of transportation resources. • *Both Cost-Based and Balancing Based* Both cost and the surplus and deficit situation is taken into account for automatic optimization. The balancing situation is forecasted by the selected supply and demand plan for the ruleset.
Handling Time Buffer	Specifies the time buffer required for handling a triangulation. When SAP Transportation Resource Planning suggests triangulations for a specific TU, it considers the handling time buffer. For example, if the pick-up time for an empty-provisioning TU is 10 a.m. on a specific day, and the handling time buffer is set to 4 hours, then only the triangulation TUs whose return time is earlier than 6 a.m. on that day will be suggested.
Maximum Hits	Specifies the maximum number of triangulations to be suggested in the *Suggested Triangulations* list.

12.2 Pick-Up/Return Ruleset Schedule Groups

You use pick-up/return ruleset schedule groups to define reusable scheduling settings for pick-up/return rulesets. You can assign multiple scheduled pick-up/return rulesets to each ruleset schedule group.

There are different types of pick-up/return ruleset schedule group, which correspond to the steps in the pick-up/return optimization process as follows:

1. *Fetch TU*: In this step, the transportation units (TUs) to be processed are fetched.
2. *Optimize TU*: In this step, the TUs are optimized and updated to the logistics system.

Ensure that each of your scheduled pick-up/return rulesets is assigned to one *Fetch TU* schedule group and one *Optimize TU* schedule group.

Related Information

Creating Pick-Up/Return Ruleset Schedule Groups [page 164]

12.2.1 Creating Pick-Up/Return Ruleset Schedule Groups

Create a ruleset schedule group for pick-up/return rulesets and assign one or more rulesets to it.

Prerequisites

You have created a scheduled pick-up/return ruleset.

Context

You can assign as many pick-up/return rulesets as you like to a ruleset schedule group. However, there are some validation checks and restrictions that apply, as follows:

- Each scheduled pick-up/return ruleset must be assigned to only one *Fetch TU* schedule group and one *Optimize TU* schedule group.
- All of the pick-up/return rulesets assigned to a *Fetch TU* ruleset schedule group must have the same values for the following fields:
  - *Exclude Processed TUs*
  - *Date Selection*

> **Note**
>
> If a date selection is assigned to the rulesets of a ruleset schedule group, then the rulesets must have the same *Due for Pick-Up/Return In* date.

- All of the pick-up/return rulesets assigned to an *Optimize TU* ruleset schedule group must have the same values for the following fields:
  - *Network Setting Group*
  - *Optimization Setting*
  - *Automatic Optimization*
  - *Keep Execution Runs*
  - The supply and demand plans for the pick-up/return rulesets must have same calculation model, time filter, and multi-attribute filter.

> **Note**
>
> Rulesets belonging to same *Optimize TU* ruleset schedule group must not have the following:
> - The same supply and demand plan
> - The supply and demand plans of the rulesets must not have overlapping locations.

Procedure

1. Go to *Pick-Up and Return* > *Pick-Up/Return Ruleset Schedule Groups*.
2. Choose *Create Group* and then choose the job process type as follows:
   - Fetch TU
   - Optimize TU
3. Enter a name and optionally a description.
4. Select the ruleset type (*Pick-Up* or *Return*).
5. On the *Rulesets* tab, choose *Add* to add a ruleset.

   You can add multiple rulesets as required.
6. On the *Scheduling* tab, enter the following settings:
   - *Time Zone*
     Specifies the time zone for the scheduling execution time. For example, if you choose the time zone *Beijing, Chongqing, Hong Kong, Urumqi*, the scheduling time will be executed based on the time zone for China.
   - *Recurrence*
     Determines the frequency of your ruleset execution. Choose *Minutes*, *Hours*, or *Days*.
   - *Execute Every*
     Determines how often the ruleset should be executed. For example, if your recurrence is *Minutes*, you could execute the ruleset every twenty minutes.
   - *Start Time*
     Specifies the date and time that the execution of the ruleset should begin.
   - *End Time*

Specifies the date and time that the execution for the ruleset should stop.

- *Execute in Working Hours*
  Only available when you select *Minutes* or *Hours* as the recurrence frequency. Specifies that the ruleset should only be executed during your working hours. If you select this checkbox, you must also specify the start time and the end time of your working hours.

7. Save your entries.

> **i Note**
>
> There is no *Scheduling* tab for *Optimize TU* ruleset schedule groups exclusively.

Related Information

Pick-Up/Return Ruleset Schedule Groups [page 164]
Creating Rulesets for Pick-Up and Return [page 156]

12.3 Making Location Assignments

Before you can begin working in the *Location Assignment* view, you need rulesets for pick-up and return. These rulesets determine which transportation units are displayed in the view for making assignments. For more information about rulesets, see Pick-Up/Return Rulesets [page 155].

> **i Note**
>
> The activities described here apply only for pick-up/return rulesets that are executed manually. If a ruleset is configured for scheduled execution, the optimization activities are done automatically in the background, and no manual selections are necessary in the *Location Assignments* view. You can use manual execution to test your ruleset and see if you are satisfied with its results. You can then switch to scheduled ruleset execution and have the optimization performed automatically.

Configuring the Table Layout and Personalizing the View

You can configure the layout of this table to show only those columns that you are interested in. To do this, choose  in the toolbar. This opens a dialog in which you can select the columns to be shown or hidden in the *Location Assignment* view. You can also change the order and the width of the columns. To save or manage your personalized view, choose  .

Step 1: Find Transportation Units

First, you must select a ruleset in the *Location Assignment* view. To do this, make an entry in the *Ruleset Name* field.

> **i** Note
>
> Make sure to choose a ruleset that has manual execution.

Optionally, you can enter a pick-up/return date range (*From* date, *To* date, or both). The results of the pick-up/return ruleset will be filtered to only display the transportation units within the date range.

Choose *Go* to display the list of transportation units that are eligible for the assignment of a new location and date for pick-up or return of empty resources. These are transportation units in your logistics system that have not yet been completed. Pick-up rulesets filter for TUs of the type *Empty Provisioning*. Return rulesets filter for TUs of the type *Empty Return*.

The ruleset filters the transportation units shown according to the following criteria:

- The due date for pick-up or return, for example, the next 7 days.
- The location filter selected for the ruleset.
  The ruleset finds TUs with source locations or destination locations that are included in this location filter. If the TU's source location or destination location is empty in your logistics system, then the ruleset uses the location of the port of loading (for pick-up) or port of discharge (for return). If this location is included in this location filter, the TU is also selected.
- The content of the location determination rule that is in effect for the ruleset.
  You can use determination rules to specify which status types should be selected.

Step 2: Generate Ranked Suggestions

Once you have obtained a list of transportation units, you can generate a ranked list of suggested locations and triangulations.

- To get a list of suggested locations, select one or more transportation units in the list.
- To get a list of suggested triangulations, select only one transportation unit in the list.

The system executes the ruleset and shows the results below the list of transportation units in two separate tabs, one for locations and the other for triangulations. The system ranks the suggested locations according to the optimization settings in the ruleset, and ranks the suggested triangulations according to estimated cost. Costs are displayed in the currency unit specified in the ruleset's network setting group.

> **i** Note
>
> If your ruleset involves many depots and a long period of time, execution may take some time.

Step 3: Make Assignments

Once you have obtained a list of transportation units, you can assign pick-up or return locations or triangulations.

> ℹ Note
>
> For each transportation unit, you can either assign a new location or assign a triangulation unit, but not both. If you assign a location first and then assign a triangulation, the previously assigned location will be cleared, and vice-versa.

You have the following options to make location assignments:

- You can make manual changes in individual transportation units.
  You can make these changes directly in the list or use *Assign* shown in the list of suggested locations to accept the suggestion. Note that you can also use the *Assign* option to assign a location to more than one transportation unit if you have selected more than one in the list above.
- To assign a new pick-up or return location to all transportation units that have been obtained using the applied ruleset, use *Assign to All*.
- To obtain new suggested dates and locations for all of the listed transportation units at once, choose *Run Automatic Optimization*.
- You can use a combination of both manual adjustment and automatic optimization. The automatic optimization process does not overwrite any manual changes of the date or location that you have made in the list of transportation units.

To assign a triangulation, use *Assign* shown in the list of suggested triangulations to accept the suggestion. Note that you cannot use *Run Automatic Optimization* to assign triangulations. Triangulations can only be assigned manually.

To see whether the location or triangulation assignment was successful, you can check the *Assignment Status* field.

If you want to clear all entries that you have made so far, either manually or automatically, choose *Reset*.

Optional: Assign Special Instructions

You can also use this list of transportation units to assign special instructions for handling a resource. For example, this may indicate that a resource is to be sold or off-hired. To do this, click the link provided in the *Assigned Resources* column for a TU. This opens a detailed view in which you can access a dialog for selecting the relevant special instructions for a resource.

The options available depend upon what has been configured in your logistics system. When you finalize your changes, this information is also sent to your logistics system.

Step 4: Finalize Your Changes

When you are satisfied with the changes that you have made in the transportation unit list, choose *Update in Logistics System*. This sends your changes to your logistics system.

> → Tip
>
> To optimize performance, we recommend that you decouple the depot update process in SAP Transportation Management from the SAP Transportation Resource Planning system by sending the HTTP

request to SAP TM in asynchronous mode. In synchronous mode, the pick-up and return ruleset execution processes hang as they wait for a response from SAP Transportation Management (SAP TM), and all of the allocated resources cannot be released.

For information on how to decouple the update process, see SAP Note 2853040

Related Information

Configuring Table Layout [page 15]
Personalizing Views [page 17]

12.3.1 Fields for Location Assignments

The table below shows the fields available in *Pick-Up/Return* > *Location Assignment*. Note that the selected resource category also determines which fields are available in the view.

> **i Note**
>
> You can configure the layout of the *Location Assignment* view to show only those columns that you are interested in. To do this, choose  in the toolbar. This opens a dialog in which you can select the columns to be shown or hidden in the view.

Field Shown	What It Means
Action	This link allows you to view the transportation unit directly in your logistics system using a browser.
Assigned Resources	The number of resources assigned to a transportation unit. You can click this link to open a detailed view of attributes of each assigned resource. **i Note** You can also use this detailed view to access a dialog for assigning special instructions for a resource. The options available depend upon what has been configured in your logistics system. When you finalize your changes, this information is also sent to your logistics system.
Booking Date	Shows when the order was accepted and the booking was created.

Field Shown	What It Means
Booking Reference	A reference number for the booking.
Carrier for Station of Discharge	Assigned carrier for the station where the train is unloaded.
Carrier for Station of Loading	Assigned carrier for the station where cargo is loaded.
Consignee	The party who is to receive the shipment.
Current Pick-Up Date	The currently planned pick-up date.
Current Pick-Up Location	The currently planned pick-up location.
Current Return Date	The currently planned return date.
Current Return Location	The currently planned return location.
Customer Name	The name of the customer who requested the booking.
Destination Location	The transport destination.
Haulage Type	The haulage type for a transportation unit. *Carrier Haulage* is relevant for planning, whereas *Merchant Haulage* is not.
Lease Contract	Identifies the relevant lease contract for a resource, if applicable.
Lease Contract Type	The type of lease contract used, for example, short term.
Life Cycle Status	The life cycle status of the transportation unit in your logistics system. This can be one of the following: • *New* • *In Process* • *Completed* • *Canceled*
Means of Transport	The means of transport for the main transportation stage of the transportation unit.
New Pick-Up Date	A new pick-up date that has been added manually or by means of automatic optimization.
New Pick-Up Location	A new pick-up location that has been added manually or by means of automatic optimization.
New Return Date	A new return date that has been added manually or by means of automatic optimization.
New Return Location	A new return location that has been added manually or by means of automatic optimization.

Field Shown	What It Means
Order Date	The date the order was accepted.
Order Reference	A reference number for the order.
Plan Status	The status of the plan. This can be one of the following: • *Not Planned* • *Partially Planned* • *Planned* • *Not Ready for Planning* • *Not Published*
PoD Carrier	The carrier for the port of discharge in the last sea stage. This is taken from the main TU.
PoL Carrier	The carrier for the port of loading in the first sea stage. This is taken from the main TU.
Port of Discharge	A port where the cargo is unloaded from the vessel.
Port of Loading	A port where cargo is loaded aboard the vessel.
Previous Location	The previous location of the train.
Quantity	How many transportation resources of a particular type are included in the transportation unit for pick-up or return.
Resource Number	For single resources, shows an identifier for the resource.
Resource Type	Identifies the type of transportation resource included in the transportation unit.
Shipper	The party responsible for the transportation of the shipment.
Source Location	For pick-up rulesets, the field shows the location to which the resource is to be delivered. For return rulesets, the field shows the location from which the resource is to be provided.
Special Instructions	Shows any special instructions relevant for handling the resource. For example, this may indicate that a resource is to be sold or off-hired.
Station of Discharge	A station where the train is unloaded.
Station of Loading	A station where cargo is loaded.
Status	The current execution status for a transportation unit.

Field Shown	What It Means
Train No. for Station of Loading	Assigned train number for the station where cargo is loaded.
Transportation Unit	The unique identifying number for a transportation unit.
Triangulation TU	A transportation unit that combines a request for an empty provisioning and a request for an empty return to save transportation charges.
TU Type	Pick-up rulesets filter for TUs of the type *Empty Provisioning*. Return rulesets filter for TUs of the type *Empty Return*.
Vessel Arrival Date	Shows when the vessel arrives at the port of discharge.
Vessel Cut-Off Date	The date by which the cargo must be loaded on the vessel.
Vessel Name for PoD	Identifies the vessel arriving at the port of discharge, according to the assigned schedule.
Vessel Name for PoL	Identifies the vessel leaving the port of loading location, according to the assigned schedule.
Voyage ID for PoD	Identifies the voyage for the port of discharge.
Voyage ID for PoL	Identifies the voyage for the port of loading.

12.3.2 Fields for Suggested Locations and Triangulations

The *Location Assignment* view in the *Pick-Up and Return* work center shows suggested locations and triangulations in the lower table.

The *Suggested Locations* table provides the following fields:

Field Shown	What It Means
Ranking	The ranking of the suggested location, determined by transportation costs, handling costs, and storage costs.
Location	The suggested new pick-up or return location.
Average Stay (Days)	The average number of days that a particular resource type stays idle at the suggested location.
Transport Cost	The transportation costs for the suggested location.
Handling Cost	The handling costs for the suggested location.

Field Shown	What It Means
Storage Cost	The storage costs for the suggested location. The storage cost calculation is based on the time zone of the uploaded stock cost dataset.
Adjustment Cost	The optional cost adjustment to reflect your business requirements. It is calculated based on a business rule and can be positive or negative. Like the *Transport Cost*, *Handling Cost*, and *Storage Cost*, the *Adjustment Cost* is considered in the solver's optimization result as well.
Total Cost	For a pick-up scenario, the total cost is the transport and handling costs less the storage cost. For a return scenario, the total cost is the sum of the transport, handling, and storage costs. For pick-up, the most expensive location is recommended, and for return, the cheapest location is recommended.
Supply-Demand Balance	The current supply-demand balance at the suggested location. This number is the result of the supply quantity minus the demand quantity. Next to the number, there a traffic light to alert you to different surplus or deficit situations. For an empty return scenario, the color coding is as follows: • Green: The balance is less than or equal to the maximum safety stock. • Amber (Warning): The balance exceeds the maximum safety stock. • Red (Alert): The balance exceeds the maximum physical capacity. For an empty pick-up scenario, the color coding is as follows: • Green: The balance is greater than or equal to the minimum safety stock. • Amber (Warning): The balance is lower than the minimum safety stock. • Red (Alert): Supply is less than demand.

Field Shown	What It Means
New Supply-Demand Balance	The new supply-demand balance after the suggested location is assigned. This number is the result of the new supply quantity minus the new demand quantity. Next to the number, there a traffic light to alert you to different surplus or deficit situations. For an empty return scenario, the color coding is as follows: • Green: The balance is less than or equal to the maximum safety stock. • Amber (Warning): The balance exceeds the maximum safety stock. • Red (Alert): The balance exceeds the maximum physical capacity. For an empty pick-up scenario, the color coding is as follows: • Green: The balance is greater than or equal to the minimum safety stock. • Amber (Warning): The balance is lower than the minimum safety stock. • Red (Alert): Supply is less than demand.
Estimated Storage Condition	Specifies how the storage rate is calculated at the suggested location, for example, whether it is time-based or quantity-based.
Current Stock	The current stock at the suggested location. The unit of measure is pieces (PCs).
Max. Safety Stock/Max. Capacity	The maximum safety stock and the maximum physical stock for the resource type at the suggested location. The unit of measure is PCs.
Remaining Handling Capacity	The remaining handling capacity at the suggested location. Next to the number, there a traffic light to inform you of different situations as follows: • Green: The remaining handling capacity is sufficient. • Red (Alert): The remaining handling capacity is not sufficient.
Maximum Handling Capacity	The maximum handling capacity for the resource type at the suggested location. The unit of measure is PCs.

The *Suggested Triangulations* table provides the following fields:

Field Shown	What It Means
Ranking	The ranking of the suggested triangulation by estimated cost.
Triangulation TU	The suggested triangulation transportation unit. It combines a request for an empty provisioning and a request for an empty return to save transportation charges.
Source Location	The source location of the triangulation.
Destination Location	The destination location of the triangulation.
Source UN/LOCODE	The source location's United Nations Code for Trade and Transport Locations.
Destination UN/LOCODE	The destination location's United Nations Code for Trade and Transport Locations.
Shipper	The party responsible for the transportation of the shipment.
Consignee	The party who is to receive the shipment.
Document Type	The transportation unit type specified in your logistics system.
Resource Type	The type of transportation resource included in the triangulation TU.
Estimated Cost	Estimated transportation cost for the suggested triangulation. Handling cost is not considered.

12.4 Using the Ruleset Execution History

The *Ruleset Execution History* in the *Pick-Up and Return* work center provides an overview of the changes that have been made as part of the automatic execution of rulesets.

> **i Note**
>
> When using the execution history, keep in mind that it makes a difference whether your ruleset is scheduled or executed manually:
>
> - For scheduled rulesets: All changes are shown in the execution history.
> - For rulesets executed manually: The execution history shows only those changes that you triggered using the *Run Automatic Optimization* option.

When you open the view, you decide first whether you want to see the execution history for pick-up rulesets or return rulesets. You can use the radio buttons to make this choice. You can then narrow down your results by entering a location filter.

You can narrow down your results further as follows:

- Use the search field in the upper-right corner of the list.
- Display the additional filters available for the columns in the list.

  To do this, choose  at the upper left of the list.
  You can also filter on the from/to date of the execution results, so that you can see the execution history for the last two days at a time. This filter can be adjusted manually if want to see more records.
- Sort each individual column in the list.
  To do this, click a column header and select *Sort Ascending* or *Sort Descending*.

The view provides the following fields:

Field Shown	What It Means
Name	Identifies the pick-up or return ruleset. This is shown as a link. You can use this link to open a detailed view of the ruleset settings.
Execution ID	An identifier for the respective execution run of the ruleset.
Transportation Unit	The transportation unit that was changed by the ruleset.
Assignment Status	The status of a change. This can be one of the following: • *Manually Assigned* Shown if you changed a location or date for a transportation unit after running automatic optimization for location assignments. • *Auto-Assigned* Shown for changes made as a result of running automatic optimization for location assignments. • *Assignment Failed* Shown if an error occurred during location assignment when running automatic optimization for location assignments. These changes have not been sent to your logistics system. • *Sent to TM* Shown if changes have been sent to SAP Transportation Management in asynchronous mode and are pending.
Optimization Setting	Shows whether the change was done as part of automatic optimization or manually after automatic optimization. The field also shows the ruleset's optimization setting, which can be cost-based, balancing-based, or both.
Start Time	Shows when the execution of the ruleset was triggered.

Field Shown	What It Means
New Pick-Up Location or *New Return Location*	The new pick-up or return location after the change.
Old Pick-Up Location or *Old Return Location*	The original pick-up or return location before the change.
New Pick-Up Date or *New Return Date*	The new pick-up or return date after the change.
Old Pick-Up Date or *Old Return Date*	The original pick-up or return date before the change.
Triangulation TU	The triangulation TU assigned in the manual ruleset execution.
Ruleset Owner	Identifies the user who created the ruleset.
Custom Processing Status	Indicates the post processing status of the TU in the logistics system. The possible status values are as follows: • Failed • Success • Warning • Empty
Custom Processing Message	Indicates the post processing message for the TU in the logistics system.

13 Resource Balancing

SAP Transportation Resource Planning helps you to both detect approaching critical supply and demand situations and correct these imbalances before they occur. You use the *Home* dashboard and the *Supply and Demand* work center to monitor the forecasted situation for your locations and resource types. If you receive an alert about a critical situation, you can then use the *Resource Balancing* work center to find the best way to correct it.

Process Overview

Create a Balancing Simulation

In the *Resource Balancing* work center, you first create a balancing simulation. When you do this, you choose a supply and demand plan and a network setting group. At this point, a network model is also generated for the simulation.

Add Scenarios and Activities

You can then create different scenarios for correcting an imbalanced supply and demand situation in a location or set of locations. Each scenario consists of different activities that can be performed to correct the imbalance. You can export these activities to Microsoft Excel.

Your balancing simulation can have any number of scenarios. However, a supply and demand plan can only be used in one balancing simulation that is in draft status.

Compare Scenario Results

The left area of the work center is used to show the simulated supply and demand status and any alerts. Initially, this area shows the results from the last execution run of the supply and demand plan that is being used in the balancing simulation. Then, for each scenario and after any change in the included activities, you can check the effect on the supply and demand situation here. You can also display this information in the map view.

Finalize a Scenario

Once you have decided on the optimal scenario, you finalize it, and the activities are sent to your logistics system to be carried out. When you finalize a scenario, this also finalizes the status of the balancing simulation itself. Then the supply and demand plan can be used again in a new balancing simulation.

Related Information

Balancing Simulations [page 179]
Scenarios and Activities [page 183]
Network Models [page 200]

Routes [page 220]

13.1 Balancing Simulations

A balancing simulation allows you to compare different scenarios for optimizing the rebalancing activities. A balancing simulation is based on a supply and demand plan and a network setting group.

You can create, modify, delete, and finalize balancing simulations in the *Resource Balancing* work center.

Related Information

Creating Balancing Simulations [page 179]
Modifying Balancing Simulations [page 181]
Deleting Balancing Simulations [page 182]
Finalizing Balancing Simulations [page 182]

13.1.1 Creating Balancing Simulations

Prerequisites

Before you can create a balancing simulation, make sure that you have the following:

- A supply and demand plan with a corresponding calculation model must be available.
- A network setting group with one or two compatible cost models must be available for computing the activity costs. The cost model must cover the locations that are included in the supply and demand plan.

Context

→ Tip

In resource balancing, SAP HANA application function libraries (AFLs) are used while saving simulation plans and updating multistage paths for usage levels. To optimize performance, the following settings are recommended:

- Use time filters with a time range of no more than six months.
  When you create a simulation plan, you specify a supply and demand plan. This supply and demand plan has a *Time Filter* parameter. Ensure that the time range of the time filter is no more than six months.
- Specify the *Thread Number for Route Generation* parameter as **16**.

When you create a simulation plan, you specify a network setting group. The network setting group has a *Thread Number for Route Generation* parameter. Specify the number of threads as **16** for optimal performance.

- Specify location filters that only have the required locations.
  When you create a simulation plan, you specify a supply and demand plan. This supply and demand plan has a *Location Filter* parameter. The number of locations specified in the location filter has an impact on the execution time. Therefore, create location filters that only include the required locations.

Procedure

1. In the *Resource Balancing* work center, choose *Create* in the upper-right corner.
2. Enter a name and description.
3. Select a supply and demand plan.

   i Note

   - Make sure that the supply and demand plan has a calculation model that includes calculation nodes for both supply and demand. Also check that the plan is not used by any existing balancing simulation that is in draft status.
   - The selection dialog box for plans also shows the current status of a plan. If the plan configuration has changed, an error has occurred during plan execution, or the plan execution results are not current, the status changes to show this. You can achieve best results by using a plan with the execution status OK.
   - By default, only supply and demand plans with the plan usage *Resource Balancing* or *Generic S&D Plan* are shown in the search help. To view supply and demand plans with a different plan usage, choose  *Plan Usages*, and then select the checkboxes for the required plan usages.
4. Select a network setting group.
5. **Optional:** Select a cost adjustment determination rule.

   This rule is used to calculate a cost adjustment that reflects your specific business requirements.

   i Note

   If you select a cost adjustment determination rule, the calculated *Cost Adjustment* field will impact the solver's cost calculation and the proposals might be different.

   In resource balancing optimization scenarios, you might need to consider not only the supply and demand balance with the minimum cost between locations, but also other impacted weights all together. This optimization option provides more flexibility to fulfill the supply and demand balance by considering not only the total cost of transportation, storage, and handling cost, but also a cost adjustment by the determination rule.

   The adjustment of the total cost can be modeled using the business rule framework. The output parameter `Adjustment Cost` is regarded as the cost adjustment and is added to the total cost of the scenario in the simulation plan. The cost adjustment can be a positive or a negative value as modeled. The solver can make better resource repositioning proposals considering not only gaps of supply and

demand between locations, but also the total cost with the cost adjustment according to the specific business strategy.

> → Tip
>
> Although the cost adjustment provides the flexibility to adjust the additional costs through the cost adjustment determination rule, it might not be sufficient for all business needs. SAP Transportation Resource Planning provides enhancements for customer projects to build a customized procedure for the cost adjustment logic. The name of the procedure must match the naming convention for customized procedures with the prefix `p_user_exit_rb_adjustment_cost`.

6. Save your entries.

Results

The balancing simulation is created with the following:

- A default scenario that does not yet contain any activities
- A network model to be used by the simulation and its scenarios

13.1.2 Modifying Balancing Simulations

Prerequisites

- The balancing simulation can contain scenarios that are in draft, submitted, or synchronized status. When a scenario is submitted or synchronized, the balancing simulation is changed to submitted. In this case, you can continue to modify the simulation. However, after the simulation has been finalized, you can no longer modify it.
- You cannot modify a balancing simulation when it is being edited by another user.
- Modifying a balancing simulation means managing the scenarios and activities within it. You cannot change the supply and demand plan or network setting group used in the simulation.

Procedure

1. In the *Resource Balancing* work center, go to the *Simulation Balance* tab use the *Balancing Simulation* field at the upper left to select the balancing simulation that you want to modify.
2. Choose *Edit* in the upper-right corner.

   This activates the buttons in the *Scenarios* and *Planned Activities* areas. You can then work with the scenarios and activities in the balancing simulation. For more information, follow the link below.
3. When you have finished, choose *Release*.

   After a balancing simulation is released, it can be edited by another user.

> **i Note**
>
> If you do not choose *Release*, the balancing simulation is automatically released when you leave the *Resource Balancing* work center. Your changes are still saved.
>
> If you submit a scenario, the balancing simulation is also set to submitted, but you can continue to change it.

Related Information

Scenarios and Activities [page 183]

13.1.3 Deleting Balancing Simulations

Prerequisites

A balancing simulation that contains a submitted scenario or a balancing simulation that has been finalized cannot be deleted.

Procedure

1. In the *Resource Balancing* work center, go to the *Simulation Balance* tab and use the *Balancing Simulation* field at the upper left to select the balancing simulation that you want to delete.
2. Choose *Edit* in the upper-right corner.
3. Choose *Delete*.

13.1.4 Finalizing Balancing Simulations

Prerequisites

- The balancing simulation has finished the resource balancing.
- The planned activities have been submitted or synchronized to SAP Transportation Management (SAP TM).
- The related documents have been created or modified.

- There are no more changes to the simulation.

Procedure

1. In the *Resource Balancing* work center, go to the *Simulation Balance* tab and use the *Balancing Simulation* field at the upper left to select the balancing simulation that you want to finalize.
2. Choose the *Finalize* button in the upper-right corner.

   A confirmation message is displayed.
3. Choose *OK*.

   The simulation is finalized. Alternatively, if you choose *Cancel*, the finalizing is canceled.

   > **i** Note
   >
   > After a balancing simulation is finalized, it cannot be edited anymore.

Related Information

Scenarios and Activities [page 183]

13.2 Scenarios and Activities

You use scenarios to simulate and compare the optimization results of different resource balancing activities. You can add multiple scenarios to a balancing simulation, add balancing activities to each scenario, compare the optimization results, and then implement the scenario with the best results.

Working with Scenarios

When you first create a new balancing simulation, a draft scenario is also created. You can begin working with this one, and then create any number of additional scenarios as necessary.

A scenario goes through a lifecycle. Until a scenario has been finalized, it has the status `Draft`. This means that the activities in the scenario have not yet been sent to your logistics system. You can change a scenario as long as all scenarios in the balancing simulation have the status `Draft`.

When you are satisfied with a scenario and its effects on your imbalanced situation, you can finalize the scenario. The activities are sent to your logistics system and are carried out there, and the status of the scenario changes to `Finalized`. The balancing simulation can then no longer be changed.

Scenarios for a Balancing Simulation

The *Scenarios* list at the top of the *Resource Balancing* view shows all scenarios that have been created for a simulation. The following fields are included here:

Field Shown	What It Means
Name	The name of the scenario.
Activity Status	Shows whether the activities in the scenario are still up to date. If the start and end time for the activities no longer correspond with the dates for the simulated data, then you must change them.
Alerts	Shows the number of remaining supply and demand alerts after you apply the activities in the scenario. You may need to choose *Update Simulation Data* to refresh the number.
Total Costs	The total costs of the activities in the scenario. This field shows the sum of the activity costs, balancing costs, storage costs, and cost adjustment.
Activity Costs	The total cost of the activities included in the scenario. These costs are calculated based on the cost model.
Balancing Costs	For imbalanced situations, this field shows how much it would cost to balance the situation.
Storage Costs	The total storage costs for the activities in the scenario.
Cost Adjustment	The optional cost adjustment to reflect your business requirements. It is calculated based on a business rule and can be positive or negative. Like *Activity Costs* and *Storage Costs*, the *Cost Adjustment* is considered in the solver's optimization result as well.
Action Status	The status can be either `Draft` or `Finalized`. If a scenario has been finalized, the activities it contains have been sent to your logistics system to be carried out. The scenario can no longer be changed. When you finalize a scenario, the status for the balancing simulation itself is also set to `Finalized`.
Actions	You use the buttons in this column to delete, modify, or finalize a scenario.

When you select a scenario in the list, additional data for the scenario is shown in the area between the two tables. The following information is shown:

- *Planned Activity Costs*
  The total costs for the activities included in the scenario.
  This is the same amount that is shown in the *Activity Costs* field in the overview list.
- *Balancing Costs*

  If you have an imbalanced situation and want to see how much it would cost to balance it, choose  .
  The amount is then displayed in the field. You can then also choose the *View Additional Balancing Activities* link. Here you see which activities would be necessary to balance the situation apart from the activities already in the *Planned Activities* list. The cost of each activity is also shown.
- *Storage Costs*
  Shows any storage costs, if applicable.

Related Information

Creating Scenarios [page 185]
Changing a Scenario Name or Description [page 186]
Deleting Scenarios [page 187]
Adding Activities to a Scenario [page 187]
Modifying the Activities in a Scenario [page 190]
Deleting Activities from a Scenario [page 191]
Mass-Updating Planned Activities [page 192]
Automatically Splitting Repositioning Activities [page 193]
Checking Simulation Results for Scenarios [page 194]
Monitoring Submitted Simulations [page 199]
Submitting Scenarios [page 196]
Synchronizing Scenarios [page 198]

13.2.1 Creating Scenarios

Prerequisites

Before you can create a scenario, the balancing simulation to which you want to add the scenario must be available.

Procedure

1. In the *Resource Balancing* work center, go to the *Simulation Balance* tab and use the *Balancing Simulation* field at the upper left to select a simulation.

2. Choose *Edit* in the upper-right corner.
3. Choose *Create Scenario*.
4. Enter a name and description.
5. Save your entries.

Results

The scenario is added to the *Scenarios* list. You can then add activities to it.

Related Information

Adding Activities to a Scenario [page 187]

13.2.2 Changing a Scenario Name or Description

Prerequisites

- The balancing simulation and the scenario that you want to work with are available in the *Resource Balancing* work center.
- Make sure that the balancing simulation has the status `Draft`. If the balancing simulation has been finalized, you cannot edit any of the scenarios it contains.

Procedure

1. In the *Resource Balancing* work center, go to the *Simulation Balance* tab and use the *Balancing Simulation* field to select a balancing simulation.
2. Choose *Edit* in the upper-right corner.
3. In the *Scenarios* list, select the scenarios that you want to edit.
4. Choose  in the *Actions* column.
5. Make your changes and save.

13.2.3 Deleting Scenarios

Prerequisites

Make sure that the balancing simulation has the status `Draft`. If the balancing simulation has been finalized, you cannot delete any of the scenarios it contains.

Procedure

1. In the *Resource Balancing* work center, go to the *Simulation Balance* tab and use the *Balancing Simulation* field at the upper left to select the balancing simulation that you want to work with.
2. Choose *Edit* in the upper-right corner.
3. In the *Scenarios* list, select the scenarios that you want to delete.
4. Choose  in the *Actions* column.

> **i Note**
>
> After one scenario of a simulation has been submitted, the delete icon will become invisible, which means that you cannot delete any of the scenarios.

13.2.4 Adding Activities to a Scenario

Context

When adding activities to a scenario, you have the following options:

- Run automatic balancing
  This generates suggested repositioning activities for balancing the situation.
- Create manual activities
  You can manually create the following types of activities for a scenario:
  - Repositioning
    Triggers the movement of empty resources from a location that has a surplus to a location that has a deficit.
  - Planned repositioning
    Assumes the movement of empty resources to simulate a planned repositioning event that is known to happen in the future. Unlike a repositioning activity, a planned repositioning activity is not implemented in your logistics system when the scenario is finalized.
  - On-hire
    Initiates leasing of additional transportation resources to compensate for a deficit.
  - Off-hire
    Ends leasing of transportation resources to compensate for a surplus.

- Maintenance and repair
  Triggers the repair of damaged transportation resources to make them available for use again.
- Load and Discharge
  Adjusts the number of empty resources to be loaded or discharged at specific locations in a voyage.

  > **i Note**
  >
  > This activity is available only when you are working with a container-type resource category.

- Use a combination of the automatic and manual activities
  You can first run automatic balancing and then create manual activities or vice versa.

Prerequisites

- The balancing simulation and the scenario that you want to work with are available in the *Resource Balancing* work center.
- Make sure that the balancing simulation has the status `Draft`. If the balancing simulation has been finalized, you cannot change any of the scenarios it contains.

Steps

1. In the *Resource Balancing* work center, go to the *Simulation Balance* tab and use the *Balancing Simulation* field at the upper left to select the balancing simulation.
2. Choose *Edit* in the upper-right corner.
3. From the *Scenarios* list, select a scenario.
4. To run automatic balancing, choose *Run Automatic Balancing* in the *Planned Activities* area.
5. To create activities manually, choose *Create Manual Activity* and an activity type, then fill the required information.
   The information required depends upon the activity type as follows:
   - If you choose *Repositioning*, you must enter the following:
     - The location from which and to which the empty resources are to be moved.
     - A start and end time for the activity.
       The start time must always be later than the current time.
     - A quantity specifying the number of transportation resources to be repositioned.
     - The cost of the activity.
       You can enter an estimate manually or use *Estimate Cost* to generate an estimate based on the cost model in the network setting group.
     - The resource type.

   Optionally, you can also enter a description and the route used by the repositioning activity.

   > **i Note**
   >
   > The *Route* field is not available until you have specified the from and to locations and the start and end time.

> When selecting a route, you can see the capacity of the route in the selection dialog box. Make sure that the quantity you specify does not exceed the route capacity.

- If you choose *Planned Repositioning*, you must enter the following:
  - The location from which and to which the empty resources are to be moved.
  - A start and end time for the activity.
    The start time must always be later than the current time.
  - A quantity specifying the number of transportation resources to be repositioned.
  - The cost of the activity.
  - The resource type.

  Optionally, you can also enter a description.
- If you choose *On-Hire* or *Off-Hire*, you must enter the following:
  - The location at which the resources are to be on-hired or off-hired.
  - A start time for the on-hire or off-hire activity.
    The start time must always be later than the current day.
  - A quantity specifying the number of transportation resources that you want to on-hire or off-hire.
  - The relevant lease contract.
  - The cost of the activity.
  - The resource type.

  Optionally, you can also enter a description.
- If you choose *Maintenance and Repair*, you must enter the following:
  - The location at which the maintenance and repair activity should take place.
  - A start and end time for the activity.
    The start time must always be later than the current time.
  - A quantity specifying the number of transportation resources that the activity makes available.
  - The estimated cost of the maintenance and repair activities.
  - The resource type.

  Optionally, you can also enter a description.
- If you choose *Load and Discharge*, you must enter the following:
  - The port from which or to which the empty resources are to be loaded or discharged.
  - The resource type that is to be loaded or discharged.
  - The voyage in which you want to change the number of empty resources to be loaded or discharged.
    When selecting the voyage, you can set a range of planned arrival time to filter the *Voyages* list. The planned arrival time is the time when the vehicle or vessel arrives at the specified port of load or discharge.
  - The new load and discharge quantities that specify the number of empty resources to be loaded or discharged at stops in the selected voyage.
    The *Load and Discharge for Selected Voyage* table lists the planned load and discharge quantities for each stop in pieces (PCs) and twenty-foot equivalent units (TEUs). Enter a number in the *New Load Quantity* or *New Discharge Quantity* column to specify a new quantity (in PCs).
    Make sure that the new load quantity does not exceed the remaining capacity of the vehicle or vessel at that stop and the new discharge number does not exceed the empty stock at the stop. The empty stock, total capacity, and remaining capacity are all listed in both PCs and TEUs. The system calculates the total capacity and the remaining capacity as follows:
    Total Capacity = Vessel Capacity - Occupied Quantity (from SAP Transportation Management)

Remaining Capacity = Total Capacity +/- change in the load and discharge activities +/- change in repositioning activities

Optionally, you can also enter a description.

6. Save your entries.

Result

The activities are added to the *Planned Activities* list. The *Type* column shows whether an activity is automatic or has been created manually.

If you want to refresh the simulation results for the scenario to see the effects of your changes, choose *Update Simulation Data*.

Related Information

Routes [page 220]

13.2.5 Modifying the Activities in a Scenario

Prerequisites

- The balancing simulation and the scenario that you want to work with are available in the *Resource Balancing* work center.
- Make sure that the balancing simulation has the status `Draft`. If the balancing simulation has been finalized, you cannot change any of the scenarios it contains.

Procedure

1. In the *Resource Balancing* work center, go to the *Simulation Balance* tab and use the *Balancing Simulation* field to select a balancing simulation.
2. Choose *Edit* in the upper-right corner.
3. In the *Scenarios* list, select a scenario.
4. In the *Planned Activities* list, select the activity that you want to change.

> **i Note**
>
> You can only edit one activity at a time.

5. Choose *Edit*.

> **Note**
>
> If you edit an activity proposed in automatic balancing, it changes into a manual activity. If you want to specify a route for the activity, make sure that the quantity of the resource type does not exceed the route capacity.

6. Make your changes and save.

Results

The activity is updated. If you want to refresh the simulation results for the scenario to see the effects of your changes, choose *Update Simulation Data*.

13.2.6 Deleting Activities from a Scenario

Prerequisites

- The balancing simulation and the scenario that you want to work with are available in the *Resource Balancing* work center.
- Make sure that the balancing simulation has the status `Draft`. If the balancing simulation has been submitted or finalized, you cannot delete any of the scenarios it contains.

Procedure

1. In the *Resource Balancing* work center, go to the *Simulation Balance* tab and use the *Balancing Simulation* field at the upper left to select a balancing simulation.
2. Choose *Edit* in the upper-right corner.
3. In the *Scenarios* list, select the scenario that you want to work with.
4. In the *Planned Activities* list, select the activities that you want to delete.

> **Note**
>
> You can select one or more activities for deletion.

5. Choose *Delete*.

Results

If the activity has not been submitted to SAP Transportation Management (SAP TM), it is physically deleted. However, if the activity has already been submitted or synchronized to SAP TM, then only the deletion flag

is set for the activity. If you want to refresh the simulation results for the scenario to see the effects of your changes, choose *Update Simulation Data*.

13.2.7 Mass-Updating Planned Activities

Context

You can mass-update the planned activities for a scenario by exporting the activities to a comma-separated values (CSV) file, updating the relevant activities, and then importing the updated CSV file back into the system.

Procedure

1. In the *Resource Balancing* work center, go to the *Simulation Balance* tab and use the *Balancing Simulation* field at the upper left to select a balancing simulation.
2. In the *Scenarios* list, select the scenario that you want to update.
3. On the *Planned Activities* tab, choose *Export to CSV* to export the activities in the table.
4. Modify the data in the CSV file.

> **i** Note
>
> - If you edit the file using Microsoft Excel, the date time format in the CSV file will be changed to the format defined in your local system. You need to change the format to "yyyy-dd-mm hh:mm:ss", otherwise an error will occur when you import the CSV file.
> - All dates, for instance *Start Time*, *End Time*, and so on, are displayed on the user interface (UI) in the time zone defined in your local system. In the database layer, all of the dates and times are converted into the UTC time zone and saved. Therefore, when the dates and times are exported to CSV, they are downloaded with the UTC time zone.
> - To create a new activity, make the *Activity* and *CODE* columns blank and enter "C" in the *CHANGE_MODE* column.
> - To update an existing entry, enter "U" in the *CHANGE_MODE* column.
> - To delete an existing activity, enter "D" in the *CHANGE_MODE* column.
> - You can only modify the following columns:
>   - ACTIVITY_ID
>   - CODE
>   - VOYAGE
>   - VESSEL
>   - QUANTITY
>   - RESOURCE_TYPE

- FROM
- TO
- COST
- START_TIME
- END_TIME

5. On the *Planned Activities* tab, choose *Import from CSV* to import the activities back into the system.

Related Information

Scenarios and Activities [page 183]
Adding Activities to a Scenario [page 187]
Modifying the Activities in a Scenario [page 190]
Deleting Activities from a Scenario [page 191]

13.2.8 Automatically Splitting Repositioning Activities

Prerequisites

- In the network setting group, the *TM & TRP with 1:1 Relationship* checkbox is selected.
- Automatic splitting is only available for the manual repositioning and proposed repositioning activities.

Context

When adding a manual repositioning activity or a proposed repositioning activity that has more than one resource to a scenario, the activity is automatically split into multiple activities with a quantity of one, each with same activity ID but different activity codes.

Procedure

1. In the *Resource Balancing* work center, go to the *Simulation Balance* tab and use the *Balancing Simulation* field at the upper left to select the balancing simulation.
2. Choose *Edit* in the upper-right corner.
3. From the *Scenarios* list, select a scenario.

4. In the *Planned Activities* area, choose *Run Automatic Balancing*.
5. Choose *Create Manual Activity* and an activity type.

   A message is displayed to confirm that the activity will be automatically split.
6. Enter the required information in the repositioning window and choose *Save*.

Results

To run automatic balancing, the generated activities are automatically split into multiple activities with a quantity of one each if the quantity is greater than one.

Manual repositioning activities are automatically split into multiple activities with a quantity of one each if the quantity is greater than one.

Related Information

Adding Activities to a Scenario [page 187]

13.2.9 Checking Simulation Results for Scenarios

Prerequisites

In the *Resource Balancing* work center, you have added balancing activities, either manually or automatically, to a scenario in the current balancing simulation.

Context

Simulated Supply and Demand Status

Each balancing simulation is based on a supply and demand plan. The execution results for the plan are shown in the table at the left of the *Resource Balancing* view. After you add activities to a scenario, the supply and demand data in the table are recalculated to show the effect of your activities. This table also includes any alerts triggered for resource surpluses or deficits. You can also display the alerts in the map view.

Scenario Costs

The simulation also calculates the costs for each scenario, which include:

- Planned activity costs
  The total costs for all the activities in the current scenario.
- Balancing costs

If the simulated supply and demand are not balanced, this shows the costs to balance the supply and demand status.
If the situation in the current scenario is already balanced (no alerts in the simulated results), the balancing cost is zero.

- Storage costs
  The total storage costs involved in the current scenario.

Procedure

1. In the *Scenarios* list, select a scenario for which you have added activities.
2. If you have not already updated simulation results for the scenario, you are notified at the top of the left-hand area. In this case, choose *Update Simulation Data* in the *Planned Activities* area to update your results.
3. In the left-hand area, check the simulated data in the *Simulated Supply and Demand Status* table. To display alerts in the map view, choose *Alerts*. To enlarge this area, choose the  button.
4. Check the planned activity costs, balancing costs, and storage costs for the current scenario. You can do this in the *Scenarios* list table or in the area between the *Scenarios* list and the *Planned Activities* list.

> **i** Note
>
> If the balancing costs are not available, choose  to calculate the costs. You can also choose *View Additional Balancing Activities*, if available. Here, you can check the required balancing activities (apart from the ones already listed in the *Planned Activities* list) and their costs.
>
> If the system cannot suggest any balancing activities for an imbalanced situation, the balancing costs field shows the total number of surplus and deficit resources in all locations.

Results

The simulation results show you whether the activities can correct the supply and demand imbalances, as well as the involved costs. You can compare the results of different scenarios and identify an optimal scenario.

13.2.10 Submitting Scenarios

Context

When you are satisfied with the simulated results of a scenario, you can submit it. When you submit the scenario, the following types of activities in the scenario are sent to be carried out in your logistics system:

- Repositioning activities
- On-hire activities
- Off-hire activities
- Maintenance and repair activities
- Load and discharge activities

Activities of the type *Planned Repositioning* are not carried out. Instead, you use them to simulate the activities that you know will be happening in the future.

> **i** Note
>
> Once you have submitted the scenario, you can also modify your submitted activities and synchronize them to the logistics system if the *TM & TRP with 1:1 Relationship* checkbox is selected in the network setting group. Otherwise, you cannot submit or synchronize activities again.

> **i** Note
>
> In your resource category settings, you can predefine configurations for creating empty repositioning orders in your logistics system.

Enabling Tracking for Submitted Respositioning Activities

To track the changes to each submitted repositioning activity in both SAP Transportation Resource Planning and the logistics system, the quantity in the repositioning activity must be only one. If you create a repositioning activity with a quantity of more than one, the system displays a message asking you to split the repositioning activity into single units. Otherwise, changes to the repositioning activity in the logistics system cannot be tracked when its quantity and locations are changed.

To enable the one-to-one relationship for tracking in the two systems, you need to select the *TM & TRP with 1:1 Relationship* checkbox in the network setting group.

Procedure

1. In the *Resource Balancing* work center, go to the *Simulation Balance* tab and use the *Balancing Simulation* field at the upper left to select a balancing simulation.
2. In the *Scenarios* list, select the scenario that you want to submit.

3. Choose  in the *Actions* column.

Results

The activities in the scenario (except any planned repositioning activities) are sent to be carried out in your logistics system. The status of the scenario changes to *Submitted*. The balancing simulation can still be changed. You can view the related transportation requests that are created in your logistics system in the planned activities table. The data returned from your logistics system can be displayed after the scenario has been submitted.

Next Steps

After you submit repositioning activities to the logistics system, you might need to modify or delete them, or create new activities according to the changes in the logistics system. You can change the details of the submitted activities, including the locations, quantities, dates, and so on, and then synchronize your changes to the logistics system.

Process Overview

When you create a new scenario in a simulation plan, it is initially in *Draft* status before it is submitted to the logistics system. The activities in the scenario are initially in *Created* status. After you create more scenarios, you can evaluate and decide which set of repositioning activities of a simulation plan are the best to submit to the logistics system. Once the scenario is submitted to the logistics system, its status becomes *Synchronized*, and the status of each activity in the scenario becomes *Submitted*.

If you change the submitted repositioning activities, then both the activity status and the scenario status become *Changed*. When you have finished changing the activities, you can resubmit the scenario to the logistics system. The status of the scenario becomes *Synchronized*, and the status of each repositioning activity becomes *Submitted*. You can continue to change the repositioning activities until you set the simulation plan as *Finalized*. Once the simulation plan is *Finalized*, it becomes read-only and cannot be changed or submitted to the logistics system again.

Related Information

Scenarios and Activities [page 183]
Synchronizing Scenarios [page 198]
Resource Categories [page 232]

13.2.11 Synchronizing Scenarios

Prerequisites

- The *TM & TRP with 1:1 Relationship* checkbox is selected in the network setting group.
- The scenario has been submitted.

Context

When you have modified the submitted activities of a scenario and want to synchronize the changed information for the submitted activities with the logistics system, you can use the synchronize option. When you synchronize a scenario, the following types of activities in the scenario are sent to be carried out in your logistics system:

- Repositioning activities
- On-hire activities
- Off-hire activities
- Maintenance and repair activities
- Load and discharge activities

Activities of the type *Planned Repositioning* are not carried out. Instead, you use them to simulate the activities that you know will be happening in the future.

> **i** Note
>
> Once you have synchronized the scenario, you can also modify your synchronized activities and synchronize again to the logistics system if the *TM & TRP with 1:1 Relationship* checkbox is selected in the network setting group. Otherwise, you cannot submit or synchronize activities.

Procedure

1. In the *Resource Balancing* work center, go to the *Simulation Balance* tab and use the *Balancing Simulation* field at the upper left to select a balancing simulation.
2. In the *Scenarios* list, select the scenario that you want to synchronize.
3. Choose  in the *Actions* column.

Results

The activities in the scenario (except any planned repositioning activities) are sent to be carried out in your logistics system. The status of the scenario changes to *Synchronized*. The balancing simulation can still be changed. You can view the related transportation requests that are created in your logistics system in the planned activities table. The data returned from your logistics system can be displayed after the scenario has been synchronized.

Related Information

Scenarios and Activities [page 183]
Submitting Scenarios [page 196]
Monitoring Submitted Simulations [page 199]

13.2.12 Monitoring Submitted Simulations

Context

In the *Resource Balancing* work center, you can monitor all of the submitted activities and track the status and result while submitting and synchronizing simulations to the logistics system.

> **i** Note
>
> - *Draft* and *Finalized* simulations are not relevant for monitoring purposes.
> - The planned activities for the following types of scenarios in simulations are monitored:
>   - *Submitted/Synchronized*
>   - *Partially Finalized*
>   - *Finalized Failed*
>   - *Changed but Not Synchronized*
>
>   Activities in *Draft* and *Finalized* status are not monitored.
> - Only the manual repositioning and proposed repositioning activities are monitored.

Procedure

1. In the *Resource Balancing* work center, go to the *Monitoring* tab and use the *Balancing Simulation* field at the upper left to select the balancing simulation that you want to monitor.

2. To monitor all the submitted simulations, leave the *Balancing Simulation* field blank.
3. Choose  to configure the layout and display the required columns.

Related Information

Scenarios and Activities [page 183]
Submitting Scenarios [page 196]
Synchronizing Scenarios [page 198]

13.3 Network Models

A network model represents the current transportation network that can be used in resource balancing. A network model consists of lanes, single-stage paths, and multi-stage paths.

- A lane defines a direct transport capability between two locations without any planned intermediate transport activities, such as stops for loading and uploading.
- A single-stage path is a sequence of lanes with start and end locations and a common means of transport. This type of path represents a transportation capability for the sequence of locations with potential loads and unloads at any of the locations. However, there is no requirement for transshipment in between.
- A multi-stage path is a transportation path with a set of sequential and contiguous single-stage path and/or lanes for transporting resources from a source location to a destination location.

Use

You use a network model to generate routes. Routes can be used in repositioning activities to determine scheduled departures, stop sequences, vehicle capacity, distance, duration, costs, and so on.

Whenever you create a balancing simulation, a network model is automatically created based on the supply and demand plan and network setting group in the current balancing simulation. The model is associated with the balancing simulation and all of its scenarios, including the default scenario and any scenarios. However, you can edit the simulation-level and scenario-level network models separately.

In a network model, lanes and single-stage paths are initially retrieved from your logistics system. You can create new lanes and single-stage paths or modify the existing ones according to your own business needs.

The multi-stage paths in a network model are automatically generated based on the lanes and single-stage paths. You can also create your own multi-stage paths.

SAP Transportation Resource Planning automatically generates routes based on the multi-stage paths in a network model.

Managing Network Models

To work with network models, go to *Resource Balancing*, and choose the *Network Model* tab at the right of the work center.

Related Information

Synchronizing Network Datasets [page 201]
Viewing Paths and Lanes in a Network Model [page 202]
Lanes [page 203]
Single-Stage Paths [page 208]
Multi-Stage Paths [page 215]
Routes [page 220]

13.3.1 Synchronizing Network Datasets

Prerequisites

A balancing simulation has been created in the *Resource Balancing* work center, which means that an associated network model is available.

Context

Network datasets are lanes, single-stage paths, and the network information used to generate multi-stage paths and routes in SAP Transportation Resource Planning. The original network datasets are retrieved from your logistics system.

To make sure that the retrieved datasets are up-to-date, you must manually synchronize network datasets from your logistics system from time to time.

If a supply and demand plan is already used in a balancing simulation, and the location filter used in the plan has been modified, you must synchronize the network datasets for the balancing simulation.

You can synchronize two types of network datasets:

- Global datasets
  Consist of basic connectivity and network information for the entire transportation network defined in your logistics system.
- Local datasets
  Consist of basic connectivity and network information for locations in the location filter of the supply and demand plan that is associated with the current balancing simulation.

Procedure

1. In the *Resource Balancing* work center, use the *Balancing Simulation* field at the upper left to select a balancing simulation.
2. Choose the *Network Datasets* tab at the right of the work center.
3. To synchronize global datasets from your logistics system, choose *Synchronize Global Datasets*. To synchronize local datasets from your logistics system, choose *Synchronize Local Datasets*.

Results

The latest network data is retrieved from your logistics system. The *Network Datasets* tab shows you how many single-stage paths and lanes are included in the updated datasets, as well as when the synchronization was completed.

13.3.2 Viewing Paths and Lanes in a Network Model

Prerequisites

A network model is available for a balancing simulation in the *Resource Balancing* work center.

Steps

1. In the *Resource Balancing* work center, use the *Balancing Simulation* field to select a balancing simulation.
2. Choose the *Network Model* tab at the right edge of the work center.
3. In the *Usage Level* field, if you want to view the network model available for the current balancing simulation, select *Balancing Simulation*. To view the model available for a specific scenario, select *Scenario* and choose the target scenario in the *Scenarios* list.
4. Choose the *Lanes*, *Single-Stage Paths*, or *Multi-Stage Paths* tab to display the respective list of lanes or paths.
   In each tab, you can search paths or lanes by specifying from and to locations and means of transport under *Filters*.

   > **i** Note
   >
   > The *Means of Transport* filter option is available only when you are working with a container-type resource category. The means of transport for a railcar-type resource category is always *Rail*.

5. After finding a lane or path in the corresponding list, choose  to view more details.

Map View for Network Models

You can also view lanes and paths in the map view. To do this, choose *Network* in the left-hand area of the *Resource Balancing* work center.

The map view shows the lanes or paths that you have found in the current list. The color of the lanes or paths indicates the means of transport. The start, end, and transshipment locations are represented by different icons. You can place your mouse cursor over a lane or path to see more information.

You can enlarge the map view by choosing  and zoom in or out to focus on a particular area.

When the list of lanes or paths changes, update the map view by choosing *Refresh Path Data on Map*.

13.3.3 Lanes

A lane defines a direct transport capability between two locations without any planned intermediate transport activities, such as stops for loading or unloading. Lanes are part of a network model in resource balancing.

Use

When you create a balancing simulation in the *Resource Balancing* work center, a network model is generated. The model retrieves the lanes from your logistics system. You can also modify or disable these original lanes and create your own.

Based on your lanes and single-stage paths, SAP Transportation Resource Planning automatically generates the multi-stage paths in the network model. Multi-stage paths are then used to create the routes that can be selected in repositioning activities for resource balancing.

Managing Lanes

To work with lanes in a network model, go to the *Resource Balancing* work center and choose the *Network Model* tab at the right edge of the work center. Then, under *Paths and Lanes*, choose the *Lanes* tab.

Related Information

Creating Lanes [page 204]
Modifying Lanes [page 205]
Disabling Lanes [page 206]
Deleting Lanes [page 207]

13.3.3.1 Creating Lanes

Prerequisites

The simulation-level or scenario-level network model in which you want to create lanes is available.

Context

A network model retrieves lanes from your logistics system, but you can also create your own lanes according to your business needs.

You can create a lane from scratch or use an existing lane as a template.

Procedure

1. In the *Resource Balancing* work center, use the *Balancing Simulation* field at the upper left to select the balancing simulation that you want to work with.
2. Choose the *Network Model* tab at the right of the work center.
3. In the *Usage Level* field, if you want to work with the simulation-level network model, select *Balancing Simulation*. To work with the scenario-level network model, select *Scenario* and choose the target scenario in the *Scenarios* list.
4. Under *Paths and Lanes*, choose the *Lanes* tab.
5. Do either of the following:
   - To create a lane from scratch, choose *Create*.
   - To create a lane using an existing lane as a template, find the lane in the list, and choose *Copy* next to it.

   > **i Note**
   >
   > To find the template lane easily, you can filter the lanes list by specifying *From Location*, *To Location*, and *Means of Transport* under *Filters*, and sort the list using the *View* and *Sort By* options.
6. In the *Create Lane* or *Copy Lane* dialog box, specify a from location, to location, the distance between them, and the duration.
7. If necessary, specify a means of transport and/or a carrier. You can also choose *Calculate Cost* to get an estimated cost for the lane.

   > **i Note**
   >
   > The *Means of Transport* option is available only when you are working with a container-type resource category. The means of transport for a railcar-type resource category is always *Rail*.
8. Save your entries.

Results

After creating lanes in a network model, you must update the list of multi-stage paths manually.

SAP Transportation Resource Planning then automatically generates the routes again based on the updated multi-stage paths list. If a route has already been used in a repositioning activity, the activity may become invalid.

Related Information

Updating the List of Multi-Stage Paths [page 216]

13.3.3.2 Modifying Lanes

Prerequisites

The lanes that you want to modify are available in the simulation-level or scenario-level network model.

Context

When modifying a lane, you can only change the distance and duration for the lane and recalculate the cost. You cannot change the lane's from and to locations, means of transport, or carrier.

Procedure

1. In the *Resource Balancing* work center, use the *Balancing Simulation* field at the upper left to select the balancing simulation that you want to work with.
2. Choose the *Network Model* tab at the right of the work center.
3. In the *Usage Level* field, if you want to work with the simulation-level network model, select *Balancing Simulation*. To work with the scenario-level network model, select *Scenario* and choose the target scenario in the *Scenarios* list.
4. Under *Paths and Lanes*, choose the *Lanes* tab.
5. In the lanes list, find the lane that you want to modify.

> **i Note**
>
> You can filter the lanes list by specifying *From Location*, *To Location*, and/or *Means of Transport* under *Filters*. You can also use the *View* field to list only the lanes that are used in multi-stage paths.

> To sort the lanes list, make your selection in the *Sort By* field and choose  or  .

6. Choose *Edit* next to the target lane.
7. Make your changes and save your entries.

Results

After modifying lanes in a network model, you must update the list of multi-stage paths manually.

SAP Transportation Resource Planning then automatically generates the routes again based on the updated multi-stage paths list. If a route has already been used in a repositioning activity, the activity may become invalid.

Related Information

Updating the List of Multi-Stage Paths [page 216]

13.3.3.3 Disabling Lanes

Prerequisites

- The lanes that you want to enable or disable are available in the simulation-level or scenario-level network model.
- You can only enable or disable lanes that have the status `Original`.

Context

You can disable some lanes in a network model. When SAP Transportation Resource Planning uses the lanes and single-stage paths to generate multi-stage paths automatically, the disabled lanes are not used.

Procedure

1. In the *Resource Balancing* work center, use the *Balancing Simulation* field at the upper left to select the balancing simulation that you want to work with.
2. Choose the *Network Model* tab at the right of the work center.

3. In the *Usage Level* field, if you want to work with the simulation-level network model, select *Balancing Simulation*. To work with the scenario-level network model, select *Scenario* and choose the target scenario in the *Scenarios* list.
4. Under *Paths and Lanes*, choose the *Lanes* tab.
5. In the lanes list, find the lane that you want to disable.

   > **i Note**
   >
   > You can filter the lanes list by specifying *From Location*, *To Location*, and/or *Means of Transport* under *Filters*. You can also use the *View* field to list only the lanes that are used in multi-stage paths.
   >
   > To sort the lanes list, make your selection in the *Sort By* field and choose  or  .

6. Deselect the *Enabled* checkbox for the lane.

Results

After disabling lanes in a network model, you must update the list of multi-stage paths manually.

SAP Transportation Resource Planning then automatically generates the routes again based on the updated multi-stage paths list. If a route has already been used in a repositioning activity, the activity may become invalid.

Related Information

Updating the List of Multi-Stage Paths [page 216]

13.3.3.4 Deleting Lanes

Prerequisites

- The lanes that you want to delete are available in the simulation-level or scenario-level network model.
- You can only delete lanes that have the status `User-Created`.

Procedure

1. In the *Resource Balancing* work center, use the *Balancing Simulation* field at the upper left to select the balancing simulation that you want to work with.
2. Choose the *Network Model* tab at the right of the work center.

3. In the *Usage Level* field, if you want to work with the simulation-level network model, select *Balancing Simulation*. To work with the scenario-level network model, select *Scenario* and choose the target scenario in the *Scenarios* list.
4. Under *Paths and Lanes*, choose the *Lanes* tab.
5. In the lanes list, find the lane that you want to delete.

   > **i Note**
   >
   > You can filter the lanes list by specifying *From Location*, *To Location*, and/or *Means of Transport* under *Filters*. You can also use the *View* field to list only the lanes that are used in multi-stage paths.
   >
   > To sort the lanes list, make your selection in the *Sort By* field and choose  or  . For example, you can sort the list by *Status* in descending order to make all the user-created lanes appear at the top of the list.

6. Choose *Delete* next to the lane.

Results

After deleting lanes in a network model, you must update the list of multi-stage paths manually.

SAP Transportation Resource Planning then automatically generates the routes again based on the updated multi-stage paths list. If a route has already been used in a repositioning activity, the activity may become invalid.

Related Information

Updating the List of Multi-Stage Paths [page 216]

13.3.4 Single-Stage Paths

A single-stage path is a sequence of lanes with start and end locations and a common means of transport. A single-stage path represents a transport capability for the sequence of locations with potential loads and unloads at any of the locations, but no requirement for transshipment in between. Single-stage paths are part of a network model in resource balancing.

Use

When you create a balancing simulation in the *Resource Balancing* work center, a network model is generated. The model retrieves single-stage paths from your logistics system. You can also modify or disable these original single-stage paths and create your own.

Based on your single-stage paths and lanes, SAP Transportation Resource Planning automatically generates the multi-stage paths in the network model. Multi-stage paths are then used to create the routes that can be selected in repositioning activities for resource balancing.

Managing Single-Stage Paths

To work with single-stage paths in a network model, go to the *Resource Balancing* work center and choose the *Network Model* tab at the right edge of the work center. Then under *Paths and Lanes*, choose the *Single-Stage Paths* tab.

Related Information

Creating Single-Stage Paths [page 209]
Modifying Single-Stage Paths [page 211]
Disabling Single-Stage Paths [page 213]
Deleting Single-Stage Paths [page 214]

13.3.4.1 Creating Single-Stage Paths

Prerequisites

The simulation-level or scenario-level network model in which you want to create single-stage paths is available.

Context

A network model retrieves single-stage paths from your logistics system, but you can also create your own single-stage paths according to your business needs.

You can either create a single-stage path from scratch, or use an existing single-stage path as a template.

You create a single-stage path in a set of sequential dialog boxes, which allow you to perform the following tasks:

1. Specify from and to locations and a sequence of stops for the single-stage path.
2. Add departure rules for generating scheduled departures.
3. Set the capacity for scheduled departures or legs within a departure. The capacity defines the maximum number of resources that can be carried by the vehicle.

Procedure

1. In the *Resource Balancing* work center, use the *Balancing Simulation* field at the upper left to select the balancing simulation that you want to work with.
2. Choose the *Network Model* tab at the right of the work center.
3. In the *Usage Level* field, if you want to work with the simulation-level network model, select *Balancing Simulation*. To work with the scenario-level network model, select *Scenario* and choose the target scenario in the *Scenarios* list.
4. Under *Paths and Lanes*, choose the *Single-Stage Paths* tab.
5. Do either of the following:
   - To create a single-stage path from scratch, choose *Create*.
   - To create a single-stage path using an existing path as a template, find the path in the list, choose  to expand the path, and choose *Copy*.

   > **i Note**
   >
   > To find the template path easily, you can filter the single-stage paths list by specifying *From Location*, *To Location*, and *Means of Transport* under *Filters*, and sort the list using the *Sort By* option.

6. In the *Create Single-Stage Path* or *Copy Single-Stage Path* dialog box, specify the from and to locations and a sequence of stops as follows:
   1. Specify a from location and to location, and if necessary, a means of transport and a carrier.
      A line appears in the *Sequence of Stops* list.

      > **i Note**
      >
      > The *Means of Transport* option is available only when you are working with a container-type resource category. The means of transport for a railcar-type resource category is always *Rail*.

   2. If you need to add one or more stops between the from and to locations, choose *Add Stop* one or more times.
      Each time you choose the button, a new line is added to the list. You can also choose *Remove Stop* to remove existing stops.
   3. Specify the to location, distance, stopover, and duration for each leg in the single-stage path.
   4. Choose *Refresh Totals* to calculate and display the total distance, duration, and cost for the single-stage path.
   5. Choose *Save and Add Departure Rules*.
7. In the *Create Departure Rules* dialog box, define the departure rules for the single-stage path as follows:
   1. Specify the time zone used by the departure rule.
   2. To add a departure rule, choose *Add*. Then in the *Add Departure Rule* dialog box, specify departure time, recurrence, and the start day if the recurrence is weekly or monthly, and choose *Save*.

      To delete a departure rule, select the rule in the list and choose  in the *Actions* column.
   3. Choose *Save and Generate Scheduled Departures*.
      SAP Transportation Resource Planning automatically generates all the scheduled departures within a certain time range. The time range is defined by the time filter in the supply and demand plan used in the current balancing simulation.

8. In the *Edit Scheduled Departures* dialog box, set the capacities as follows:

> **i Note**
>
> You can set capacity for both the scheduled departure and each leg within the departure. If you set the capacity for the scheduled departure but not for the legs within it, the capacity also applies to the legs. If you set the capacity for the legs, the leg capacity takes precedence over the departure capacity, and no matter what capacity you set for the departure, the departure capacity will equal the lowest leg capacity. For example, if you set capacity 100 for the scheduled departure, and capacities 100, 80, and 50 for the three legs within the departure, then the departure capacity will be 50.

- To set capacity for a scheduled departure, select the departure in the list and choose *Set Capacity for Selected Departure*.
- To set capacity for a leg within a scheduled departure, select the departure in the list. Then in the lower table, choose  in the *Defined Capacity* column for the target leg.

> **i Note**
>
> In the lower table, the *Available Capacity* column shows the available capacity for each leg for your reference. The available capacity is calculated by deducting the occupied capacity (the capacity used by the manual and proposed activities in the current scenario) from the defined capacity.

9. Save your entries.

Results

After creating single-stage paths in a network model, you must update the list of multi-stage paths manually.

SAP Transportation Resource Planning then automatically generates the routes again based on the updated multi-stage paths list. If a route has already been used in a repositioning activity, the activity may become invalid.

Related Information

Updating the List of Multi-Stage Paths [page 216]

13.3.4.2 Modifying Single-Stage Paths

Prerequisites

The single-stage paths that you want to modify are available in the simulation-level or scenario-level network model.

Context

When modifying a single-stage path, you can only change the distance, stopover, and duration between the stops, and the allowed capacities for scheduled departures. You cannot change the from and to locations, means of transport, carrier, or sequence of stops for the path.

Procedure

1. In the *Resource Balancing* work center, use the *Balancing Simulation* field at the upper left to select the balancing simulation that you want to work with.
2. Choose the *Network Model* tab at the right of the work center.
3. In the *Usage Level* field, if you want to work with the simulation-level network model, select *Balancing Simulation*. To work with the scenario-level network model, select *Scenario* and choose the target scenario in the *Scenarios* list.
4. Under *Paths and Lanes*, choose the *Single-Stage Paths* tab.
5. In the single-stage paths list, find the single-stage path that you want to modify.

   > **i Note**
   >
   > You can filter the single-stage paths list by specifying *From Location*, *To Location*, and/or *Means of Transport* under *Filters*. You can also use the *View* field to list only the single-stage paths that are used in multi-stage paths.
   >
   > To sort the single-stage paths list, make your selection in the *Sort By* field and choose  or  .

6. Choose  to expand the single-stage path.
7. Do either of the following:
   - To change the distance, stopover, or duration between the stops, choose *Edit* next to *Path Details*.
   - To change the capacities for scheduled departures, choose *Edit* next to *Scheduled Departures*.
8. Make your changes and save your entries.

Results

After modifying single-stage paths in a network model, you must update the list of multi-stage paths manually.

SAP Transportation Resource Planning then automatically generates the routes again based on the updated multi-stage paths list. If a route has already been used in a repositioning activity, the activity may become invalid.

Related Information

Updating the List of Multi-Stage Paths [page 216]

13.3.4.3 Disabling Single-Stage Paths

Prerequisites

- The single-stage paths that you want to enable or disable are available in the simulation-level or scenario-level network model.
- You can only enable or disable single-stage paths that have the status `Original`.

Context

You can disable some single-stage paths in a network model. When SAP Transportation Resource Planning uses the single-stage paths and lanes to generate multi-stage paths automatically, disabled single-stage paths are not used.

Procedure

1. In the *Resource Balancing* work center, use the *Balancing Simulation* field at the upper left to select the balancing simulation that you want to work with.
2. Choose the *Network Model* tab at the right of the work center.
3. In the *Usage Level* field, if you want to work with the simulation-level network model, select *Balancing Simulation*. To work with the scenario-level network model, select *Scenario* and choose the target scenario in the *Scenarios* list.
4. Under *Paths and Lanes*, choose the *Single-Stage Paths* tab.
5. In the single-stage paths list, find the path that you want to disable.

   > **i** Note
   >
   > You can filter the single-stage paths list by specifying *From Location*, *To Location*, and/or *Means of Transport* under *Filters*. You can also use the *View* field to list only the single-stage paths that are used in multi-stage paths.
   >
   > To sort the single-stage paths list, make your selection in the *Sort By* field and choose  or  .

6. Deselect the *Enabled* checkbox for the single-stage paths.

Results

After disabling single-stage paths in a network model, you must update the list of multi-stage paths manually.

SAP Transportation Resource Planning then automatically generates the routes again based on the updated multi-stage paths list. If a route has already been used in a repositioning activity, the activity may become invalid.

Related Information

Updating the List of Multi-Stage Paths [page 216]

13.3.4.4 Deleting Single-Stage Paths

Prerequisites

- The single-stage paths that you want to delete are available in the simulation-level or scenario-level network model.
- You can only delete single-stage paths that have the status `User-Created`.

Procedure

1. In the *Resource Balancing* work center, use the *Balancing Simulation* field at the upper left to select the balancing simulation that you want to work with.
2. Choose the *Network Model* tab at the right of the work center.
3. In the *Usage Level* field, if you want to work with the simulation-level network model, select *Balancing Simulation*. To work with the scenario-level network model, select *Scenario* and choose the target scenario in the *Scenarios* list.
4. Under *Paths and Lanes*, choose the *Single-Stage Paths* tab.
5. In the single-stage paths list, find the path that you want to delete.

> **i Note**
>
> You can filter the single-stage paths list by specifying *From Location*, *To Location*, and/or *Means of Transport* under *Filters*. You can also use the *View* field to list only the single-stage paths that are used in multi-stage paths.
>
> To sort the single-stage paths list, make your selection in the *Sort By* field and choose  or  . For example, you can sort the list by *Status* in descending order to make all the user-created single-stage paths appear at the top of the list.

6. Choose *Delete* next to the single-stage path.

Results

After deleting single-stage paths in a network model, you must update the list of multi-stage paths manually.

SAP Transportation Resource Planning then automatically generates the routes again based on the updated multi-stage paths list. If a route has already been used in a repositioning activity, the activity may become invalid.

Related Information

Updating the List of Multi-Stage Paths [page 216]

13.3.5 Multi-Stage Paths

A multi-stage path is a transportation path with a set of sequential and contiguous single-stage paths and/or lanes for transporting resources from a source location to a destination location. Multi-stage paths are part of a network model in resource balancing.

Use

In resource balancing, the multi-stage paths in a network model are automatically generated based on the lanes and single-stage paths in the model, as well as the settings in the network setting group used in the balancing simulation.

SAP Transportation Resource Planning uses the multi-stage paths to create the routes that can be used in automatic or manual repositioning activities.

Managing Multi-Stage Paths

To work with multi-stage paths in a network model, go to the *Resource Balancing* work center and choose the *Network Model* tab at the right edge of the work center. Then, under *Paths and Lanes*, choose the *Multi-Stage Paths* tab.

Related Information

Updating the List of Multi-Stage Paths [page 216]
Creating Multi-Stage Paths [page 217]
Disabling Multi-Stage Paths [page 218]
Deleting Multi-Stage Paths [page 219]

13.3.5.1 Updating the List of Multi-Stage Paths

Prerequisites

This step is only required if the  symbol appears above the multi-stage paths list. This symbol tells you that some lanes or single-stage paths in the network model have been changed. For example, a single-stage path or lane may have been created, modified, disabled, or deleted, or the network datasets may have been updated.

Procedure

1. In the *Resource Balancing* work center, use the *Balancing Simulation* field at the upper left to select a balancing simulation.
2. Choose the *Network Model* tab at the right of the work center.
3. In the *Usage Level* field, if you want to work with the simulation-level network model, select *Balancing Simulation*. To work with the scenario-level network model, select *Scenario* and choose the target scenario in the *Scenarios* list.
4. Under *Paths and Lanes*, choose the *Multi-Stage Paths* tab.
5. Choose *Update*.

Results

SAP Transportation Resource Planning then automatically generates the routes again based on the updated multi-stage paths list. If a route has already been used in a repositioning activity, the activity may become invalid.

13.3.5.2 Creating Multi-Stage Paths

Prerequisites

The simulation-level or scenario-level network model in which you want to create multi-stage paths is available.

Context

The multi-stage paths in a network model are automatically generated using the lanes and single-stage paths in the model. You can also create your own multi-stage paths according to your business needs.

You can either create a multi-stage path from scratch, or use an existing path as a template.

Procedure

1. In the *Resource Balancing* work center, use the *Balancing Simulation* field at the upper left to select the balancing simulation that you want to work with.
2. Choose the *Network Model* tab at the right of the work center.
3. In the *Usage Level* field, if you want to work with the simulation-level network model, select *Balancing Simulation*. To work with the scenario-level network model, select *Scenario* and choose the target scenario in the *Scenarios* list.
4. Under *Paths and Lanes*, choose the *Multi-Stage Paths* tab.
5. Do either of the following:
   - To create a multi-stage path from scratch, choose *Create*.
   - To create a multi-stage path using an existing path as a template, find the path in the list, choose  to expand the path, and choose *Copy*.

   > **i Note**
   >
   > To find the template path easily, you can filter the multi-stage paths list by specifying *From Location*, *To Location*, and *Means of Transport* under *Filters*, and sort the list using the *Sort By* field.

6. In the *Create Multi-Stage Path* or *Copy Multi-Stage Path* dialog box, specify a from location and to location.

   A line appears in the *Single-Stage Paths and Lanes* list.
7. If you need to add one or more transshipment locations between the from and to locations, choose *Add Transshipment Location* one or more times.

   Each time you choose the button, a new line is added to the list. You can also choose *Remove Transshipment Location* to remove the existing transshipment locations.
8. In the *To* column, specify the transshipment locations.
9. In the *Single-Stage Path or Lane* column, specify the single-stage path or lane to be used for each location pair.

The means of transport for each single-stage path or lane is automatically entered.

10. Choose *Refresh Totals* to calculate and display the total distance, duration, and cost for the multi-stage path.
11. Save your entries.

Results

After you create multi-stage paths in a network model, SAP Transportation Resource Planning automatically generates the routes again. If a route has already been used in a repositioning activity, the activity may become invalid.

13.3.5.3 Disabling Multi-Stage Paths

Prerequisites

- The multi-stage paths that you want to enable or disable are available in the simulation-level or scenario-level network model.
- You can only disable or enable multi-stage paths that have the status `Original`.

Context

You can disable a multi-stage path. When SAP Transportation Resource Planning uses the multi-stage paths to automatically generate the routes used in repositioning activities, disabled multi-stage paths are not used.

Procedure

1. In the *Resource Balancing* work center, use the *Balancing Simulation* field at the upper left to select a balancing simulation.
2. Choose the *Network Model* tab at the right of the work center.
3. In the *Usage Level* field, if you want to work with the simulation-level network model, select *Balancing Simulation*. To work with the scenario-level network model, select *Scenario* and choose the target scenario in the *Scenarios* list.
4. Under *Paths and Lanes*, choose the *Multi-Stage Paths* tab.
5. In the multi-stage paths list, find the path that you want to disable.

> **i Note**
>
> You can filter the multi-stage paths list by specifying *From Location*, *To Location*, and/or *Means of Transport* under *Filters*.

To sort the multi-stage paths list, make your selection in the *Sort By* field and choose  or  at the right of the field.

6. Deselect the *Enabled* checkbox for the multi-stage path.

Results

After you disable the multi-stage paths in a network model, SAP Transportation Resource Planning automatically generates the routes again. If a route has already been used in a repositioning activity, the activity may become invalid.

13.3.5.4 Deleting Multi-Stage Paths

Prerequisites

- The multi-stage paths that you want to delete are available in the simulation-level or scenario-level network model.
- You can only delete multi-stage paths that have the status `User-Created`.

Procedure

1. In the *Resource Balancing* work center, use the *Balancing Simulation* field at the upper left to select the balancing simulation that you want to work with.
2. Choose the *Network Model* tab at the right of the work center.
3. In the *Usage Level* field, if you want to work with the simulation-level network model, select *Balancing Simulation*. To work with the scenario-level network model, select *Scenario* and choose the target scenario in the *Scenarios* list.
4. Under *Paths and Lanes*, choose the *Multi-Stage Paths* tab.
5. In the multi-stage paths list, find the path that you want to delete.

> **i** Note
>
> You can filter the multi-stage paths list by specifying *From Location*, *To Location*, and/or *Means of Transport* under *Filters*.
>
> To sort the multi-stage paths list, make your selection in the *Sort By* field and choose  or  at the right of the field. For example, you can sort the list by *Status* in descending order to make all the user-created multi-stage paths appear at the top of the list.

6. Choose *Delete* next to the multi-stage path.

Results

After you delete multi-stage paths in a network model, SAP Transportation Resource Planning automatically generates the routes again. If a route has already been used in a repositioning activity, the activity may become invalid.

13.4 Routes

A route is an actionable transportation capability based on multi-stage paths. Each route has an explicit start time.

Use

SAP Transportation Resource Planning automatically generates the routes for use in resource balancing. The routes used for a balancing simulation are generated based on the multi-stage paths in the simulation-level network model. The routes used for a specific scenario are generated based on the multi-stage paths in the scenario-level network model. Route generation is also controlled by your settings in the network setting group of the balancing simulation.

Routes are used in repositioning activities to determine scheduled departures, stop sequences, vehicle capacity, distance, duration, costs, and so on. You can specify a route for a manual repositioning activity. If you run automatic balancing, SAP Transportation Resource Planning selects a route for each proposed repositioning activity.

> **i** Note
>
> SAP Transportation Resource Planning generates the routes again when the multi-stage paths in a network model are updated. If a route has already been used in a manual or proposed repositioning activity, the activity may become invalid.

Finding Routes

Make sure a simulation-level or scenario-level network model is available in the *Resource Balancing* work center. Then choose the *Routes* tab at the right edge of the work center.

In the *Usage Level* field, if you want to find the routes available for the current balancing simulation, select *Balancing Simulation*. To find the routes available for a specific scenario, select *Scenario* and choose the target scenario in the *Scenarios* list.

You can search routes by specifying start and end time, and from and to locations under *Filters*, or selecting *Route ID* and specifying an ID. Choose *Find Routes* to display the search results in the *Routes* list.

Viewing Route Details

After finding a route in the *Routes* list, you can see the route ID, from and to locations, and start and end time for each route. The small icons under the route ID show the distance, duration, cost, and available capability of the route.

You can also choose  to view the lanes and single-stage paths that are used in the route.

For each lane or single-stage path in the route, you can click the from and to locations to view its details in the *Path Details* dialog box. In the dialog box, if it is a single-stage path, you can also choose *Edit* to modify the capacities for the scheduled departures of the path.

Map View for Routes

You can also view routes in the map view. To do this, choose *Routes* in the left-hand area of the *Resource Balancing* work center.

The map view shows the routes that you have found in the *Routes* list. The color of the routes indicates the means of transport. The start, end, and transshipment locations are represented by different icons. You can place your mouse cursor over a route or location to see more information.

You can enlarge the map view by choosing  and zoom in or out to focus on a particular area.

When the *Routes* list changes, update the map view by choosing *Refresh Routes on Map*.

13.5 Cabotage

Cabotage is a set of restrictions that define where foreign carriers are not allowed to carry containers or goods between locations in particular countries. Each country has its own cabotage policy, so SAP Transportation Resource Planning provides cabotage rules that you can maintain for a resource category.

The cabotage rules that impact a balancing simulation are listed on the *Cabotage* tab in the *Resource Balancing* work center.

Use

In SAP Transportation Resource Planning, cabotage impacts the running of automatic balancing (the generation of proposed repositioning activities) and route selection while creating repositioning activities manually.

Generation of Proposed Repositioning Activities

A proposed repositioning activity can only be generated for two locations if there is a valid route between those two locations. If you have maintained cabotage rules, then some routes may become invalid routes and any corresponding proposed repositioning activities will not be generated.

Route Selection While Creating Repositioning Activities Manually

Optionally, you can enter a route used by a manual repositioning activity; however, only valid routes can be selected.

Logic for Determining Invalid Routes

If any one of the route stages is invalid, then the entire route is invalid. The system determines if a stage is invalid as follows:

1. The system checks if the from location and the to location of the stage are in the same country. If not, then the stage is valid. If the from location and the to location are in the same country, the system continues to Step 2.
2. The system checks if the carrier is a foreign carrier. If not, then the stage is valid. If the carrier is a foreign carrier, the system continues to Step 3.
3. The system gets the country of the to location and the from location and the means of transport of the stage, and checks if a corresponding cabotage rule is maintained. If yes, then the stage is invalid.

13.6 Statuses in Resource Balancing

In the *Resource Balancing* work center, various statuses are used to indicate the current status of simulations, scenarios of simulations, and activities of scenarios. The following table lists all of the possible statuses for simulations, scenarios, and activities:

Type of Object	Status	Description
Balancing Simulation	Draft	The simulation is newly created, and no scenario has been submitted to the logistics system.
	Submitted	One and only one scenario of the simulation has been submitted to the logistics system.
	Finalized	The simulation has been finalized.
Scenario	New	The scenario is newly created.
	Invalid	A non-submitted activity of the scenario is invalid.
	Submitted/Synchronized	The scenario has been submitted or synchronized to the logistics system.
	Partly Submitted/Synchronized	Some of the activities of the scenario have been submitted or synchronized successfully to the logistics system.
	Submitting/Synchronizing Failed	The submitting or synchronizing to the logistics system has failed for all of the activities of the scenario.

Type of Object	Status	Description
	Changed but Not Synchronized	After submitting, there have been changes to the submitted activities of the scenario.
Activity	Created	The activity is newly created.
	Changed	There are changes to the non-submitted activity.
	Activity Time Invalid	The non-submitted activity has expired as the starting time is already in the past.
	Activity Location Invalid	The non-submitted activity has an invalid location.
	Both Time and Location of the Activity are Invalid	Both the time and the location of the activity are invalid.
	Submitted/Synchronized	The activity has been submitted or synchronized to the logistics system successfully.
	Submitting/Synchronizing Failed	The submitting or synchronizing to the logistics system has failed for the activity.
	Changed but Not Synchronized	The submitted activity has been changed and it has not been synchronized.
	Deleted	The submitted activity has been deleted.
Scenario Action	Draft	The scenario has not been submitted.
	Submitted	The scenario has been submitted.
	Synchronized	The scenario has been synchronized.

14 Administrator Tasks

Before business users can properly work with SAP Transportation Resource Planning, the system administrator must perform some fundamental tasks. This section describes each of these administrator tasks.

Related Information

Logistics System Settings [page 224]
Region Hierarchy [page 226]
Regions [page 228]
Specifying Map Providers [page 231]
Resource Categories [page 232]
Users and Roles [page 245]
Object Registration [page 250]
Creating Extended Columns [page 256]
Schedule Integration [page 257]
Mass Data Upload [page 259]
Equipment Availability Check Configuration [page 258]
Archiving Data [page 313]
Monitoring [page 318]
End-to-End Tracing [page 323]

14.1 Logistics System Settings

SAP Transportation Resource Planning reads logistics data from your logistics system. You need to configure a connection between SAP Transportation Resource Planning and your logistics system to enable logistics data to be synchronized between the two systems.

To configure the connection, you need to specify the following settings:

- System ID
- Client code to identify the server where your logistics system resides

SAP Transportation Resource Planning can be connected to multiple SAP Transportation Management (SAP TM) systems. You can create multiple logistics system settings to connect with specific logistics systems.

Logistics system settings can be specified in the SAP HANA back-end system during the system configuration process. For more information, see the master guide available at https://help.sap.com/trp500.

You can also configure logistics system settings in SAP Transportation Resource Planning under *Administration* > *General Settings*.

Related Information

Adding Logistics System Settings [page 225]
Resource Categories [page 232]

14.1.1 Adding Logistics System Settings

Add a logistics system and specify the connection settings. These settings allow data to be synchronized between SAP Transportation Resource Planning and the logistics system.

Context

> **i Note**
>
> If your logistics system is SAP Transportation Management (SAP TM), you can connect to multiple logistics systems.

Procedure

1. Go to *Administration* > *General Settings*.
2. On the *Logistics System Settings* tab, choose *Add*.
3. Enter a name and optionally a description.
4. Enter the system ID and the client code of the server where your logistics system resides.
5. Save your entries.

Next Steps

You can now use the configured logistics system in the system connection settings for your resource categories.

Related Information

Resource Categories [page 232]

14.2 Region Hierarchy

To plan and manage your transportation resources, you need information about where your resources are located. SAP Transportation Resource Planning uses a geographic hierarchy to provide you with the necessary level of detail for monitoring and tracking your resources.

The geographic hierarchy is made up of the following elements:

- Depot: The smallest unit for organizing transportation resources. A depot is a location at which transportation resource stock is gathered, received, and redistributed. Depots are also referred to as locations.
- Region: Regions are used to structure locations hierarchically. A region consists of a parent location and its child locations.

These geographic structures correspond with the roles provided by SAP Transportation Resource Planning. System administrators can tailor the geographic structure to meet your administrative needs and assign roles to users accordingly. The region hierarchy is a geographic structure consisting of regions with hierarchical levels. Regions can be assigned to a regional planner role, and added to a location group or filter.

You must be a system administrator to work with the region hierarchy in SAP Transportation Resource Planning.

Related Information

Initial Creation of the Region Hierarchy and Synchronization [page 226]
Modifying the Region Hierarchy [page 227]

14.2.1 Initial Creation of the Region Hierarchy and Synchronization

As the basic underlying structure, SAP Transportation Resource Planning uses the region hierarchy that is in place in your logistics system.

> **i Note**
>
> If SAP Transportation Resource Planning is connected to multiple SAP Transportation Management (SAP TM) systems, the region hierarchy is from the logistics system that has the data category *Master Data* or *Master Data and Transactions* maintained for the resource category.

If your logistics system is SAP TM, there are two options for handling the region hierarchy when SAP Transportation Resource Planning is installed and configured:

- Your SAP Transportation Resource Planning system uses the `RELH_ZONE` hierarchy in SAP TM.
  In this case, you are not allowed to modify this hierarchy in SAP Transportation Resource Planning. SAP Transportation Resource Planning can recognize locations for any region at any node level in the hierarchy.

- Your SAP Transportation Resource Planning system uses a region hierarchy that is not the `RELH_ZONE` hierarchy in SAP TM.
  In this case, you can modify the hierarchy in SAP Transportation Resource Planning. However, SAP Transportation Resource Planning can only use and display locations for regions at the lowest hierarchy level. Any location information for a higher-level region is ignored.

Initial Creation of the Region Hierarchy

The region hierarchy is created in the SAP HANA back-end system during the system configuration process. For more information, see the master guide available at http://help.sap.com/trp500.

You can also specify a region hierarchy in the *System Connection Settings* in SAP Transportation Resource Planning under *Administration* > *Resource Categories*.

Synchronizing Data

Because SAP Transportation Resource Planning uses a region hierarchy that is in your logistics system, hierarchy updates must be synchronized between the two systems. To do this, go to *Locations* > *Region Hierarchy* and choose *Synchronize* at the upper right.

Related Information

Resource Categories [page 232]

14.2.2 Modifying the Region Hierarchy

Prerequisites

- You must be a system administrator to work with the region hierarchy in SAP Transportation Resource Planning.
- Initial creation of the region hierarchy has been completed as part of system configuration.
- You are not using the SAP Transportation Management (SAP TM) hierarchy `RELH_ZONE`.

> **i Note**
>
> Saving changes in the region hierarchy may take some time.
>
> It is highly recommended that you maintain the region hierarchy before business users make any resource planning. After you change the region hierarchy, it may be necessary to re-create location filters, plans, balancing simulations, and so on.

Procedure

1. Go to *Locations* > *Region Hierarchy* and select the region hierarchy name.

   This opens the detailed view of the hierarchy. You can use the plus sign next to the regions to expand the hierarchical list.
2. Choose *Edit*.
3. On the left, you can change the description.

   Note that you are not allowed to change the hierarchy name.
4. In the pane at the right, you can do the following:
   - To add top-level regions, choose *Add* above the list, select regions in the dialog box, and then choose *OK*.
   - To add child regions to a region, choose the plus symbol next to the region in the *Actions* column. Select the child regions that you want to add, and choose *OK*.
   - To remove a region from the hierarchy, choose  next to the region in the *Actions* column.
5. Save your entries.

14.3 Regions

In SAP Transportation Resource Planning, the lowest-level geographic object is location. A region is a group of locations and can be added to a location group or location filter.

> **i** Note
>
> The *Regions* view shows all the regions that were created by users and synchronized from the backend logistics system. However, if you want to use a region in SAP Transportation Resource Planning, the region must be included in the region hierarchy. If you want to use a location, the location must be included in a relevant region.

A region is defined by the following factors:

- Region name
- Region description
- Locations included in the region, which can be added by three methods:
  - By locations: You can directly select the locations to add to the region.
  - By administrative divisions: You can select administrative divisions. All the locations in the divisions are added to the region.
  - By postal codes: You can set a postal code range. All the locations whose postal codes fall into that range are added to the region.

  You can also combine these methods. For example, you can add several locations directly, and then select administrative divisions to include all locations inside those divisions, and finally set a postal code range to add more locations to the region.
- Primary location, which is used to represent the entire region.

You must have the role of system administrator in SAP Transportation Resource Planning to work with regions.

Related Information

Creating Regions [page 229]
Modifying Regions [page 230]
Deleting Regions [page 230]

14.3.1 Creating Regions

Prerequisites

- You must have the role of system administrator in SAP Transportation Resource Planning to work with regions.
- Initial creation of the region hierarchy has been completed as part of system configuration.

Procedure

1. Go to *Locations* > *Regions*.
2. Choose *Create Region*.
3. Enter a name and description for the new region.
4. At the right, use any of the following methods to select the locations that you want to add to the region:
   - In the *Locations* tab, choose *Add*. Select the locations that you want to add and choose *OK*.

     To view selected locations on a map, choose  above the list.
   - In the *Administrative Divisions* tab, choose *Add*. Select the divisions that you want to add and choose *OK*.

     To view selected divisions on a map, choose  above the list.
   - In the *Postal Codes* tab, choose *Add*. Then enter a country and the starting and ending postal code numbers for a range, and choose *OK*. To view the locations selected by postal codes, choose  above the list.
5. In the *Primary Location* tab, specify a primary location if necessary.
6. Save your entries.

Results

Before using the new regions in locations filters, you need to add them to the region hierarchy first. SAP Transportation Resource Planning ignores regions that are not in the region hierarchy.

> **i** Note
>
> It is highly recommended that you maintain regions and region hierarchy before business users make any resource planning. After you make changes to regions and region hierarchy, location filters, plans, balancing simulations, etc. may need to be re-created.

14.3.2 Modifying Regions

Prerequisites

You must have the role of system administrator in SAP Transportation Resource Planning to work with regions.

Procedure

1. Go to *Locations* > *Regions*.
2. When you have found the region that you want to change, click it to open the detailed view.
3. Choose *Edit*.
4. Make your changes and save your entries.

Results

If you change a region that is used in a location group or location filter, and the location group or filter is already used in a scheduled plan, the execution results for the plan become obsolete. You can execute the plan again manually or wait until the next execution to get the latest results. This also affects any virtual plans in which the scheduled plan is included.

14.3.3 Deleting Regions

Prerequisites

You must have the role of system administrator in SAP Transportation Resource Planning to work with regions.

> **Note**
>
> In some cases, you may not be able to delete a region. This is the case if any of the following applies for the region:
>
> - It consists of sublevel regions in the region hierarchy.
> - It is included in a location group.
> - It is included in a location filter.
> - It is referenced by a plan.

Procedure

1. Go to *Locations* > *Regions*.
2. When you have found the region that you want to delete, click it to open the detailed view.
3. Choose *Edit*.
4. Choose *Delete*.

14.4 Specifying Map Providers

Prerequisites

- You must have the role of system administrator in SAP Transportation Resource Planning to specify map providers.
- You have decided which map provider to use and obtained a license directly from the provider. You have got the URLs for accessing map services from the provider.

Context

SAP Transportation Resource Planning does not include a map service. When it displays a map view, the map image, which is independent from business data, is downloaded at runtime from a user-specified map provider.

You must decide which map provider to use, obtain a license directly from the provider, and get the URLs for accessing its map service. Then you can specify the URLs in SAP Transportation Resource Planning. The software accesses the specified URLs to download the required map image.

You can maintain multiple map providers in SAP Transportation Resource Planning, but you can only set one of them as the active provider. You can specify multiple URLs for each map provider. SAP Transportation Resource Planning tries these URLs one by one until it finds the required map service.

Procedure

1. Go to ▶ *Administration* ▶ *General Settings* ▶.
2. Under *Map Providers*, choose *Create*.
3. Specify a map provider name and, if necessary, a description and the copyright information at the left in the *Map Provider* window.
4. Choose *Add* and enter a map provider URL in the table. You can specify multiple URLs for the same map provider.

   > **i** Note
   >
   > If the URL for accessing your SAP Transportation Resource Planning user interface is configured as an HTTP address, your map provider URL should start with **`http://`**. If the URL for accessing SAP Transportation Resource Planning is an HTTPS address, start your map provider URL with **`https://`**. If you are not sure, you can add both HTTP and HTTPS URLs for each map provider.

5. If you want to activate this map provider for SAP Transportation Resource Planning, choose *Enabled* at the left in the *Map Provider* window.
6. Save your entries. If asked whether you want to disable the previously enabled map, choose *OK*.

14.5 Resource Categories

A resource category is used to distinguish between the usage types of different classes of transportation resources. For example, if you have a resource category for containers, you use this category to organize different container types at a higher level.

A resource category is defined by the following settings:

- Resource category type
  This setting defines the category of resources that a user can work with when the resource category is selected, including:
  - *Containers*: used to organize different types of containers.
  - *Railcars*: used to organize different types of railcars.
  - *Generics*: used to organize other transportation resources, for example, trailers or air containers.
- Resource types
  This setting defines the specific resource types that are included in a resource category.
- Base resource type
  This setting is used to calculate preliminary costs in network models. The real costs are then adjusted according to the specific resource types.
- Lease contracts
  This setting determines whether the *Resource Visibility* work center contains a *Lease Contracts* view to show lease contracts information when the resource category is selected.
- System Connection Settings

The settings listed in the table below control how data is synchronized with your logistics system. Before configuring these settings, you must add your logistics system details under *Administration* > *General Settings*.

> **Note**
>
> If your logistics system is SAP Transportation Management (SAP TM), you can connect to multiple logistics systems and use those systems for different purposes.

Setting	What It Means
Mode	Specifies the connection mode of the landscape as follows: • *Embedded Mode* The logistics system and SAP Transportation Resource Planning are using the same SAP HANA database. Therefore, in embedded mode only one logistics system is allowed to connect with SAP Transportation Resource Planning for this resource category. • *Sidecar Mode* The logistics system and SAP Transportation Resource Planning are using different SAP HAHA databases. You can maintain multiple logistics systems with multiple clients in the resource category. As a prerequisite, the master data must be the same across the multiple SAP TM systems maintained in one resource category. Therefore, only one master data entry is permitted. **Note** You can configure connections in only one mode. It is not possible to have system connections in both embedded mode and sidecar mode.
Logistics System	Specifies the logistics system to be used. If you have selected *Embedded Mode*, then you can only add one logistics system. If you have selected *Sidecar Mode*, then you can add multiple logistics systems (SAP TM only).
System ID	Displays the system ID of the logistics system. This system ID is configured in the *Logistics System Settings* under *Administration* > *General Settings*.
Client Code	Displays the client code of the logistics system. This client code is configured in the *Logistics System Settings* under *Administration* > *General Settings*.

Setting	What It Means
Data Category	Specifies the type of data to be synchronized as follows: • *Master Data and Transactions* • *Master Data* • *Transactions* Each resource category should have only one master data system.
Region Hierarchy	Specifies the region hierarchy for the logistics system.
Leading System	Indicates the system to which repositioning activities should be synchronized. You can specify the relevant logistics system for repositioning activities either by selecting the *Leading System* checkbox or by entering a determination rule in the *Respositioning System Determination* field. If there is no determination rule maintained, then the leading system will be the default repositioning target system.
Repositioning System Determination	Specifies a rule for determining which logistics system is relevant for the synchronization of repositioning activities. This is an alternative to using the *Leading System* checkbox. The rule needs to be registered in *Administration* > *Object Registration*. This field is only enabled for sidecar mode when there are multiple system connections. It is not applicable in embedded mode, as there is only one system connection.

- Extended columns
  This setting determines what extended columns are shown in the *Resources* and *Transportation Demand* views in the *Resource Visibility* work center when the resource category is selected.
- Registered objects
  This setting specifies the registered objects that a user can use when the resource category is selected. Registered objects include rules and calculation models.
- Repositioning settings
  The settings listed in the table below control the repositioning activities for the resource category in resource balancing.
  You can also use these settings to predefine the configurations for creating empty repositioning orders in your logistics system. *Forwarding Order Type* and other relevant fields for empty repositioning orders generated in the logistics system can either be determined from the repositioning settings that you define here or you can develop your own customized logic in your logistics system.

Setting	What It Means
Item Category	Provides a classification of different items that the system can process in delivery processing.
Movement Type	Specifies the stages for which a logistics service provider (LSP) is responsible. The LSP organizes the transportation of cargo for these stages. Furthermore, the movement type specifies which stage types are valid for the business document.
UoM	Specifies the unit of measure.
Sales Organization	Specifies the organizational unit in logistics that structures the company according to its sales requirements. A sales organization is responsible for selling materials and services.
TRQ Category	Provides a classification of transportation requests.
TRQ Item Type	Specifies the item types that can be assigned to transportation requests.
Forwarding Order Type	Provides a classification of an order from an ordering party to a carrier or logistics service provider to transport goods from a shipper to a consignee in accordance with agreed terms and conditions.
To Build TU	Specifies to build a business document that represents a transportation demand.
Traffic Direction	Specifies whether cargo is being imported or exported from the perspective of the contracting party.
Transportation Mode Category	Specifies how a product is transported. For example: road, rail, sea, or air.
Transportation Mode	Specifies how a product is specifically transported by road, rail, sea, air, and so on. For example, for the transportation mode category *Sea*, you can define the transportation mode *Sea - Container Ship*.

> **i Note**
>
> In addition to the repositioning settings listed above, you can use the Business Add-In (BAdI) `/TRP/BADI_REPOSITION` to determine further details that are required for empty repositioning forwarding orders based on your business requirements.

- Cabotage rules

The following settings define the cabotage rules used in resource balancing:

Setting	What It Means
Country	Specifies the country code from SAP Transportation Management. You can use the asterisk as a wildcard here to indicate that the cabotage rule applies to all countries.
Country Name	Provides a description of the country.
Means of Transport Code	Specifies the code for the means of transport from SAP Transportation Management. You can use the asterisk as a wildcard here to indicate that the cabotage rule applies to all means of transport.
Means of Transport Description	Provides a description of the means of transport.
Cabotage Check	Specifies whether the cabotage rule is used by resource balancing.

Example

Country	*Country Name*	*Means of Transport Code*	*Means of Transport Description*	*Cabotage Check*
US	America	0005	Ship	Yes
FR	France	*	*	Yes
*	*	0003	Airplane	Yes

- Variable parameters
  The following settings define the variable parameters used for the calculation of overdue activities:

Setting	What It Means
Average Stay	Used in pick-up and return optimization and specifies the average stay for suggested locations.
Overdue Empty Return	Used in supply and demand calculations and specifies the amount of time to be passed for TUs to be regarded as overdue for empty return.
Overdue Inland Repositioning In	Used in supply and demand calculations and specifies the amount of time to be passed for TUs to be regarded as overdue for inland repositioning in.

Setting	What It Means
Overdue Maritime Repositioning In	Used in supply and demand calculations and specifies the amount of time to be passed for TUs to be regarded as overdue for maritime repositioning in.
Overdue Empty Pick-Up	Used in supply and demand calculations and specifies the amount of time to be passed for TUs to be regarded as overdue for empty pick-up.
Overdue Inland Repositioning Out	Used in supply and demand calculations and specifies the amount of time to be passed for TUs to be regarded as overdue for inland repositioning out.
Overdue Maritime Repositioning Out	Used in supply and demand calculations and specifies the amount of time to be passed for TUs to be regarded as overdue for maritime repositioning out.

Use

A system administrator of SAP Transportation Resource Planning creates resource categories to determine which functions are relevant for different resources. A business user who logs on to SAP Transportation Resource Planning must first select a resource category. Then the user can start working with the resources defined in the selected category.

Managing Resource Categories

To create and maintain resource categories, go to *Administration* > *Resource Categories*.

Related Information

Creating and Enabling Resource Categories [page 238]
Modifying Resource Categories [page 239]
Selecting a Resource Category [page 21]
Disabling Resource Categories [page 240]

14.5.1 Creating and Enabling Resource Categories

Prerequisites

- You must be a system administrator to create and enable resource categories.
- You have added your logistics system settings under *Administration* > *General Settings*.
- If you want to enable extended columns or registered objects for a resource category, the extended columns or registered objects must be available.

Procedure

1. Go to *Administration* > *Resource Categories*.
2. Choose *Create* and the resource category type.
3. Specify a resource category name and, if necessary, a description at the left in the *Resource Category* dialog.
4. If you want to access lease contracts information for the resource category in the *Resource Visibility* work center, select *Include Lease Contracts*.
5. Under *System Connection Settings*, choose the mode for your landscape as follows:
   - *Embedded Mode*: You have one logistics system with multiple clients.
   - *Sidecar Mode*: You have multiple logistics systems with multiple clients. This option is only possible when your logistics system is SAP Transportation Management (SAP TM).
6. Under *System Connection Settings*, choose *Add*, and then add one or more system connections as required for your landscape.
7. Under *Resource Settings*, choose *Add* to add resource types.
8. Choose a base resource type.
9. Under *Extended Columns* and *Object Registrations*, choose *Add* to add the extended columns and registered objects that you want to use for the resource category.
10. Under *Repositionings*, specify a value for each setting.
11. Under *Cabotage Rules*, specify the cabotage rules to be used for different means of transport in different countries.
12. Under *Variable Parameters*, specify a value for each parameter.
13. Enable the resource category by selecting the *Enabled* option at the left.
14. Save your entries.

Results

After the resource category is created and enabled, users can select it by choosing the *Resource Category* symbol in the upper-right corner of the application.

Once a resource category is created, you cannot delete it, but you can disable it. A disabled resource category is not available when users choose the *Resource Category* symbol in the top-right corner of the window.

Related Information

Resource Categories [page 232]
Selecting a Resource Category [page 21]
Disabling Resource Categories [page 240]

14.5.2 Modifying Resource Categories

Prerequisites

- You must be a system administrator to modify resource categories.
- If you want to add extended columns or registered objects to a resource category, the extended columns or registered objects must be available.

Procedure

1. Go to *Administration* > *Resource Categories*.
2. When you have found the resource category that you want to change, click it to open the detailed view.
3. Choose *Edit*.
4. Make your changes and save your entries.

14.5.3 Disabling Resource Categories

Prerequisites

- You must be a system administrator to modify resource categories.
- If you want to add extended columns or registered objects to a resource category, the extended columns or registered objects must be available.

Procedure

1. Go to *Administration* > *Resource Categories*.
2. When you have found the resource category that you want to change, click it to open the detailed view.
3. Choose *Edit*.
4. Disable the resource category by clearing the *Enabled* checkbox at the left..
5. Save your entries.

Results

Once a resource category is disabled, it is not available for selection when users choose the *Resource Category* symbol in the upper-right corner of application.

14.6 General Parameters

SAP Transportation Resource Planning uses various parameters. These parameters can be used to enable and disable certain features (such as migration mode and lane determination) or to set performance-related thresholds.

To view or change the value of a parameter, go to *Administration* > *Parameters*. The available parameters are listed in the table below:

Category	Parameter	Possible Values	Additional Information
System Upgrade	*Migration Mode*	A checkbox with the following possible values: • Selected: Migration mode is activated • Deselected: Migration mode is not activated	When migration mode is enabled, certain validations are disabled for the migration data.
TRP Lane Determination	*Activate Lane Determination*	A checkbox with the following possible values: • Selected: Lane determination is activated • Deselected: Lane determination is not activated	
Packet Size for TU Update	*Pick-Up Return Packet Size*	A number	
Location Pair Group	*Activate Location Group*	A checkbox with the following possible values: • Selected: Location groups are activated • Deselected: Location groups are not activated	If location groups are activated, please ensure that all the locations are assigned to a location group. Otherwise, the suggested location assignment may be incorrect.
	Field Group Name	Text	Enter the Customizing field name for location pair groups in the table.
Supply and Demand	*Instant Plan Tolerance Time (Seconds)*	A number with the default value 7200. You can enter a value from 0 to 864000.	If you have any data inconsistency issues, this parameter might help. For better performance, maintain it as 0.

Category	Parameter	Possible Values	Additional Information
	EAC Check Instant Parallel Thread	A number with the default value 5. You can enter a value from 1 to 10.	
Others	*Pick-Up & Return Harmonized Tolerance (Days)*	A number with the default value -3	Examples: • X means disable • -3 means last 3 days
	Optimize TU Batch Max. TU Count	A number with the default value 10000	
	Optimize TU Batch Max. Process Records	A number	

14.6.1 Activating Location Pair Groups in Pick-Up/Return Optimization

Activate the location pair group functionality for the pick-up and return optimization process.

Prerequisites

You have defined the location groups in your location master data.

Context

You can define location pair groups for the pick-up and return optimization process. If you activate the location pair group setting, then during the optimization process the assignment is done as follows:

- For pick-up: A location will be assigned as a suggested location if it belongs to the same group as the destination location.
- For return: A location will be assigned as a suggested location if it belongs to the same group as the source location.

Procedure

1. Go to *Administration* > *Parameters*.

In the list of parameter categories, you should see *Location Pair Group*.

2. In the *Location Pair Group* category, choose the *Edit* button for the *Activate Location Group* parameter, and then select the checkbox.
3. Save your entries.
4. In the *Location Pair Group* category, choose the *Edit* button for the *Field Group Name* parameter, and then enter the name of the field from the table `/SAPAPO/LOC` where you have defined the grouping.
5. Save your entries.

Related Information

General Parameters [page 241]
Pick-Up/Return Rulesets [page 155]
Fields for Pick-Up/Return Rulesets [page 160]

14.6.2 Activating TRP Lane Determination in Pick-Up/Return Optimization

Activate the lane determination functionality provided by SAP Transportation Resource Planning for the pick-up/return optimization process.

Context

By default, SAP Transportation Resource Planning uses the standard process for determining the lane between two locations. In the standard process, a call is made to the logistics system to fetch the lane information.
If you would like to use the leaner lane determination process provided by SAP Transportation Resource Planning, you need to activate it in the common settings for the pick-up and return optimization process. SAP Transportation Resource Planning lane determination is done as follows:

1. Get all the lanes for the location pair or lanes for the zones of the location pair maintained in the lane configuration.
2. If distance and duration is fixed in the lane, consider that distance and duration.
3. If distance and duration is not fixed, calculate the distance and duration based on the coordinates maintained for the location and the distance factor and average velocity maintained for the means of transport.

> **i Note**
>
> SAP Transportation Resource Planning lane determination does not consider any Business Add-In (BAdI) implementation that has been implemented for lane determination in the logistics system.

Procedure

1. Go to *Administration* > *Parameters*.

   In the list of parameter categories, you should see *TRP Lane Determination*.
2. In the *TRP Lane Determination* category, choose *Edit* and then select the *Activate TRP Lane Determination* checkbox.
3. Save your entries.

Related Information

General Parameters [page 241]
Pick-Up/Return Rulesets [page 155]
Fields for Pick-Up/Return Rulesets [page 160]

14.6.3 Maintaining Packet Size for TU Update

Maintain the packet size for the transportation unit (TU) update in each batch.

Context

When the list of TUs for update is sent to the logistics system during the processing of manual or scheduled rulesets, there could be a large number of TUs. You can use this setting to maintain the packet size and limit the number of TUs to be sent in each batch. If you do not specify the packet size, all of the TUs are sent together in one batch to the logistics system.

Procedure

1. Go to *Administration* > *Parameters*.

   In the list of parameter categories, you should see *Packet Size for TU Update*.
2. In the *Packet Size for TU Update* category, choose *Edit* and then enter the *Pick-up Return Packet Size*.
3. Save your entries.

Related Information

General Parameters [page 241]

Pick-Up/Return Rulesets [page 155]
Fields for Pick-Up/Return Rulesets [page 160]

14.7 Users and Roles

Users

A user consists of a profile that provides settings for preferences and the corresponding role assignments. There are two types of users in SAP Transportation Resource Planning:

- Administrator
- Business users with the role of regional planner

> **i Note**
>
> SAP Transportation Resource Planning does not support the deletion of users. You can create or delete users in your integrated logistics system. For more information about user management, see the master guide at http://help.sap.com/trp500.

Roles

Roles allow you to tailor user privileges to correspond with their planning responsibilities. Each regional planner needs at least one of role of each of the following types:

- Region-specific
- Resource-specific

Managing Users and Roles

You must be a system administrator to work with user data and roles in the *Administration* work center.

Related Information

Assigning Roles to Users [page 247]
Creating Roles [page 248]
Modifying Roles [page 249]
Deleting Roles [page 249]

14.7.1 Creating Business Users

Business users are created or changed in SAP Transportation Resource Planning. Business users are created with the role *Regional Planner*.

Context

> **i** Note
>
> Administrator users can only be created from the SAP HANA back end.
>
> When you delete a user in the SAP HANA back-end system, the user is automatically deleted in SAP Transportation Resource Planning. No additional manual action is necessary.

Procedure

1. Go to *Administration* > *Users*.
2. Choose *Create User* > *Regional Planner*.
3. Enter the user name, valid-from date, and valid-to date.
4. Maintain the user profile.
5. Save your entries.

Related Information

User Profiles [page 246]
Assigning Roles to Users [page 247]
Enabling Users to View Personal Data [page 247]

14.7.2 User Profiles

User profiles consist of user attributes in SAP Transportation Resource Planning.

To maintain the preferences, go to *Administration* > *Users*. Find the user that you want to modify, open the detailed view, and choose *Edit*.

Related Information

Creating Business Users [page 246]

14.7.3 Assigning Roles to Users

Prerequisites

- You must be a system administrator to work with user data and role assignments in SAP Transportation Resource Planning.
- Each user should have at least one resource-specific role and one region-specific role.

Context

You use roles to tailor user privileges to correspond with their planning responsibilities.

Procedure

1. Go to *Administration* > *Users*.
2. Find the user that you want to modify and open the detailed view, and choose *Edit*.
3. Choose the *Roles* tab.
4. Under the target role type, choose *Add*.
5. Select one or more roles in the dialog box and choose *OK*.
6. Save your entries.

14.7.4 Enabling Users to View Personal Data

Prerequisites

You must be a system administrator to grant data privilege to users in SAP Transportation Resource Planning.

Context

In SAP Transportation Resource Planning, a user can view the personal data of other users (data subjects), such as user ID, only when the following two requirements are both met.

- The data subject has given the consent for the application to collect and process his or her personal data, and the consent is within its validity period. User consents are managed in the *Data Protection Privacy* work center. For more details, see User Consents [page 325].
- The system administrator must enable the user to view other users' personal data. The procedure is shown below.

Procedure

1. Go to *Administration* > *Users*.
2. Find the user that you want to modify and open the detailed view, and choose *Edit*.
3. Choose the *Data Privilege* tab.
4. Under the target role type, choose *Add*.
5. Enable *Privilege to view personal data with user consent*.
6. Save your entries.

14.7.5 Creating Roles

Prerequisites

You must have the role of administrator to create roles in SAP Transportation Resource Planning.

Procedure

1. Go to *Administration* > *Roles*.
2. Choose *Create Role* and the role type.
3. Specify a role name and, if necessary, a description at the left in the *Role* window.
4. At the right, do one of the following, depending on the type of role that you are creating:
   - For the region-specific type, select the regions that you want to assign to the role.

     You can choose  to narrow down the list or the page numbers or arrows at the bottom to browse the rest of the list.
   - For the resource-specific type, select the resource types that you want to assign to the role.

   To view selected regions, choose the  symbol.

5. Save your entries.

Results

You can now assign the role to users.

14.7.6 Modifying Roles

Prerequisites

You must have the role of administrator to modify roles in SAP Transportation Resource Planning.

Procedure

1. Go to *Administration* > *Roles*.
2. Find and open the role that you want to change.
3. Choose *Edit*.
4. Change the assigned regions or resource categories by adding or removing them in the list. You can also remove assigned items by choosing *Remove* in the *Actions* column.
5. Save your entries.

14.7.7 Deleting Roles

Prerequisites

- You must have the role of administrator to delete roles in SAP Transportation Resource Planning
- You cannot delete a role if it has been assigned to a user.

> **i** Note
>
> Before you delete a role, you can check the *Where-Used* list for an overview of the users to which the role is assigned. You can choose  to make sure that the results are up to date.

.

Procedure

1. Go to *Administration* > *Roles*.
2. When you have found the role that you want to delete, click it to open the detailed view.
3. Choose *Edit*.
4. Choose *Delete*.

14.8 Object Registration

SAP Transportation Resource Planning delivers a set of business rules and calculation models to support resource visibility and optimization. These objects are delivered as runtime objects in the SAP HANA back-end system. You must register them into rules and models for SAP Transportation Resource Planning in order to use them.

In addition, you can define your own business rules and calculation models according to your business needs. User-defined objects also need to be registered before you can use them.

The following objects can be registered:

- Calculation models
- Supply and demand alert rules
- KPI alert rules
- Location determination rules
- Resource stock rules (alert/bubble)
- SD KPI plan bubble view
- Availability check rules (plan/level)
- Exclusion rule
- Extended columns for pick-up
- Extended columns for return
- Selection date criteria for pick-up
- Selection date criteria for return
- Manage TU selection in pick-up/return

Managing Object Registration

To register objects, modify the registration, and unregister objects, go to *Administration* > *Object Registration*.

Related Information

Registering Objects [page 251]
Modifying Object Registration [page 253]
Modifying HRF Rules for Registered Objects [page 253]
Deleting Object Registration [page 254]

14.8.1 Registering Objects

Prerequisites

- You must have the role of system administrator in SAP Transportation Resource Planning.
- The calculation models and rules that you want to register must be available in the SAP HANA back-end system.
- For extended columns for pick-up and return:
  - The structure and procedure that you want to register must be available in the SAP HANA back-end system.
  - The structure that you register must be the output parameter of the corresponding registered procedure.
  - The output structure must have a column called `TU_ID` of type NVARCHAR(20) along with the extended columns.
- For selection date criteria for pick-up and return:
  - The procedure that you want to register must be available in the SAP HANA back-end system.
  - The procedure must have following input parameters:
    - `VAL_MOT_CAT`
      If the resource category is *CN*, `VAL_MOT_CAT` is **3**. If the resource category is *RC*, `VAL_MOT_CAT` is **2**.
    - Start time
    - End time
  - The output of the procedure must be saved to the global temporary table `sap.tm.trp.db.pickupreturn::t_ord_fil_by_loc_return_temp`.

  For an example, see the procedure `p_get_tu_for_return_opt_vad`.
- For manage TU selection in pick-up and return:
  - The procedure that you want to register must be available in the SAP HANA back-end system.
  - The procedure must have the input parameter `RULE_ID` (the ID of the pick-up and return ruleset).
  - All of the original TUs (without any filtering) are stored in the global temporary table `sap.tm.trp.db.pickupreturn::t_original_tu_temp`, and the excluded TUs are stored in the global temporary table `sap.tm.trp.db.pickupreturn::t_assign_result_temp`. These tables can be accessed in the custom procedure and be modified as required.
  - The final TUs that are to be selected according to the logic must be saved to the global temporary table `sap.tm.trp.db.pickupreturn::t_original_tu_temp`.

> **Note**
>
> For more information about object registration in the back-end system, see the master guide available at http://help.sap.com/trp500.

Procedure

1. Go to *Administration* > *Object Registration*.
2. Choose *Register Object* with the object type that you want to work with.
3. Enter a name and, optionally, a description.
4. Enter the object access type for selecting the container where the procedure is present.
5. Enter the required details for locating the object from the back-end system.

   > **Note**
   >
   > For selection date criteria for pick-up and return, you need to register the stored procedure that fetches the required transportation units (TUs). If you want to filter based on vessel arrival date, you can register the following details:
   > - *Object Access Type*: `TRP HDI Container`
   > - *Stored Procedure*: `sap.tm.trp.db.pickupreturn::p_get_tu_for_return_opt_vad`

6. For objects of type *Extended Columns for Pick-Up*, *Extended Columns for Return*, and *Manage TU Selection in Pick-Up-Return*, select the *Activate Configuration* checkbox for the registration to take effect.

   Only one configuration can be active at a time.

   > **Note**
   >
   > You can only use the custom procedure to select TUs when an object of the type *Manage TU Selection in Pick-Up-Return* is active. Otherwise the TUs are selected by the default logic.

7. Save your entries.

Results

The objects are available for use in the application.

Next Steps

For extended columns for pick-up and return:

- Once you have activated an entry, the new columns that are part of the extended structure are displayed under *Administration* > *Extended Columns*. For each extended column displayed here, you can edit the description that is displayed on the *Location Assignment* tab in the *Pick-Up and Return* work center.

- If you add a new column to an active configuration at a later point in time, you must choose *Regenerate* on the *Register Object* screen to make the column visible on the *Location Assignment* tab.

14.8.2 Modifying Object Registration

Prerequisites

You must have the role of system administrator in SAP Transportation Resource Planning to modify object registration.

Procedure

1. Go to *Administration* > *Object Registration*.
2. When you have found the registered object that you want to change, click it to open the detailed view.
3. Choose *Edit*.
4. Make your changes and save your entries.

> **i** Note
>
> Editing is only possible from the user interface if the new stored procedure is in the same container as that of the old one; otherwise you need to create a new object.

14.8.3 Modifying HRF Rules for Registered Objects

Prerequisites

You must have the role of system administrator in SAP Transportation Resource Planning.

Context

Some registered objects are based on the rules predefined or created in the SAP HANA Rules Framework (HRF). You can modify the content of these underlying HRF rules, and you do not need to register them again after the modification.

The following types of registered objects have underlying HRF rules that you can modify:

- Supply and demand alert rules
- KPI alert rules

- Location determination rules
- Exclusion rules

> **i Note**
>
> For more information on how to create and modify HRF rules in the SAP HANA back-end system, see the master guide available at http://help.sap.com/trp500.

Procedure

1. Go to *Administration* > *Object Registration*.
2. When you have found the registered object that you want to change, click it to open the detailed view.
3. Choose *Edit*.
4. Choose *Edit* at the right of the *Stored Procedure* field.
5. Modify the rule.
   - To add or remove condition columns, choose *Edit Conditions*.
   - To modify detailed conditions or output values, click the *Conditions* or *Output* cells.
   - If your rule has more than one condition, you can also modify the *Hit Policy* option. It is highly recommended that you use *All Matches* for location determination rules and exclusion rules, and *First Match* for other rules.
6. Save your entries.

Results

If you change a supply and demand or KPI alert rule that is used in an alert rule group, and the group is already used in a scheduled plan, the alerts triggered by the previous execution of the plan become obsolete. You can execute the plan again manually or wait until the next execution to get the latest results. This also affects any virtual plans in which the scheduled plan is included.

If you change a location determination rule or an exclusion rule, and the rule is already used in a pick-up or return ruleset, the results of the ruleset execution become obsolete.

14.8.4 Deleting Object Registration

Prerequisites

You must have the role of system administrator in SAP Transportation Resource Planning to delete object registration.

Procedure

1. Go to *Administration* > *Object Registration*.
2. When you have found the registered object that you want to unregister, click it to open the detailed view.
3. Choose *Edit*.
4. Choose *Delete*.

> **i Note**
>
> For object types that can have only one object such as resource stock rules, SD KPI plan bubble rules, and availability check rules, use the following script to delete the object:
>
> > **Sample Code**
> >
> > ```
> > delete from
> > “<SCHEMA_NAME>”."sap.tm.trp.db.hrf.ruleManage.ruleGroup::t_rule"
> > where RULE_TYPE_ID = <RULE_TYPE_ID>
> > ```
>
> Replace `<RULE_TYPE_ID>` with the appropriate value from the following table:
>
Object Type	<RULE_TYPE_ID>
resource_stock_alert	10
resource_stock_bubbleView	11
SD_KPI_plan_bubbleView	14
available_check_plan	16
available_check_level	17
>
> `<SCHEMA_NAME>` is the name of the schema mentioned in the MTA extension file corresponding to the `resource trp_hdi_db_core` during deployment.

Results

The objects are no longer available for use in resource planning.

14.9 Creating Extended Columns

Prerequisites

You must have the role of system administrator to add, modify, and delete extended columns.

The following types of extended columns are available for adding if SAP Transportation Management (SAP TM) is your underlying logistics system:

- *Transportation Demand*
  These fields are from SAP TM table `/SCMTMS/D_TORITE`. They can be added to the *Transportation Demand* view of the *Resource Visibility* work center as extended columns.
- *Resources*
  These fields are from SAP TM table `/SAPAPO/RES_HEAD`. They can be added to the *Resources* view of the *Resource Visibility* work center as additional attributes.

Once you add, modify, or delete extended columns in the corresponding SAP TM table, you need to restart the SAP Transportation Resource Planning service `trp-tm-db` to make these changes available in the SAP Transportation Resource Planning system.

Context

You can create extended columns to obtain additional information in the *Resource Visibility* work center. These fields are then available as additional columns in the view for which they have been defined.

Procedure

1. If SAP Transportation Management is your logistics system, make sure the field that you are going to add is available in the SAP TM table `/SCMTMS/D_TORITE` or `/SAPAPO/RES_HEAD`.
2. Go to *Administration* > *Extended Columns*.
3. Choose *Create Column*.
4. Enter a display name and, optionally, a description. The display name is shown as the label of the extended column or additional attribute.
5. Select a type and the field to be added.
6. Save your entries.

Results

You can add the extended columns in the *Transportation Demand* view by choosing the  button.

For resource attributes, you can view the added attributes by clicking a resource ID in the *Resources* view and choosing the *Additional Attributes* tab in the detailed view.

14.10 Schedule Integration

If there is a Container Shipping Liners (CSL) scenario implemented in your target SAP Transportation Management (SAP TM) system, you need to integrate the CSL schedule to SAP Transportation Resource Planning by specifying the enhanced schedule tables. After the schedule integration, SAP Transportation Resource Planning will use both the standard schedule and the CSL schedule to generate routes.

Integrate CSL Schedule

Procedure

1. Go to *Administration* > *Schedule Integration*.
2. In the two text boxes, enter the table names as follows:
   - The departure rule table name is */TMCSL/D_SCHDPR*.
   - The departure rule stage table name is */TMCSL/D_SCHDPS*.
3. Choose the *Save* button.

Result

SAP Transportation Resource Planning will use both the standard and the CSL schedules to generate routes.

Delete Integrated Schedule

Prerequisite

You have specified the CSL schedule tables as mentioned above.

Procedure

1. Go to *Administration* > *Schedule Integration*.
2. Choose the *Delete* button.

Result

SAP Transportation Resource Planning will only use the standard schedule to generate routes.

14.11 Equipment Availability Check Configuration

In SAP Transportation Management (SAP TM), the equipment manager needs to check the availability of the requested equipment before confirming a customer's booking. SAP Transportation Resource Planning provides an application programming interface (API) that is called during the booking process to perform the equipment availability check (EAC).

The EAC API can be called in batch mode with multiple locations, equipment types, request check types, and requested dates. The EAC API determines a supply and demand plan for each combination of location, equipment type, requested date, quantity, and requested check type. The details of the relevant supply and demand plans are returned to SAP TM where they are used to create equipment proposals.

> **i Note**
>
> To ensure good performance, there is a limitation on the size of data that can be sent to the EAC API in batch mode. The data must not exceed 60,000 characters, including one additional character that is added for each item.
>
> > **Example**
> >
> > For example, the following data is sent from SAP TM to SAP Transportation Resource Planning:
> >
> > 10,CNSHA,20ST,2021-12-25T21:40:43.394Z,40,C
> >
> > 20,U00_1D_SHA,40ST,2021-12-25T21:40:43.394Z,40,C
> >
> > 30,CNSHA,40ST,2021-12-25T21:40:43.394Z,40,C
> >
> > SAP Transportation Resource Planning converts the data as follows:
> >
> > 10,CNSHA,20ST,2021-12-25T21:40:43.394Z,40,C~
> >
> > 20,U00_1D_SHA,40ST,2021-12-25T21:40:43.394Z,40,C~
> >
> > 30,CNSHA,40ST,2021-12-25T21:40:43.394Z,40,C
> >
> > An additional "~" is added at the end of each item. SAP Transportation Resource Planning checks the length of the converted data. To be successfully processed, the length of the converted data must not exceed 60,000 characters.

In SAP Transportation Resource Planning, you need to configure the rules for the EAC under *Administration* > *EAC Configuration*. You can configure multiple rules with each rule applying to one or more locations.

If you want to consider the minimum safety stock threshold for the location in the EAC, you need to select the *Enable Minimum Safety Stock in EAC* checkbox in the safety stock thresholds for the location. If you select this option, then the EAC for the location will fail when the stock level is below the minimum safety stock.

Related Information

For more information about the EAC API and the configuration of EAC rules, see the master guide available at https://help.sap.com/trp500.

Setting Safety Stock Thresholds [page 66]

14.12 Mass Data Upload

Before you begin working with SAP Transportation Resource Planning, you need to set up various data such as location groups, location filters, and supply and demand plans. Some of this data is high in volume and would be time-consuming to enter one at a time.

To accelerate the data entry, you can use the mass data upload process to enter a high volume of data at once. You prepare the data in an application such as Microsoft Excel and then save it as a comma-separated values (CSV) file for the upload process. Note that the data must be structured in a specific way, and the relevant templates can be downloaded from the system.

You can upload the following types of data with the mass data upload process:

- Stock Settings for Locations
- Location Groups
- Stock Settings for Location Groups
- Location Filters
- Supply and Demand Plans
- Virtual Supply and Demand Plans
- Scheduled KPI Plans
- Virtual KPI Plans
- Pick-Up and Return Rulesets
- Lessors
- Lease Contract Types
- Lease Contract Hire Terms
- Lease Contract Hire Conditions
- Lease Contracts
- Fetch TU Ruleset Groups
- Optimize TU Ruleset Groups
- Tiles

The mass data upload process enables you to create the high-volume master data listed above in batch mode. You create and maintain all of the other types of master data manually using the dedicated screens in the application.

You can also use the mass data upload process to update existing data. If you make changes to a previously uploaded CSV file and then upload the file again, the system detects the changes and updates the existing data.

> **i Note**
>
> The order of the data uploads is important. For example, the data for stock settings for location groups refers to location groups. As part of the validation process, the system checks that the location groups already exist. Similarly, the data for supply and demand plans refers to location filters. Therefore, it is

recommended that location groups and location filters are uploaded first to avoid validation errors. Lease contract types and lessors must be uploaded before lease contracts.

Related Information

Downloading Templates for the Mass Data Upload [page 260]
Uploading Mass Data [page 261]
Downloading the Home Dashboard Tile Configuration [page 262]
File Formats for Mass Data Upload [page 263]
References for Mass Data Upload [page 307]

14.12.1 Downloading Templates for the Mass Data Upload

Download a template that you can use to prepare data in the correct format for the mass data upload process.

Procedure

1. Go to ▶ *Data Operations* ▶ *Mass Data Upload* ▶.
2. Select an object type and a resource category.
3. Choose the *Template* button.

> **i Note**
>
> If you have selected *Tiles* as the object type, you need to choose ▶ *Download* ▶ *Template* ▶. This is because you also have an option to download the tile configuration for the *Home* dashboard.

Results

The selected template is downloaded. The template is in comma-separated values (CSV) format and has the columns required for the mass data upload process.

Related Information

Uploading Mass Data [page 261]
File Formats for Mass Data Upload [page 263]

14.12.2 Uploading Mass Data

Upload data that you have prepared in a comma-separated values (CSV) file into SAP Transportation Resource Planning.

Prerequisites

- You have prepared the data to be uploaded in the appropriate format and saved it as a CSV file.
- Your user has a role collection that has any one of the following role templates:
  - TRP_Role_Business_Configuration_User
  - TRP_Role_Super_Admin
  - TRP_MassUpload_Admin
- You have maintained the values of the following SAP HANA XS configuration parameters:

Parameter	Recommended Value	Comments
max_request_runtime	7200	
sessiontimeout	3600	
icm/server_port0 or icm/server_port1	PROCTIMEOUT=3600	Maintain the parameter based on the port used for SAP Transportation Resource Planning (that is, HTTP or HTTPS).

> **i Note**
>
> After the mass upload activities, we recommend you revert the values of the above parameters to the SAP recommended values.

Context

> **i Note**
>
> If you need help with the format of the CSV file, you can use the available option to download the sample template for the selected object type. The data in the template can be modified and uploaded as required.

Procedure

1. Go to ▶ *Data Operations* ▶ *Mass Data Upload* ▶.
2. Select an object type and a resource category.
3. Choose *Upload CSV*.
4. Select the file to be uploaded and then choose *Open*.

   The system validates the data in the file. If there are errors, an error message is displayed listing the type of error along with the row and column numbers. You must correct all of the errors and then upload the file again. You cannot upload the file until all of the errors are resolved. If there are no errors in the file, a confirmation message is displayed prompting you to save the uploaded data.
5. Choose *OK* to save the uploaded data.

Results

The data is saved (or updated if it already exists) and can be viewed in the relevant screens in the system. A message is displayed at the bottom of the screen to confirm the number of created and updated records. You can view a list of the mass data uploads on the *Mass Upload History* tab under *Monitoring*, to which you can navigate by choosing the *View Logs* button on the *Mass Data Upload* user interface.

Related Information

Mass Data Upload [page 259]
File Formats for Mass Data Upload [page 263]
Downloading Templates for the Mass Data Upload [page 260]

14.12.3 Downloading the Home Dashboard Tile Configuration

Download your tile configuration settings for your *Home* dashboard.

Context

The tile configuration settings can be downloaded by adminstrators and business users. Administrators can then upload these settings into a different SAP Transportation Resource Planning system as necessary.

Procedure

1. Go to *Data Operations* > *Mass Data Upload*.
2. Select *Tiles* as the object type and a resource category.
3. Choose *Download* > *Tile Configuration*.

Results

Your tile configuration settings are downloaded in comma-separated values (CSV) format.

Related Information

Downloading Templates for the Mass Data Upload [page 260]
Uploading Mass Data [page 261]
File Format for Tiles [page 305]

14.12.4 File Formats for Mass Data Upload

Data that you upload through the mass data upload process must be prepared in an application such as Microsoft Excel and then saved as a comma-separated values (CSV) file.

The data must be structured in a specific way, as the system expects columns of data in a fixed order and applies validation checks on each column. Note that the first row of the file is treated as a header row and is not uploaded.

Related Information

File Format for Stock Settings for Locations [page 264]
File Format for Location Groups [page 266]
File Format for Stock Settings for Location Groups [page 268]
File Format for Location Filters [page 270]
File Format for Supply and Demand Plans [page 271]
File Format for Virtual Supply and Demand Plans [page 280]
File Format for Scheduled KPI Plans [page 282]
File Format for Virtual KPI Plans [page 286]
File Format for Pick-Up and Return Rulesets [page 287]
File Format for Fetch TU Ruleset Schedule Groups [page 291]

File Format for Optimize TU Ruleset Schedule Groups [page 295]
File Format for Lessors [page 296]
File Format for Lease Contract Types [page 298]
File Format for Lease Contract Hire Terms [page 298]
File Format for Lease Contract Hire Conditions [page 301]
File Format for Lease Contracts [page 302]
References for Mass Data Upload [page 307]

14.12.4.1 File Format for Stock Settings for Locations

The comma-separated values (CSV) file for the mass data upload of stock settings for locations must be in the format below. Note that the first row of the file is treated as a header row and is not uploaded.

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Location Name	1	CHAR	20	Required	The location must already exist in the location master data.
Resource Name	2	CHAR	20	Required	Enter *TEUS* for the location's header level safety stock. The unit of measurement (UoM) for stock is twenty-foot equivalent unit (TEU). Non-header level rows represent the safety stock for a resource type or resource group (for example, *40FT* or *20ST*).
Level	3	INTEGER	1	Required	The following values are permitted: • 0 – Header • 1 – Resource Type • 2 – Resource Group

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Minimum Safety Stock	4	DECIMAL	18,0	Optional	There is no check between the location header level and the resource type level safety stock quantity.
Maximum Safety Stock	5	DECIMAL	18,0	Optional	There is no check between the location header level and the resource type level safety stock quantity.
Capacity	6	DECIMAL	18,0	Optional	This is the physical capacity of the location. Capacity must be greater than the minimum safety stock and the maximum safety stock.
Handling Capacity	7	DECIMAL	18,0	Optional	This should be greater than or equal to 0 and is only assigned for locations with level 0.
Enable Minimum Safety Stock in EAC	8	CHAR	1	Optional	Only applies at header level (locations with level 0) and specifies whether the minimum safety stock is considered during the equipment availability check (EAC). This value can be either 1 (enabled) or blank (not enabled).

Example

Location Name	Resource Name	Level	Min. Safety Stock	Max. Safety Stock	Capacity	Handling Capacity	Enable Minimum Safety Stock in EAC
ARBUE-DAPM	TEUS	0	100	200	1000	100	1
ARBUE-DAPM	40FT	1	20	100	200		
ARBUE-DAPM	20OT	1	10	20	100		
ARBUEDASA	RG_05	2	10	20	100		
ARBUEDESA	20FT	1	10	20	40		
ARBUEDTRP	RG_01	2	10	20	100		
ARZAE	TEUS	0	100	200	500	100	

14.12.4.2 File Format for Location Groups

The comma-separated values (CSV) file for the mass data upload of location groups must be in the format below. Note that the first row of the file is treated as a header row and is not uploaded.

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Location Group Name	1	CHAR	20	Required	If the location group already exists, then it is updated. Otherwise, a new location group is created.
Location Group Description	2	CHAR	40	Optional	Description of the location group.

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Location Group Type	3	CHAR	50	Required	Must be *Location* or *Region*. Locations and regions cannot be mixed in one location group. If the location group type is *Location*, then only locations should be assigned to the location group. If the location group type is *Region*, then only regions should be assigned to the location group.
Visibility	4	CHAR	20	Required	Must be *Global* or *Personal*.
Location	5	CHAR	20	Required	The location must already exist in the location master data.
Primary Location	6	CHAR	20	Optional	This is the primary location and must be one of the locations in the location group.

Example

Location Group Name	Location Group Description	Location Group Type	Visibility	Location	Primary Location
LOC_GRP_01	Location Group 1	Region	Global	REGION_1	CNDAG
LOC_GRP_01	Location Group 1	Region	Global	REGION_2	CNDAG
LOC_GRP_01	Location Group 1	Region	Global	REGION_3	CNDAG

14.12.4.3 File Format for Stock Settings for Location Groups

The comma-separated values (CSV) file for the mass data upload of stock settings for location groups must be in the format below. Note that the first row of the file is treated as a header row and is not uploaded.

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Location Group Name	1	CHAR	20	Required	If the location group already exists, then it is updated. Otherwise, a new location group is created.
Resource Type	2	CHAR	20	Required	Enter *TEUS* for the location group's header level safety sock. The unit of measurement (UoM) of stock is twenty-foot equivalent unit (TEU). Non-header level rows represent the safety stock for a resource type or resource group (for example, *40ST* or *20ST*).
Level	3	INTEGER	1	Required	The following values are permitted: • 0 – Header • 1 – Resource Type • 2 – Resource Group

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Minimum Safety Stock	4	DECIMAL	18,0	Optional	If the resource type is *TEUS*, then it represents the minimum safety stock for the location group header level. Otherwise, it represents the minimum safety stock for the resource type or resource group.
Maximum Safety Stock	5	DECIMAL	18,0	Optional	If the resource type is *TEUS*, then it represents the maximum safety stock for the location group header level. Otherwise, it represents the maximum safety stock for the resource type or resource group level.

Example

Location Group Name	Resource Type	Level	Minimum Safety Stock	Maximum Safety Stock
LOCATION_GROUP_1	TEUS	0	10	20
LOCATION_GROUP_1	40ST	1	10	20
LOCATION_GROUP_1	20ST	2	10	20

14.12.4.4 File Format for Location Filters

The comma-separated values (CSV) file for the mass data upload of location filters must be in the format below. Note that the first row of the file is treated as a header row and is not uploaded.

Fields	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Location Filter Name	1	CHAR	20	Required	If the location filter already exists, then it is updated. Otherwise, a new location filter is created.
Description	2	CHAR	40	Optional	Description of the location filter.
Type	3	CHAR	20	Required	The following values are permitted: • Location • Region • Location Group • Region Group A location filter can only include locations of the same type. That is, all entries for the same location filter must have the same type.
Visibility	4	CHAR	20	Required	Must be *Global* or *Personal*.
Location	5	CHAR	20	Required	A location, location group, region, or region group that already exists in master data. The location type must match the type specified in the *Type* column.

Example

Location Filter Name	Description	Type	Visibility	Location
LF_CN_EAST	East of China	Location	Global	CNSHADSHA
LF_CN_EAST	East of China	Location	Global	CNSHA
LF_IN_DEL	India Delhi	Region	Global	AIR_REGION_ALL_ALL
LF_IN_KOL	India Kolkata	Location Group	Global	LOC_GRP_94
LF_CN_WEST	West of China	Region Group	Global	MIT_CN_REG_GRP001

14.12.4.5 File Format for Supply and Demand Plans

The comma-separated values (CSV) file for the mass data upload of supply and demand plans must be in the format below. Note that the first row of the file is treated as a header row and is not uploaded.

Fields	File Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Supply and Demand Plan Name	1	CHAR	20	Required	If the supply and demand plan already exists, then it is updated. Otherwise a new one is created.
Description	2	CHAR	40	Optional	Description of the supply and demand plan.
Plan Type	3	CHAR	32	Required	Must be *Supply and Demand Plan*.

Fields	File Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Location Filter	4	CHAR	20	Required	The location filter must already exist. If the supply and demand plan is globally visible, then the location filter must be globally visible too.
Resource Filter	5	CHAR	20	Required	The resource filter must already exist. If the supply and demand plan is globally visible, then the resource filter must be globally visible too.
Time Filter	6	CHAR	20	Required	The time filter must already exist. If the supply and demand plan is globally visible, then the time filter must be globally visible too.
Calculation Model	7	CHAR	20	Required	The calculation model must already exist and be registered.
Alert Rule Group	8	CHAR	20	Required	The alert rule group must already exist. If the supply and demand plan is globally visible, then the alert rule group must be globally visible too.

Fields	File Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Multi-Attribute Group Filter	9	CHAR	20	Optional	The multi-attribute group filter must already exist. If the supply and demand plan is globally visible, then the multi-attribute group filter must be globally visible too.
Recurrence Type	10	CHAR	7	Required if the supply and demand plan is scheduled	The following values are allowed: • Minutes • Hours • Days • Weeks • Months
Recurrence Interval	11	INTEGER	2	Required if the supply and demand plan is scheduled	Number of minutes, hours, days, weeks, or months. The following values are permitted based on the *Recurrence Type*: • Minutes: 1 to 59 • Hours: 1 to 23 • Months: 1 to 99 • Weeks: 1 to 99 • Days: 1 to 99

Fields	File Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Executed On	12	INTEGER/CHAR		Required if the supply and demand plan is scheduled and the *Recurrence Type* is *Weeks* or *Months*	The following values are permitted based on the *Recurrence Type*: • Weeks: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, or Saturday • Months: 1 to 31 If the *Recurrence Type* is any other value, you can leave this field blank.
Start Date and Time	13	TIMESTAMP	24	Required if the supply and demand plan is scheduled	Start date for execution of the scheduled supply and demand plan. Must be in the format YYYY-MM-DDTHH:MM:00.000Z and must refer to the UTC time zone.
End Date and Time	14	TIMESTAMP	24	Required if the supply and demand plan is scheduled	End date for execution of the scheduled supply and demand plan. Must be in the format YYYY-MM-DDTHH:MM:00.000Z and must refer to the UTC time zone.
Visibility	15	CHAR	7	Required	Must be *Global* or *Personal*.

Fields	File Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Keep X Execution Runs	16	INTEGER	8	Optional	Specifies the number of execution runs to be kept. If it is blank, then all execution runs will be kept. The permitted range is 1 to 99999999.
Plan Usage	17	CHAR	40	Required	The following values are allowed: • EAC / Ruleset • Generic S&D Plan • Resource Balancing • Any other categories for extension
Disable Intermediate Node	18	CHAR	3	Required	Specifies whether the intermediate node-related data is saved to the database during the execution of the supply and demand plan. If the intermediate node data is not saved to the database, then only the `SUPPLY_DEMAND` node data can be displayed in the plan execution result. Must be *Yes* or *No*.

Fields	File Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Execute in Working Hours	19	CHAR	3	Required if the supply and demand plan is scheduled and the *Recurrence Type* is *Minutes* or *Hours*	Specifies whether the schedule is to be executed during working hours only. Relevant if *Recurrence Type* is *Minutes* or *Hours*, and must be *Yes* or *No*.
Start Working Hours	20	TIME		Required if the supply and demand plan is scheduled and *Execute in Working Hours* is *Yes*	Start time of the working hours. Only relevant when *Execute in Working Hours* is *Yes*. Must be in the format HH:MM and must refer to the UTC time zone.
End Working Hours	21	TIME		Required if the supply and demand plan is scheduled and *Execute in Working Hours* is *Yes*	End time of the working hours. Only relevant when *Execute in Working Hours* is *Yes*. Must be in the format HH:MM and must refer to the UTC time zone.
Time Zone	22	CHAR	40	Required if the supply and demand plan is scheduled	Must be a valid time zone code.

Example

Supply and Demand Plan	Description	Plan Type	Location Filter	Resource Filter	Time Filter	Calculation Mode	Alert Rule Group	Multi-Attribute Filter	Recurrence Type	Recurrence Interval	Executed On	Start Date and Time	End Date and Time	Visibility	Keep X Execution Runs	Plan Usage	Disable Intermediate Node	Execute in Working Hours	Start Working Hours	End Working Hours	Time Zone
SDP_02626_100001	Plan 1	Supply and Demand Plan	LF_REGION_1	ATP_RF_1	FT_HAN1	IRIS_4_CDP_CM	ATP_SD_ALERTS_GP		MONTH	1	1	2019-02-20T05:00:00.000Z	2019-02-26T10:00:00.000Z	Global	100	Generic S&D Plan	No	No			Asia/Beijing
SDP_02626_100002	Plan 1	Supply and Demand Plan	IRIS_4_RS1	ATP_RF_1	ECC_ELI_TF	IRIS_4_CDP_CM	ATP_SD_ALERTS_GP		MONTH	1	1	2019-02-20T05:00:00.000Z	2019-02-26T10:00:00.000Z	Global	100	Generic S&D Plan	No	No			Asia/Beijing
SDP_02626_100003	Plan 1	Supply and Demand Plan	IRIS_4_RS1	BUSER2_GLOBAL	APRIL_NEXT2W_2M	IRIS_4_CDP_CM	IRIS_4_CDP		MONTH	1	1	2019-02-20T05:00:00.000Z	2019-02-26T10:00:00.000Z	Global	100	Generic S&D Plan	No	No			Asia/Beijing

Supply and Demand Plan	Description	Plan Type	Location Filter	Resource Filter	Time Filter	Calculation Model	Alert Rule Group	Multi-Attribute Filter	Recurrence Type	Recurrence Interval	Executed On	Start Date and Time	End Date and Time	Visibility	Keep X Executions Runs	Plan Usage	Disable Intermediate Node	Execute in Working Hours	Start Working Hours	End Working Hours	Time Zone
SDP_02626_10000 4	Plan 1	Supply and Demand Plan	IRIS_LF_BY_LG1	ATP_RF_1	FT_HAN	IRIS_4_CDP_CM	IRIS_4_CDP		MONTH	1	1	2019-02-20T05:00:00.000Z	2019-02-26T10:00:00.000Z	Global	100		No	No			Asia/Beijing
SDP_02626_10000 5	Plan 1	Supply and Demand Plan	IRIS_TST_LOWEST	BU_CREATED_GLOBAL	FTF_HAN8	ATP_SD_CALMODEL	IRIS_4_CDP		MONTH	1	1	2019-02-20T05:00:00.000Z	2019-02-26T10:00:00.000Z	Global	100	Generic S&D Plan	No	No			Asia/Beijing
SDP_02626_10000 6	Plan 1	Supply and Demand Plan	LF_REGION_1	IRIS_4_CDP	FUR_4_MONTHS	IRIS_4_CDP_CM	ATP_SD_ALERTS_GP		MONTH	1	1	2019-02-20T05:00:00.000Z	2019-02-26T10:00:00.000Z	Global	100	Generic S&D Plan	No	No			Asia/Beijing

Supply and Demand Plan	Description	Plan Type	Location Filter	Resource Filter	Time Filter	Calculation Model	Alert Rule Group	Multi-Attribute Filter	Recurrence Type	Recurrence Interval	Executed On	Start Date and Time	End Date and Time	Visibility	Keep X Executions Runs	Plan Usage	Disable Intermediate Node	Execute in Working Hours	Start Working Hours	End Working Hours	Time Zone
SDP_02626_10000 7	Plan 1	Supply and Demand Plan	IRIS_TST_ROUTE	BU_CREATED_GLOBAL	APRIL_NEXT2W_2M	ATP_SD_CAL-MODEL	IRIS_4_CDP		MONTH	1	1	2019-02-20T05:00:00.000Z	2019-02-26T10:00:00.000Z	Global	100	Generic S&D Plan	No	No			Asia/Beijing
SDP_02626_10000 8	Plan 1	Supply and Demand Plan	LF_REGION_1	ATP_RF_1	DH_CIR_RC	IRIS_4_CDP_CM	ATP_SD_ALERTS_GP		MONTH	1	1	2019-02-20T05:00:00.000Z	2019-02-26T10:00:00.000Z	Global	100	Generic S&D Plan	No	No			Asia/Beijing
SDP_02626_10000 9	Plan 1	Supply and Demand Plan	IRIS_4_RS1	BUSER2_GLOBAL	DORA_FUTURE	ATP_SD_CAL-MODEL	ATP_SD_ALERTS_GP		MONTH	1	1	2019-02-20T05:00:00.000Z	2019-02-26T10:00:00.000Z	Global	100	Generic S&D Plan	No	No			Asia/Beijing

Supply and Demand Plan	Description	Plan Type	Location Filter	Resource Filter	Time Filter	Calculation Model	Alert Rule Group	Multi-Attribute Filter	Recurrence Type	Recurrence Interval	Executed On	Start Date and Time	End Date and Time	Visibility	Keep X Executions Runs	Plan Usage	Disable Intermediate Node	Execute in Working Hours	Start Working Hours	End Working Hours	Time Zone
SDP_02 26_100 010	Plan 1	Supply and Demand Plan	IRIS_TST_APJ LINE	TST_SD_PLAN 1	FT_HAN1	IRIS_4_CDP_CM	IRIS_4_CDP		MONTH	1	1	2019-02-20T 05:00:00. 000Z	2019-02-26T10:0 0:0.0 00Z	Global	100	Generic S&D Plan	No	No			Asia/ Beijing

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14.12.4.6 File Format for Virtual Supply and Demand Plans

The comma-separated values (CSV) for the mass data upload of virtual supply and demand plans must be in the format below. Note that the first row of the file is treated as a header row and is not uploaded.

Fields	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Virtual Supply and Demand Plan Name	1	CHAR	20	Required	If the virtual supply and demand plan already exists, then it is updated. Otherwise, a new one is created.

Fields	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Description	2	CHAR	40	Optional	Description of the virtual supply and demand plan.
Type	3	CHAR	30	Required	Must be *Virtual Supply and Demand Plan*.
Visibility	4	CHAR	20	Required	Must be *Global* or *Personal*.
Location Filter	5	CHAR	20	Required	The location filter must already exist in master data.
Resource Filter	6	CHAR	20	Required	The resource filter must already exist in master data.
Supply and Demand Plan Name	7	CHAR	20	Required	The scheduled supply and demand plan must already exist and must have at least one location, location group, region, region group or one resource or resource group type overlap with the virtual supply and demand plan's location filter and resource filter. **i Note** Instant supply and demand plans cannot be used in virtual supply and demand plans.

Example

Virtual Supply and Demand Plan Name	Description	Type	Visibility	Location Filter	Resource Filter	Scheduled Supply and Demand Plan Name
VSD_01	Virtual Supply and Demand Plan 1	Virtual Supply and Demand Plan	Global	LOC_FILTER3	FILTER_COMMON	SCHEDULE1
VSD_01	Virtual Supply and Demand Plan 1	Virtual Supply and Demand Plan	Global	LOC_FIILTER3	FILTER_COMMON	SCHEDULE2

14.12.4.7 File Format for Scheduled KPI Plans

The comma-separated values (CSV) file for the mass data upload of scheduled key performance indicator (KPI) plans must be in the format below. Note that the first row of the file is treated as a header row and is not uploaded.

Fields	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Scheduled KPI Plan Name	1	CHAR	20	Required	If the scheduled KPI plan already exists, then it is updated. Otherwise a new one is created.
Description	2	CHAR	40	Optional	Description of the scheduled KPI plan.
Type	3	CHAR	30	Required	Must be *Scheduled KPI Plan*.
Visibility	4	CHAR	20	Required	Must be *Global* or *Personal*.
Location Filter	5	CHAR	20	Required	The location filter must already exist in master data.

Fields	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Resource Filter	6	CHAR	20	Required	The resource filter must already exist in master data.
Time Filter	7	CHAR	20	Required	The time filter must already exist in master data and must be a past time filter.
Calculation Model	8	CHAR	20	Required	The calculation model must already exist in master data. The calculation model type should be *KPI Calculation*.
Alert Rule Group	9	CHAR	20	Required	The alert rule group must already exist in master data. The alert rule group type must be *KPI Alert*.
Multi-Attribute Filter	10	CHAR	20	Optional	The multi-attribute filter must already exist in master data.
Recurrence Type	11	CHAR	15	Required	The following values are permitted: • Minutes • Hours • Days • Weeks • Months

Fields	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Execute Every	12	INTEGER	2	Required	Number of minutes, hours, days, weeks, or months. The following values are permitted based on the *Recurrence Type*: • Minutes: 1 to 59 • Hours: 1 to 23 • Months: 1 to 99 • Weeks: 1 to 99 • Days: 1 to 99
Executed On	13	CHAR/INTEGER	10	Required if *Recurrence Type* is *Weeks* or *Months*	The following values are permitted based on the *Recurrence Type*: • Weeks: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday or Saturday • Months: 1 to 31 • If the *Recurrence Type* is any other value, you can leave this field blank.
Start Date and Time	14	CHAR	30	Required	Must be in the format YYYY-MM-DDTHH:MM:00.000Z and must refer to the UTC time zone.

Fields	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
End Date and Time	15	CHAR	30	Required	Must be in the format YYYY-MM-DDTHH:MM:00.000Z and must refer to the UTC time zone.
Plan Usage	16	CHAR	16	Required	Must be *Generic KPI Plan*.
Time Zone	17	CHAR	40	Required	Must be a valid time zone.

Example

Scheduled KPI Plan Name	Description	Type	Visibility	Location Filter	Resource Filter	Time Filter	Calculation Model	Alert Rule Group	Multi-Attribute Filter	Recurrence	Execute Every	Executed On	Start Date and Time	End Date and Time	Plan Usage	Time Zone
KPI_MARCH4_1	KPI March	Scheduled KPI Plan	Global	LOCATION1	EST_4RF_T	GEN_TF1	MIT_CM_KPI_IDLE	DUAN_KPI_ALERT		Days	2		2019-03-28T09:00:00.000Z	2019-06-13T08:00:00.000Z	Generic KPI Plan	Asia/Beijing
KPI_MARCH4_2	KPI March	Scheduled KPI Plan	Global	AEJ_LOCS	FILTER_COMMON	GEN_TF1	MIT_CM_KPI_IDLE	DUAN_KPI_ALERT		Weeks	1	Sunday	2019-03-18T09:00:00.000Z	2019-06-13T08:00:00.000Z	Generic KPI Plan	Asia/Beijing

Related Information

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14.12.4.8 File Format for Virtual KPI Plans

The comma-separated values (CSV) file for the mass data upload of virtual key performance indicator (KPI) plans must be in the format below. Note that the first row of the file is treated as a header row and is not uploaded.

Fields	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Virtual KPI Plan Name	1	CHAR	20	Required	If the virtual KPI plan already exists, then it is updated. Otherwise a new one is created.
Description	2	CHAR	40	Optional	Description of the virtual KPI plan.
Type	3	CHAR	30	Required	Must be *Virtual KPI Plan*.
Visibility	4	CHAR	20	Required	Must be *Global* or *Personal*.
Location Filter	5	CHAR	20	Required	The location filter must already exist in master data.
Resource Filter	6	CHAR	20	Required	The resource filter must already exist in master data.
Scheduled KPI Plan Name	7	CHAR	20	Required	The scheduled KPI plan must already exist and must have at least one location, location group, region, region group or one resource or resource group overlap with the virtual KPI plan's location filter and resource filter.

Example

Virtual KPI Plan Name	Description	Type	Visibility	Location Filter	Resource Filter	Scheduled KPI Plan Name
VKPI_01	Virtual KPI Plan 1	Virtual KPI Plan	Global	LOC_FILTER1	RES_FILTER1	SCHEDULED_KPI_1
VKPI_01	Virtual KPI Plan 1	Virtual KPI Plan	Global	LOC_FILTER1	RES_FILTER1	SCHEDULED_KPI_2

14.12.4.9 File Format for Pick-Up and Return Rulesets

The comma-separated values (CSV) file for the mass data upload of pick-up and return rulesets must be in the format below. Note that the first row of the file is treated as a header row and is not uploaded.

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Pick-Up/Return Ruleset Name	1	CHAR	20	Required	If the pick-up and return ruleset already exists, it is updated. Otherwise, a new ruleset is created.
Description	2	CHAR	40	Optional	Description of the ruleset.
Ruleset Type	3	CHAR	20	Required	Must be *Pick-up* or *Return*.
Visibility	4	CHAR	50	Required	Must be *Global* or *Personal*.
Due for Pick-up/ Return	5	INTEGER		Required	Due time as a number, for example, 2 hours, days, weeks, or months, depending on the unit of measurement (UoM) specified in the next column.

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
UoM of Due Time	6	CHAR	10	Required	The following values are permitted: • Hours • Days • Weeks
Location Filter	7	NVARCHAR	20	Required	The location filter must already exist.
Resource Filter	8	NVARCHAR	20	Optional	The resource filter must already exist.
Exclude Processed TUs	9	CHAR	3	Required	The following values are permitted: • Yes • No
Exclusion Rule Name	10	CHAR	20	Optional	A stored procedure name that is already registered.
Supply and Demand Plan	11	CHAR	20	Required	The supply and demand plan must already exist.
Network Setting Group	12	CHAR	20	Required	The network setting group must already exist.

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Optimization Setting	13	CHAR	20	Required	There following values are permitted: • Location Determination Rule • Automatic Optimization • Location Determination Rule and Automatic Optimization (when this option is entered, both the *Location Determination Rule* and *Automatic Optimization* field should be filled) • None
Location Determination Rule	14	CHAR	20	Required if optimization setting is *Location Determination Rule*	Name of the location determination rule.
Automatic Optimization	15	CHAR	100	Required if optimization setting is *Automatic Optimization*	The following values are permitted: • Cost-Based • Both Cost-Based and Balancing-Based
Manual or Scheduled	16	CHAR	20	Required	The following values are permitted: • Manual • Scheduled

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Handling Time Buffer	17	INTEGER		Optional	Handling time buffer for triangulation as a number of hours.
Maximum Hits	18	INTEGER		Optional	Maximum hits for triangulation candidates.
Keep X Execution Runs	19	INTEGER	8	Optional	Specifies the number of execution runs to be kept. If it is blank, then all execution runs will be kept. The permitted range is 1 to 99999999.
Date Selection	20	CHAR	30	Optional	The date selection field must already exist and be registered under *Object Registration* for the corresponding ruleset type.
Time Zone	21	CHAR	40	Required if the ruleset is scheduled	Must be a valid time zone code.
Exclude Unprocessed TUs	22	CHAR	3	Required	The following values are permitted: • Yes • No

Example

Pick-Up / Return Ruleset Name	Description	Ruleset Type	Visibility	Due for Pick-Up / Return	UoM of Due Time	Location Filter	Resource Filter	Exclude Processed TUs	Exclusion Rule	Supply and Demand Plan	Network Settings	Optimization Settings	Location Determination Rule	Automatic Optimization	Manual or Scheduled	Handling Time Buffer	Maximum Hits	Keep X Execution Runs	Date Selection	Time Zone	Exclude Unprocessed TUs
MASS_UPLOAD_NEW1	Test Mass Upload	Pick-up	Global	200	Weeks	U01_LF	ALL_RESOURCE_TYPE	Yes		CLASSIC_SD_PLAN	NSG_01	None			Manual						No

Related Information

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14.12.4.10 File Format for Fetch TU Ruleset Schedule Groups

The comma-separated values (CSV) file for the mass data upload of *Fetch TU Ruleset Groups* must be in the format below. Note that the first row of the file is treated as a header row and is not uploaded.

Note

There are several validation checks and restrictions that apply to ruleset schedule groups. For more information, see Creating Pick-Up/Return Ruleset Schedule Groups [page 164].

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Pickup/Return Ruleset Schedule Group Name	1	CHAR	20	Required	If the ruleset schedule group already exists, it is updated. Otherwise, a new ruleset schedule group is created.
Description	2	CHAR	40	Optional	Description of the ruleset schedule group.
Ruleset Type	3	CHAR	20	Required	The following values are permitted: • Pick-up • Return
Time Zone	4	CHAR	40	Required	Must be a valid time zone code.
Recurrence Type	5	CHAR	7	Required	The following values are permitted: • Minutes • Hours • Days
Recurrence Interval	6	INTEGER	2	Required	Number of days, hours, or minutes depending on the *Recurrence Type*.
Start Date and Time	7	TIMESTAMP	24	Required	Start date for execution of the ruleset schedule group. Must be in the format YYYY-MM-DDTHH:MM:00.000Z and must be in the time zone entered in the time zone field.

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
End Date and Time	8	TIMESTAMP	24	Required	End date for execution of the ruleset schedule group. Must be in the format YYYY-MM-DDTHH:MM:00.000Z and must be in the time zone entered in the time zone field.
Execute in Working Hours	9	CHAR	3	Required if the *Recurrence Type* is *Minutes* or *Hours*	Specifies whether the schedule is to be executed during working hours only. Relevant if the *Recurrence Type* is *Minutes* or *Hours*, and must be *Yes* or *No*.
Start Working Hours	10	TIME	5	Required if *Execute in Working Hours* is *Yes*	Start time of the working hours. Only relevant when *Execute in Working Hours* is *Yes*. Must be in the format HH:MM.
End Working Hours	11	TIME	5	Required if *Execute in Working Hours* is *Yes*	End time of the working hours. Only relevant when *Execute in Working Hours* is *Yes*. Must be in the format HH:MM.

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Ruleset	12	CHAR	20	Required	The name of the pick-up and return ruleset that you want to assign to the group. The ruleset must exist in the ruleset master data.

Example

Pickup / Return Ruleset Schedule Group Name	Description	Ruleset Type	Time Zone	Recurrence Type	Recurrence Interval	Start Date and Time	End Date and Time	Execute in Working Hours	Start Working Hours	End Working Hours	Ruleset
INDIA_PICKUP_GRP	Pickup Rulesets for India	Pick-up	Asia/Kolkata	Minutes	50	2019-02-20T05:00:00.000Z	2019-02-26T10:00:00.000Z	YES	9:00	18:00	PICKUP_MUMBAI
INDIA_PICKUP_GRP	Pickup Rulesets for India	Pick-up	Asia/Kolkata	Minutes	50	2019-02-20T05:00:00.000Z	2019-02-26T10:00:00.000Z	YES	9:00	18:00	PICKUP_CHENNAI
INDIA_RETURN_GRP	Return Rulesets for India	Return	Asia/Kolkata	Minutes	50	2019-02-20T05:00:00.000Z	2019-02-26T10:00:00.000Z	YES	09:00	18:00	RETURN_MUMBAI
INDIA_RETURN_GRP	Return Rulesets for India	Return	Asia/Kolkata	Minutes	50	2019-02-20T05:00:00.000Z	2019-02-26T10:00:00.000Z	YES	9:00	18:00	RETURN_CHENNAI

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14.12.4.11 File Format for Optimize TU Ruleset Schedule Groups

The comma-separated values (CSV) file for the mass data upload of *Optimize TU Ruleset Groups* must be in the format below. Note that the first row of the file is treated as a header row and is not uploaded.

> **i Note**
>
> There are several validation checks and restrictions that apply to ruleset schedule groups. For more information, see Creating Pick-Up/Return Ruleset Schedule Groups [page 164].

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Pick-up/Return Ruleset Schedule Group Name	1	CHAR	20	Required	If the ruleset schedule group already exists, it is updated. Otherwise, a new ruleset schedule group is created.
Description	2	CHAR	40	Optional	Description of the ruleset schedule group.
Ruleset Type	3	CHAR	20	Required	The following values are permitted: • Pick-up • Return
Ruleset Name	4	CHAR	20	Required	The name of the pick-up and return ruleset that you want to assign to the group. The ruleset must exist in the ruleset master data.

Example

Pickup/Return Ruleset Schedule Group Name	Description	Ruleset Type	Ruleset Name
PU_OPT_GRP1	Pick-up Optimization Group for India	Pick-up	PU_RS_INDIA_1
DO_OPT_GRP1	Return Optimization Group for India	Return	DO_RS_INDIA_1
PU_OPT_GRP1	Pick-up Optimization Group for India	Pick-up	PU_RS_INDIA_2
DO_OPT_GRP1	Return Optimization Group for India	Return	DO_RS_INDIA_2

14.12.4.12 File Format for Lessors

The comma-separated values (CSV) file for the mass data upload of lessors must be in the format below. Note that the first row of the file is treated as a header row and is not uploaded.

Field	Column Sequence	Data Type	Maximum Length	Required/	Field
Code	1	NVARCHAR	22	Required	If the code already exists, then it is updated. Otherwise, a new one is created
Lessor Agreement Reference	2	NVARCHAR	100	Required	Reference for the lessor agreement
Name	3	NVARCHAR	100	Required	Name of the lessor
Address Line 1	4	NVARCHAR	255	Required	First line of address.
Address Line 2	5	NVARCHAR	255	Optional	Second line of address
Address Line 3	6	NVARCHAR	255	Optional	Third line of address
Description	7	NVARCHAR	1000	Optional	Description

Field	Column Sequence	Data Type	Maximum Length	Required/	Field
City	8	NVARCHAR	40	Optional	City
State	9	NVARCHAR	40	Optional	State
Country	10	NVARCHAR	40	Optional	Country
Post Code	11	NVARCHAR	10	Optional	Post code
Phone 1	12	NVARCHAR	30	Optional	Phone number
Phone 2	13	NVARCHAR	30	Optional	Second phone number
Fax Number 1	14	NVARCHAR	30	Optional	Fax number
Fax Number 2	15	NVARCHAR	30	Optional	Second fax umber
Email 1	16	NVARCHAR	30	Optional	Email address
Email 2	17	NVARCHAR	30	Optional	Second email address
Company URL	18	NVARCHAR	255	Optional	Company URL
Image URL	19	NVARCHAR	255	Optional	Image URL

Example

Code	Lessor Agreement Reference	Name	Address Line 1	Address Line 2	Address Line 3	Description	City	State	Country	Post Code	Phone 1	Phone 2	Fax Number 1	Fax Number 2	Email 1	Email 2	Company URL	Image URL
3094	3094	SEAFREIGHTLINE	Head Office	Europe														

14.12.4.13 File Format for Lease Contract Types

The comma-separated values (CSV) file for the mass data upload of lease contract types must be in the format below. Note that the first row of the file is treated as a header row and is not uploaded.

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Code	1	NVARCHAR	22	Required	If the lease contract type already exists, then it is updated. Otherwise, a new one is created
Type	2	NVARCHAR	100	Required	Description of the lease contract type.

Example

Code	Type
S	Subleased From
Y	Life Cycle Lease
Z	One Way

14.12.4.14 File Format for Lease Contract Hire Terms

The comma-separated values (CSV) file for the mass data upload of lease contract hire terms must be in the format below. Note that the first row of the file is treated as a header row and is not uploaded.

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Lease Contract Reference	1	NVARCHAR	100	Required	The lease contract reference must exist in the system.

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Hire Type	2	TINYINT		Required	The following values are permitted: • 0 - Off-Hire • 1 - On-Hire
Start Time	3	TIMESTAMP	24	Required	Start time should be in the format YYYY-MM-DDTHH:MM:SS.000Z
End Time	4	TIMESTAMP	24	Required	End time should be in the format YYYY-MM-DDTHH:MM:SS.000Z
Location Type	5	TINYINT		Optional	The following values are permitted: • 1 – Location • 2 – Location Group • 3 – Zone • 4 – Zone Group • 5 – Region • 6 – Region Group
Location	6	NVARCHAR	22	Optional	Location can be one of the following: • a specific location • a location group • a region • a region group • a zone • a zone group

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Equipment	7	NVARCHAR	50	Optional	Can be a specific equipment or an equipment group
Minimum Hire Quantity	8	INTEGER		Optional	Minimum hire quantity
Maximum Hire Quantity	9	INTEGER		Optional	Maximum hire quantity
Fee	10	DECIMAL	13,3	Optional	Fee
Penalty Fee	11	DECIMAL	13,3	Optional	Penalty fee
Remarks	12	NVARCHAR	1000	Optional	Remarks
Active	13	TINYINT		Required	The following values are permitted: • 1 – Yes • 0 – No

Example

Lease Contract Reference	Hire Type	Start Time	End Time	Location Type	Location	Equipment	Minimum Hire Quantity	Maximum Hire Quantity	Fee	Penalty Fee	Remarks	Active
LEASE-Z	1	2019-02-20T05:00:00.000Z	2019-04-20T10:00:00.000Z	2	LOC_GRP_23	1	250	500	100	0		1
LEASE-Z	1	2019-02-20T05:00:00.000Z	2019-04-20T10:00:00.000Z	2	LOC_GRP_32	1	300	600	75	20		1
LEASE-Z	1	2019-02-20T05:00:00.000Z	2019-04-20T10:00:00.000Z	3	ZONE_2	1	1500	3000	50	10		0

14.12.4.15 File Format for Lease Contract Hire Conditions

The comma-separated values (CSV) file for the mass data upload of lease contract hire conditions must be in the format below. Note that the first row of the file is treated as a header row and is not uploaded.

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Lease Contract Reference	1	NVARCHAR	100	Required	The lease contract reference must exist in the system.
Hire Type	2	TINYINT		Optional	The following values are permitted: • 0 – Off-Hire • 1 – On-Hire
Location Type	3	TINYINT		Optional	The following values are permitted: • 1 – Location • 2 – Location Group • 3 – Zone • 4 – Zone Group • 5 – Region • 6 – Region Group
Location	4	NVARCHAR	22	Optional	Location can be one of the following: • a specific location • a location group • a region • a region group • a zone • a zone group
Equipment	5	NVARCHAR	50	Optional	Equipment can be a specific equipment or an equipment group

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Minimum Hire Quantity	6	INTEGER		Optional	Minimum hire quantity
Maximum Hire Quantity	7	INTEGER		Optional	Maximum hire quantity
Active	8	TINYINT		Required	The following values are permitted: • 1 – Yes • 0 – No

Example

Lease Contract Reference	Hire Type	Location Type	Location	Equipment	Minimum Hire Quantity	Maximum Hire Quantity	Active
LEASE-Z	X	2	LOC_GRP_23	1	250	1100	1
LEASE-Z	Y	2	LOC_GRP_32	1	500	900	1
LEASE-Z	Z	3	ZONE_2	1	3000	8000	1

14.12.4.16 File Format for Lease Contracts

The comma-separated values (CSV) file for the mass data upload of lease contracts must be in the format below. Note that the first row of the file is treated as a header row and is not uploaded.

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Lease Contract Reference	1	NVARCHAR	100	Required	If the lease contract reference already exists, then it is updated. Otherwise, a new one is created

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Lease Type Code	2	NVARCHAR	22	Required	The code for the lease type. The lease type code should exist in the system.
Lessor Code	3	NVARCHAR	22	Required	The code for the lessor. The lessor code should exist in the system.
Start Time	4	TIMESTAMP	24	Optional	Start time must be in the format YYYY-MM-DDTHH:MM:SS.000Z.
End Time	5	TIMESTAMP	24	Optional	Start time must be in the format YYYY-MM-DDTHH:MM:SS.000Z.
Currency Code	6	NVARCHAR	3	Required	Currency code
Unit	7	NVARCHAR	3	Optional	Unit
Maximum Hire Quantity	8	INTEGER		Optional	Maximum hire quantity
Minimum Hire Quantity	9	INTEGER		Optional	Minimum hire quantity
Active	10	TINYINT		Required	The following values are permitted: • 1 - Yes • 0 - No
Unit Type	11	NVARCHAR	50	Required	Unit type
Equipment	12	NVARCHAR	50	Optional	Can be an equipment or an equipment group
Per Diem	13	DECIMAL	13,3	Optional	Per diem amount

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Per Diem Active	14	TINYINT		Required	The following values are permitted: • 1 - Yes • 0 - No

Example

Lease Contract Reference	Lease Type	Lessor Code	Start Time	End Time	Currency Code	Unit	Maximum Hire Quantity	Minimum Hire Quantity	Active	Unit Type	Equipment	Per Diem	Per Diem Active
LEASE-Z	Z	3094	2019-02-20T05:00:00.000Z	2019-04-20T10:00:00.000Z	USD		100	50	1	ST	20ST	10	1
LEASE-Z	Z	3094	2019-02-20T05:00:00.000Z	2019-04-20T10:00:00.000Z	USD		100	50	1	ST	40ST	20	1
LEASE-Z	Y	3094	2019-02-20T05:00:00.000Z	2019-04-20T10:00:00.000Z	EUR		200	10	0	ST	20	30	0

14.12.4.17 File Format for Tiles

Users can include four different types of tiles on their *Home* dashboards. You can use the mass data upload to upload the settings for the tiles and specify the sequence of the tiles on the *Home* dashboard.

The following types of tile can be uploaded:

Tile Type	Required Settings	Additional Information
Stock	Location filter and resource filter	
Supply and Demand	Supply and demand plan	
Alerts	Supply and demand plan or KPI plan	An *Alerts* tile can have more than one supply and demand plan or KPI plan.
KPI	KPI plan	Multiple KPI plans can be added in one *KPI* tile with the same sequence and user name. However, the KPI plans must be the same KPI type and have the same time filter and calculation model.

The comma-separated values (CSV) file for the mass data upload of tiles must be in the format below. Note that the first row of the file is treated as a header row and is not uploaded.

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
User Name	1	CHAR	20	Required	User name for SAP Transportation Resource Planning
Position	2	INTEGER		Required	Position sequence in the *Home* dashboard. If an *Alerts* or a *KPI* tile has more than one plan in its settings, the sequence number must be the same.

Field	Column Sequence	Data Type	Maximum Length	Required/ Optional	Notes
Tile Type	3	CHAR	32	Required	The type of the tile. The possible values are as follows: • Stock • Supply and Demand • Alerts • KPI
Location Filter	4	CHAR	20	Required for *Stock* tiles	Specifies the location filter and is mandatory for *Stock* tiles.
Resource Filter	5	CHAR	20	Required for *Stock* tiles	Specifies the resource filter and is mandatory for *Stock* tiles.
Supply and Demand Plan Name	6	CHAR	20	Required for *Supply and Demand* tiles and optional for *Alerts* tiles	Specifies the name of a supply and demand plan. Mandatory for *Supply and Demand* tiles and optional for *Alerts* tiles.
KPI Plan Name	7	CHAR	20	Required for *KPI* tiles and optional for *Alerts* tiles	Specifies the name of a KPI plan. Mandatory for *KPI* tiles and optional for *Alerts* tiles.

Example

User Name	Position	Tile Type	Location Filter	Resource Filter	Supply and Demand Plan Name	KPI Plan Name
PLANNER1	1	Stock	LF_ASIA	RF_ASIA		

User Name	Position	Tile Type	Location Filter	Resource Filter	Supply and Demand Plan Name	KPI Plan Name
PLANNER1	2	Supply and Demand			SD_ASIA	
PLANNER1	3	Alerts			SD_ASIA	
PLANNER1	3	Alerts			SD_EU	
PLANNER1	4	Alerts				KPI_ASIA
PLANNER1	4	Alerts				KPI_EU
PLANNER1	5	Alerts			SD_ASIA	
PLANNER1	5	Alerts				KPI_ASIA
PLANNER1	6	KPI				KPI_ASIA
PLANNER1	6	KPI				KPI_EU

14.12.5 References for Mass Data Upload

This section contains lists of the codes used in the mass data upload files.

14.12.5.1 List of Time Zones

The table below lists the time zones that are valid for use in SAP Transportation Resource Planning.

Time zone codes are used in the following features:

- Time filters
- Scheduling of supply and demand plans
- Scheduling of KPI plans
- Pick-up and return rulesets
- Scheduling of archive rules

These time zone codes are also used in the CSV files for the mass data upload of scheduled supply and demand plans, scheduled KPI plans, and pick-up and return rulesets.

Time Zone Code	Offset	Time Zone Description
Pacific/Midway	(GMT-11:00)	Coordinated Universal Time-11
US/Aleutian	(GMT-10:00)	Aleutian Islands
Pacific/Honolulu	(GMT-10:00)	Hawaii
Pacific/Marquesas	(GMT-09:30)	Marquesas Islands
Pacific/Gambier	(GMT-09:00)	Coordinated Universal Time-09
America/Juneau	(GMT-09:00)	Alaska
America/Tijuana	(GMT-08:00)	Baja California
America/Los_Angeles	(GMT-08:00)	Pacific Time (US and Canada)
Pacific/Pitcairn	(GMT-08:00)	Coordinated Universal Time-08
America/Denver	(GMT-07:00)	Mountain Time (US and Canada)
America/Chihuahua	(GMT-07:00)	Chihuahua, La Paz, Mazatlan
America/Phoenix	(GMT-07:00)	Arizona
Chile/EasterIsland	(GMT-06:30)	Easter Island
America/Chicago	(GMT-06:00)	Central America, Central Time (US and Canada)
Canada/Saskatchewan	(GMT-06:00)	Saskatchewan
America/Mexico_City	(GMT-06:00)	Guadalajara, Mexico City, Monterrey
America/New_York	(GMT-05:00)	Chetumal, Haiti, Turks and Caicos, Eastern Time (US and Canada)
America/Havana	(GMT-05:00)	Havana
America/Indiana/Indianapolis	(GMT-05:00)	Indiana (East)
America/Lima	(GMT-05:00)	Bogota, Lima, Quito, Rio Branco
America/Caracas	(GMT-04:00)	Caracas
America/Santiago	(GMT-04:00)	Atlantic Time (Canada), Santiago
America/Asuncion	(GMT-04:00)	Asuncion
America/Cuiaba	(GMT-04:00)	Cuiaba
America/La_Paz	(GMT-04:00)	Georgetown, La Paz, Manaus, San Juan

Time Zone Code	Offset	Time Zone Description
America/St_Johns	(GMT-03:30)	Newfoundland
America/Araguaina	(GMT-03:00)	Araguaina
America/Montevideo	(GMT-03:00)	Montevideo
America/Argentina/Buenos_Aires	(GMT-03:00)	City of Buenos Aires
America/Fortaleza	(GMT-03:00)	Cayenna, Fortaleza
America/Punta_Arenas	(GMT-03:00)	Punta Arenas
America/Miquelon	(GMT-03:00)	Saint Pierre and Miquelon, Greenland
America/El_Salvador	(GMT-03:00)	Salvador, Brasilia
America/Noronha	(GMT-02:00)	Coordinated Universal Time-02
Atlantic/Azores	(GMT-01:00)	Azores
Atlantic/Cape_Verde	(GMT-01:00)	Cabo Verde Islands
Europe/London	(GMT)	Dublin, Edinburgh, Lisbon, London
Africa/Sao_Tome	(GMT)	Sao Tome
Africa/Monrovia	(GMT)	Monrovia, Reykjavik
UTC	(GMT)	Coordinated Universal Time
Africa/Casablanca	(GMT)	Casablanca
Europe/Belgrade	(GMT+01:00)	Belgrade, Bratislava, Budapest, Ljubljana, Prague
Europe/Zagreb	(GMT+01:00)	Sarajevo, Skopje, Warsaw, Zagreb
Europe/Paris	(GMT+01:00)	Brussels, Copenhagen, Madrid, Paris
Europe/Berlin	(GMT+01:00)	Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna
Africa/Brazzaville	(GMT+01:00)	West Central Africa
Europe/Kaliningrad	(GMT+02:00)	Kaliningrad
Africa/Khartoum	(GMT+02:00)	Khartoum
Africa/Tripoli	(GMT+02:00)	Tripoli
Asia/Beirut	(GMT+02:00)	Beirut

Time Zone Code	Offset	Time Zone Description
Asia/Amman	(GMT+02:00)	Amman
Africa/Windhoek	(GMT+02:00)	Windhoek
Africa/Cairo	(GMT+02:00)	Cairo
Europe/Helsinki	(GMT+02:00)	Helsinki, Kyiv, Riga, Sofia, Tallinn, Vilnius
Europe/Athens	(GMT+02:00)	Athens, Bucharest
Asia/Jerusalem	(GMT+02:00)	Jerusalem
Africa/Harare	(GMT+02:00)	Harare, Pretoria
Europe/Chisinau	(GMT+02:00)	Chisinau
Asia/Damascus	(GMT+02:00)	Damascus
Asia/Gaza	(GMT+02:00)	Gaza, Hebron
Europe/Moscow	(GMT+03:00)	Moscow, St. Petersburg
Europe/Minsk	(GMT+03:00)	Minsk
Asia/Istanbul	(GMT+03:00)	Istanbul
Asia/Kuwait	(GMT+03:00)	Kuwait, Riyadh
Africa/Nairobi	(GMT+03:00)	Nairobi
Asia/Baghdad	(GMT+03:00)	Baghdad
Asia/Tehran	(GMT+03:30)	Tehran
Europe/Volgograd	(GMT+04:00)	Volgograd
Europe/Astrakhan	(GMT+04:00)	Astrakhan, Ulyanovsk
Europe/Samara	(GMT+04:00)	Izhevsk, Samara
Europe/Saratov	(GMT+04:00)	Saratov
Asia/Yerevan	(GMT+04:00)	Yerevan
Indian/Mauritius	(GMT+04:00)	Port Louis
Asia/Muscat	(GMT+04:00)	Abu Dhabi, Muscat
Asia/Baku	(GMT+04:00)	Baku

Time Zone Code	Offset	Time Zone Description
Asia/Tbilisi	(GMT+04:00)	Tbilisi
Asia/Kabul	(GMT+04:30)	Kabul
Asia/Karachi	(GMT+05:00)	Islamabad, Karachi
Asia/Qyzylorda	(GMT+05:00)	Qyzylorda
Asia/Yekaterinburg	(GMT+05:00)	Ekaterinburg
Asia/Tashkent	(GMT+05:00)	Ashgabat, Tashkent
Asia/Kolkata	(GMT+05:30)	Chennai, Kolkata, Mumbai, New Delhi, Sri Jayawardenepura
Asia/Kathmandu	(GMT+05:45)	Kathmandu
Asia/Dhaka	(GMT+06:00)	Dhaka, Astana
Asia/Omsk	(GMT+06:00)	Omsk
Asia/Rangoon	(GMT+06:30)	Yangon (Rangoon)
Asia/Barnaul	(GMT+07:00)	Barnaul, Gorno-Altaysk
Asia/Hovd	(GMT+07:00)	Hovd
Asia/Novosibirsk	(GMT+07:00)	Novosibirsk
Asia/Tomsk	(GMT+07:00)	Tomsk
Asia/Bangkok	(GMT+07:00)	Bangkok, Hanoi, Jakarta
Asia/Krasnoyarsk	(GMT+07:00)	Krasnoyarsk
Asia/Beijing	(GMT+08:00)	Beijing, Chongqing, Hong Kong, Urumqi
Asia/Singapore	(GMT+08:00)	Kuala Lumpur, Singapore
Asia/Taipei	(GMT+08:00)	Taipei
Australia/Perth	(GMT+08:00)	Perth
Asia/Ulaanbaatar	(GMT+08:00)	Ulaanbaatar
Asia/Irkutsk	(GMT+08:00)	Irkutsk
Australia/Eucla	(GMT+08:45)	Eucla
Asia/Chita	(GMT+09:00)	Chita

Time Zone Code	Offset	Time Zone Description
Asia/Pyongyang	(GMT+09:00)	Pyongyang
Asia/Seoul	(GMT+09:00)	Seoul
Asia/Tokyo	(GMT+09:00)	Osaka, Sapporo, Tokyo
Asia/Yakutsk	(GMT+09:00)	Yakutsk
Australia/Darwin	(GMT+09:30)	Darwin
Australia/Adelaide	(GMT+09:30)	Adelaide
Australia/Sydney	(GMT+10:00)	Canberra, Melbourne, Sydney
Australia/Brisbane	(GMT+10:00)	Brisbane
Australia/Hobart	(GMT+10:00)	Hobart
Asia/Vladivostok	(GMT+10:00)	Vladivostok
Pacific/Guam	(GMT+10:00)	Guam, Port Moresby
Australia/Lord_Howe	(GMT+10:30)	Lord Howe Island
Pacific/Bougainville	(GMT+11:00)	Bougainville Island
Pacific/Norfolk	(GMT+11:00)	Norfolk Island
Asia/Sakhalin	(GMT+11:00)	Sakhalin
Asia/Magadan	(GMT+11:00)	Magadan, Solomon Islands, New Caledonia, Chokurdakh
Pacific/Fiji	(GMT+12:00)	Fiji
Asia/Kamchatka	(GMT+12:00)	Petropavlovsk-Kamchatsky
Asia/Anadyr	(GMT+12:00)	Coordinated Universal Time+12, Anadyr
Pacific/Auckland	(GMT+12:00)	Auckland, Wellington
Pacific/Chatham	(GMT+12:45)	Chatham Island
Pacific/Tongatapu	(GMT+13:00)	Coordinated Universal Time+13, Nuku'alofa
Pacific/Samoa	(GMT+13:00)	Samoa
Pacific/Kiritimati	(GMT+14:00)	Kiritimati Island

14.13 Archiving Data

Data archiving is a process that keeps your historical business data separate from the current data. This is done by deleting the historical data from the hot tables after copying them to their respective warm (disk) storage. This releases the memory to accommodate more of your current business data, enabling faster data access and analysis.

Archiving Options

SAP Transportation Resource Planning supports data archiving with either of the following options:

- SAP HANA Dynamic Tiering
  A native big data solution for SAP HANA. This option adds smart, disk-based extended storage to your SAP HANA database.
- SAP HANA Smart Data Access
  This option enables you to access remote data without having to move or replicate it to SAP HANA. SAP Transportation Resource Planning supports data archiving using smart data access for SAP IQ by using the database objects in the remote server as the warm tables.

Archiving Rules

You can use archiving rules to manage your archived data. You can define rules to do the following:

- To archive data
- To remove archive data
- To schedule automatic archiving

Related Information

Selecting an Archiving Option [page 314]
Creating and Executing Archiving Rules [page 314]
Using the Execution History for Archiving Rules [page 316]
Viewing Archived Data [page 317]

14.13.1 Selecting an Archiving Option

Prerequisites

You must be a system administrator to work with archiving options.

> **i** Note
>
> The data archiving option is determined during the configuration process for SAP Transportation Resource Planning. Both options require system setup and configuration. For more information, see the master guide available at http://help.sap.com/trp500.

Procedure

1. Go to ▶ *Data Operations* ▶ *Archiving Settings* ▶.
2. Select one of the following options:
   - *SAP HANA Dynamic Tiering*
     A native big data solution for SAP HANA. This option adds smart, disk-based extended storage to your SAP HANA database.
   - *SAP HANA Smart Data Access*
     This option enables you to access remote data without having to move or replicate it to SAP HANA. SAP Transportation Resource Planning supports data archiving using smart data access for SAP IQ by using the database objects in the remote server as the warm tables.
     If you select this option, you must also specify remote data source type, name, and schema.
3. Choose *Save*.

14.13.2 Creating and Executing Archiving Rules

Prerequisites

You must be a system administrator to work with archiving rules.

Context

In SAP Transportation Resource Planning, you can set rules to define archiving jobs, and then execute the rules to do the jobs. You can also schedule automatic archiving.

When you create a rule, you decide on the following aspects:

- Rule type

This determines whether the rule is used to archive data, delete archived records, or schedule automatic archiving. When data is archived, it is moved from hot storage to warm storage. When archived records are deleted, they are removed from the warm storage.

> **i Note**
>
> After you delete archived records, the records are neither in the hot storage nor in the warm storage. They are permanently deleted.

- Archived table
  This specifies the data table to be archived or the archived records to be deleted.
- Time period
  This specifies a time period for filtering table records. The records created within this period are the target records for archiving, deleting, or automatic archiving.
  For archiving and deleting archived records, you specify a date range. For automatic archiving, you specify one of the following options:
  - *Archive older than X days*
    Choose this option to archive all data older than the specified number of days.
  - *Archive older than Y execution runs*
    There can be multiple execution runs on each day. Choose this option to archive all but the specified number of execution runs. For example, if you specify 2, the latest two execution runs on each day are kept, and all other execution runs are archived.
  - *Archive data older than X days but keep Y execution runs*
    Choose this option to archive data older than the specified number of days, but keep the specified numbered of execution runs from those days.
- Scheduling
  For automatic archiving, this specifies the recurrence frequency as a number of minutes, hours, days, weeks, or months. You also specify a start date and time and an end date and time.

Procedure

1. Go to *Data Operations* > *Archiving Rules*.
2. Choose *Create Rule* with one of the following options:
   - To create a rule to archive a table, select *Archive*.
   - To create a rule to delete archived records, select *Remove Archive Data*.
   - To create a rule to archive a table automatically, select *Schedule Archive Data*.
3. Enter a name and description.
4. Specify a data table and a time period.
5. If you choose the *Schedule Archive Data* option, specify the scheduling options as follows:
   a. Go to the *Scheduling* tab.
   b. Specify the recurrence frequency.
   c. Specify the start date and time and the end date and time for the schedule.
6. Save the rule.

Results

Once a rule is created, you cannot modify or delete it. Rules for archiving and deleting can be executed repeatedly at any time. Scheduled archiving rules run automatically at the scheduled time and cannot be run manually. You can deactivate and activate rules as required. For example, you can use these options to pause or stop a scheduled archiving rule.

14.13.3 Using the Execution History for Archiving Rules

For an overview of the execution history for archiving rules, go to *Monitoring* > *Archiving Execution History*. You can use this view to check how many records were affected by the execution of an archiving rule, for example.

When you open the view, you can narrow down the execution history by doing the following:

- Display the filters available for the columns in the list.

  To do this, choose  at the upper left of the list.
- Sort each individual column in the list.
  To do this, click a column header and select *Sort Ascending* or *Sort Descending*.

The *Execution History* view provides the following fields:

Field Shown	What It Means
Name	Shows the name of the archiving rule.
Ruleset Type	Shows the type of archiving rule.
From	Shows the start of the time period that was specified in the archiving rule. Blank for *Scheduled Archive Data* rules.
To	Shows the end of the time period that was specified in the archiving rule. Blank for *Scheduled Archive Data* rules.
Schedule Option	Shows the scheduling option for a *Scheduled Archive Data* rule.
Number of Days	Shows the number of days that were specified for a *Scheduled Archive Data* rule.
Number of Executions	Shows the number of executions that were specified for a *Scheduled Archive Data* rule.

Field Shown	What It Means
Records Affected	Indicates how many records were archived or deleted by the execution of the archiving rule.
Start Time	Shows when the execution of the archiving rule was triggered.
End Time	Shows when the execution of the archiving rule was completed.
Executed By	Identifies the user who executed the archiving rule.
Status	Indicates whether the archiving rule was executed successfully or with errors.
Message	Shows any errors encountered during the execution of the archiving rule.

14.13.4 Viewing Archived Data

Prerequisites

You must be a system administrator to work with archived data.

Procedure

1. Go to *Data Operations* > *Archived Data*.

   > **i Note**
   >
   > This view only shows the records that are currently in the archived table. The records that have been deleted are not shown.

2. Select a table in the *Archived Table* field.

   The archived records of that table are displayed in the list.

3. You can narrow down the results by doing the following:
   - Select an archive rule in the *Rule* field to show records archived by a specific rule.
   - Use the *From* and *To* fields to show the records that were created during a specific time period.
   - Use the search field available at the upper-right corner of the list.
   - You can also sort each individual column in the list by clicking a column header and selecting *Sort Ascending* or *Sort Descending*.

14.14 Monitoring

SAP Transportation Resource Planning provides a *Monitoring* work center that integrates features to report the conditions that occur during the execution of the application.

The application log provides a comprehensive infrastructure for collecting messages, saving them in the server and displaying them for analysis. Application logs are typically created for processes that are executed without a direct user interface. It supports the logging of multiple languages and the maintenance of translated messages.

In the application log, you can monitor the following log objects:

- All configuration changes
- Errors during job execution
- Remote calls for transportation request creation
- Pick-up and return ruleset execution
- Supply and demand plan and KPI plan execution
- Authorization errors

To access the *Monitoring* work center, you must be assigned a role collection containing the following role templates:

- Advance monitoring role: For administrators to view their own and other users' logs.
  - `TRP_Role_Business_Configuration_Admin`
  - `TRP_Role_Super_Admin`
- Basic monitoring role: To view your own logs only.
  - `TRP_Role_Business_Viewer` or
  - `TRP_Role_Business_Application_User`

The *Monitoring* work center provides access to the following monitoring services:

- Application Logs
- Mass Upload History
- Archiving Execution History
- Job Scheduling Status
- Queue Status

Related Information

Application Logs [page 319]
Mass Upload History [page 320]
Archiving Execution History [page 320]
Job Scheduling Status [page 322]
Queue Status [page 323]

14.14.1 Application Logs

The *Application Logs* tab in the *Monitoring* work center provides application logging capability to the SAP Transportation Resource Planning application services. The logs are generated from the operations you perform as part of your daily working.

You can monitor the following log objects:

- User-transaction related messages
- Configuration changes
- Master data changes
- Job schedule execution errors
- Remote calls to the external logistics system

The log levels used in the *Application Logs* are as follows:

Log Level	Description
Info	Used for events that do not need any follow-up activity. Reflects the normal operations within the application.
Warning	Used for events that need follow-up activity to prevent errors in the future.
Error	Used when the desired tasks cannot be completed and the application is still usable.
Fatal	Used in the case of errors that cause the application to be no longer usable.

The following filters are available on the *Application Logs* tab:

- *Log Level*: Single drop-down selection for the log level you want to filter.
- *Business Application*: Single drop-down selection for the business application name.
- *Service Name*: Single drop-down selection for the service name under the application name.
- *Logged User*: Single drop-down selection for the ID of the logged user.
- *From Date*: Date that defaults to 24 hours before today.
- *To Date*: Date that defaults to today.
- *Log Messages*: Free text search for the log message parameters.

> **i Note**
>
> For the error application logs, there is a database entry for the *errorObj* column, which contains the stack track for the error object that was generated with the failed user transaction. Share this detail, along with the error message, when raising a support message to help expedite the troubleshooting.
>
> For the sake of brevity, the *errorObj* column is not displayed on the *Application Logs* tab.

Related Information

Monitoring [page 318]

14.14.2 Mass Upload History

The *Mass Upload History* tab in the *Monitoring* work center displays an overview of the execution history for the mass data upload application.

You can use this tab to check the number of records affected by the execution of a mass data upload.

The *Mass Upload History* tab includes the following fields:

Field	What it Means
Upload ID	Shows the unique ID for the mass data upload transaction log.
Object Type	Shows the object type description.
Number of Records Created	Shows the count of created records.
Number of Records Updated	Shows the count of updated records.
Total Number of Records	Shows the total cumulative count of created and/or updated records.
Upload Time	Shows the time stamp for the upload action.
Uploaded By	Shows the system user who performed the action.
Status	Shows the status of the mass upload transaction.

Related Information

Monitoring [page 318]
Mass Data Upload [page 259]

14.14.3 Archiving Execution History

The *Archiving Execution History* tab in the *Monitoring* work center provides an overview of the execution history for archiving rules.

You can use this view to check how many records were affected by the execution of an archiving rule, for example. When you open the view, you can narrow down the execution history by doing the following:

- Display the filters available for the columns in the list.

  To do this, choose  at the upper left of the list.
- Sorti each individual column in the list.
  To do this, click a column header and select *Sort Ascending* or *Sort Descending*.

The *Archiving Execution History* tab includes the following fields:

Field	What it Means
Name	Shows the name of the archiving rule.
Ruleset Type	Shows the type of archiving rule.
From	Shows the start of the time period that was specified in the archiving rule. Blank for *Scheduled Archive Data* rules.
To	Shows the end of the time period that was specified in the archiving rule. Blank for *Scheduled Archive Data* rules.
Schedule Option	Shows the scheduling option for a *Scheduled Archive Data* rule.
Number of Days	Shows the number of days that were specified for a *Scheduled Archive Data* rule.
Number of Executions	Shows the number of executions that were specified for a *Scheduled Archive Data* rule.
Records Affected	Indicates how many records were archived or deleted by the execution of the archiving rule.
Start Time	Shows when the execution of the archiving rule was triggered.
End Time	Shows when the execution of the archiving rule was completed.
Executed By	Identifies the user who executed the archiving rule.
Status	Indicates whether the archiving rule was executed successfully or with errors.
Message	Shows any errors encountered during the execution of the archiving rule.

Related Information

Monitoring [page 318]

14.14.4 Job Scheduling Status

The *Job Scheduling Status* tab in the *Monitoring* work center displays the recommended job scheduling status for the current system setup.

These basic jobs should be available and active in the SAP Transportation Resource Planning system for it to operate normally. The *Job Scheduling Status* tab includes the following fields:

Field	What it Means
Job Name	Shows the recommended job names that should be available and active in the system for the solution to be running properly.
Job ID	Shows the ID for the job that has been assigned by the system during job creation.
Job Status	Shows the job status for the specific job in the system. The possible values are as follows: • *Available* • *Unavailable*
Job Status Action	Provides a button to create the job in system if the job is *Unavailable*. The button is disabled if the job is *Available*.
Activation Status	Shows the activation status for the job name. The possible values are as follows: • *Active* • *Inactive*
Activation Status Action	Provides a button to activate/deactivate a job schedule in the system. The button has a toggle feature that switches the job schedule from *Active* to *Inactive*.

Related Information

Monitoring [page 318]

14.14.5 Queue Status

The *Queue Status* tab in the *Monitoring* work center displays the messaging service queue details.

The following fields are listed on this tab:

Field	What it Means
Queue Name	Shows the application queue name.
Pending Messages	Shows the count of pending messages in the queue.
Producers Count	Shows the count of the messages producing applications to the current queue Name.
Consumers Count	Shows the count of the messages consuming applications from the current queue name.

When you select a single row in the *Queues* table, the following details are displayed for that queue:

Field	What it Means
Queue Name	Shows the application queue name.
Message ID	Shows the message ID.
Correlation ID	Shows the correlation ID.
Expiration (in seconds)	Shows the expiration time of the message in seconds.
Persistence	Shows whether the message has the property persistence selected. This is a fallback option that helps ensure that the messages are persisted to internal storage for the messaging service broker if the broker restarts.
Redelivered	Shows whether the message has been attempted for redelivery.
Time Stamp	The time stamp of the message.

> **i Note**
>
> The data displayed in the table is the current snapshot of the messaging service statistics. There is no historical trend/data persistently stored in this regard.

14.15 End-to-End Tracing

In SAP Transportation Resource Planning, with a microservices architecture, requests originating from any clients are typically propagated to several back-end applications and perhaps even conduct SAP HANA

executions. End-to-end (E2E) tracing enables you to follow such requests between SAP Transportation Resource Planning applications and the underlying SAP HANA database.

For each user request, the following information is tagged and logged:

- An end-to-end trace of API requests
- The related action/execution for the request in SAP HANA
- The distributed statistics record (DSR) collection for SAP Transportation Resource Planning applications

For more information about implementing and using end-to-end tracing in SAP Transportation Resource Planning, see *End-to-End Tracing* in the master guide available at https://help.sap.com/trp500.

15 Data Protection and Privacy

Data protection is associated with numerous legal requirements and privacy concerns. In addition to compliance with general data privacy regulation, it is necessary to consider compliance with industry-specific legislation in different countries. SAP Transportation Resource Planning provides features in the *Data Protection Privacy* work center to help data protection officers (DPOs) perform tasks relevant to data protection and privacy.

> **i** Note
>
> The DPO must be granted a role collection that has the role template `TRP_Role_DPP_Admin` to perform DPO-related tasks.

For conceptual information on data protection and privacy, see *Data Protection and Privacy* in the master guide for SAP Transportation Resource Planning. This guide is available at http://help.sap.com/trp500.

Related Information

User Consents [page 325]
Viewing Information Reports [page 328]

15.1 User Consents

SAP Transportation Resource Planning requires user consent before collecting and using any personal data, such as user ID. Such consents must be collected from users and uploaded to the application in a predefined CSV format.

Use

It is the responsibility of users' organizations themselves to obtain the consents of all their business partners with regard to the use of their personal data in SAP Transportation Resource Planning.

The process is as follows:

1. Data protection officer (DPO) of the users' organization prepares a user consent agreement according to the organization's data protection policy to tell users how their data is handled. Based on these texts, users can decide whether or not they want their personal data to be collected and stored in SAP Transportation Resource Planning.

2. DPO gets consents from each user of SAP Transportation Resource Planning by email or signed agreement whatever describes whether the user consent is yes or no, as well as the validity period of the consent.
3. DPO maintains user consent information in a CSV file with predefined format. The fields in the header line are as follows:
   - `USERNAME`: Character user ID from SAP HANA user name
   - `VALID_FROM`: The date and time from which the consent is valid
   - `VALID_TO`: The date and time until which the consent remains valid
   - `CONSENT_STATEMENT`: Content of the user consent statement
   - `ENABLED_FLAG`: Specifies whether the user consent is enabled (`1`) or disabled (`0`)

   The below sample shows a CSV file with two user consents:

   > **i Note**
   >
   > It is highly recommended that you follow the format in the below sample, especially the format of date and time.

```
USERNAME;VALID_FROM;VALID_TO;CONSENT_STATEMENT;ENABLED_FLAG
USER1;2017-09-13T00:00:00;2017-12-20T00:00:00;Statement of user consent;1
USER2;2017-10-15T00:00:00;2017-11-20T00:00:00;Statement of user consent;1
```

After the CSV format user consents file is prepared, you can upload the consents to SAP Transportation Resource Planning. You can also delete any uploaded consent at any time.

Managing User Consents

To upload or delete user consents, go to *Data Protection Privacy* > *Consents*. This opens the work center in which you manage user consents.

Related Information

Uploading User Consents [page 327]
Deleting a User Consent [page 327]

15.1.1 Uploading User Consents

Prerequisites

- User consents have been collected and prepared in a CSV file with predefined format.
- You must have a role collection that has the role template `TRP_Role_DPP_Admin`.

Context

When uploading a new CSV file, the old user consents are kept. Only the new and updated ones are added.

Procedure

1. Go to *Data Protection Privacy* > *Consents* > *Upload User Consents*.
2. Choose the *Upload CSV* button, specify the CSV file that contains user consents, and choose *Open*.
3. In the *Confirm* dialog box, choose *OK*.

Results

A message appears at the bottom of the screen, showing that the CSV file has been uploaded.

15.1.2 Deleting a User Consent

Prerequisites

- The user consent that you want to delete has been uploaded to SAP Transportation Resource Planning.
- You know the user ID of the user whose consent you want to delete.
- You must have a role collection that has the role template `TRP_Role_DPP_Admin`.

Context

You can only delete user consent one by one per user ID.

Procedure

1. Go to *Data Protection Privacy* > *Consents* > *Delete User Consent*.
2. In the *User ID* box, enter the exact user ID of the user whose consent you want to delete, and choose *Delete*.
3. In the *Confirm* dialog box, choose *OK*.

Results

A message appears at the bottom of the screen, showing that the specified user consent has been deleted.

15.2 Viewing Information Reports

Prerequisites

- You know the user ID of the user whose information reports you want to view.
- You must have a role collection that has the role template `TRP_Role_DPP_Admin`.

Context

SAP Transportation Resource Planning provides information reports to display users' personal data that is stored and used in the application.

The reports are displayed in 5 tabs with the following fields. You can also export them to CSV files for printing purpose.

- Main Data tab
  - User type
  - User validity period
  - The date/time when the user was created or changed

- User Consent tab
  - Whether the user consent is enabled or not
  - Consent validity period
  - The date/time when the consent was created or changed
  - Consent statement
- User Roles tab
  - Name of the role that is assigned to the user
  - Role type
  - Role description
- Where-Used tab
  - The resource category for the business object in which the user's personal data is stored
  - The names of the work center and view in which the user's personal data is displayed
  - The name of the business object in which the user's personal data is stored
  - Description of each object
  - The field(s) where the user's personal data is displayed. In SAP Transportation Resource Planning, personal data can be displayed in *Created By*, *Last Changed By*, and/or *Executed By* fields.
- Application Privileges tab
  - List of the application privileges assigned to the user

Procedure

1. Go to *Data Protection Privacy* > *Reports*.
2. In the *User ID* box, enter the exact user ID of the user whose information reports you want to view, and then choose *View Data*.
3. Switch among the 5 tabs to view relevant information report.
4. If you want to print any of the above reports, choose the *Export to CSV* button to export the report on the current page. Then you can easily print the exported CSV file.

16 Glossary

The following table lists terms that are essential for working with SAP Transportation Resource Planning.

Term	Definition
alert rule	A rule used to determine when an alert should be triggered to notify users about critical situations.
alert rule group	A group of rules that can be selected and used to trigger alerts when critical situations occur, such as supply and demand imbalances or KPI issues.
balancing activity	An action taken to correct an imbalance of transportation resources at a particular location, such as the repositioning of empty resources or the on-hiring of additional resources.
balancing simulation	A simulation that allows you to compare different scenarios or network models for optimizing the rebalancing activities. A balancing simulation is based on a supply and demand plan and a network setting group.
base resource type	A resource type used to calculate preliminary costs in network models.
calculation model	A mathematical model used to compute, for example, supply and demand quantities, stock, KPIs, and so on.
calculation node	An element used to create a calculation model. Each node corresponds with a table in the database structure used to store input, intermediate results, or output. There are two types of calculation nodes: data provider nodes and data operator nodes. Data provider nodes provide source data in a calculation model. Data operator nodes perform a calculation on the data, such as filtering or forecasting.
capacity	The amount of transportation resources that can be carried in a scheduled departure.
carrier	A party that transports goods from one location to another.
consignee	The party who is to receive the cargo.
core data model (CDM)	A simplified data model for SAP Transportation Resource Planning applications, which holds all of the transportation-relevant master data and transaction data in an SAP Transportation Resource Planning database.

Term	Definition
cost connector	A means of retrieving online cost information from your logistics system for use in a cost dataset.
cost dataset	A dataset that contains transportation, handling, and storage costs from user-specified CSV files, or retrieved from the back-end logistics system, or both. Cost datasets can be added to a cost model for calculating costs.
cost model	A model used to calculate costs such as the transportation, storage, or handling of resources. It consists of cost datasets with a common currency and additional information about carriers and means of transport.
cost profile	A planning cost setting in your logistics system that is used for cost calculation.
departure rule	A group of settings that determines the recurrences of scheduled departures. Departure rules are used in single-stage paths for network models in resource balancing.
depot	A location where a transportation resource is kept in stock and received from or delivered to operators, shippers, or consignees.
destination location	The location to which a product is delivered.
distributed statistics record (DSR)	An element of an SAP Passport that includes statistical information on an incoming request and is logged in JSON format. A unique DSR is generated by each application to which a request is sent.
empty repositioning	The movement of transportation resources that contain no goods from one location to another. This is a means of correcting surpluses or deficits of transportation resources in particular locations.
E2E	Abbreviation for end-to-end
exclusion rule	In pick-up/return rulesets, this determines which transportation units are excluded from processing.
freight agreement	A long-term contract that represents the contractual relationship with a carrier from whom you are buying transportation services.

Term	Definition
freight booking	An order whose execution is planned by a carrier, for example, a shipowner. The freight booking contains the plan for the logistical processing, for example, fixed departure times of the ship.
freight order	An order whose execution is planned by a carrier or the shipper. The order contains the following: • Plan for the logistical processing, for example, when and onto which vehicle freight units are to be loaded • Planned departure times for the vehicle • Execution data
idle rate	A key performance indicator (KPI) that shows the percentage of time that a transportation resource has spent in a location waiting to be used again.
instant plan	A supply and demand plan that is executed manually to create forecasts for transportation resources in real time. It consists of a calculation model together with a time filter, a location filter, and a resource filter.
KPI plan	A plan that reports key performance indicators (KPIs) for transportation resources. A KPI plan can be a scheduled plan or a virtual plan.
lane	Defines a direct transport capability between two locations without any planned intermediate transport activities, such as stops for loading or unloading. Lanes are part of network models in resource balancing.
location	A general term used to refer to a depot or region where transportation resources are managed.
location determination rule	A rule that determines the optimal pick-up or return locations for transportation units.
location filter	A set of frequently used locations or location groups that can be selected for transportation resource planning.
location group	A set of locations that can be added to a location filter. A location group can consist of a set of depots or regions, but not a combination of the two.
means of transport	Describes the type of vehicle used in a particular mode of transportation, for example, a truck or a ship.

Term	Definition
multi-attribute filter	A filter used for selecting transportation resources according to certain attributes and conditions.
multi-stage path	A transportation path with a set of sequential and contiguous single-stage paths and/or lanes for transporting resources from a source location to a destination location. Multi-stage paths are part of network models in resource balancing.
network dataset	A set of single-stage paths and lanes for use in a network model. These single-stage paths and lanes can either be retrieved from the logistics system or created by users.
network model	A model that represents the current transportation network that can be used in resource balancing. The network model can consist of single-stage paths, multi-stage paths, and lanes.
network setting group	A set of network settings including at least one cost model that can be assigned as a whole to a balancing simulation. Each group provides settings for generating network models and performing optimization.
off-hire	To return a transportation resource, for example, a container, to the lessor at the end of a lease.
on-hire	To receive a transportation resource, for example, a container, from a lessor at the start of a lease.
pick-up/return ruleset	A set of rules used for finding the optimal pick-up or return locations and dates for transportation units.
port of discharge	A port where the vessel is unloaded.
port of loading	A port where cargo is loaded aboard the vessel.
primary location	A location in a location group or region that has been selected to represent the entire group or region in resource balancing.
region	A geographical area that consists of a set of locations with a hierarchical relationship.
region hierarchy	A geographic structure that orders regions into hierarchical levels.
regional planner	A designated role for a person authorized to manage transportation resources in assigned regions.

Term	Definition
resource category	An attribute used to distinguish between the usage types of different classes of transportation resources. For example, if you have a resource category for containers, you use this category to organize different container types at a higher level.
resource filter	A set of frequently used resource types or resource groups that can be used for transportation resource planning.
resource group	A set of resource types that can be added to a resource filter.
resource type	An attribute used to classify transportation resources within resource categories. The resource type is used to distinguish resources by size, usage for different cargo types, such as chemical, food, bulk cargo, and so on.
resource visibility	The real-time representation of master data for transportation resources and current stock status for planning purposes.
route	An actionable transportation capability based on multi-stage paths. Each route has an explicit start time. In the multi-stage paths used for the route, the lanes must have start times defined, and single-stage paths must have scheduled departures selected.
scheduled departure	A departure of a vehicle that is generated based on a schedule. Scheduled departures are part of single-stage paths for network models in resource balancing.
scheduled plan	A supply and demand plan or a KPI plan that is executed regularly to create forecasts or summary results for transportation resources. It consists of a calculation model together with a time filter, a location filter, and a resource filter.
shipper	A company or a functional unit of a company that organizes the transportation of goods in the following business contexts: • Goods that are sold by that company or one of its subsidiaries • Goods that are to be distributed by that company • Goods that have been purchased by that company if the buyer and the vendor have agreed that the vendor is not responsible for organizing the transportation

Term	Definition
single-stage path	A sequence of lanes with start and end locations and a common means of transport. A single-stage path represents a transport capability for the sequence of locations with potential loads and unloads at any of the locations, but no requirement for transshipment in between. Single-stage paths are part of network models in resource balancing.
source location	Location that supplies a product.
supply and demand plan	A plan that forecasts supply and demand for transportation resources and identifies imbalance issues. A supply and demand plan can be a scheduled plan, an instant plan, or a virtual plan.
TEU	Abbreviation for twenty-foot equivalent unit
time filter	A set of successive time intervals in the future or past that can be selected for transportation resource planning.
transportation resource	Any moving asset that is used to transport goods.
transportation unit	A business document that represents a transportation demand and that can also function as a capacity. Example: A transportation unit can be used to model the following: • A trailer load • The capacity provided by a single railcar or container • The capacity provided by multiple railcars or containers that are shipped together
transshipment location	A location that marks the intersection of two single-stage paths, two lanes, or one single-stage path and one lane.
triangulation	A function that combines a request for an empty provisioning and a request for an empty return into a single transport to save transportation charges. For example, instead of picking up an empty container from a customer location and returning it to a container yard, the container is directly transported from the customer location to another customer location, where the other customer has requested the provisioning of a container of the same type.
vehicle resource	A particular means of transport or a group of identical means of transport that can provide transportation services.

Term	Definition
virtual plan	A plan that allows you to view the aggregated results of multiple scheduled plans. Virtual plans have their own location filters and resource filters. A virtual plan can consist of supply and demand plans or KPI plans.

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