



SAP Transportation Management (SAP TM) Release 9.1 Support Package 02

CUSTOMER
Document Version: 1.0 – May 2014



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SAP Transportation Management (SAP TM)

SAP Transportation Management (SAP TM) supports you in all activities connected with the physical transportation of goods from one location to another. You can use SAP TM to perform the following activities, for example:

- Create forwarding orders for your ordering parties
- Transfer orders and deliveries from an ERP system
- Create freight bookings
- Plan the transportation and select carriers
- Tender transportation services
- Dispatch and monitor the transportation
- Calculate the transportation charges for both the ordering party and the supplier side
- Consider foreign trade and dangerous goods regulations

You can use SAP TM to create and monitor an efficient transportation plan that fulfills the relevant constraints (for example, service level, costs, and resource availability). You can determine options to save costs and to optimize the use of available resources. You can react to transportation events and find solutions to possible deviations from the original transportation plan.

Integration

SAP TM is integrated with the following applications:

Application	Integration Type
SAP ERP (or another ERP system)	<p>In SAP TM, you can perform transportation planning and execution for your ERP orders and deliveries; in ERP, you can also perform invoicing and invoice verification for your TM settlement documents. The data is transferred using enterprise services.</p> <p>You can also integrate SAP TM with ERP shipment processing. In this case, data is transferred using enterprise services and IDocs.</p>
SAP Extended Warehouse Management (SAP EWM)	<ul style="list-style-type: none">• You can integrate SAP TM and SAP EWM directly. Communication is based on the deliveries that are sent from SAP ERP to SAP EWM and SAP TM. The SAP TM planning results are transferred directly to SAP EWM. Transportation units are created in the warehouse. Together with the delivery information, these form the basis for warehouse planning and execution. Confirmations of the execution results (such as loading and quantity discrepancies) are sent directly from SAP EWM to SAP TM.• You can integrate SAP TM with SAP EWM using SAP ERP. Communication is based on outbound deliveries that are sent from SAP ERP to SAP EWM and SAP TM. SAP TM planning results are represented as shipments in SAP ERP and transferred from SAP

Application	Integration Type
	ERP to SAP EWM. These shipments generate transportation units in the warehouse. In conjunction with the delivery information, these shipments are used as the basis for warehouse planning and execution. Confirmations of execution results (such as packaging of deliveries and actual quantities and weights) are sent from SAP EWM to SAP ERP and then from SAP ERP to SAP TM.
SAP Event Management (SAP EM)	You can use event tracking to monitor the execution status of your transportation.
SAP Global Trade Services	You can perform customs processing for your SAP TM business documents in a connected global trade services (GTS) system. For example, you can request export declarations for freight orders or freight bookings. The data is transferred using enterprise services.
SAP Customer Relationship Management (SAP CRM)	SAP TM enables you to send service product information to an SAP CRM system. For more information, see Integration with SAP Customer Relationship Management .

Note also the following:

- You use EH&S Services in SAP TM to ensure the safe transportation of dangerous goods in accordance with legal regulations (see [Considering Dangerous Goods](#)).
- You can integrate SAP TM with external systems by using enterprise services. For example, you can automatically create and confirm forwarding orders based on data received from your ordering parties.
- In SAP TM, you can use SAP Visual Business for the following:
 - You can display your transportation network visually on a geographical map (see [Map Functions](#)).
 - You can display a 3D load plan of your box truck (see [Load Planning](#)).

For more information about SAP Visual Business, see SAP Library for SAP Visual Business on SAP Help Portal under ► <http://help.sap.com> ► SAP NetWeaver ► SAP Visual Business 2.1 ▶.

Features

SAP TM covers the following subcomponents with the following functions, for example:

- [Forwarding Order Management \[Page 293\]](#)

You can use forwarding order management to create, edit, and confirm the forwarding orders from your ordering parties. Furthermore, you can create forwarding quotations and send them to your ordering parties. While the orders and quotations are being created, you can also have the system determine the transportation route, and you can check the transportation charges.
- [ERP Logistics Integration \[Page 392\]](#)

The ERP logistics integration supports the transfer of orders and deliveries from SAP ERP to SAP TM as well as the planning and execution processes based on the ERP data.

- [Freight Order Management \[Page 471\]](#)

You can use freight order management to create and edit freight orders and freight bookings that then form the basis of transportation planning. You can then perform carrier selection, and either subcontract the freight orders directly to a carrier or you can perform tendering.

- [Planning](#)

In planning, a transportation plan is created on the basis of the orders that were either entered in forwarding order management or transferred via an ERP system. You can perform planning either manually or automatically. Here the system uses advanced planning algorithms (optimization).

- [Forwarding Settlement](#) and [Freight Settlement](#)

From SAP TM, you can trigger invoicing and invoice verification that take place in the ERP system.

- [Master Data \[Page 24\]](#) and [Transportation Network \[Page 50\]](#)

You can use these SAP TM components to create and administer all the master data that you need for the activities in SAP TM, for example, business partners, locations, and products.

- [Considering Dangerous Goods](#)

You use EH&S Services in SAP TM to ensure the safe transportation of dangerous goods in accordance with legal regulations.

- [Business Context Viewer in SAP TM](#)

You can display content for SAP TM content in Business Context Viewer (BCV).

- [Enterprise Services and ESR Content](#)

Enterprise services enable you to exchange data with SAP ERP and SAP Global Trade Services, as well as with external systems that belong to your business partners. Communication can be realized using either SAP NetWeaver Process Integration or point-to-point communication (Web Services Reliable Messaging).

- Business Intelligence Content for SAP TM

The business intelligence content (BI Content) for SAP TM provides analytic tools and BI queries for evaluating, analyzing, and interpreting business data. For more information about BI Content for SAP TM, see [Analytics](#) and SAP Help Portal at
► <http://help.sap.com> ► SAP NetWeaver ► BI Content ► All Releases ►



Introductory Information

Before you start working with SAP Transportation Management (SAP TM), we recommend that you familiarize yourself with the following important information.

Calling SAP TM

SAP TM harmonizes all transportation applications in one Web-based solution that is integrated in a business client shell.

You call SAP TM using a SAP NetWeaver Business Client that is connected to an ABAP client. For more information about SAP NetWeaver Business Client and the ABAP client, see SAP Library for SAP NetWeaver on SAP Help Portal at <http://help.sap.com/nw>. In SAP Library, choose ► *Function-Oriented View* ► *UI Technologies in SAP NetWeaver* ► *User Interface Clients* ► *SAP NetWeaver Business Client*.

FPM BOPF Integration (FBI) offers configurable and codeless integration of Floor Plan Manager (FPM) technology and BOPF-based business objects (BOPF = Business Objects Processing Framework). For more information, see [Reusable Objects and Functions for the BOPF Environment \(CA-EPT-BRC\)](#).

Note

If you want to use applications from SAP NetWeaver Business Warehouse or SAP Event Management in SAP NetWeaver Business Client, you need to set up a role in role maintenance. To do so, on the SAP Easy Access screen, choose ► *Tools* ► *Administration* ► *User Maintenance* ► *Role Administration* ► *Roles*.

On the *Menu* tab page of this new role, you need to create an additional object by choosing *Other*. Choose *Web address or file* as the URL type and enter the fixed URL of your application. Moreover, you need to add your user on the *User* tab page of the new role.

If you change your role, you need to delete the cache in Internet Explorer by choosing ► *Tools* ► *Internet Options*. On the *General* tab page, choose *Delete...* and then delete the relevant cookies and files.

End of the note.

Using SCM Basis Functions

You must only use those SCM Basis functions that are relevant for SAP TM.



Business Functions

SAP TM-Specific Enhancements in SCM Basis

Technical Data	
<i>Technical Name of Business Function</i>	SCM_SAPTM_SCMB_FND
<i>Type of Business Function</i>	Enterprise Business Function
<i>Available From</i>	SAP Transportation Management 9.0
<i>Technical Usage</i>	TM
<i>Application Component</i>	<i>Transportation Management Master Data (TM-MD)</i>
<i>Required Business Functions</i>	<p>SAP TM system: <i>FND, Business Context Viewer Main Application</i> (/BCV/MAIN)</p> <p>SAP TM system: <i>FND, Business Context Viewer Main Application 2</i> (/BCV/MAIN_1)</p> <p>SAP TM system: <i>Improvements for SOA Reuse Functions</i> (FND_SOA_REUSE_1)</p> <p>SAP TM system: <i>Visual Business (Reversible)</i> (FND_VISUAL_BUSINESS)</p> <p>SAP ERP system: <i>SCM, Customer and Vendor Master Data Integration into BP</i> (LOG_SCM_CUSTVEND_INT)</p>

You can use this business function for the following extensions in SCM Basis:

- Foundation of SAP Transportation Management
- Transportation Network
- Dangerous Goods
- Resource Master

You must activate this business function to operate SAP TM.

Integration

In SAP ERP, the business function *SCM, Customer and Vendor Master Data Integration into BP* (LOG_SCM_CUSTVEND_INT) is available to extend the outbound Core Interface (CIF) so that you can transfer the customer and vendor data from the SAP ERP system to the SAP SCM system.

Prerequisites

You have installed the following components as of the version mentioned:

Type of Component	Component	Required for the Following Features Only
Software Component	SCM_BASIS 702 SCMBPLUS 702 SAP_ABA 731 SAP_BASIS 731 PI_BASIS 731 SAP_BW 731 SAP_BS_FND 731	
SAP NetWeaver External Product	SAP NetWeaver 7.31 Any geographical information systems.	

Features

Foundation of SAP Transportation Management

- Business partner master for the following business partner roles: *Carrier*, *Vendor*, *Organizational Unit*, *Ship-To Party*, and *Sold-To Party*.

For more information, see [Business Partner \[Page 25\]](#) and [Definition of Business Partners \[Page 28\]](#).

- Core interface (CIF)

For more information, see [Business Partner \[Page 25\]](#) and [Integration of International Address Versions](#).

- Equipment groups and types

For more information, see [Definition of Equipment Groups and Equipment Types \[Page 117\]](#).

- Organizational management

For more information, see [Organizational Management \[Page 40\]](#) and [Creation of Organizational Models \[Page 41\]](#).

Transportation Network

- Geocoding

For more information, see [Geocoding](#).

- Distance and duration determination

For more information, see [Distance and Duration Determination](#).

- Location
For more information, see [Location \[Page 55\]](#).
- Transportation lane
For more information, see [Transportation Lane \[Page 81\]](#).

Dangerous Goods

- Mixed loading checks
For more information, see [Configuration of Dangerous Goods Processing](#).
- Check framework for document-based dangerous goods data
For more information, see [Configuration of Dangerous Goods Processing](#).

Resource Master

- Driver
For more information, see [Definition of Resources \[Page 118\]](#).
- Resource Class
For more information, see [Classification of Resources \[Page 120\]](#).

SAP TM - Localization Brazil

Technical Data	
<i>Technical Name of Business Function</i>	BF_TM_LOCL_BR01
<i>Type of Business Function</i>	Enterprise Business Function
<i>Available From</i>	SAP Transportation Management 9.1
<i>Technical Usage</i>	TM
<i>Application Component</i>	<i>Transportation Management Master Data (TM-MD)</i>
<i>Required Business Functions</i>	SAP TM-Specific Enhancements in SCM Basis (SCM_SAPTM_SCMB_FND)

You can use this business function to activate the country-specific vehicle identification number for Brazil (RENAVAM number) in SAP TM Resource Master Data.

Integration

When this business function is activated, a Forwarding Settlement document (FWSD) in SAP TM generates a Billing document and a CTE document in SAP ERP which include RENAVAM information, if applicable.



A Freight Settlement document (FSD) in SAP TM generates a PO in SAP ERP but this process does *not* handle RENAVAM information.

End of the note.

Prerequisites

You have installed the following components as of the version mentioned:

Type of Component	Component	Required for the Following Features Only
Software Component	SCM_BASIS 713 SAPTM 120	



Master Data

You use this component to manage master data that is used in a variety of business transactions in SAP Transportation Management (SAP TM). The following master data objects are part of this component:

- Business partner (see [Business Partner \[Page 25\]](#))
- Organizational management (see [Organizational Management \[Page 40\]](#))
- Transportation network (see [Transportation Network \[Page 50\]](#))
- Transportation mode (see [Transportation Mode \[Page 105\]](#))
- Product (see [Product \[Page 108\]](#))
- Carrier profile (see [Carrier Profile \[Page 37\]](#))
- Equipment (see [Equipment Groups and Equipment Types \[Page 116\]](#))
- Resources (see [Definition of Resources \[Page 118\]](#))
- Transportation charges (see [Setup of MD for Charge Management and SP Catalogs \[Page 168\]](#))



Note

Before you define any master data objects, you *must* create an active model in Customizing. For more information, see Customizing for *Transportation Management* under *Master Data* *Create Active Version and Model*.

End of the note.



Business Partner

A person, organization, group of persons, or group of organizations in which a company has a business interest.

You use this business object for a variety of business transactions.

You create and manage your business partners (BPs) centrally along with the roles they assume for your company. To do so, you define the general data of the business partner once and you assign [business partner roles](#) (BP roles) to the business partner. Specific data is stored for each business partner role. In this way, you do not store redundant data since the general data is independent of a business partner's function or of application-specific extensions.

When you first create a business partner in the system, the BP role *General Business Partner* is automatically assigned to the business partner.

Structure

You identify each BP with a unique [business partner number](#) (BP number).

You create and manage the specific data for a BP role once you have assigned a specific role to the BP.

You create and manage the following general elements of a BP:

General Data

Here, you enter data (or the system displays data) that is valid for all business partner roles. This data includes, for example, the name, address, communication data, identification numbers, and business partner status.

TM-Specific Data

Depending on the business partner role, additional information or special tab pages for SAP Transportation Management are displayed:

- Identification (BP roles *Carrier* and *Organizational Unit*)
You can enter and display data such as identification numbers, data regarding agents (for example, regulated agent code), offsets, and calendars. For the *Organizational Unit* role, the system displays the related organizational unit.
- Vendor Data (BP roles *Carrier* and *Vendor*)
Here, you can set blocks and define one-time accounts. For the role *Carrier*, you can also enter standard carrier alpha codes (SCACs), airline codes, and service level codes. For the role *Vendor*, you can enter information related to air cargo security (for example, shipper security status and the date as of which you have known the shipper).
- Vendor Company Org. Data (BP roles *Carrier* and *Vendor*)
Here, you configure settings for vendor company organizations. You can configure settings for the central posting block and the terms of payment.
- Vendor Org. Data (BP roles *Carrier* and *Vendor*)

Here, you can configure settings regarding purchasing organizations. You can, for example, configure settings for the purchase group, specific profiles, blocks, or the terms of payment.

- Vendor Partner Determination (BP roles *Carrier* and *Vendor*)

Here, you can maintain a related business partner for a party role and purchasing organization.

- Customer Data (BP roles *Ship-To Party* and *Sold-To Party*)

The system displays the location instances to which a business partner is assigned, along with all assigned locations and their descriptions. You can also configure settings for central blocks and one-time accounts.

- Customer Company Org. Data (BP roles *Ship-To Party* and *Sold-To Party*)

Here, you configure settings for customer company organizations. You can, for example, configure settings for the central posting block and the terms of payment.

- Customer Org. Data (BP roles *Ship-To Party* and *Sold-To Party*)

Here, you can configure settings for sales organizations. You can, for example, set central blocks or configure settings regarding the payment.

- Customer Partner Determination (BP roles *Ship-To Party* and *Sold-To Party*)

Here, you can maintain a related business partner for a party role and sales organization.

- Additional texts (BP role *Business Partner (Gen.)*)

You can use additional texts as printing addresses or signatures on several printing documents such as air waybills. You can select the number of lines, number of columns, and language.

Integration

In an integrated system landscape with SAP ERP and SAP Transportation Management (SAP TM), the ERP system is frequently the leading master data system. In this case, the customer and supplier master data is maintained in the ERP system from where it is transferred to SAP TM using the SAP Core Interface (CIF) as locations and business partners. For more information, see [Integration of Locations](#).

In business transaction documents, such as a forwarding order, the BP master data object appears as a party that takes part in transportation processes. The party assumes party roles, such as consignee, shipper, or ordering party.



You do not need to define special BP roles in Customizing for the party roles (see [Definition of Business Partners \[Page 28\]](#)). You can assign any BP to the different party roles.

End of the note.

You can configure the system to assign business partner roles to allowed business document party roles.

For all business documents that you work with in across SAP TM:

- The system checks whether a business partner is compatible with a business document party role. If you enter a business partner with a particular party role in a business document the system verifies whether that role is allowed for that business partner.
- The search help for Business Partners reflects this configuration of Business Partners for the allowed Business document party roles by only returning business partners in the result list which can be used for a specific business document party role.

More Information

For more information about SAP Business Partner, see SAP Library for SAP ERP Central Component on SAP Help Portal at <http://help.sap.com/erp>. In SAP Library, choose ► SAP ERP Cross-Application Functions ► Cross-Application Components ▶.



Definition of Business Partners

You use this process to define business partners (BPs) in SAP Transportation Management (SAP TM).

Process

1. You define a BP in SAP NetWeaver Business Client by choosing ► *Master Data* ▶ *General* ▶ *Define Business Partner* ▶.
2. You assign additional BP roles to the BP.

SAP TM delivers the following BP roles for BPs of the type *Organization*:

- *Carrier*

You use this BP role to identify a BP who is a carrier. You can also define business partners with the *Carrier* role further by assigning one of the following categories:

- Subsidiary
- Carrier
- Agent
- Non-vessel operating common carrier

In this BP role, you can also define the standard carrier alpha codes (SCACs) or airline codes by which a business partner is represented. You can also define service level codes that you want available when buying transportation services from the carrier. For more information about air-freight-specific codes, see [Transportation-Mode-Specific Codes \[Page 106\]](#).

- *Ship-To Party and Sold-To Party*

You use this BP role to identify a BP who is a customer.

- *Vendor*

You use this BP role to identify a BP who is a supplier. For air cargo security, you can enter information related to air cargo security (see [Configuration of Air Cargo Security \[Page 526\]](#)).

- *Organizational Unit*

Business partners to which this BP role is assigned represent an organizational unit of a company. For air cargo security, you can enter the regulated agent code of the logistics service provider.

SAP TM delivers the following BP roles for BPs of the type *Person*:

- *Employee*

You use this BP role to identify a BP who can be assigned to an organizational unit (see [Workflow in SAP Transportation Management \[Page 45\]](#)).

- *Internet User*
You use this BP role to identify a BP who takes part in the tendering process.
 - *Contact Person*
You use this BP role to identify a BP who takes part in the tendering process.
 - *Driver*
You use this BP role to identify a BP who can be assigned to a freight order as a human resource.
3. You create relationships between BPs.

 Note

The relationship category *Has Contact Person* is used in the tendering process.

The relationship category *Has Subsidiary / Agent* is used to describe subsidiaries and agents of a carrier organization.

End of the note.



Additional Texts

You can define additional texts for the business partner master and use them as printing addresses or signatures on different documents.

Prerequisites

You have defined additional text types in Customizing for SCM Basis under ► *Master Data* ➤ *Business Partner* ➤ *Define Text Types for Business Partner Master*.

Features

You can enter additional texts for the business partner role *Business Partner (Gen.)* on the *Maintain Business Partner* user interface (transaction `BP`) on the *Additional Texts* tab page. Texts from this tab page (for example, addresses or signatures) are used by SAP Transportation Management (SAP TM) as printing addresses or signatures on several printing documents such as air waybills.

To ensure that the texts have the correct dimensions for the designated areas, you specify text types with maximum numbers of characters and lines. To support printing in several languages, you can define the language of the texts and enter additional texts for one text type in different languages for one business partner instance.



Note

You can also use additional texts to define formatted printing addresses or paragraphs for the related business partner and edit them so that they are letter of credit-compliant. To use this function, you must define the default text type for printing addresses in Customizing for *Transportation Management* under ► *Business Add-Ins (BAdls) for Transportation Management* ➤ *Forwarding Order Management* ➤ *User Interface* ➤ *BAdl: Business Partner Printing Address Default Text Types*.

End of the note.



Business Partner Blocking

With this function, you can block the assignment of a business partner to a forwarding quotation or to a forwarding order. Additionally, you can block the business partner, so that within a forwarding order the system prevents forwarding settlement documents from being created.

The blocking options are structured hierarchically in the business partner master record. You can set the blocks at the following levels:

- Complete business partner
- Company organization
- Sales organization

Prerequisites

The business partner has the role of a ship-to-party or a sold-to-party.

Features

You can block the business partner manually.

If a business partner in SAP Transportation Management (SAP TM) was created from SAP ERP customer master data via Core Interface (CIF), the block indicators from customer master data are automatically transferred to the corresponding business partner in SAP TM.

You can set the blocks in SAP TM under ► *Master Data* ► *Define Business Partner* ▶.

Block	Description	Tab Page
Central Posting Block	<ul style="list-style-type: none">• Blocks the assignment of business partners to a forwarding order document or a forwarding quotation document.• Blocks the creation of forwarding settlement documents. Only relevant for forwarding orders.	<ul style="list-style-type: none">• <i>Customer Data</i>• <i>Customer Company Org. Data</i>
Central Sales Block	Blocks the assignment of business partners to forwarding order documents or forwarding quotation documents.	<ul style="list-style-type: none">• <i>Customer Data</i>• <i>Customer Org. Data</i>
Central Order Block	<ul style="list-style-type: none">• Blocks the assignment of business partners to forwarding order documents or forwarding quotation documents.• Blocks the creation of forwarding settlement documents of the specific sales organization. Only relevant for forwarding orders.	<i>Customer Org. Data</i>
Central Billing Block	<ul style="list-style-type: none">• Only relevant for forwarding orders.• Blocks the creation of forwarding settlement documents of the specific sales organization.	<i>Customer Org. Data</i>

Activities

On the corresponding tab page, select the check box with the block you want to set or, in case of specific sales organizations, enter block reason codes.

Example

You would like to block the business partner *Kulinarisch Weltweit*, located in Cologne. To do so, on the *Customer Company Org Data* tab page, you select the *Central Posting Block* check box. From now on, the system blocks all sales organizations of the respective business partner and you cannot assign the business partner to a forwarding order.

If a forwarding order document already exists in the system when you set the block, you cannot create forwarding settlement documents. This applies to the following blocks:

- Central billing block
- Central order block
- Central posting block



Business Partner Determination

You can enable the system to determine the business partners that you use in different business document types. You can also enable the system to automatically determine business partners for forwarding orders with specific Incoterms. This allows you easily and efficiently enter business partners in a business document. It cuts down the chance of manual errors and reduces the need to enter a business partner for each party role.

In the *Define Partner Determination Profiles* Customizing activity, you can create a partner determination profile that the system uses to automatically determine the following features:

- The party roles available in a business document

You specify the list of party roles that the system makes available in a business document.

- The level of control the user has in entering the party role

Depending on the settings you define in Customizing, you change or delete a party role, or add a party role from a list of available party roles. You can also specify settings so that you cannot change or delete specific party roles.

- How the system determines business partners for the party roles

The system uses one of the following relationships that you specify in Customizing, to determine a business partner:

- Party role and source party role

In Customizing, you can specify a source party role for a particular party role. In the application, when you enter a business partner in the field that you have specified as the source party role, the system automatically copies the business partner to the associated party role.

For example, in Customizing, you specify the party role as *Invoicing Party*, the source type as *Party Role*, and the source role as *Carrier*. In the application, you specify the carrier as *CSI_CARR1*. The system assigns *CSI_CARR1* as the business partner for the invoicing party.

- Party role and the source party role in business partner master data

The system uses the relationship you specify between organizations and business partners in the *Customer Partner Determination* and *Vendor Partner Determination* tab pages in the *BP – Maintain Business Partner* transaction to determine a business partner in a business document.

For example, you are a logistics service provider (LSP), and you have a business partner *APP_1*. In the *BP – Maintain Business Partner* transaction, you specify *APP_1* with the BP role of *Sold-to Party*. On the *Customer Partner Determination* tab page of the BP transaction for *APP_1*, you create a relationship between sales organization *561234* and the business partner *APP_INV*. *APP_INV* fulfills the role of *invoicing party* for *APP_1*. In Customizing, you specify the party role as *Invoicing Party*, the source type as *BP Relationship*, and the source role as *Ordering Party*.

In a forwarding order, you specify the organization as 561234 on the *General Data* tab page and the ordering party as APP_1 on the *Business Partner* tab page. The system checks the business partner master data for APP_1. On the *Customer Partner Determination* tab page, it finds that APP_1 uses APP_INV as the invoicing party for organization 561234. It assigns APP_INV as the business partner for the invoicing party.

- Party role and business partner

In Customizing, you directly assign a business partner to a party role. In the application, the system automatically assigns this business partner to the party role.

For example, in Customizing, you specify the party role as *Invoicing Party*, the source type as *Business Partner*, and the business partner as CSI_CARR1. The system automatically assigns CSI_CARR1 as the business partner for the invoicing party in the application.

Note that you can enter a business partner that does not exist in the current system. This enables you to assign a business partner to a party role in one system and transport it to another system where the business partner exists. For example, in a Customizing system, you have not defined any business partner master data. You have assigned business partner LUF to a party role of carrier. You transport this data to a production system where LUF is defined. In a business document of the production system, the system determines that the business partner for the carrier is LUF.

In Customizing, you can assign different profiles to different types of business documents. For example, you can specify a profile that controls how the system determines business partners in forwarding orders, and another profile for business partner determination in forwarding settlement documents.

In Customizing, you can assign a profile to the following business document types:

- Forwarding orders
- Forwarding quotations
- Forwarding settlement documents
- Freight orders
- Freight bookings
- Freight settlement documents

When you use a particular forwarding order type to create a forwarding order and enter an Incoterm, the system uses the information you specify in the *Assign Partner Determination Profiles Based on Incoterms* Customizing activity to determine the business partner. It overwrites the partner determination profile you have assigned to the forwarding order type in the *Define Forwarding Order Types* Customizing activity.

Prerequisites

You have made the settings in Customizing to create a partner determination profile that the system uses to automatically determine business partners. For more information, see Customizing for *Transportation Management* under ► *Master Data* ► *Business Partners* ► *Define Partner Determination Profiles* ▶.

If you want to automatically determine business partners in a forwarding order with a specific Incoterm, you have assigned the partner determination profile to forwarding order type and Incoterm combination in Customizing. For more information, see *Customizing for Transportation Management* under *Master Data* *Business Partners* *Assign Partner Determination Profiles Based on Incoterms* .

You have created relationships between organizations and business partners in the transaction *BP – Maintain Business Partner* under *SAP Menu* *Transportation Management* *Master Data* .

If you want to assign a particular business partner to a particular party role in a business document, you have performed the following actions:

- Entered *Business Add-In* in the *Srcce Type* (Source Type) field in the *Define Partner Determination Profiles* Customizing activity
- Implemented the *Business Add-In BAdI: Specific Partner Assignment* in Customizing for *Transportation Management* under *Business Add-Ins for Transportation Management* *Master Data* *Business Partners* .

More Information

[Settings for the Forwarding Order \[Page 301\]](#)

[Creation and Editing of a Forwarding Quotation \[Page 340\]](#)

[Forwarding Settlement](#)

[Creation and Editing of Freight Orders \[Page 476\]](#)

[Creation and Editing of Freight Bookings \[Page 509\]](#)

[Freight Settlement](#)



Definition of Carrier Service Codes

A carrier can offer services to shippers or logistics service providers (LSP). The shippers or LSPs contact the carrier and obtain the list of services. Subsequently, the shippers or LSPs manually enter these services in the master data of the system to use it in a freight document with the carrier.

You can enter the services that a carrier offers to a shipper or LSP in the *Maintain Business Partner* transaction (transaction BP). When you enter the carrier in a freight agreement, the system makes these services available in the document.

Prerequisites

You have defined service types in Customizing for *Transportation Management* under ► *Basic Functions* ► *General Settings* ► *Define Service Types*.

Activities

In the *Maintain Business Partner* transaction, perform the following steps to enter the services:

1. Enter the business partner.
2. Change *BP role* to Carrier.
3. In the *Carrier Service Codes* screen area of the *Vendor Data* tab page, enter the carrier service code and the service type.

Example

In the *Maintain Business Partner* transaction, you enter carrier service codes and service types for services Fumigation, Loading, and Unloading for a business partner LUF_1 with a *BP role* of Carrier. In a freight agreement, you enter the carrier LUF_1. The system automatically makes the carrier service codes for Fumigation, Loading, and Unloading available in the input help of the field *Carrier Service Code* in the agreement.



Carrier Profile

A profile with which you characterize transportation capabilities of a carrier.

You use this object to store information that is used in a similar constellation for multiple carriers. Carriers are business partners (BPs) to which you have assigned the business partner role *Carrier*. You can only create one profile for each carrier.

Structure

You can store the following objects in a carrier profile:

- Freight code sets
- Transportation lane and carrier-specific parameters
- Product freight groups
- Transportation groups
- Equipment groups and equipment types
- Fixed transportation costs
- Dimension costs

Integration

You make use of the carrier profile when creating transportation proposals (see [Generation of Transportation Proposals](#)) and when selecting a carrier.



Definition of Carrier Profiles

You use this process to define a profile for a carrier.

Prerequisites

- You have assigned the business partner role *Carrier* to the business partner for which you want to create a carrier profile (see [Definition of Business Partners \[Page 28\]](#)).
- You have defined transportation lanes in Customizing (see [Definition of Transportation Lanes \[Page 82\]](#)).
- You have defined freight code sets in Customizing. For more information, see Customizing for *SCM Basis* under ► *Master Data* ► *Transportation Lane* ► *Carrier Profile* ► *Define Freight Code Sets, Freight Codes, and Determination*.
- You have defined product freight groups in Customizing. For more information, see Customizing for *SCM Basis* under ► *Master Data* ► *Transportation Lane* ► *Carrier Profile* ► *Define Product Freight Groups*.
- You have defined transportation groups in Customizing. For more information, see Customizing for *SCM Basis* under ► *Master Data* ► *Product* ► *Maintain Transportation Group*.
- You have defined equipment groups and equipment types in Customizing. For more information, see Customizing for *Transportation Management* under ► *Master Data* ► *General Settings* ► *Define Equipment Groups and Equipment Types*.
- You have defined means of transport in Customizing. For more information, see Customizing for *Transportation Management* under ► *Master Data* ► *Resources* ► *Define Means of Transport*.

Process

1. On the SAP Easy Access screen, choose ► *Master Data* ► *General* ► *Define Carrier Profile*.
2. You choose the carrier for which you want to define a profile and save your entry.

You can set the following attributes:

- Performance
- *Cont. Move* (Continuous Move) checkbox

3. You make settings on the following tab pages:

- *Transportation Lane*

You can enter any attributes that are relevant for the carrier, such as the business share or the priority.

- *Freight Code Set*

You must specify the country and the means of transport to which the freight code set relates.

- *Product Freight Group*
- *Transportation Group*
- *Equipment*

You can enter information about the location of the equipment or the means of transport to which this equipment is restricted.

- *Fixed Transportation Costs*

You can define fixed transportation costs for the means of transport of the carrier.

- *Dimension Costs*

You can define dimension costs for the means of transport of the carrier.

4. Save your entry.

Result

You have defined a profile for a carrier. You can search for settings that you have made in the carrier profile and identify all carriers that have those settings.



Organizational Management

A means for creating and managing the organizational and staffing structures in your company that uses an [organizational model](#) as its basis.

In SAP Transportation Management (SAP TM), the organizational structure can be based on the structure of a connected SAP ERP system. To enable this, you can create the following organizational units:

- Corporate organization

This organization unit is optional and serves as a single entry point into the organizations structure in SAP TM.

- Company organization

This organization unit corresponds to the ERP company code containing the local currency.

Note

The company organization unit is used by transportation charge management (TCM) for invoicing and charging.

End of the note.

- Sales organization, office, and group
- Purchase organization and group
- Planning and execution organization and group

More Information

For more information, see SAP Library for SAP ERP Central Component on SAP Help Portal at <http://help.sap.com/erp>. In SAP Library, choose ► SAP ERP Central Component ► Human Resources ► Personnel Management (PA) ▶.



Creation of Organizational Models

In SAP Transportation Management (SAP TM), you use this process to create organizational models for the organizations that take part in transportation processes. You can create the organizational models according to a predefined hierarchical structure. You can assign employees who take part in workflow processes to the organizational units.

Process

1. You define an organizational model in SAP NetWeaver Business Client (NWBC) by choosing *Master Data* *Organization* *Create Organization and Staffing* .
2. You define organizational units (see [Organizational Unit \[Page 42\]](#)) and assign an appropriate [organizational unit function](#) and [organizational unit role](#) to them.
3. You relate organizational units to other organizational units according to their organizational unit role and depending on the organizational unit function.

Note

The hierarchical relationship of organizational units is fixed.

For organizational units with a *Sales* unit function, you can define the unit roles *Organization*, *Office*, and *Group*. Organizational units with unit role *Group* can be assigned to organizational units with a unit role *Office* or *Organization*, and organizational units with a unit role *Office* to organizational units with a unit role *Organization*.

For organizational units with a *Purchasing* or *Planning and Execution* unit function, you can only assign organizational units with a unit role *Group* to organizational units with a unit role *Organization*.

End of the note.

4. You assign employees to organizational units, see [Assigning Employees to Organizational Units \[Page 43\]](#).

You can also create an SAP TM organization structure. For more information, see Customizing for SAP Transportation Management under *Transportation Management* *Master Data* *Organizational Management* *Organizational Model* *Create and Merge Organizational Hierarchy* .

Example

You want to re-create the structure of a purchasing organization or a planning and execution organization. You proceed as follows:

1. You create an organizational unit with a *Purchasing* or *Planning and Execution* unit function and an *Organization* unit role.
2. You create an organizational unit with a *Purchasing* or *Planning and Execution* unit function and a *Group* unit role.
3. You assign the organizational unit with the *Group* unit role to the organizational unit with the *Organization* unit role.



Organizational Unit

An object that is used for mapping the organizational structure of a company in an organizational model. Each organizational unit is defined in more detail by its unit function and unit role.

You can use this object as the basis for an organizational model by arranging organizational units hierarchically and therefore mirroring the structure of your company.

Note

You may only use the *Organization* or *Group* organizational unit roles for organizational units with the *Purchasing* or *Planning and Execution* organizational unit functions.

End of the note.

Integration

You use organizational units with a *Sales* organizational unit function to create the following:

- Forwarding orders
- Forwarding quotations
- Forwarding settlements

You use organizational units with a *Purchasing* organizational unit function to create the following:

- Freight orders
- Freight bookings
- Freight settlements

You use organizational units with an *Execution* organizational unit function to create the following:

- Resources (see [Definition of Resources \[Page 118\]](#))
- Freight orders



Assigning Employees to Organizational Units

You use this procedure to assign employees to organizational units in SAP Transportation Management (SAP TM).

Prerequisites

- You have defined a business partner (BP) of the type *Person* (see [Definition of Business Partners \[Page 28\]](#)).
- You have assigned the business partner role (BP role) *Employee* to the BP and maintained any data relevant for this BP role.



Note

As a minimum, you need to enter the country in which this business partner resides.

End of the note.

Procedure

1. Access the organizational model in SAP NetWeaver Business Client by choosing *Master Data* *Organization* *Edit Organization and Staffing*.
2. Select an organizational unit and choose the *Create* button.
3. Choose *Incorporates Position* and enter a name and a description in the *Position* input field.
4. In the context menu of the employee symbol, choose *Assign*.
The *Choose Relationship* screen appears.
5. Choose *Holder Central Person* and enter the name of the business partner that you want to assign to the position in the search dialog.

Result

You have assigned an employee to an organizational unit by assigning a business partner with the role *Employee* to the organizational unit.

The system establishes a correlation between the master data objects *Organizational Unit* and *Business Partner*.



Changing of Organizational Models

You can use this process to change an organizational model in SAP Transportation Management (SAP TM).

Process

1. You change an organizational model in SAP NetWeaver Business Client by choosing *Master Data > Organization > Edit Organization and Staffing*.
2. You search for an existing organizational unit.
3. You change attributes of the organizational unit, such as:
 - o Organizational unit ID
 - o Reference organizational unit ID
 - o Organizational unit function
 - o Organizational unit role
 - o Local currency (company organizations only)
 - o Relationship with other organizational units
4. You save your entry.

The system automatically adds a technical business partner and sets the business system group.



Workflow in SAP Transportation Management

Sequence of steps processed either by people or by an SAP system.

SAP Transportation Management (SAP TM) uses *SAP Business Workflow*, which is a cross-application tool that enables the integration of business tasks across whole application areas.

For more information, see SAP Library for SAP ERP Central Component on SAP Help Portal at <http://help.sap.com/erp>. In SAP Library, choose ► *SAP ERP Cross-Application Functions* ► *Scenarios in Applications* ► *SAP Business Workflow* ▾.

An example of the use of the workflow capability in SAP TM is the approval check that you can define. For more information, see [Approval Check \[Page 46\]](#).

Note

You have to assign employees to organizational units to be able to use the workflow capabilities. For more information, see [Assigning Employees to Organizational Units \[Page 43\]](#).

End of the note.



Approval Check

You use this function to do the following:

- Check whether a forwarding order or a forwarding quotation meets the value ranges defined in a condition for specific attributes of the business document.
- Trigger the workflow to get approval for the processing of a business document, freight agreement RFQ, agreement, or validity period in a rate table.

When you save a business document, freight agreement RFQ, agreement, or validity period in a rate table, the system triggers the approval workflow.

Integration

You can use this workflow with forwarding orders, forwarding quotations, freight agreement RFQs, agreements, and rate tables.

Prerequisites

- You have customized the workflow engine. For more information, on the *SAP Easy Access* screen, choose ► *Tools* ► *Business Workflow* ► *Development* ► *Utilities* ► *Automatic Workflow Customizing* ▶
- You have enabled the approval workflow functionality as relevant in the following activities in Customizing for *Transportation Management*:
 - ► *Master Data* ► *Agreement RFQs and Quotations* ► *Define Freight Agreement RFQ Types* ▶
 - ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Forwarding Order Types* ▶
 - ► *Forwarding Order Management* ► *Forwarding Quotation* ► *Define Forwarding Quotation Types* ▶
 - ► *Master Data* ► *Agreements and Service Products* ► *Define Freight Agreement Types* ▶
 - ► *Master Data* ► *Agreements and Service Products* ► *Define FWA and Service Product Catalog Types* ▶
 - ► *Master Data* ► *Agreements and Service Products* ► *Define Internal Agreement Types* ▶
 - ► *Master Data* ► *Rate Tables* ► *Define Rate Table Types* ▶
- If you want to be able to override the approval check for forwarding orders and forwarding quotations, you must implement the *Specific Checks for Approval Workflow in FWO Management* (`TRQ_APPR_CHECK_BO`) BAdl. For more information, see Customizing for *Transportation Management* under ► *Business Add-Ins (BAdls) for Transportation Management* ► *Forwarding Order Management* ► *BAdl: Specific Checks for Approval Workflow in FWO Management* ▶.

- If you want to check mandatory fields in freight agreement RFQs before proceeding with the approval workflow, you must implement the *Specific Checks for Approval Workflow in Freight Agreement RFQs* (/SCMTMS/RFQ_APPR_CHECK_BO) BAdl. For more information, see Customizing for *Transportation Management* under ► *Business Add-Ins (BAdls) for Transportation Management* ► *Master Data* ► *Agreement RFQs* ► *BAdl: Specific Checks for Approval Workflow in Freight Agreement RFQs*.
- If you want to check mandatory fields in agreements before proceeding with the approval workflow, you must implement the *Specific Checks for Approval Workflow in Agreements* (/SCMTMS/FAG_APPR_CHECK_BO) BAdl. For more information, see Customizing for *Transportation Management* under ► *Business Add-Ins (BAdls) for Transportation Management* ► *Master Data* ► *Agreements* ► *BAdl: Specific Checks for Approval Workflow in Agreements*.
- If you want to check mandatory fields in rate tables before proceeding with the approval workflow, you must implement the *Specific Checks for Approval Workflow in Rate Tables* (/SCMTMS/RATES_APPR_CHECK) BAdl. For more information, see Customizing for *Transportation Management* under ► *Business Add-Ins (BAdls) for Transportation Management* ► *Master Data* ► *Rate Tables* ► *BAdl: Specific Checks for Approval Workflow in Rate Tables*.
- You have created an organizational unit, assigned a position to it, for example, *Customer Agent*, and assigned an employee to this position. For more information, see [Creation of Organizational Models \[Page 41\]](#). When creating the organizational unit, you must have specified the following settings:
 - Marked the appropriate position as *Head of own organizational unit*.
 - Assigned the *Sales* organizational unit function to the organizational unit for forwarding orders and forwarding quotations.
- You have defined agents for the workflow in the [Workflow Builder](#) and you have defined the standard task as a general task in the workflow. For more information, on the SAP Easy Access screen choose ► *Tools* ► *Business Workflow* ► *Development* ► *Definition tools* ► *Workflow Builder* ► *Workflow Builder*.
- For business documents (not freight agreement RFQs, agreements, or validity periods in rate tables), you have assigned conditions to the /SCMTMS/APPROV_TRQ condition type:

A condition assigned to this type specifies certain fields and the exact limits the system must consider for starting the approval workflow. For example, a condition says that the gross weight must be bigger than 5.000 kg. At 5.001 kg the approval workflow starts.

For more information about defining conditions, see [Definition of Conditions](#).

Features

When you create a freight agreement RFQ, agreement, validity period in a rate table, or a business document, the system sets the status as follows:

- RFQ status in a freight agreement RFQ to *In Process*
- Approval status in an agreement, or validity period in the rate table, to *In Process*
- Approval status in a business document to *Not Checked*

Freight Agreement RFQs

If you have enabled the approval workflow for RFQ publication, when you create individual freight agreement RFQs, the system changes the status to *Freight Agreement RFQs Created*. In the freight agreement RFQ master under *Follow Up*, you can request publishing approval. The system changes the status to *Awaiting Approval*.

The customer agent or approver can approve or reject the publishing request. The system updates the status as follows:

- If the agent or approver approves, the status changes to *Published*. The system publishes an individual freight agreement RFQ to each of the relevant carriers.
- If the agent or approver rejects, the status changes to *Freight Agreement RFQs Created*. You can change the details of the RFQ master and publish the RFQ master again.

If you have enabled the approval workflow for agreement creation, in the freight agreement RFQ master under *Follow Up*, you can request agreement creation approval. The system changes the status from *Published* to *Awaiting Approval*.

The customer agent or approver can approve or reject the agreement creation request. The system updates the status as follows:

- If the agent or approver approves, the status changes to *Ready for Agreement Creation*.
- If the agent or approver rejects, the status changes to *Published*.

You must create a new negotiation round or change the business share allocation.

Agreements, Validity Periods in Rate Tables, and Business Documents

If you have enabled the approval workflow for agreements, validity periods in rate tables, and business documents, the system changes the status as follows:

- For an agreement, or a validity period in a rate table, when you request approval, the system changes the status of the agreement or validity period in the rate table to *Awaiting Approval*. When you then save the agreement, or validity period in the rate table, the system triggers the workflow process.
- For business documents, when you first save the business document, the system checks the document against the value ranges defined in the conditions and takes one of the following actions:
 - If the business document meets the value ranges defined in the conditions, the system changes the approval status from *Not Checked* to *No Approval Needed*. You can then process the business documents further.
 - If the business document does not meet the value ranges defined in the conditions, the system changes the status of the business document from *Not Checked* to *Approval Needed*. The system then triggers the workflow and sends a message to the customer agent or approver.

Note

An action in the Post Processing Framework (PPF) triggers the workflow. For more information about the PPF, see [Post Processing Framework \(BC-SRV-GBT\)](#).

End of the note.

- The customer agent or approver can approve or reject the agreement, validity period, or business document as follows:

- If the agent or approver approves the business document, the approval status changes to *Approved*.

You can then process the business document further.

- If the agent or approver approves the agreement or validity period, the approval status changes to *Released*.

You can then process the agreement or validity period further.

- If the agent or approver rejects the business document, the approval status changes to *Not Approved*.

The system blocks the business document for further processing and triggers the workflow.

- If the agent or approver rejects the agreement or validity period, the approval status changes to *In Process*.

Note

The customer agent or approver can cancel the processing of the workflow item. The workflow item then stays in the personal inbox of the customer agent or approver and the system cannot process the agreement RFQ, business document, agreement, or validity period further.

End of the note.

More Information

[Definition of Conditions](#)

[Post Processing Framework \(BC-SRV-GBT\)](#)

[Workflow in SAP Transportation Management \[Page 45\]](#)



Transportation Network

You use this component in SAP Transportation Management (SAP TM) to define the following master data objects:

- [Location \[Page 55\]](#)
- [Transportation Zone \[Page 73\]](#)
- [Transportation Lane \[Page 81\]](#)
- [Schedule \[Page 87\]](#)

In conjunction with the means of transport, the transportation network (TN) defines the direct reachability of transportation zones and locations for a particular vehicle resource.



Transportation Network Cockpit

You can use this function to display the following master data of the transportation network on a map:

- Locations
- Transshipment locations
- Default routes
- Transportation zones
- Transportation lanes
- Schedules

Features

General map functions

For more information, see [Map Functions](#).

Object Search

You can search for the following master data:

- Locations (including address search)
- Transportation zones
- Schedules

The system adds the master data that matches the search criteria to the map view. Master data that has already been displayed remains in the display.

Legend

The legend is available in the toolbar and contains all objects that can be displayed on the map.

Object Relationships

For the individual master data objects, you can determine other master data objects that have a relationship to them. Select a master data object and then one of the search functions available in the context menu. The system adds the master data objects determined to the map view.

Display Options

You can use the display profile to select all the objects that are to be displayed on the map. The display profile is available in the toolbar

You can set the display status for the individual master data objects. Select a master data object and then one of the functions available for hiding objects in the context menu. The system then removes the master data objects determined from the map view. You can hide the master data object itself, all the other master data objects, and the master data objects that do not have a relationship.

Activities

To call up the transportation network cockpit, in SAP NetWeaver Business Client choose
► *Master Data* ► *Transportation Network* ► *Transportation Network Cockpit* ▶.



Path Finder

You can use this function to search for legs in your transportation network and take the following into account in the process:

- Locations
- Transshipment locations
- Transportation lanes
- Schedules
- Transportation zones

This enables you to easily determine whether a connection exists between two locations and, therefore, whether you have correctly configured your master data.

Note

The path finder does not take incompatibilities into account. For more information about incompatibilities, see [Incompatibilities](#).

End of the note.

Integration

This function is available both in the transportation network cockpit and on the user interface for transportation proposals. In both cases, the result of the path finder is displayed on the geographical map.

Prerequisites

You have defined the following objects:

- Locations [mandatory] (see [Definition of Locations \[Page 65\]](#))
- Transshipment locations that are assigned to locations [optional] (see [Transshipment Location \[Page 59\]](#))
- Connecting transportation lanes [optional] (see [Definition of Transportation Lanes \[Page 82\]](#))
- Schedules [optional] (see [Schedule Creation \[Page 91\]](#))

Features

You can execute this function and check the result in either the transportation network cockpit or on the transportation proposals user interface:

- Transportation Network Cockpit

When you open the context menu for a location in the transportation network cockpit, you can choose: *Find Path To Location...* and enter a destination in the dialog box displayed. The system then calculates all of the available connections in the

transportation network and displays them on the map. The color of the connections indicates whether a valid transportation lane or schedule exists.

- Transportation Proposals

When you call the user interface for transportation proposals, you can choose the appropriate pushbutton to show or hide the available connections on the map. As in the transportation network cockpit, the color of the connections indicates whether a valid transportation lane or schedule exists.

- Explanation Tool

When you select one or more freight units, you can choose the *Show Network Path* pushbutton to analyze the underlying transportation network that is taken into account when planning the selected freight units.

More Information

[Transportation Network Cockpit \[Page 51\]](#)

[Generation of Transportation Proposals](#)



Location

A logical or physical place in which products or resources are managed on a quantity basis.

You use this business object as the basis for transportation processes. In transportation processes, you name a [source location](#), a [destination location](#), and any transshipment locations necessary to complete the transportation process. For this purpose, you define locations.

Structure

A location is identified by a name. To define a location, you have to specify its name and type. SAP Transportation Management (SAP TM) provides standard location types such as the following:

- Production plant (1001)
- Distribution center (1002)
- Shipping point (1003)
- Customer (1010)
- Vendor (1011)
- Terminal (1030)
- Port (1100)
- Airport (1110)
- Railway station (1120)
- Container freight station (1130)
- Hub (1140)
- Gateway (1150)
- Container yard (1160)
- Warehouse (1170)
- Carrier warehouse (1180)

In SAP TM, you use the location type as a means for categorizing locations. Location types are not used for controlling business processes, they are only used as a means of reference.

Integration

This business object is used throughout SAP TM in almost every business process, including the following:

- Definition of more complex master data objects that are part of the transportation network, such as transportation zones, transportation lanes, or schedules.
- Definition of other master data objects, such as resources.

- Definition of incompatibilities. For example, a location may be marked as having a restriction in regards to the delivery of goods by means of a specific vehicle resource.
- Creation of forwarding orders, freight units, planned transportation activities, executed transportation activities, and so on.

You can transfer locations from an Enterprise Resources Planning (ERP) system, such as SAP ERP, to SAP TM. When connecting SAP ERP to SAP TM you can transfer the data via the Core Interface.

More Information

[Definition of Locations \[Page 65\]](#)

[Transshipment Location \[Page 59\]](#)



One-Time Location

A [location](#) that is stored as a transient master data object in the system.

You use one-time locations in business processes that require the input of locations that have not been defined as master data objects, such as the creation of forwarding orders. The system creates one-time locations based on one-time address details that you can specify on the user interface.

Structure

A one-time location is specified by the name of the organization, its address data, its communication data, or a combination of these.

You can create a note for each one-time location. When you create a note, you can only define one note per location and language.

Integration

- To find addresses for one-time locations using the input help (F4), complete the Customizing activities for SAP NetWeaver under ► *Application Server* ► *Basis Services* ► *Address Management* ► *Regional Structure/City File* ▶.
- In Customizing, you can activate an address search that determines whether one-time locations match locations that already exist. For more information, see Customizing for *Transportation Management* under ► *Basic Functions* ► *General Settings* ► *Define General Settings for SAP TM* ▶.
- In the standard system, all user roles have been configured so that users can read the details of one-time locations. If you reconfigure the roles to suite your business needs, we recommend that you do the following:
 - Configure all roles available in SAP Transportation Management so that users assigned to them can read the details of one-time locations.
 - Configure the roles that are used for creating or changing forwarding orders (see [Forwarding Order \[Page 294\]](#)), such as the transportation booking agent, so that they can create one-time locations.

For more information about roles, see [Roles](#).

More Information

You can activate the following BAdI implementations for one-time locations:

- A customer-specific address search for one-time locations. For a possible implementation, see Customizing for *SAP Transportation Management* under ► *Transportation Management* ► *Business Add-Ins (BAdIs)* for *Transportation Management* ► *Master Data* ► *General Settings* ► *One-Time Locations* ► *BAdI: Customer-Specific Search Logic for Locations Based on Address Data* ▶.
- The adjustment of location data created for one-time locations. For a possible implementation, see Customizing for *SAP Transportation Management* under ► *Transportation Management* ► *Business Add-Ins (BAdIs)* for *Transportation*

Management > *Master Data* > *General Settings* > *One-Time Locations* > *BAdl: Adjustment of Location Data Created for One-Time Locations*.



Transshipment Location

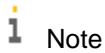
A [location](#) that is used for unloading goods from one vehicle resource and loading it onto another vehicle resource during the transportation process.

You use transshipment locations when different means of transport or different carriers have to be used in the transportation process. You can also use transshipment locations when consolidating or de-consolidating goods to be transported.

Structure

A transshipment location is defined by assigning a location to *either* another location *or* to a transportation zone (see [Transportation Zone \[Page 73\]](#)).

When you assign a transshipment location to a transportation zone, it can be used as a transshipment location by all locations that are part of that transportation zone.



Note

You cannot define a transshipment location by assigning a location to itself.

End of the note.



Recommendation

For a better system performance, we recommend that you define only transshipment locations that you use.

End of the recommendation.

Integration

If you define a transshipment location and want to use it in your transportation processes, you must define transportation lanes (see [Transportation Lane \[Page 81\]](#)) that take the transshipment location into account.



Example

You want to transport goods from location A to location C. You have to unload some goods in location B and change your means of transport. Location B is therefore a transshipment location.

For this transportation process to take place, you have to define the following:

1. A transshipment location B
2. A transportation lane from A to B and a transportation lane from B to C

For more information, see [Examples for the Transshipment Location \[Page 61\]](#).

End of the example.



Define Transshipment Location Assignments

You, as a system administrator, can use this report to display, create, and delete transshipment location assignments as follows:

- You can display transshipment location assignments for selected locations, transportation zones, and transshipment locations. You can display all transshipment location assignments in the system, by selecting the *Display All Assignments* checkbox.
- You can assign locations and/or transportation zones to one or more transshipment locations.
- You can delete transshipment location assignments for selected locations, transportation zones, and transshipment locations. To simulate the deletion of transshipment location assignments before deleting the assignments from the system, you select the *Simulate Deletion* checkbox.

Activities

To define transshipment location assignments, on the SAP Easy Access screen choose ► *Master Data* ► *Transportation Network* ► *Locations* ► *Assign Transshipment Location* ▶.



Examples for the Transshipment Location

Example 1

You want to transport goods from location A to location C. You have defined the transshipment location B for the location A. This situation is depicted in the following figure (the transshipment location is displayed with a blue background):



Examples for the Transshipment Location

You have the following options for transporting goods from location A to location C (provided you have defined the respective transportation lanes):

- A to C

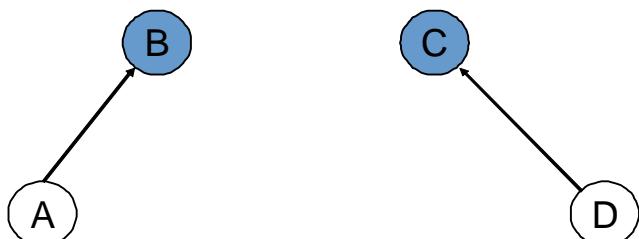
You can transport the goods directly from location A to location C.

- A to B to C

You can transport the goods to location B first, and from location B to location C.

Example 2

You want to transport goods from location A to location D. You have defined the transshipment location B for the location A, and the transshipment location C for the location D. This situation is depicted in the following figure (the transshipment locations are displayed with a blue background):



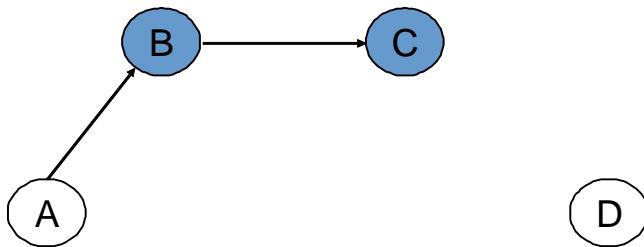
Examples for the Transshipment Location

You have the following options for transporting goods from location A to location D (provided you have defined the respective transportation lanes):

- A to D
- A to B to D
- A to C to D
- A to B to C to D

Example 3

You want to transport goods from location A to location D. You have defined the transshipment location B for the location A, and the transshipment location C for the location B. This situation is depicted in the following figure (the transshipment locations are displayed with a blue background):



Examples for the Transshipment Location

You have the following options for transporting goods from location A to location D (provided you have defined the respective transportation lanes):

- A to D
- A to B to D
- A to B to C to D

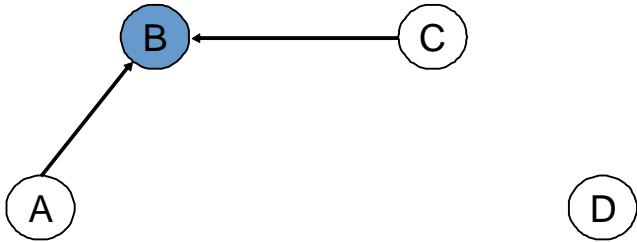
 Note

In this example, you cannot transport goods from A to C to D, since C is not a transshipment location for the location A.

End of the note.

Example 4

You want to transport goods from location A to location D. You have defined the transshipment location B for the location A and the location C. This situation is depicted in the following figure (the transshipment location is displayed with a blue background):



Examples for the Transshipment Location

You have the following options for transporting goods from location A to location D (provided you have defined the respective transportation lanes):

- A to D
- A to B to D

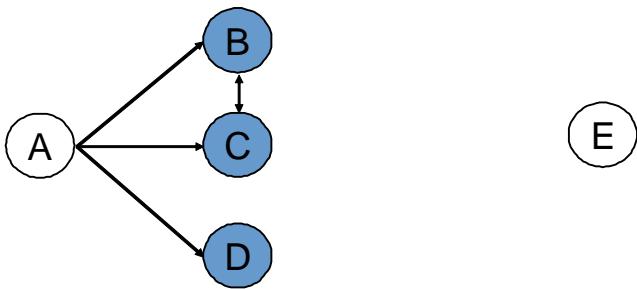
 Note

In this example, you cannot transport goods from A to B to C to D, since C is not a transshipment location for the location B.

End of the note.

Example 5

You want to transport goods from location A to location E. You have defined the transshipment locations B, C, and D for the location A, and specified that B and C are mutual transshipment locations. This situation is depicted in the following figure (the transshipment locations are displayed with a blue background):



Examples for the Transshipment Location

You have the following options for transporting goods from location A to location E (provided you have defined the respective transportation lanes):

- A to E
- A to B to E
- A to C to E

- A to D to E
- A to B to C to E
- A to C to B to E



Definition of Locations

You use this process to define locations in SAP Transportation Management.

Prerequisites

- In Customizing for *SAP Transportation Management* under ► *SCM Basis* ► *Integration* ► *Basic Settings for Creating the System Landscape* ▶, you have made all the necessary settings in the following activities:
 - *Name Logical Systems*
 - *Assign Logical Systems to a Client*
 - *Maintain Business Systems Group*
 - *Assign Logical System and Queue Type*
- Optionally, you have configured geo-coding in Customizing for *SAP NetWeaver* under ► *General Settings* ► *Set Geocoding* ▶.

Process

1. In *SAP NetWeaver Business Client*, you choose ► *Master Data* ► *Transportation Network* ► *Locations* ► *Define Location* ▶.
2. You specify your location, choose the location type, and choose *Create*.
3. You describe your location and enter location-specific data on the following tab pages:
 - *General*
This tab page contains information about standard identification numbers for the location, geographical data of the location, the business partner that owns the location, and the priority of the location for business processes.
 - *Address*
This tab page contains information about the contact details for the location, such as street address, PO box address, and communication data.

Note

If you enter data on the *Address* tab page, the system calculates the geographical data for the location and enters the values in the corresponding fields on the *General* tab page. For this process to take place, as a minimum you must specify the country code of the location.

The system can use a third-party geocoding program to calculate the geographical data. For more information, see [Geocoding](#).

Note that with SAP TM, we do not deliver a third-party geocoding program.

End of the note.

- *Alt. Identifiers*

This tab page contains information about the alternative location identifiers defined for the location. For more information, see [Definition of Alternative Location Identifiers \[Page 72\]](#)

- *TM*

This tab page contains information about the goods wait time of products for the location. You can also enter information related to air cargo security (for example, the shipper security status for the location). For more information, see [Configuration of Air Cargo Security \[Page 526\]](#).

- *Resources*

This tab page contains information about restrictions that apply for this location in regards to resources and operating times of resources for the inbound and outbound processes.

- *Addit. (Additional)*

This tab page can contain distinctive information that you want to store with locations. You configure the fields that the system displays on this tab page in Customizing for SAP Transportation Management under ► *Transportation Management* ► *Master Data* ► *General Settings* ► *Maintain Freely-Definable Attributes* ▶.

4. You save the location.

Result

You have created locations. You can change or display locations that you have defined in SAP NetWeaver Business Client, by choosing ► *Master Data* ► *Transportation Network* ► *Define Location* ▶.

You can use the locations in transportation processes, such as the creation of forwarding orders or the definition of resources.



Operating Times

Time stream that describes the availability of a location.

You use this business object to specify at which times loading and unloading activities can take place at a specific [location](#), and at which times transportation activities can start or end at this location.

You can consider a multiple-shift operation when specifying operating times for a location.

Integration

You specify operating times for a location by using a calendar resource (see [Calendar Resource \[Page 123\]](#)). On the *Resources* tab page of the *Change Location* screen, you can assign calendar resources for the inbound and outbound delivery to the location.



Note

Several locations can refer to a single calendar resource.

End of the note.



Deleting Locations

You can use this procedure to delete locations that have become obsolete in SAP Transportation Management (SAP TM).

Prerequisites

1. You have checked if [dependencies](#) exist by generating a *Where-Used List*. For example, forwarding orders or resources may depend on locations.

To generate a *Where-Used List*, do the following:

1. In SAP NetWeaver Business Client choose ► *Master Data* ► *Transportation Network* ► *Define Location* ▾ and in the *Location* field, enter or choose a location.
2. In the menu, choose ► *More* ► *Extras* ► *Where-Used List* ▾.

Note

Alternatively, you can access the *Where-Use Framework* in SAP NetWeaver Business Client, by choosing ► *Master Data* ► *General* ► *Where-Used Framework* ▾.

End of the note.

2. You have eliminated any dependencies involving the locations.

Note

Do not remove the technical dependency on the default model.

End of the note.

Procedure

1. In SAP NetWeaver Business Client choose ► *Master Data* ► *Transportation Network* ► *Define Location* ▾ and enter or choose the location you want to delete.
2. Select the *Deletion Flag* checkbox for the location by choosing ► *More* ► *Location* ► *Deletion Flag* ▾.

Note

If you have selected the *Deletion Flag* checkbox for a location and you no longer want to delete the location, you can deselect it at any time before deletion by choosing ► *More* ► *Location* ► *Deletion Flag* ▾.

End of the note.

3. If necessary, repeat steps number 1 and 2 to select the *Deletion Flag* checkbox for other locations.
4. Delete all locations that have been flagged for deletion by choosing ► *More* ► *Extras* ► *Delete Locations* ▾.

Note

The system administrator may have scheduled a background job that deletes locations that have been flagged for deletion periodically. In this case, you do not have to delete the locations manually as described in step number 4.

End of the note.

More Information

Deleting One-Time Locations

The procedure described above is not valid for deleting one-time locations (see [One-Time Location \[Page 57\]](#)).

The system can delete one-time locations as soon as all dependencies of the individual one-time location to business processes have been eliminated.

The system starts the deletion process for one-time locations when you carry out step number 4 as described above or when the system starts a scheduled background job.



Example

The system deletes one-time locations of a forwarding order if you do not save the forwarding order or if you delete the forwarding order.

End of the example.



Application Logs for Locations

You use this function to collect messages, exceptions, and errors that have been stored in the system for a specific object, such as a location. Logs can be displayed and deleted from the database.

Features

The application log shows you messages issued by specific programs, such as the following:

- The deletion program for locations
 - The application log for this program provides you with an overview of where references to the deleted location still exist. You can then remove these.
- All programs capable of running in the background

Activities

- You can display logs for locations in SAP NetWeaver Business Client by choosing
► *Application Administration* ► *Master Data* ► *Transportation Network* ► *Application Log*
► *Display Application Log* ▶.
- You can delete logs for locations in SAP NetWeaver Business Client by choosing
► *Application Administration* ► *Master Data* ► *Transportation Network* ► *Application Log*
► *Delete Application Log* ▶.



Use of Change Documents for Locations

You use this process to trace changes that are made to locations in SAP Transportation Management.

The changes are logged in change documents, which allow you to find out at any time, what was changed, when the changes occurred, and how the changes were made. Change documents facilitate the analysis of errors. To use change documents for locations, you have to define the business object as a change object in the system.

Process

1. You activate change documents in Customizing. For more information, see Customizing for SAP Transportation Management under ► *Transportation Management* ► *Master Data* ► *Transportation Network* ► *Location* ► *Activate Change Documents* ▶.
2. You display the change documents for locations in SAP NetWeaver Business Client by choosing one of the following navigation paths:
 - o ► *Application Administration* ► *Master Data* ► *Transportation Network* ► *Edit Documents for Location* ▶.
 - o ► *Application Administration* ► *Change Documents* ► *Location Change Documents* ▶



Definition of Alternative Location Identifiers

You use this function to define alternative location identifiers (ALI) in SAP Transportation Management.

Once defined, you can use an ALI in transportation processes such as the creation of forwarding orders or the definition of resources.

Prerequisites

- You have defined at least one ALI type in Customizing for *SAP Transportation Management* under ► *Transportation Management* ► *Master Data* ► *Transportation Network* ► *Location* ► *Configuration for Alternative Location Identifiers* ▶.
- If you want to use an ALI type with a strict code list, you must have defined a code list and type in Customizing for *SAP Transportation Management* under ► *Transportation Management* ► *Master Data* ► *Transportation Network* ► *Location* ► *Configuration of Alternative Location Identifiers* ▶.
- If you want to add an ALI to an existing location, this location must have been previously defined.

For more information, see [Definition of Locations \[Page 65\]](#).

Activities

1. In SAP NetWeaver Business Client, you either navigate to an existing location where you want to add an ALI, or you select the *Alt. Identifiers* tab while you are defining a new location.
2. You specify the *ALI Type* and *Alternate ID* in the ALI table.

Note

If you are using an ALI type with a defined code list, the value of the *Alternate ID* table entry must be a member of the list.

End of the note.

3. You now repeat step 2 to add as many additional alternative location identifiers as you require.
4. You save the location.



Transportation Zone

An object that groups a number of locations.

You use this business object to group locations into transportation zones. The system can partly transfer the properties that you assign to a transportation zone to all its locations. This function reduces the volume of master data stored in the system.



Example

A number of locations are supplied by the same warehouse. You group these in a transportation zone.

End of the example.

Structure

A transportation zone is identified by a name. To define a transportation zone, you specify its name and type. In SAP Transportation Management (SAP TM), the following types of transportation zones exist:

- Direct zone
- Postal code zone
- Region zone
- Mixed zone



Note

A mixed zone is a combination of any of the other zone types.

End of the note.

Integration

This business object is used in the definition of more complex master data objects that are part of the transportation network such as transportation lanes (see [Transportation Lane \[Page 81\]](#)).



Definition of Transportation Zones

You use this process to define transportation zones in SAP Transportation Management (SAP TM).

Prerequisites

- You have defined locations (see [Definition of Locations \[Page 65\]](#)).

Process

1. You define a transportation zone in SAP NetWeaver Business Client by choosing *Master Data* *Transportation Network* *Define Transportation Zone* .
2. You create a transportation zone by entering its name and a description for the zone.

Note

The system automatically sets the zone type to **M** (mixed). If you require a different zone type, you can change the zone type using the input help (**F4**).

End of the note.

3. Depending on the type of transportation zone, you assign or exclude locations by creating entries on *one* of the following tab pages:
 - *Zone – Location*
To define a *direct zone*, you create entries on this tab page. You assign locations to the transportation zone directly by entering the name of each location. You exclude locations by selecting the *Exclude* checkbox.
 - *Zone – Postal Code*
To define a *postal code zone*, you create entries on this tab page. You assign locations to the transportation zone by specifying a postal code range that is valid for a particular country.
 - *Zone – Region*
To define a *region zone*, you create entries on this tab page. You assign locations to the transportation zone by specifying a country and a region. If you only enter a country, the system automatically chooses all regions of this country.

4. Note

5. If you want to define a *mixed zone*, you can create entries on more than one tab page.
6. End of the note.
7. You save your entries.



Caution

If you have defined a direct zone, a postal code zone, or a region zone, and you enter information on any other tab page, the system automatically changes the type of transportation zone to a mixed zone. This change is irreversible.

End of the caution.



Transportation Zone Hierarchy

A hierarchy that can be defined for transportation zones.

You use this object to structure transportation zones hierarchically by assigning one transportation zone to another. All locations included in a zone that is assigned to another zone, are automatically also part of that other zone.

Transportation zones that are included in a transportation zone hierarchy inherit properties of the superordinate zone.

The following conditions apply when you define a transportation zone hierarchy:

- You cannot assign a transportation zone to itself.
- You cannot assign a transportation zone to another zone if the former already contains the other zone.

Structure

A transportation zone hierarchy is defined by its name and its hierarchy structure.

Integration

- The VSR *optimizer* takes the transportation zone hierarchy into account during the optimization run.
- The lane determination function takes the transportation zone hierarchy into account when determining a specific transportation lane (see [Lane, Distance, and Duration Determination \(LDDD\) \[Page 86\]](#)).
- The transshipment location determination function takes the transportation zone hierarchy into account when determining all valid transshipment locations for a location.



Defining a Transportation Zone Hierarchy

You use this procedure to define a transportation zone hierarchy in SAP Transportation Management (SAP TM).

Prerequisites

- You have defined transportation zones (see [Definition of Transportation Zones \[Page 74\]](#)).

Procedure

1. You define a transportation zone hierarchy in SAP NetWeaver Business Client by choosing ► *Master Data* ► *Transportation Network* ► *Define Transportation Zone Hierarchy*.
2. Enter `RELH_ZONE` as the name of the transportation zone hierarchy.
3. Enter `RELHS_ZONE` as the name of the hierarchy structure.

Note

SAP TM delivers the hierarchy structure as standard.

End of the note.

4. Choose *Create*.
5. Assign transportation zones to the transportation zone hierarchy by using the *Hierarchy Fast Entry* screen area or by assigning them directly in the tree structure.
6. Save your entries.



Calculation of Geographical Data for a Transportation Zone

You use this process to calculate the geographical data of the geographical center of a transportation zone. The calculation is based on the geographical data of all locations that are part of the transportation zone. The system calculates the following geographical data:

- Latitude
- Longitude
- Time zone
- Precision (continent, country, region, and postal code)

Note

In SAP Transportation Management the precision is calculated based on the country and region of the locations.

End of the note.

The system uses the calculated data, for example, to increase the precision of a transportation lane when calculating the distance between locations or zones.

Prerequisites

You have entered the address data of all locations (see [Definition of Locations \[Page 65\]](#)). The system calculates the geographical data for the location on the basis of the address data.

Process

1. In SAP NetWeaver Business Client, you choose Application Administration Master Data Transportation Network Calculate Transp. Zone Coordinates .
2. You select the transportation zone for which you want to calculate the coordinates and choose *Calculate Coordinates*.

Note

The system does not consider locations for which you have set the *Deletion Flag* (see [Deleting Locations \[Page 68\]](#)) or locations that have initial coordinates.

End of the note.

3. The system calculates the geographical data for the geographical center of the selected transportation zone and stores the data in the background.

More Information

[Transportation Lane \[Page 81\]](#)

[Transportation Zone \[Page 73\]](#)



Determination of Locations Within a Transportation Zone

You can use this report to determine all locations contained within a transportation zone.

Prerequisites

Both locations (see [Location \[Page 55\]](#)) and transportation zones (see [Transportation Zone \[Page 73\]](#)) exist.

Features

The report offers the following options:

- Determination of all locations that are directly contained in the transportation zone
In this case, the system determines all locations that are contained in this transportation zone.
- Determination of all locations (that is, locations that are indirectly contained in the transportation zone)
In this case, the system determines all locations that are contained in both this transportation zone and in the transportation zones of the corresponding transportation zone hierarchy.

The following applies when defining locations:

- A location is directly contained within a transportation zone if one of the following criteria is met:
 - It is assigned directly to the transportation zone (zone type D or M).
 - It matches the transportation zone definition (zone type R or M) with regard to the region and country from the location address.
 - It matches the transportation zone definition (zone type P or M) with regard to the postal code and country from the location address.
- A location is indirectly contained within a transportation zone if it is directly assigned to at least one transportation zone that meets the following condition: It is a lower-level transportation zone within the transportation zone hierarchy of the transportation zone that you entered in this report.



Example

You have defined three transportation zones:

- Transportation zone EU (Europe)
- Transportation zone DE (Germany)
- Transportation zone FR (France)

The transportation zones DE and FR are subordinate to the transportation zone EU.

If you run the report for transportation zone DE and specify that the system is to determine all locations that are directly contained within this zone, the system displays all locations of transportation zone DE only. This result is irrespective of whether you have manually assigned the locations to the transportation zone or whether the system has assigned them using the address field.

If you specify that the system is to determine all locations, it displays the locations from the transportation zones EU and FR as well.

End of the example.

Activities

To execute the report, on the SAP Easy Access screen, choose *Transportation Management* *Master Data* *Transportation Network* *Determine Locations Within a Transportation Zone* .



Transportation Lane

A relationship between two locations, two transportation zones, or a combination of locations and zones that expresses the direct reachability of the locations or of all locations within the zones for a specific means of transport.

You use this business object when planning distribution and procurement between different locations.

Structure

A transportation lane is defined by a source location or zone, a destination location or zone, and a means of transport (MTr). You have the option of assigning carriers to the transportation lane.

Integration

This business object is used by several processes in SAP Transportation Management (SAP TM). For more information, see:

- [Planning](#)
- [Creation of Business Shares and Transportation Allocations](#)
- [Carrier Selection](#)



Definition of Transportation Lanes

You use this process to define transportation lanes in SAP Transportation Management (SAP TM).

Prerequisites

- You have defined means of transport (MTr) in Customizing for *SAP Transportation Management* under *Transportation Management* *Master Data* *Resources* *Define Means of Transport*
- You have defined at least two locations or transportation zones. For more information, see [Definition of Locations \[Page 65\]](#) or [Definition of Transportation Zones \[Page 74\]](#).
- If you want to assign a carrier to a means of transport, you have assigned the business partner role *Carrier* to the business partner that functions as the carrier. For more information, see [Definition of Business Partners \[Page 28\]](#).

Process

1. You define a transportation lane in SAP NetWeaver Business Client by choosing *Master Data* *Transportation Network* *Define Transportation Lane*
2. You create a transportation lane by entering information on either of the following tab page pages:
 - *Tr.Lane*
You create the transportation lane by entering or choosing the source location or zone and the destination location or zone.
 - *Intra-Zone Lane/Loc. Transp. Lane*
You use this tab page to define an [intrazone lane](#) or a [location transportation lane](#).
 - You create an intrazone lane by entering or choosing a transportation zone.
 - You create a location transportation lane by entering or choosing a location.

Note

Defining a location transportation lane has no impact on the reachability of locations. It can, however, be useful in specific contexts such as the initialization of transportation allocations (see [Transportation Allocation](#)).

For example, you might create a location transportation lane for a location A, define a planning period for one or more means of transport, assign one or more carriers to the transportation lane, and define a maximum freight order quantity for each carrier. This information can be evaluated during the creation of transportation allocations, thereby limiting the number of transportation activities from or to location A that are assigned to a specific carrier within the planning period.

End of the note.

- *Mass Maint. (Create)*

You create multiple transportation lanes by copying an existing transportation lane.

3.  Note

4. On all tab pages, when you choose a transportation zone via the input help you can identify the transportation zones by the location type 1005. This location type is used as a marker for transportation zones in the system. It cannot be used to define transportation zones in the *Define Location* transaction (see [Definition of Locations \[Page 65\]](#)). To define transportation zones, see [Definition of Transportation Zones \[Page 74\]](#).
5. End of the note.
6. You assign a means of transport to the transportation lane.

Means of transport are used to move goods between the locations or zones of a transportation lane. You specify attributes for the means of transport that apply to transportation activities between the source and destination of the goods to be transported, such as the transportation duration, the transportation distance, and the transportation costs.

 Note

You can only create a transportation lane if you assign at least one means of transport to it.

End of the note.

7. You have the option of assigning carriers to the transportation lane.

A carrier offers services along a transportation lane for a specific means of transport. You, therefore, assign carriers to the transportation lane by assigning them to the means of transport. Once you have assigned a carrier to the means of transport, you can specify the attributes that are specific to this combination of carrier and MTR. For example, the transportation costs, the priority, the share of business, or the capacity for the transportation allocation.

 Note

If you want to use automatic carrier selection, you have to assign carriers to means of transport.

End of the note.

Result

You have created transportation lanes. You can change or display transportation lanes that you have defined in NetWeaver Business Client by choosing ► *Master Data* ► *Transportation Network* ► *Define Transportation Lane* ▶.

You can change or display multiple transportation lanes on the *Mass Maint. (Display/Change)* tab page.

You can use transportation lanes in transportation processes such as dispatching or subcontracting.



Use of Change Documents for Transportation Lanes

You use this process to trace changes that are made to transportation lanes in SAP Transportation Management.

The changes are logged in change documents, which allow you to find out at any time, what was changed, when the changes occurred, and how the changes were made. Change documents facilitate the analysis of errors. To use change documents for transportation lanes, you have to define the business object as a change object in the system.

Process

1. You activate change documents in Customizing. For more information, see Customizing for SAP Transportation Management under ► *Transportation Management* ► *Master Data* ► *Transportation Network* ► *Transportation Lane* ► *Activate Change Documents* ▶.
2. You display the change documents for transportation lanes in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *General Settings* ► *Change Documents* ► *Change Docs for Transportation Lanes* ▶.



Distance and Duration Determination (DDD)

You can use this function in SAP Transportation Management (SAP TM) to determine the distance of a transportation lane and the duration it takes the means of transport to travel that distance. The system uses the distance and duration of the transportation lane in planning processes. The *VSR optimizer*, for example, determines the most suitable means of transport for the transportation processes on the basis of the distance and duration.

Activities

In SAP TM, you can implement a business add-in (BAdI) for distance and duration determination that can manipulate the calculated values for the distance and duration. For more information, see Customizing for *SAP Transportation Management* under *Transportation Management* *Business Add-Ins (BAdIs) for Transportation Management* *Master Data* *Transportation Network* *Reuse Component* *Enhancement of Basic Distance and Duration Determination* *BAdI: RC_LDDD - Basic Distance and Duration Determination*.

More Information

[Distance and Duration Determination](#).



Lane, Distance, and Duration Determination (LDDD)

The system uses this function to determine the most specific transportation lane for your transportation process. The lane, distance, and duration determination (LDDD) considers the hierarchy of the means of transport and the hierarchy of the transportation zone at the source and destination location. In addition to determining the transportation lane, the system determines the distance of the lane and the duration it takes the means of transport to travel that distance.

LDDD is used in planning processes in SAP Transportation Management (SAP TM). The *VSR optimizer*, for example, determines the most specific transportation lane for transportation processes on the basis of the lane, distance, and duration determination.

Prerequisites

- In Customizing, you have defined means of transport to which you have assigned superordinate means of transport. For more information, see *Customizing for SAP Transportation Management* under ► *Transportation Management* ► *Master Data* ► *Resources* ► *Define Means of Transport* □.
- You have defined hierarchies for the source location or zone and the destination location or zone (see [Defining a Transportation Zone Hierarchy \[Page 77\]](#)).
- You have defined transportation lanes (see [Definition of Transportation Lanes \[Page 82\]](#)).
- You have defined the hierarchy priorities for lane determination in Customizing. For more information, see *Customizing for SAP Transportation Management* under ► *Transportation Management* ► *Master Data* ► *Transportation Network* ► *General Settings for Transportation Network Determination* □.

Note

In the standard system, the hierarchy of the means of transport is considered first during determination.

End of the note.

Activities

In SAP TM, you can implement a business add-in (BAdI) for lane, distance, and duration determination that enables you to manipulate the values for the distance and duration and the transportation lane calculated by the system. For more information, see *Customizing for SAP Transportation Management* under ► *Transportation Management* ► *Business Add-Ins (BAdIs)* for *Transportation Management* ► *Master Data* ► *Transportation Network* ► *Reuse Component* ► *Enhancement of Distance and Duration Determination* ► *BAdI: RC LDDD - Distance and Duration Determination* □.

More Information

[Distance and Duration Determination](#)



Schedule

You use this function to define a sequence of stops such as ports, airports, or gateways that is valid for a specific period of time. Ships, trucks, or airplanes can move goods at recurring times along the whole sequence or any part of it. The movement of goods depends on the transportation duration between each of the stops as well as the cut-off times and the length of stay at each stop.

As part of the new schedule concept, you can use different carrier schedules and gateway schedules to define information about your stop sequence and departure rules. For more information about departure rules, see [Use of Departure Rules \[Page 98\]](#).

Features

There are up to three categories of schedules for each mode of transport available to you in SAP Transportation Management (SAP TM).

- Direct and indirect gateway schedules
- Gateway Schedules with Reference
- Carrier Schedules

Gateway Schedules

Gateway schedules are schedules whose start stops and destination stops are transportation hubs (gateways) such as container freight stations (CFS) where freight is consolidated and deconsolidated. When you create a gateway schedule, you can enter a reference to a carrier schedule for each transportation stage and so transfer departure rules and voyages from the carrier schedule to the gateway schedule. This function is based on the transportation mode and is available for the sea and air modes only.

For more information, see [Direct Creation of Freight Documents and Selection of Schedules \[Page 335\]](#).



Note

You can enter only one source gateway and one target gateway for each gateway schedule.

End of the note.

The following gateway schedules are supplied in the standard SAP delivery:

- Road Gateway Schedule

As a logistics service provider, you use a road gateway schedule to define a *direct* connection between two gateways. Consequently this involves a direct gateway schedule. Freight is transported between the two gateways in the road gateway schedule by road.

- Sailing Schedule

You use sailing schedules to define a schedule for the customer in an ocean freight scenario. Sailing schedules denote a connection between two gateways that are designated as container freight stations in the sea transportation mode, and include information about the port of loading and port of discharge. Unlike the road gateway

schedule, this involves an *indirect* gateway schedule for the sailing schedule. However, they do not include information about any of the other stops in the sequence.

- Master Flight Schedule

As a logistics service provider, you use the master flight schedule to define a connection between the gateways at two airports. As the master flight plan contains further information about the airport of departure and the airport of destination, this involves an *indirect* gateway schedule, similar to the sailing schedule.

You can reference from one master flight schedule to several carrier flight schedules, and therefore map connecting flights in your schedule. You can define the individual references for each transportation stage of the main carriage.

If you define a restriction to certain organizational units for a master flight schedule, this restriction also applies to any air freight bookings that you generate from this master flight schedule. This means that only transportation planners from the specified organizational unit can plan the air freight bookings in question. For more information, see [Publication and Locking of Air Freight Bookings \[Page 535\]](#).

Gateway Schedules with Reference

In the sea and air transportation modes, you can also reference one or more carrier schedules from a gateway schedule and as a result map for instance connecting flights in your schedule in air transportation mode. You can define the individual references for each transportation stage of the main carriage.

 Note

If there are changes in one of the referenced carrier schedules, and you have already entered these in the carrier schedule yourself, then the status of referenced data in your gateway schedule is changed from *Data Is Up-to-date* to *Data Is Not Up-to-date*. For each transportation stage, the system shows you whether the data in the relevant referenced carrier schedule has changed.

End of the note.

 Example

You open your master flight schedule from Frankfurt to Los Angeles via New York. You note that the status of the referenced data is *Data Is Not Up-to-date*. You now check in the departure rules of your schedule which transportation stage is affected by this change. The status of the referenced data for the transportation stage from Frankfurt to New York is still *Data Is Up-to-date*. However, the status of the referenced data for the transportation stage from New York to Los Angeles is *Data Is Not Up-to-date*.

You assign the updated carrier flight schedule to the no longer up-to-date transportation stage of the master flight schedule again. The system then changes the status of the referenced data for both the transportation stage from New York to Los Angeles and for the entire master flight schedule to *Data Is Up-to-date*.

If these changes involve a postponement of the departure dates and one of the two flight schedules is assigned to an air freight booking, the system changes the status of the referenced data in the air freight booking to *Data Is Not Up-to-date*. For additional information about using schedules in freight documents, see [Use of Schedules \[Page 602\]](#).

End of the example.

Caution

Once you have assigned a new or updated carrier schedule to the gateway schedule, you have to regenerate the departures in the gateway schedule.

End of the caution.

Carrier Schedules

Carrier schedules define a sequence of stops for which the start stop and target stop are not gateways. By specifying departure rules, you can generate departures automatically. The system calculates the arrival and departure dates and times at each stop in the sequence, taking into account the transit duration, cut-off times, and availability of the goods for each stop. You can then modify each voyage individually.

In the sea and air transportation modes, you can also reference carrier schedules from a gateway schedule. For more information, see [Direct Creation of Freight Documents and Selection of Schedules \[Page 335\]](#).

The following carrier schedules are supplied in the standard SAP delivery:

- Ocean Carrier Schedule

You use the ocean carrier schedule to define a standard sequence of stops that are served by a ship. By specifying departure rules, you can generate voyages automatically.

- Carrier Flight Schedule

You use the carrier flight schedule to define a standard sequence of stops that are typically served by one plane. Alternatively, you can also define carrier flight schedules for connection flights with multiple transportation stages, for which various carriers with different aircraft types and flight numbers execute each of the transportation stages. If loading and unloading activities take place at one of these stops, you can classify this as a service stop.

Finally, by specifying departure rules, you can generate flights automatically.

Moreover, you can specify that the carrier entered in the carrier flight schedule is the operating (executing) carrier of the schedule. Consequently, you can map codeshare flights in your schedule.



Example

Airline XX offers a flight under their own flight number XX123. A different airline, ZZ, by arrangement with airline XX sells the flight under flight number ZZ456, even though the other airline does not operate the flight itself. Airline XX is therefore the operating carrier, and airline ZZ is the marketing carrier.

End of the example.

- Road Schedule

You use the road schedule to define a standard sequence of stops that are served by a truck.

Additional Functions

You can also create schedule-based freight documents by executing the report /SCMTMS/MP_SCHED_CREATE_TOR. For more information, see the system documentation.

You can also use transaction WUF to display the documents that refer to a specific schedule. This function is available for the following document types:

- Schedules
- Freight bookings
- Freight orders
- Schedule-based allocations

More Information

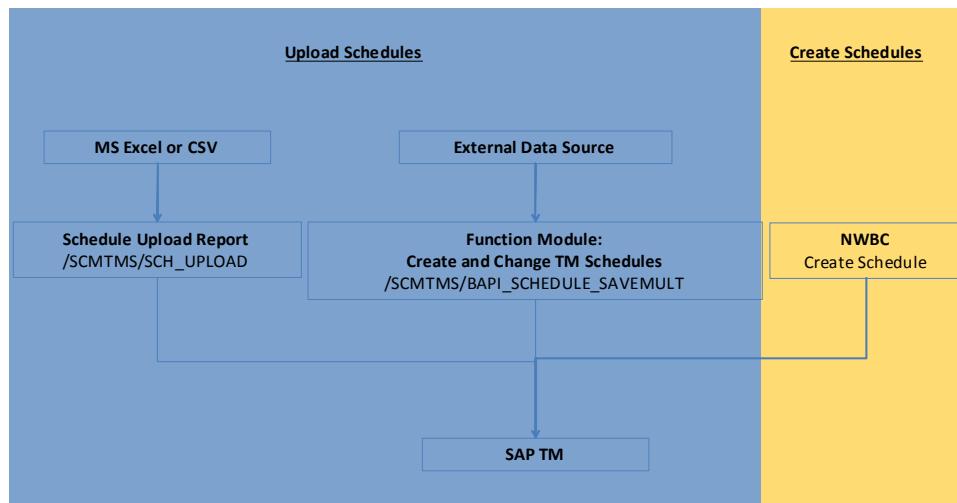
[Schedule Creation \[Page 91\]](#)

[Use of Schedules \[Page 602\]](#)



Creating Schedules

You can create various carrier schedules and gateway schedules that you want to use as part of your transportation planning activities. You can create individual schedules manually or upload one or more schedules from an external data source to SAP Transportation Management (TM). For additional information, see [Manual Creation of Schedules \[Page 92\]](#) and [Uploading of Schedules \[Page 94\]](#).



Creation of schedules in SAP TM

Prerequisites

- You have defined locations (see [Location \[Page 55\]](#)).
- You have defined business partners and assigned them to the business partner role *Carrier*. For more information, see [Definition of Business Partners \[Page 28\]](#).
- You have defined the modes of transportation in Customizing for Transportation Management under **Transportation Management** **Master Data** **Transportation Network** **Transportation Lane** **Define Transportation Mode**.
- You have defined number range intervals for schedules and departures in Customizing for Transportation Management under **Transportation Management** **Master Data** **Transportation Network** **Schedule**.
- You have defined a schedule type in Customizing for Transportation Management under **Transportation Management** **Master Data** **Transportation Network** **Schedule** **Define Schedule Types**.

More Information

[Interaction Between Organizational Units \[Page 372\]](#)

[Schedule \[Page 87\]](#)

[Default Route \[Page 103\]](#)



Manual Creation of Schedules

You use this process to create various carrier schedules and gateway schedules that you want to use as part of your transportation planning activities. To create schedules in SAP NetWeaver Business Client, choose **Master Data** **Transportation Network** **Schedule** **Create Schedule** ..

Process

1. Entering the Schedule Type

To specify the type of schedule you want to create, you enter the schedule type that you defined before in Customizing. SAP TM provides the following standard schedule types:

- Ocean carrier schedule: 1000
- Carrier flight schedule: 1100
- Road schedule: 1200
- Sailing schedule: 2000
- Sailing schedule with reference to ocean carrier schedules: 2100
- Road gateway schedule: 2200
- Master flight schedule: 2500
- Master flight schedule with reference to carrier flight schedules: 2600

Depending on the schedule type you entered, the system dynamically generates a user interface for creating schedules.

2. Entering the General Schedule Data

First you enter the general data, such as the carrier, transportation mode, and the transportation group for your schedule.

You can also specify a shipping type. If you specify a shipping type, the system only takes the schedule into account for forwarding orders with the same shipping type during automatic planning. For more information, see *Customizing for Transportation Management* under **Basic Functions** **Type Codes and Role Codes** **General Type Codes and Role Codes** **Define Shipping Type** .

If you create a sailing schedule with reference, you can reference to existing ocean carrier schedules. If you create a master flight schedule with reference, you can reference to carrier flight schedules.

If you create a master flight schedule, you can define an air cargo security status for this schedule. For more information, see [Air Cargo Security in Business Document Processing \[Page 528\]](#) and [Air Freight-Specific Consolidation Processes \[Page 363\]](#).

3. Entering Location Data

You enter the standard sequence of stops together with the transit duration, the cutoff times, the length of stay, and so on. You can also enter a start location and end location.

4. Creating Departure Rules

You enter departure rules to specify the frequency of voyages, departures, or flights from a stop. You also define a time period during which the departure rule is valid. For example, you can specify that a ship sails from the port of Newark every Thursday at 3:00 pm between January 1 and June 30. For more information about creating departure rules, see [Example of the Use of Departure Rules \[Page 100\]](#).

If you are working with a gateway schedule with reference and have referenced carrier schedules, you can copy the departure rules from the relevant carrier schedules at transportation stage level.

5. Creating Voyages, Departures, and Flights

After you have created your departure rules, generate voyages, departures, or flights to calculate the actual departure dates/times automatically. The system displays the actual departure dates/times on the appropriate tab.

6. Changing Departure Dates/Times

You select a departure date/time that the system created automatically, and adjust the relevant data as needed. You can also add a departure date/time that is not based on a departure rule.



Example

You created an ocean carrier schedule, in which your ship sails from port A via port B to port C and puts to sea every Thursday at 3:00 pm. You receive a notification that port B will be closed next Thursday; therefore, for the trip next week, you enter that your ship should sail directly from port A to port C.

End of the example.

If you have referenced one or more carrier schedules from a gateway schedule, you cannot change the data copied from the carrier schedules. If you want to change this data, you have to change it directly in the relevant carrier schedule. As an alternative, you can assign a different carrier schedule to the gateway schedule, and create new departures.

7. Deleting Schedules

You can delete entire schedules or departures, if they lie in the past, using report /SCMTMS/SCH_DELETION. For more information, see the system documentation.



Uploading of Schedules

You can upload schedules from an external data source to SAP Transportation Management (TM) by calling function module /SCMTMS/BAPI_SCHEDULE_SAVEMULT. This function is available for the sea, air, and road transportation modes. For more information, see the system documentation.

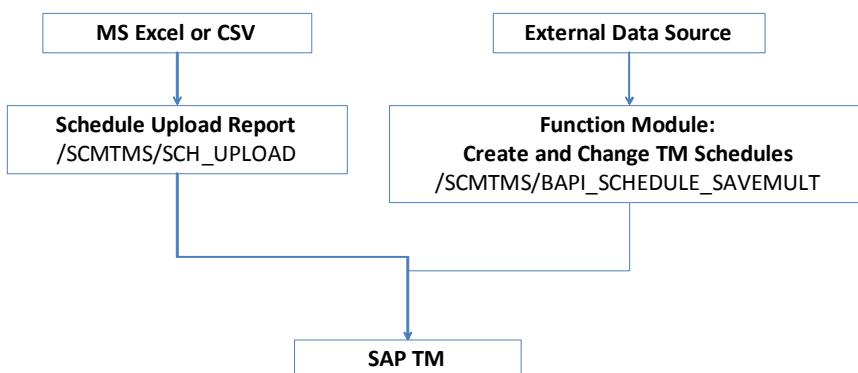
Alternatively, you can upload schedules for the air transportation mode in Microsoft Excel or CSV format to SAP TM by executing report /SCMTMS/SCH_UPLOAD. For more information, see the system documentation.

Note

You can delete schedules created manually and uploaded by calling function module /SCMTMS/BAPI_SCHEDULE_DELMULTI or by executing report /SCMTMS/SCH_DELETION.

End of the note.

Upload Schedules



Uploading of Schedules

More Information

SAP Note [1743069](#)



Transportation Costs

You can define transportation costs in your schedules based on the quantity of goods that are to be transported. These costs are then used by the optimizer to calculate the most cost-effective route; they do not represent actual costs.



Note

You can also define transportation costs based on other criteria such as distance or duration in the planning profile. For more information, see [Planning Costs](#).

End of the note.

Prerequisites

In Customizing for *Transportation Management*, you have completed the activities under
► *Master Data* ► *Transportation Network* ► *Schedules* ▶.

Features

You can calculate transportation costs in [gateway schedules](#) and [carrier schedules](#) based on the costs per quantity.

Gateway Schedules

When you enter quantity costs in a gateway schedule such as a sailing schedule or an LCL overland schedule, the optimizer calculates the transportation costs by multiplying the costs per quantity by the actual quantity to be transported. The system only considers the stage between the port of loading and the port of discharge.



Example

If you enter a quantity cost of 200 per ton and want to calculate the cost of transporting 1.5 tons, the system multiplies 200×1.5 and returns a transportation cost of 300.

End of the example.

Carrier Schedules

When you enter quantity costs in a carrier schedule such as an ocean carrier schedule, the optimizer calculates the transportation costs based on the number of stages. It therefore multiplies the costs per quantity by the actual quantity to be transported, and then multiplies the result by the number of stages over which goods are transported.



Example

If you enter a quantity cost of 200 per ton and want to calculate the cost of transporting 1.5 tons over 5 stages, the system multiplies $200 \times 1.5 \times 5$ and returns a transportation cost of 1500.

End of the example.

Activities

To define quantity costs in schedules, in SAP NetWeaver Business Client choose ► *Master Data* ► *Transportation Network* ► *Schedule* ► *Create Schedule* ▶.



Example: Schedules for Sea Traffic

As a logistics service provider (LSP), you receive an order to transport freight from your container freight station (CFS) in Nuremberg, Germany (CFS_NUR) to a CFS in Chicago, United States (CFS_CHI). You want to specify that all freight transported between Nuremberg and Chicago is to be routed by default via the ports in Hamburg (PORT_HAM) and New York (PORT_NYK) and their respective CFSs (CFS_HAM and CFS_NYK).

Process

1. You create a sailing schedule from the CFS in Hamburg (CFS_HAM) to the CFS in New York (CFS_NYK), and specify the corresponding ports as Hamburg (PORT_HAM) and New York (PORT_NYK).

You specify LCL (less than container load) as the shipping type.

2. You create a road gateway schedule with which goods are transported from the CFS in Nuremberg (CFS_NUR) to the CFS in Hamburg (CFS_HAM), and a second road gateway schedule with which goods are transported from the CFS in New York (CFS_NYK) to the CFS in Chicago (CFS_CHI).
3. You create a default route with the following sequence of locations:

1. CFS in Nuremberg (CFS_NUR)
 2. CFS in Hamburg (CFS_HAM)
 3. CFS in New York (CFS_NYK)
 4. CFS in Chicago (CFS_CHI)
4. On the Stages tab page of the forwarding order user interface under *Actual Route*, you select the stage from Nuremberg to Chicago and choose ► **Schedule** ► **Select** ▾.

The system lists a number of proposals.

Note

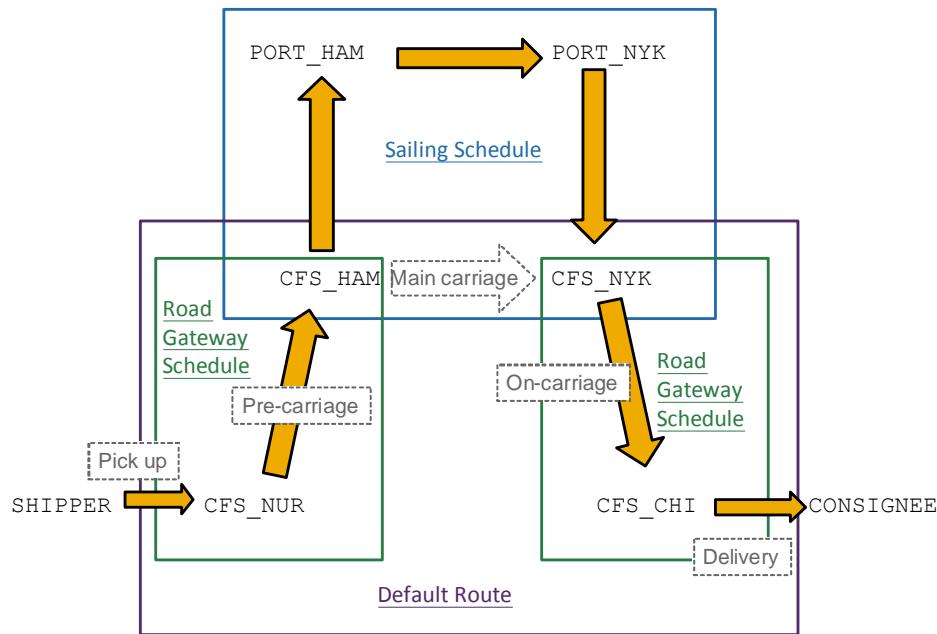
Note that the system only takes into account schedules with shipping type LCL or schedules that do not have a defined shipping type.

End of the note.

5. You select the transportation proposal that you require and choose *Done*.

The system automatically adds the pre-carriage and on-carriage stages along with additional data such as the port of loading and port of discharge, voyage number, and the name of the vessel.

This process is shown in the following graphic:



Example: Using sailing schedules, road gateway schedules, and default routes

Result

When you select the appropriate sailing schedule from the forwarding order, the system automatically enhances the data on the *Stages* tab page by adding the ports of loading and discharge, as well as the pre-carriage and on-carriage stages.



Use of Departure Rules

By specifying departure rules, you can generate departures automatically. The system calculates the arrival and departure dates and times at each stop in a stop sequence, taking into account the following durations and times for each stop:

- Transit duration
- Length of stay
- Cargo cut-off time
- Availability time

You can generate concrete departures from your departure rules and adjust them individually for each departure if required.

You can define departure rules at schedule or transportation stage level for carrier schedules and gateway schedules.

You can also apply departure rules from a referenced carrier schedule to a gateway schedule.

Prerequisites

You have created the required locations in the master data (see [Location \[Page 55\]](#)).

Features

Creation of Departure Rules at Schedule Level

If your standard stop sequence has just one source location and one destination location, your departure rule encompasses just one transportation stage. The departure rule that you define therefore applies at schedule level.

Creation of Departure Rules at Transportation Stage Level

To be able to define departure rules at transportation stage level, your standard stop sequence must contain more than two locations.

When you create departure rules at transportation stage level, you can define multiple departure rules with diverging departure times and arrival times for the various days of the week for which your schedule applies. This allows you to define different transit durations, lengths of stay, cargo cut-off times, and availability times for each day of the week.

Referencing Schedules with Departure Rules

In the gateway schedule with reference, you can reference a departure rule for a transportation stage from a carrier schedule for each transportation stage of the main carriage. The referenced departure rules can come from different carrier schedules. Alternatively, you can copy the departures for the entire main-carriage stage directly from a referenced carrier schedule.

If times are changed in the referenced carrier schedule, the system changes the status of the referenced data in the referencing gateway schedule from *Data Is Up-to-date* to *Data Is Not Up-to-date*. In the departure rule of the gateway schedule with reference, the system enters the status of the referenced data at transportation stage level. From here you can navigate via a link

to the relevant referenced carrier schedule, and there check exactly which times have changed. If you transfer these changes to your gateway schedule with reference either by assigning the same carrier schedule with the up-to-date data for the transportation stage concerned again, or by assigning a different carrier schedule for the first time, the system changes the status of the referenced data from *Data Is Not Up-to-date* back to *Data Is Up-to-date*.

Automatic Calculation of Times

If, in the *Departure Rules* screen area of your schedule, you select the *Auto Fill Times* checkbox and specify particular times for various transportation stages, the system calculates the missing times for the various transportation stages of the departure rule automatically, taking the different times zones of each of the locations into account.

In carrier schedules, for example, the system uses the arrival time at the destination location of the first transportation stage and the length of stay at the destination location of the first destination stage to calculate the departure time at the source location of the second transportation stage.

In the gateway schedule, you can also define the following durations and times for the pre-carriage and on-carriage as separate transportation stages in the departure rule:

- Transit duration
- Length of stay
- Cargo cut-off time
- Availability time

You can change the cargo cut-off times in the transportation stage for the pre-carriage only and the availability time in the transportation stage for the on-carriage.

If you create a gateway schedule with reference in the transportation modes sea and air, you can change the departure time from the source location of the first transportation stage and the arrival time at the destination location of the last transportation stage in the gateway schedule. If you want to change any other times in the departure rule from the carrier schedule, you can only do so in the actual carrier schedule.

Activities

You first define in your schedule the locations of the standard stops for your schedule in the *Standard Stop Sequence* screen area and specify the cut-off time and length of stay for each location. Based on this standard stop sequence, you create the departure rules for the different departure times on the various days of the week.

After you have created your departure rules, choose *Create Trips* to calculate the actual departure times automatically. If you want to change the dates of the departures generated automatically from the departure rule, select the trip in question and enter the deviating dates. You can also add a trip that is not based on a departure rule. If you have assigned a new or updated carrier schedule to a transportation stage of your departure rule, you have to regenerate the departures with the changed data.

Example

[Example of the Use of Departure Rules \[Page 100\]](#)



Example of the Use of Departure Rules

Example

You want to define several departure rules for your carrier flight schedule from Frankfurt airport to John F. Kennedy airport in New York via London Heathrow with differing departure times and transit durations on the various days of the week. One of these departure rules applies every Monday.

In this departure rule, you specify the departure time from Frankfurt airport as 05:00 CET and the transit duration for the flight to London Heathrow, which is one hour. The system calculates the arrival time in London Heathrow as 05:00 GMT UK.

Based on your cut-off times and the length of stay, which you specified as three hours, the system calculates the departure time for the flight to John F. Kennedy airport in New York. The time determined is 08:00 GMT UK. Since you specified eight hours as the transit duration, the system calculates the arrival time at John F. Kennedy airport in New York as 11:00 EST.

If the departure time from Frankfurt airport is moved back by two hours to 07:00 CET, the system adjusts the departure times and arrival times in London and New York accordingly. The new arrival time in New York is therefore 13:00 EST.

You can use this departure rule as a transportation stage in the departure rule for a master flight schedule by first entering your airport of departure and your airport of destination in the standard airport sequence of your master flight schedule, and assigning a corresponding carrier flight schedule to it. If you then create departure rules for your master flight schedule, you can select a suitable departure rule from the referenced carrier flight schedule. The departure rule from the carrier flight schedule appears as the only transportation stage in the departure rule for the master flight schedule.

The pre-carriage for this master flight schedule is from a gateway at Frankfurt airport to the airport. In the on-carriage, the goods are transported from the John F. Kennedy airport in New York to a gateway at the airport. The source location of the main carriage is Frankfurt airport and the destination location is John F. Kennedy airport in New York. The departure time from Frankfurt airport is 07:00 CET and the arrival time in New York is 13:00 EST.

In the gateway schedule, you can now define the transportation stages of the pre-carriage and on-carriage as parts of the departure rule. The departure time from your gateway at Frankfurt airport is 05:00:00 AM CET. The transit duration from the gateway to the airport amounts to two hours. This means the goods arrive at Frankfurt airport on time for the departure at 07:00.

You specify the length of stay at John F. Kennedy airport in New York as two hours. The availability time at the gateway is therefore 15:00 EST. The customer can pick the goods up here at 15:00 EST.

If, in the referenced carrier flight schedule, the departure time at Frankfurt airport is moved from 5:00 EST to 7:00 CET so that the arrival time at John F. Kennedy airport in New York is no longer 13:00 EST but 15:00 EST, the system changes the status of the referenced data in the master flight schedule from *Data Is Up-to-date* to *Data Is Not Up-to-date*. In the departure rule of the master flight schedule, you can navigate via a link to the referenced carrier flight schedule, and there check exactly which times have changed. If you transfer the changed departure time at Frankfurter airport and the changed arrival time at John F. Kennedy airport in New York to your master flight schedule, the system changes the status of the referenced data from *Data Is Not Up-to-date* back to *Data Is Up-to-date*.



Trade Lane

A trade lane is a classification of any transport-related activities representing a combination of zones or locations combined with a transportation mode or means of transport and providing an orientation between the source and destination.

Examples of trade lanes include:

- All transports from Hamburg to New York
- All transports within Germany
- All transports that leave Bavaria

Trade lanes are not a substitute for transportation lanes. For planning purposes transportation lanes must be maintained even if a suitable trade lane exists.

Trade lanes can form a hierarchy. This means that more generic trade lanes can contain more specific trade lanes. For example, "Within Germany Using Means of Transport Truck" contains "Along the Way from Frankfurt to Hamburg with Means of Transport Refrigerated Truck" and "Within Bavaria with Means of Transport Truck for Liquids".

Trade lanes may overlap, for example, "From Germany Using Airplane" and "Within Europe Using Airplane".

Trade lane hierarchies contain the following:

- Transportation zone hierarchies, for example, "From Germany" contains "From Bavaria", and this contains "From Plant_MÜNCHEN"
- Hierarchical relationships between means of transport, for example, "Within Germany Using Means of Transport Truck" contains "Within Germany Using Means of Transport Refrigerated Truck"
- Means of transport/transportation mode relationship, for example, "Within Germany Using Transportation Mode Street" contains "Within Germany Using Means of Transport Refrigerated Truck"

In previous releases, trade lanes were created from, and associated with other business objects such as Business Shares, Allocations, and Freight Agreements. You can now use trade lanes as full master data objects, creating, copying, and reusing them according to the needs of your business. You can view all available trade lanes in a worklist and, view information such as a where-used list.

You can configure the types of trade lanes that can be used to create trade lanes. For more information see Customizing for Transportation Management under *Transportation Management* *Master Data* *Transportation Network* *Trade Lane*

Structure

You define the following settings for a trade lane:

- Description
- Transportation Mode

- Means of Transport
- Orientation

Possible settings:

- Inbound
 - Outbound
 - From
 - To
 - Along
 - Within
- Source
 - Source Type
 - Destination
 - Destination Type

Integration

This business object is used by several processes in SAP Transportation Management (SAP TM). For more information, see:

- [Creation of Business Shares and Transportation Allocations](#)
- [Carrier Selection](#)
- [Agreement Maintenance](#)



Default Route

You use this function to define a sequence of transshipment locations. For each default route you can specify the transportation mode, carrier, schedule, and so on, for each transportation stage. The system considers default routes as possible routes for a shipment between two locations.

You can also use default routes in VSR optimization (see [Use of Default Routes in VSR Optimization \[Page 104\]](#)).

Prerequisites

- You have defined [locations \[Page 55\]](#).
- You have configured the settings in the Customizing activity *Define Default Route Types* under *Transportation Management* *Master Data* *Transportation Network* *Create Default Route*.

Activities

To create a default route, in SAP NetWeaver Business Client choose *Master Data* *Transportation Network* *Default Route* *Create Default Route*.

SAP Transportation Management is shipped with default route type 3000.

More Information

For more information about how default routes are used in conjunction with forwarding orders, see [Direct Creation of Freight Documents and Selection of Schedules \[Page 335\]](#).

For an example of how default routes can be used together with schedules, see [Example: Schedules for Sea Traffic \[Page 96\]](#).



Use of Default Routes in VSR Optimization

You use this function to consider default routes when you generate routes for the transport of freight units in VSR optimization. In your optimizer settings, you can specify how default routes are to be used when you process freight units in VSR optimization.

Prerequisites

You have defined default routes (see [Default Route \[Page 103\]](#)).

You have selected the *Freight Units* checkbox in Customizing for Transportation Management under *Transportation Management* *Master Data* *Transportation Network* *Define Default Route Types*.

In the optimizer settings of your planning profile, you have selected an option to consider default routes in VSR optimization. You do this in SAP NetWeaver Business Client under *Application Administration* *Planning* *Planning Profile Settings* *Optimizer Settings* *Edit Optimizer Settings*.

Features

When you use default routes in VSR optimization, you have the following options:

- Only consider default routes

The VSR optimizer searches only for default routes as possible routes for the transport of your freight units.

- Prefer default routes

The VSR optimizer searches for default routes but also generates alternative routes as possible routes for the transport of your freight units. If the VSR optimizer identifies a default route as a possible route, it automatically selects the default route without considering the transportation charges of the alternative routes.

- Also consider default routes

The VSR optimizer searches for default routes but also generates alternative routes as possible routes for the transport of your freight units. The VSR optimizer then selects the route with the lowest transportation charges.

- Do not consider default routes

The VSR optimizer does not search for default routes as possible routes for the transport of your freight unit. If the VSR optimizer generates only routes based on transshipment locations, these routes may by chance correspond to one of your default routes.



Transportation Mode

You can use these features to define master data that is specific to a particular transportation mode, for example, air freight or ocean freight. You can specify the following settings:

- Air freight and ocean freight codes (see [Transportation-Mode-Specific Codes \[Page 106\]](#))
- Air waybill stock numbers (see [Waybill Stock Definition \[Page 291\]](#))

More Information

For more information about transportation modes, see Customizing for *Transportation Management* under ► *Master Data* ► *Transportation Network* ► *Transportation Lane* ► *Define Transportation Mode* ▶.



Transportation-Mode-Specific Codes

SAP Transportation Management allows you to define codes that are specific to various transportation modes. These codes are explained in detail below.

Air-Freight-Specific Codes

- Location codes

You can define air-freight-specific locations such as airports or cities in the vicinity of airports. When you create an air-freight-specific document such as an air forwarding order or air freight booking, you can enter the airport of departure and the airport of destination on the user interface. The system then automatically determines the correct location code from the master data and displays it in read-only mode.

If you enter a one-time location (see [One-Time Location \[Page 57\]](#)) in your document, you can specify the location code directly in the document.

The system also takes location codes into account when calculating charges.

You define locations codes in Customizing for *Transportation Management* under *Master Data* *Transportation Network* *Location* *Define IATA Location Codes* .

- Aircraft type codes

You can define aircraft type codes and assign a category to them to specify, for example, whether the aircraft is a freighter or passenger aircraft.

You define aircraft type codes in Customizing for *Transportation Management* under *Master Data* *Resources* *Define IATA Aircraft Type Codes* .

- Airline codes

You can define airline codes for each of your air-freight carriers and assign an air waybill prefix to them. You can also specify whether the carrier is a member of the International Air Transport Association (IATA).

When you then create an air-freight document such as an air forwarding order, you can enter your airline code on the user interface. The system then automatically identifies the associated air waybill prefix. If there is a one-to-one relationship between the airline code and the associated carrier, the system can also determine the relevant carrier when you enter the airline code.

You define airline codes in Customizing for *Transportation Management* under *Master Data* *Business Partners* *Define IATA Airline Codes* .

- Handling codes

You can define handling codes to specify how certain types of freight are to be transported. For example, you can specify that goods are perishable and must, therefore, be transported in a refrigeration unit.

You define handling codes in Customizing for *Transportation Management* under *Basic Functions* *General Settings* *Define Handling Codes* .

- Traffic conference areas and region codes

You can define traffic conference areas, which designate a part of the world, and assign them to regions. You can also assign a country to the different regions.

You define traffic conference areas and region codes in Customizing for *Transportation Management* under ► *Master Data* ► *Transportation Network* ► *Define IATA Traffic Conference Areas* ▶ and ► *Master Data* ► *Transportation Network* ► *Define IATA Region Codes* ▶ respectively. You can also assign countries to region codes by choosing ► *Master Data* ► *Transportation Network* ► *Assign Countries to IATA Regions* ▶.

- Other charge codes and notes

You can define charge codes that are defined by the International Air Transport Association (IATA) as *Other Charges*. You can also enter IATA notes, which the system takes into account when calculating charges.

You define other charge codes and notes in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings for Charge Calculation* ► *Maintain IATA Other Charge Codes* ▶ and ► *Basic Functions* ► *Charge Calculation* ► *Maintain IATA Notes* ▶.

Ocean-Freight-Specific Codes

- Standard carrier alpha code (SCAC)

You define SCACs in Customizing and specify the period for which they are to be valid. When you assign SCACs to carriers, the values that you have defined are proposed in the SCAC input help. You can, therefore, enter a SCAC to find the associated carrier and vice versa.

You define SCACs in Customizing for *Transportation Management* under ► *Master Data* ► *Business Partners* ► *Define Standard Carrier Alpha Codes* ▶.

- United Nations Code for Trade and Transport Locations (UN/LOCODE)

You define UN/LOCODEs in the location master data and assign them to a container freight station (CFS) or a port, for example. When you enter a location in your ocean forwarding order or ocean booking, the system automatically determines the correct UN/LOCODE from the master data and displays it in the document in read-only mode.

If you enter a one-time location in your document, you can specify the UN/LOCODE directly in your document.

You define UN/LOCODEs in SAP NetWeaver Business Client by choosing ► *Master Data* ► *Transportation Network* ► *Define Location* ▶.

More Information

For more information about defining business partners (airlines), see [Definition of Business Partners \[Page 28\]](#).

For more information about locations, see [Location \[Page 55\]](#).

For more information about SCACs and airline codes in Freight Order Management, see [Carrier Categorization \[Page 600\]](#).



Product

A tangible or intangible good that is part of the business activities of a company. It can be traded and it contributes directly or indirectly to the value chain.

You use this object to manage global product master data.



Note

In SAP Transportation Management (SAP TM), you cannot create location-dependent products, set the planning version and the model, or display the profile of a product.

End of the note.

Structure

The product master data is maintained on a number of tab pages.



Note

Some of the tab pages contain data that is not relevant for SAP TM.

End of the note.

You identify each product with a unique product number, an appropriate description, and a value for the base unit of measure.

On the tab pages, you define items for the products, such as the following:

- [Transportation groups](#)
- [Alternative product numbers \(APNs\)](#)
- Alternative units of measure
- European Article Numbers (EANs)

You define whether the product is a packaging material by choosing the packaging material type and defining the capacities for the packaging material.

You assign the product to a [product freight group](#).

More Information

In an integrated system landscape with SAP ERP and SAP TM, the ERP system is frequently the leading master data system. In this case, the product master data is maintained in the ERP system, where it is managed as materials and transferred to SAP TM via the SAP Core Interface (CIF). For more information, see [Integration of Products](#).



Definition of Products

You use this process to define products that are transportable goods.

Prerequisites

In Customizing for *SCM Basis*, you have defined the following:

- You have defined transportation groups under ► *SCM Basis* ► *Master Data* ► *Product* ► *Maintain Transportation Group*.
- You have defined alternative product numbers under ► *SCM Basis* ► *Master Data* ► *Product* ► *Maintain Type of Alternative Product Number*.
- You have defined the packaging material types under ► *SCM Basis* ► *Master Data* ► *Product* ► *Define Packaging Material Types*.
- You have defined product freight groups under ► *SCM Basis* ► *Master Data* ► *Transportation Lane* ► *Carrier Profile* ► *Define Product Freight Groups*.
- You have defined freight codes and freight code sets under ► *SCM Basis* ► *Master Data* ► *Transportation Lane* ► *Carrier Profile* ► *Define Freight Code Sets, Freight Codes, and Determination*.

Process

1. You define a product in SAP NetWeaver Business Client by choosing ► *Master Data* ► *General* ► *Define Product*.
2. You enter a name for the product, select the *Global Data* radio button, and choose *Create*.
3. On the *Create Product* screen, you enter a description for the product and choose a value for the base unit of measure.
4. On the *Properties* tab page, you choose a value for the transportation group.
5. On the *Properties 2* tab page, you define alternative product numbers for the product.
6. On the *Units of Meas.* tab page, you define alternative units of measure for the product, their conversion rules, and the *European Article Number* (EAN).
7. On the *Pkg Data* (Packaging Data) tab page, you choose the packaging material type and define the capacities for the product, such as maximum weight or maximum length.
8. On the *Storage* tab page, you choose the product freight group to which you want to assign the product.



Deleting Products

You can use this procedure to delete products that have become obsolete in SAP Transportation Management (SAP TM).

Prerequisites

1. You have checked if [dependencies](#) exist, by generating a *Where-Used List*.

To generate a *Where-Used List*, do the following:

1. In SAP NetWeaver Business Client choose ► *Master Data* ► *General* ► *Define Product* ▾ and in the *Product* field, enter or choose a location.
2. In the menu, choose ► *More* ► *Extras* ► *Where-Used List* ▾.



Note

Alternatively, you can access the *Where-Use Framework* in SAP NetWeaver Business Client by choosing ► *Master Data* ► *General* ► *Where-Used Framework* ▾.

End of the note.

2. You have eliminated any dependencies involving the products.

Procedure

1. In SAP NetWeaver Business Client choose ► *Master Data* ► *General* ► *Define Product* ▾ and enter or choose the product you want to delete.
2. Set the *Deletion Flag* for the product by choosing ► *More* ► *Product* ► *Flag for Deletion* ▾.

When you confirm the setting you are asked whether you want to delete the product immediately. You may do so or you may delete the product at a later stage together with other products that have been flagged for deletion.

3. To delete all products that have been flagged for deletion, choose ► *More* ► *Extras* ▾ *Delete Products*. ▾



Use of Change Documents for Products

You use this process to trace changes that are made to products in SAP Transportation Management (SAP TM).

The changes are logged in change documents, which allow you to find out at any time, what was changed, when the changes occurred, and how the changes were made. Change documents facilitate the analysis of errors. To use change documents for products, you have to define the business object as a change object in the system.

Process

1. You activate change documents for products in Customizing. In the *Product* folder, as a minimum, you select the following entries:

- *Product Header*
- *Product Text*
- *Product UoM* (Product Units of Measure)
- *Prod. Pack Data* (Product Packaging Data)

For more information, see Customizing for *SCM Basis* under ► *Master Data* ► *Product* ► *Activate Change Documents* ▶.

2. You display the change documents for products in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *General Settings* ► *Change Documents* ► *Product Change Documents* ▶.



Classification of Goods

You can classify and evaluate your goods to be transported (commodities) according to characteristics of your choice. Each commodity has its own commodity code. You can group commodity codes using a commodity code type. The classification schemas (commodity code types) used for this purpose may depend on the transportation mode or country, for example.

When classifying goods, you can take into account transportation-relevant product characteristics, such as weight, density, loading properties, and handling (of dangerous goods, for example).

You can use this function in SAP Transportation Management (SAP TM) for the following purposes:

- Charge calculation for incoming invoices
- Printing

Commodity codes can be used when printing business documents.

For more information, see [Printing](#).

Prerequisites

You have defined commodity codes and commodity code types in Customizing for *Transportation Management* under ► *Master Data* ► *Classification of Goods* ► *Define Commodity Codes* ▶.

Features

Commodity codes classify goods (commodities) based on various classification schemas (commodity code types). You can enter commodity codes that belong to various classification schemas as value lists in Customizing.

You can make a selection on the following UIs:

- Forwarding Order

You can assign the commodity codes to cargo items when you create a forwarding order.

- Freight Booking

The system copies the commodity codes from the forwarding order. You can adjust the commodity codes in the freight booking as required. For more information, see [Freight Booking \[Page 506\]](#) and [Management of Air Freight Bookings for Airlines \[Page 521\]](#).

- Freight Order

The system copies the commodity codes from the forwarding order. You can adjust the commodity codes in the freight order as required. For more information, see [Freight Order \[Page 473\]](#).

Example

The commodity code type *Cereal* has the abbreviation *CR* and the following commodity codes:

Commodity Code	Description
100	Wheat
101	Organic wheat
200	Barley
201	Organic barley
300	Rye
301	Organic rye



Example: Classification of Goods

You use this process to classify and evaluate your goods to be transported according to characteristics of your choice.

Prerequisites

You have defined commodity codes and commodity code types in Customizing for *Transportation Management* under ► *Master Data* ► *Classification of Goods* ► *Define Commodity Codes*.

Process

The following example outlines how to classify a cargo:

1. *Changing the forwarding order*

In SAP NetWeaver Business Client, you choose ► *Forwarding Order Management* ► *Change Forwarding Order*, display the detail data for a main cargo item, and open the *Commodity Codes* tab page.

You define the cargo as commodity code type *Cereal* with commodity code 300 (rye) and save your entries. When you save the data, the system copies the classification to the corresponding freight order or freight booking.

2. *Displaying or checking the freight order or freight booking for the forwarding order*

In SAP NetWeaver Business Client, you choose ► *Freight Order Management* ► *Change Freight Order* (or *Change Air Freight Booking* or *Change Ocean Freight Booking*), display the detail data for a main cargo item, and open the *Commodity Codes* tab page. You now check whether the system has copied the commodity code type and commodity code correctly from the forwarding order.



Recommendation

From the forwarding order, you can also navigate to the follow-on documents *Freight Order* or *Freight Booking* using the *Document Flow* tab page, and to the *Commodity Codes* tab page using the *Cargo Management* tab page.

End of the recommendation.

3. *Changing the freight order or freight booking for the forwarding order*

In the freight order or freight booking, you display the detail data for a main cargo item and open the *Commodity Codes* tab page. You select the *Deviating Commodity Codes* checkbox, change the commodity code to 301 (organic rye), and save your entries. When you save your data, the commodity codes in the freight order or freight booking are adjusted. The commodity codes in the forwarding order remain unchanged. Once the data is saved, no further data is copied from the forwarding order to the freight order or freight booking.

Result

Goods have been classified in the forwarding order.

Goods in the freight order or freight booking are classified either from the forwarding order or locally in the freight order or freight booking using the *Deviating Commodity Codes* checkbox.



Equipment Groups and Equipment Types

Equipment types can be used when creating freight units and creating forwarding order or forwarding quotation items of the category *Container*. You use equipment groups to group equipment types into categories.

Note

Equipment types and equipment groups are transportation mode-specific.

End of the note.

Features

Equipment types can be used in the following contexts:

- Carrier profiles

When you define carrier profiles, you can use equipment types to describe the kind of equipment that is owned by the carrier. For more information, see [Definition of Carrier Profiles \[Page 38\]](#).

- Container

You can use equipment groups and types, for example, when creating forwarding order or forwarding quotation items of the category *Container*. The physical property data of the container is then available in the forwarding order and subsequent business documents as information for the planner. In addition, after you have entered the equipment group, the equipment type, and the number of containers in the forwarding order, the system calculates the tare weight and the capacity of the container in TEU based on the Customizing settings. For more information, see [Creation of Forwarding Order Items or Forwarding Quotation Items \[Page 346\]](#).

- Freight Unit Building

When you create freight units, you can take into account equipment types and their physical properties instead of the planning-relevant quantities. For more information, see [Consideration of Equipment Data During FU Creation](#).

You group equipment types into equipment groups. You use these groups, for example, in forwarding order management when creating items for a forwarding order or forwarding quotation. If you have assigned an equipment group to the item type in Customizing, the equipment group is entered automatically for an item with this item type, and equipment types of this group are displayed for selection.

More Information

[Definition of Equipment Groups and Equipment Types \[Page 117\]](#)



Definition of Equipment Groups and Equipment Types

You can use this process to define equipment types in SAP Transportation Management (SAP TM) and group them into equipment groups.

Process

1. You define equipment groups in Customizing. For more information, see Customizing for *Transportation Management* under ► *Master Data* ► *Resources* ► *Define Equipment Groups and Equipment Types* ▶.
2. You assign relevant transportation modes to each equipment group.
3. For each equipment group, you define equipment types.
4. You define the physical properties of containers (for example, capacity and weight) for the equipment types.
5. If required, you can implement a consistency check. For a possible implementation, see Customizing for *Transportation Management*, under ► *Business Add-Ins (BAdIs)* for *Transportation Management* ► *Master Data* ► *General Settings* ► *Equipment Types and Equipment Groups* ► *BAdI: Consistency Check for Equipment Types* ▶. This implementation checks whether an equipment type has been assigned to exactly one equipment group.



Definition of Resources

Resources play a central role in planning and execution within SAP Transportation Management. Resource data is relevant to the planning of order dates taking into account working times and the available capacities of the resources. Resources, in conjunction with booking, offer the capacity needed to perform transportation activities on freight units, such as transportation, loading, and unloading activities.

Integration

You can transfer Resources from an Enterprise Resources Planning (ERP) system, such as SAP ERP, to SAP TM. When connecting SAP ERP to SAP TM you can transfer the data via the Core Interface. You can use the following types from ERP:

- Equipment
- Functional Location

The system uses Plant Maintenance (PM) Orders from ERP to determine downtime information for the resources.

Features

The following resource types exist:

- Calendar resource (see [Calendar Resource \[Page 123\]](#))
- Vehicle resource (see [Vehicle Resource \[Page 124\]](#))
- Handling resource (see [Handling Resource \[Page 136\]](#))
- Drivers (see [Driver \[Page 137\]](#))
- Transportation unit resource (see [Transportation Unit Resource \[Page 138\]](#))



Note

Drivers are defined in SAP Transportation Management as business partners. However, they are often handled in the same way as resources and are, therefore, described here.

End of the note.

Activities

To create, change, or display resources, you have the following options:

- On the *SAP Easy Access* screen, choose ► *Transportation Management* ► *Master Data* ► *Resource* ► *Resource* ▾.
- In *SAP NetWeaver Business Client*, choose ► *Master Data* ► *Resources* ► *Define Resource* ▾.

For more information, see the following sections:

- Creating handling, vehicle, and calendar resources (see [Creating Handling, Vehicle, and Calendar Resources \[Page 141\]](#))

- Creating drivers (see [Creating Drivers \[Page 143\]](#))
- Copying resources (see [Copying Resources \[Page 144\]](#))
- Copying resources from template (see [Copying Resources from Templates \[Page 145\]](#))
- Deleting resources (see [Deleting Resources \[Page 147\]](#))



Classification of Resources

You can use resource classes to group resources that have the same characteristics or types (for example, vehicle resources or handling resources). This enables you to see at a glance exactly what kinds of resources are available for transportation planning.

You assign the resource class to a means of transport or an equipment group. The system then automatically assigns the correct resource class to the resource when you specify the means of transport or equipment group.

Prerequisites

- You have defined resource classes in Customizing for *Transportation Management* under *Master Data* *Resources* *Define Resource Class*.
- You have defined means of transport in Customizing for *Transportation Management* under *Master Data* *Resources* *Define Means of Transport*.
- You have defined equipment groups in Customizing for *Transportation Management* under *Master Data* *Resources* *Define Equipment Groups and Equipment Types*.

Features

Vehicle Resources

You can use resource classes to specify the kind of vehicle that is to be used for your transportation activities. When you enter the means of transport in the resource master data, the system automatically determines the resource class based on the means of transport.

For example, if you have assigned the resource class *Trailer* to means of transport *MTR_1* and subsequently create a resource with means of transport *MTR_1*, the system automatically determines that your resource is a trailer.

If you do not assign a resource class to the means of transport, the system determines the resource class based on the transportation mode and whether the vehicle resource is passive. The default values in this case are shown in the following table:

Transportation Mode	Passive	Default Resource Class
Road	No	Truck
Road	Yes	Trailer
Rail	No	Locomotive
Rail	Yes	Rail Car
Sea	Not applicable	Vessel
Air	Not applicable	Airplane

Handling Resources

You can use resource classes to specify the kind of equipment that is used to handle goods at a specific location (for example, whether the piece of equipment is a dolly or a forklift truck). When you enter the equipment group in the handling resource master data, the system automatically determines the resource class based on the equipment group.

For example, if you have assigned the resource class *Forklift Truck* to the handling resource group (that is, the equipment group) *EQ1*, the system automatically determines that the resource class is to be *Forklift Truck* when you enter *EQ1* in the resource master data.

If you do not assign a resource class to the handling resource group, the resource class defaults to *Doors*.

Transportation Unit Resources

You can use resource classes to specify the kind of transportation unit resource that is to be used for your transportation activities. When you enter the equipment group in the transportation unit resource master data, the system automatically determines the resource class based on the equipment group.

For example, if you have assigned the resource class *Container* to the transportation unit group (that is, the equipment group) *CN*, the system automatically determines that the resource class is to be *Container* when you enter *CN* in the resource master data. If you do not assign a resource class to the transportation unit group, the resource class defaults to *Container*.

More Information

[Definition of Means of Transport \[Page 126\]](#)

[Definition of Equipment Groups and Equipment Types \[Page 117\]](#)



Resource Types

In the following sections, you can find information about the resource types:

- Calendar resource (see [Calendar Resource \[Page 123\]](#))
- Vehicle resource (see [Vehicle Resource \[Page 124\]](#))
- Handling resource (see [Handling Resource \[Page 136\]](#))
- Driver (see [Driver \[Page 137\]](#))
- Transportation Unit resource (see [Transportation Unit Resource \[Page 138\]](#))



Calendar Resource

Resource that you can assign to a calendar and optionally to a shift. It is used particularly for scheduling the goods receipt and goods issue processing time.

You use calendar resources to specify operating times for locations. For more information, see [Operating Times \[Page 67\]](#).



Note

You cannot define a capacity profile for calendar resources. For more information, see [Definition of Capacity Profiles \[Page 155\]](#).

End of the note.

Structure

You can define, among others, the following parameters for calendar resources:

- Shifts
 - For more information about shifts, see [Definition of Capacity Variants \[Page 149\]](#).
- Downtimes (see [Definition of Downtimes \[Page 160\]](#))



Vehicle Resource

An instance of a particular means of transport, or a group of identical instances of means of transport that can provide transportation services.

You use this business object to map the capacity and availability of vehicles that you want to use for transportation.

You can choose up to eight dimensions and units of measurement to describe the capacity. Note that the mass and volume are predefined by default. Planning can only take the vehicle capacity into account if these correspond to the dimensions and units of measurement that you have defined in a freight unit building rule.

Note

You cannot define the available capacity for this resource type dependent on time. However, you can define a time-dependent availability using shift sequences. For more information about defining shift sequences, see [Specification of Definitions \[Page 150\]](#) and [Creating Definitions \[Page 152\]](#).

End of the note.

In the planning profile, you can specify whether the system can consider a manual overload of the resource capacity.

Vehicle Group and Vehicle Type

The vehicle and vehicle group types specify attributes such as the physical properties of a certain kind of vehicle. When you have created a vehicle type you can:

- use the type as a template to create vehicle resources, copying the attributes of the type to new resource
- request a special type of vehicle resource in a forwarding order or in booking order. (This is similar to the function already available for container groups and types).

For more information see Customizing for Transport Management under [Transportation Management](#) [Master Data](#) [Resources](#) [Define Equipment Groups and Equipment Types](#) .

Structure

You can define, among others, the following parameters for vehicle resources:

- Passive means of transport

In Customizing, you can define vehicle resources that cannot move by themselves, by selecting the *Passive Means of Transport* checkbox for the means of transport assigned to the vehicle resource.

For more information, see [Definition of Means of Transport \[Page 126\]](#).

- Vehicle combination

You can combine means of transport to create vehicle combinations.

For more information, see [Definition of Means-of-Transport Combinations \[Page 128\]](#).

- Compartment

You can divide the loading space of a vehicle resource into compartments.

For more information, see [Definition of Compartments \[Page 129\]](#).

- Capacity (see [Definition of Capacity \[Page 148\]](#))
- Availability (see [Definition of Availability \[Page 159\]](#))
- Minimum number of seals

You can specify the minimum number of seals of the vehicle resource. You can use this information for the definition of incompatibilities.

- Resource template (see [Copying Resources from Templates \[Page 145\]](#))
- Physical properties (see [Definition of Physical Properties \[Page 163\]](#))
- Downtimes (see [Definition of Downtimes \[Page 160\]](#))
- Qualifications (see [Definition of Qualifications \[Page 161\]](#))
- Attached equipment (see [Definition of Attached Equipment \[Page 162\]](#))
- Grouping attributes (see [Definition of Grouping Attributes \[Page 164\]](#))
- Alternative names (see [Definition of Alternative Names \[Page 165\]](#))

Integration

To define vehicle resources, you must have defined means of transport. For more information, see [Definition of Means of Transport \[Page 126\]](#).

More Information

[Freight Unit Building Rule](#)

[Definition of Dimensions and Units of Measurement \[Page 134\]](#)

[Planning Profile](#)

[Incompatibilities](#)



Definition of Means of Transport

You use means of transport to define groups of vehicle resources.

Features

Means of transport are groups of vehicle resources, for example, container ships or cargo ships. You assign a means of transport to each vehicle resource.

Your Own Means of Transport

You can specify that the means of transport is part of your own fleet.

Passive Means of Transport (Trailers)

You can specify that a means of transport cannot move by itself and that it therefore needs to be coupled to a vehicle that can move by itself. The incompatibilities (see [Incompatibilities](#)) as well as the means-of-transport combinations that you have defined determine whether or not a trailer can be coupled to a vehicle.

You can define a coupling duration and an uncoupling duration for a trailer.

The system schedules the uncoupling activity for a trailer when a different vehicle has to move it in the next stage. If the system has assigned an empty trailer to a stage, it schedules the coupling activity directly before the transportation activity and the uncoupling activity directly after the transportation activity.

Note

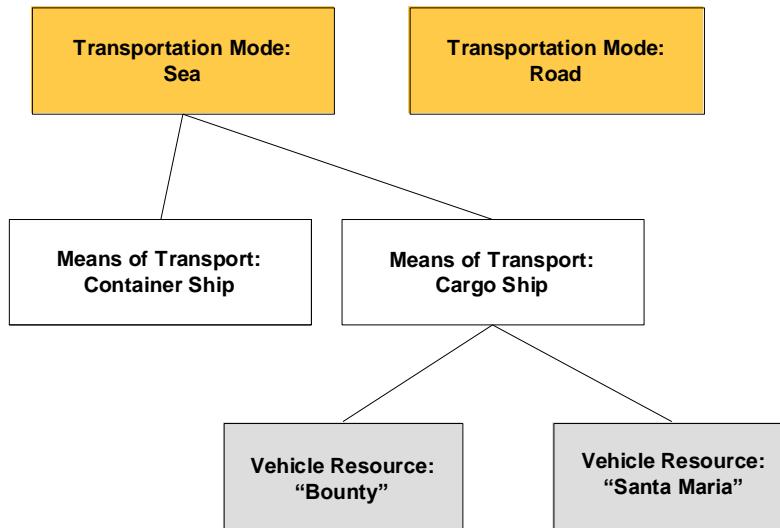
- You cannot couple trailers to schedules (see [Schedule \[Page\] 87](#)).
- Trailers must have capacity.
- You cannot define schedules for trailers.

End of the note.

Transportation Mode

The transportation mode specifies how the goods are transported, for example, as a sea shipment.

The following figure represents the relationship between vehicle resources, means of transport, and transportation modes:



Relationship Between Vehicle Resources, Means of Transport, and Transportation Modes

The vehicle resource is a particular means of transport, for example, the ship “Santa Maria”.

Superordinate Means of Transport

You can specify a means of transport that is superordinate to a means of transport.

A means of transport A that is superordinate to another superordinate means of transport B is also superordinate to any subordinate means of transport of the means of transport B.

Activities

Creating Means of Transport

You create means of transport and define the following functions, among others, in Customizing for SAP Transportation Management (SAP TM) under **Transportation Management > Master Data > Resources > Define Means of Transport**:

- Your own means of transport
- Passive means of transport
- Transportation mode
- Superordinate means of transport

Defining a Coupling and an Uncoupling Duration

You define a coupling and an uncoupling duration for passive means of transport in Customizing for SAP TM under **Transportation Management > Master Data > Resources > Define Coupling/Uncoupling Duration**.



Definition of Means-of-Transport Combinations

You use a means-of-transport combination (MTr combination) to model vehicle combinations. An MTr combination consists of one means of transport that can move independently and can move at least one passive means of transport (passive MTr).

Prerequisites

You have selected the *Passive* checkbox for the corresponding means of transport for each passive MTr. For more information, see Customizing for SAP Transportation Management (SAP TM) under ► *Transportation Management* ► *Master Data* ► *Resources* ► *Define Means of Transport* ▶.

Features

You can define a total capacity for MTr combinations. The total capacity is the maximum loading capacity without the tare weight of the vehicle and passive MTr.

You can define incompatibilities for MTr combinations by using attributes (see [Incompatibilities](#)).

Activities

You create MTr combinations in Customizing for SAP TM under ► *Transportation Management* ► *Master Data* ► *Resources* ► *Define Means-of-Transport Combination* ▶.

You define attributes for MTr combinations in Customizing for SAP TM under ► *Transportation Management* ► *Master Data* ► *Resources* ► *Define Attributes of MTr Combination/Compartment* ▶.

Example

The following table shows the vehicle resources and means of transport you have defined, and the assignments you have made:

Vehicle Resources	MTr Combination
TRUCK1	MTRTRUCK
TRUCK2	MTRTRUCK
PASSIVEVEH1	MTRPASSIVE
PASSIVEVEH2	MTRPASSIVE

You can model the following MTr combinations:

- TRUCK1 + PASSIVEVEH1
- TRUCK1 + PASSIVEVEH2
- TRUCK2 + PASSIVEVEH1
- TRUCK2 + PASSIVEVEH2



Definition of Compartments

You use compartments to map the loading space of a vehicle.

Features

You define compartments by using compartment types. For example, you use the compartment type to define the capacity of the compartment, possible steps, and a compartment profile. In the compartment profile, you specify the number and type of compartments that a means of transport can have. You then assign this compartment profile to the means of transport.

You can define a fixed number of compartments for each resource.

For each compartment, you can define a capacity for each dimension. The capacity consumption within a compartment is linear. By defining steps, you can model a capacity consumption on the basis of the step. This is recommended if the compartment has a door or if you want to work with movable partitions.

The relationship between the total capacity of the vehicle resource and the total capacity of all assigned compartments determines whether the individual compartments are fixed or flexible. This is not an attribute of the compartment. A resource with fixed compartments means that the total capacity of all assigned compartments is the same as the total capacity of the resource. A resource with flexible compartments means that the total capacity of all assigned compartments is greater than the total capacity of the resource. For more information, see [Examples of Compartments \[Page 130\]](#).

You can define incompatibilities for compartments based on attributes.

Activities

You define compartment types in Customizing for SAP Transportation Management (SAP TM) under *Transportation Management* *Master Data* *Resources* *Define Compartment Type* .

Example

You use compartments for the following:

- You have to separate two freight units on a truck because they contain refrigerated goods and fruit.
- You want to transport different types of gasoline in one tanker.

More Information

[Definition of Dimensions and Units of Measurement \[Page 134\]](#)

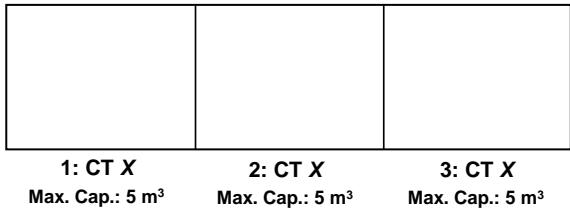
[Incompatibilities](#)



Examples of Compartments

Fixed Compartments

Vehicle Capacity: 15 m³



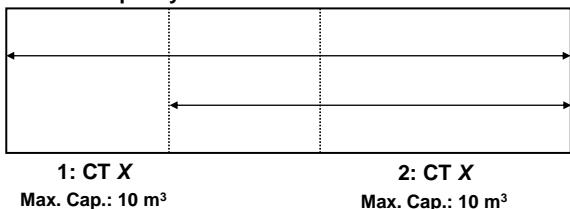
Legend:

CT = Compartment Type

In this example, the vehicle resource comprises three compartments with the compartment type X. Each compartment has a maximum capacity of 5 m³. The total capacity of the vehicle resource is 15 m³.

Flexible Compartments (Without Steps)

Vehicle Capacity: 15 m³



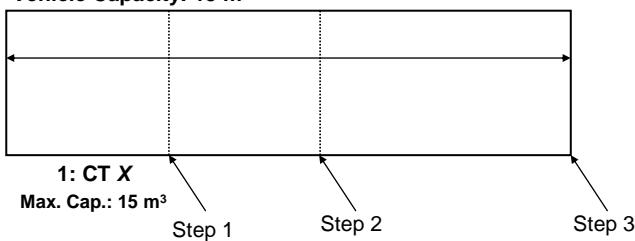
Legend:

CT = Compartment Type

In this example, the vehicle resource comprises two compartments with the compartment type X. Each compartment has a maximum capacity of 10 m³. The total capacity of the vehicle resource is 15 m³, in other words, you are not allowed to load more than 15 m³ onto the vehicle resource.

Flexible Compartments (with Steps)

Vehicle Capacity: 15 m³



Settings for Compartment Type X

Step	Capacity	Linear
1	5 m ³	No
2	10 m ³	No
3	15 m ³	No

Legend:

CT= Compartment Type

In this example, the vehicle resource comprises one compartment with the compartment type X. The compartment has a maximum capacity of 15 m^3 . The total capacity of the vehicle resource is 15 m^3 . The compartment has three steps (5 m^3 , 10 m^3 , and 15 m^3).

This means the following for the compartment:

Zero consumption is not possible for the compartment. That means if you do not load this compartment, it still consumes a capacity of 5 m^3 .

Each load that is greater than or equal to 0 m^3 but less than or equal to 5 m^3 results in a capacity consumption of 5 m^3 . That means if you load this compartment with 3 m^3 , for example, it still consumes a capacity of 5 m^3 .

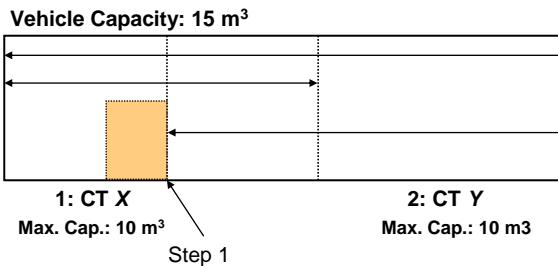
Each load that is greater than 5 m^3 but less than or equal to 10 m^3 results in a capacity consumption of 10 m^3 .

Each load that is greater than 10 m^3 but less than or equal to 15 m^3 results in a capacity consumption of 15 m^3 .



In a realistic scenario, you would define a second compartment, for example, a flexible compartment without steps.

Flexible Compartments (Zero Consumption Is Not Possible)



Settings for Compartment Type X

Step	Capacity	Linear
1	5 m^3	No

Legend:
CT = Compartment Type

In this example, the vehicle resource comprises two compartments. Compartment 1 has compartment type X, compartment 2 has compartment type Y. Each compartment has a maximum capacity of 10 m^3 . The total capacity of the vehicle resource is 15 m^3 . Compartment 1 has a door and a step (5 m^3). Compartment 2 does not have any steps.

This means the following for the two compartments:

Compartment 1:

Zero consumption is not possible for the compartment. That means if you do not load this compartment, it still consumes a capacity of 5 m^3 .

Each load that is greater than or equal to 0 m^3 but less than or equal to 5 m^3 results in a capacity consumption of 5 m^3 .

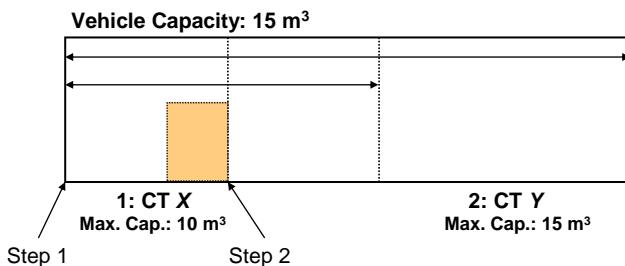
Each load x that is greater than 5 m^3 but less than or equal to 10 m^3 results in a capacity consumption of $x \text{ m}^3$.

Compartment 2:

Each load $x \text{ m}^3$ results in a capacity consumption of $x \text{ m}^3$ (linear capacity consumption).

Flexible Compartments (Zero Consumption Is Possible)

Example 1



Settings for Compartment Type X

Step	Capacity	Linear
1	0 m ³	No
2	5 m ³	No

Legend:

CT = Compartment Type

In this example, the vehicle resource comprises two compartments. Compartment 1 has compartment type X and a maximum capacity of 10 m³. Compartment 2 has compartment type Y and a maximum capacity of 15 m³. The total capacity of the vehicle resource is 15 m³. Compartment 1 has two steps (0 m³ and 5 m³). Compartment 2 does not have any steps. This means the following for the two compartments:

Compartment 1:

Zero consumption is possible for the compartment. That means if you leave this compartment empty, it does not consume any capacity.

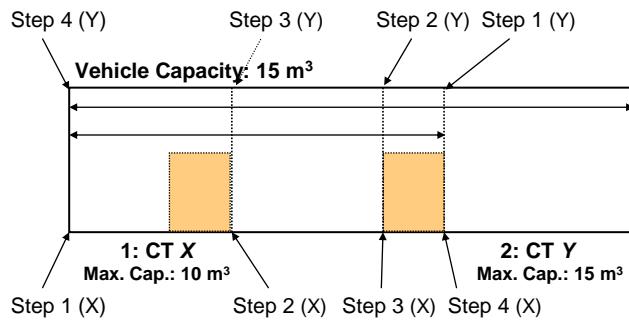
Each load that is greater than 0 m³ but less than or equal to 5 m³ results in a capacity consumption of 5 m³. This compartment might be a refrigerated part with a door, for example. As soon as you load one frozen pizza, you have to turn on the refrigerated part. The second compartment has to start behind the door.

Each load x that is greater than 5 m³ but less than or equal to 10 m³ results in a capacity consumption of $x \text{ m}^3$ (due to the maximum capacity).

Compartment 2:

Each load $x \text{ m}^3$ results in a capacity consumption of $x \text{ m}^3$ (linear capacity consumption).

Example 2



Settings for Compartment Type X

Step	Capacity	Linear
1	0 m ³	No
2	5 m ³	No
3	8 m ³	Yes
4	10 m ³	No

Settings for Compartment Type Y

Step	Capacity	Linear
1	5 m ³	Yes
2	7 m ³	No
3	10 m ³	Yes
4	15 m ³	No

Legend:

CT = Compartment Type

In this example, the vehicle resource comprises two compartments. Compartment 1 has compartment type X and a maximum capacity of 10 m³. Compartment 2 has compartment type Y and a maximum capacity of 15 m³. The total capacity of the vehicle resource is 15 m³.

Compartment 1 has four steps (0 m³, 5 m³, 8 m³, and 10 m³). Compartment 2 also has four steps (5 m³, 7 m³, 10 m³, and 15 m³). There are two doors.

This means the following for the two compartments:

Compartment 1:

Zero consumption is possible for the compartment.

Each load that is greater than 0 m³ but less than or equal to 5 m³ results in a capacity consumption of 5 m³.

Each load x that is greater than 5 m³ but less than or equal to 8 m³ results in a capacity consumption of x m³ (linear capacity consumption since you have set the *Linear* indicator for this step).

Each load that is greater than 8 m³ but less than or equal to 10 m³ results in a capacity consumption of 10 m³.

Compartment 2:

Each load x that is greater than 0 m³ but less than or equal to 5 m³ results in a capacity consumption of x m³ (linear capacity consumption since you have set the *Linear* indicator for this step).

Each load that is greater than 5 m³ but less than or equal to 7 m³ results in a capacity consumption of 7 m³.

Each load x that is greater than 7 m³ but less than or equal to 10 m³ results in a capacity consumption of x m³ (linear capacity consumption since you have set the *Linear* indicator for this step).

Each load that is greater than 10 m³ but less than or equal to 15 m³ results in a capacity consumption of 15 m³.



Definition of Dimensions and Units of Measurement

You use dimensions to group units of measurement. You need units of measurement to display product quantities, for example, for freight unit building rule (FUB rules), and to describe the capacity of vehicle resources (see [Freight Unit Building Rule](#) and [Vehicle Resource \[Page 124\]](#)).

Note

The system might display quantities with 14 decimal digits. If you want the system to round quantities to a specific number of decimal digits, follow the instructions described in SAP Note [1132219](#).

End of the note.

Prerequisites

- You have checked in Customizing for SAP NetWeaver under ► *SAP NetWeaver* ➤ *General Settings* ➤ *Check Units of Measurement* that the dimensions delivered as a standard and the associated units of measurement are complete.
- When using FUB rules, the system checks if the forwarding order contains the relevant quantities based on the FUB rules. If the forwarding order does not contain the relevant quantities, the system uses the product data. For this purpose, you have defined the following in the product master data:
 - [Base unit of measure](#) (BUoM)
 - Conversion factors

You need conversion factors to convert the base units of measure into the required units of measurement. You define these in the product master on the *Units of Meas.* tab page. For more information, see [Definition of Products \[Page 109\]](#).

If you have not defined a conversion factor, the system cannot take split quantities or rounding values into account when building freight units from business documents (forwarding orders, for example). In this case, it sets the quantities to zero.

Example

Examples for Dimensions and Units of Measurement

The following table provides you with examples of dimensions and of some units of measurement you can assign to them.

Dimension	Units of Measurement
Mass	Kilogram; milligram
Volume	Cubic centimeter; cubic decimeter

Example for the Conversion of Units of Measurement

The following units of measurement are predefined as a default:

- *Kilogram* (dimension mass)
- *Cubic decimeter* (dimension volume)

You also define the following unit of measurement:

- *Pallet* (no dimension)

Your forwarding order contains product A and product B each of which have the quantity "1 piece". You have defined *piece* as BUoM for both products.

You have defined the following conversion factors for product A:

- 1 piece = 2 kg
- 1 piece = 3 dm³

You have defined the following conversion factor for product B:

- 1 piece = 0.5 pal

In this case, product A is displayed with quantity 2 kg or 3 dm³. In the unit of measurement *pallet* (pal), the quantity 0 is displayed because you have not defined a conversion factor.

Product B is displayed with the quantity 0.5 pal. Since you have not defined conversion factors for *kilogram* or *cubic decimeter*, no conversion occurs. The system displays the value 0.



Handling Resource

An installation or device that is used to handle the goods at one specific location. The handling resource offers handling capacity that allows the goods to be loaded onto or unloaded from vehicle resources.

You use this business object to handle goods.

You can specify the capacity of handling resources based on shifts using the capacity profile.



Example

You have 50 doors for loading and unloading freight units. In the morning and in the evening the full capacity is needed, in other words, all doors are open. During the day, only 20 doors are needed, in other words, the capacity is reduced.

End of the example.

Structure

You can define, among others, the following parameters for handling resources:

- Resource template (see [Copying Resources from Templates \[Page 145\]](#))
- Capacity profile (see [Definition of Capacity Profiles \[Page 155\]](#))
- Availability (see [Definition of Availability \[Page 159\]](#))
- Downtimes (see [Definition of Downtimes \[Page 160\]](#))
- Qualifications (see [Definition of Qualifications \[Page 161\]](#))
- Attached equipments (see [Definition of Attached Equipment \[Page 162\]](#))
- Grouping attributes (see [Definition of Grouping Attributes \[Page 164\]](#))
- Alternative names (see [Definition of Alternative Names \[Page 165\]](#))

Example

- Forklift
- Door

More Information

[Vehicle Resource \[Page 124\]](#)

 **Driver**

A driver is any person who can operate vehicles and perform transportation-related tasks as a result of certain qualifications.

You specify a driver as a party in SAP TM business documents.

Structure

You can define the following parameters for drivers:

- Availability (see [Definition of Availability \[Page 159\]](#))
- Absences (see [Definition of Downtimes \[Page 160\]](#))
- Qualifications (see [Definition of Qualifications \[Page 161\]](#))
- Supply Chain Unit

Represents the driver's home location.



Transportation Unit Resource

An instance of a particular transportation unit like a container that you can use to map the capacity and availability that you want to use for transportation.

You can choose up to eight dimensions and units of measurement to describe the capacity. Note that the mass and volume are predefined by default. Planning can only take the transportation unit resource capacity into account if these correspond to the dimensions and units of measurement that you have defined in a freight unit building rule.

 Note

You cannot define the available capacity for this resource type according to time. However, you can define a time-dependent availability using shift sequences. For more information about defining shift sequences, see [Specification of Definitions \[Page 150\]](#) and [Creating Definitions \[Page 152\]](#).

End of the note.

In the planning profile, you can specify whether the system can consider a manual overload of the resource capacity.

Equipment Group and Equipment Type

The equipment and equipment group types specify attributes such as the physical properties of a certain kind of transportation unit resource. When you have created a transportation unit resource type you can:

- Use the type as a template to create transportation unit resources, copying the attributes of the type to a new resource
- Request a special type of transportation unit resource in a forwarding order or in a booking order

For more information see Customizing for Transport Management under  *Transport Management*  *Master Data*  *Resources*  *Define Equipment Groups and Equipment Types* 

Structure

You can define, among others, the following parameters for transportation unit resource resources:

- Capacity (see [Definition of Capacity \[Page 148\]](#))
- Availability (see [Definition of Availability \[Page 159\]](#))
- Minimum number of seals

You can specify the minimum number of seals of the transportation unit resource. You can use this information for the definition of incompatibilities.

- Resource template (see [Copying Resources from Templates \[Page 145\]](#))
- Physical properties (see [Definition of Physical Properties \[Page 163\]](#))
- Downtimes (see [Definition of Downtimes \[Page 160\]](#))

- Qualifications (see [Definition of Qualifications \[Page 161\]](#))
- Attached equipment (see [Definition of Attached Equipment \[Page 162\]](#))
- Grouping attributes (see [Definition of Grouping Attributes \[Page 164\]](#))
- Alternative names (see [Definition of Alternative Names \[Page 165\]](#))

More Information

[Freight Unit Building Rule](#)

[Definition of Dimensions and Units of Measurement \[Page 134\]](#)

[Planning Profile](#)

[Incompatibilities](#)



Creating, Copying, and Deleting Resources

In the following sections you can find information about:

- Creating handling, vehicle, calendar, and transportation unit resources (see [Creating Handling, Vehicle, and Calendar Resources \[Page 141\]](#))
- Creating drivers (see [Creating Drivers \[Page 143\]](#))
- Copying resources (see [Copying Resources \[Page 144\]](#))
- Creating resources based on resource templates (see [Copying Resources from Templates \[Page 145\]](#))
- Deleting resources (see [Deleting Resources \[Page 147\]](#))



Creating Handling, Vehicle, Calendar, and Transp. Unit Resources

This procedure describes how to create the following resource types:

- Handling resource (see [Handling Resource \[Page 136\]](#))
- Vehicle resource (see [Vehicle Resource \[Page 124\]](#))
- Calendar resource (see [Calendar Resource \[Page 123\]](#))
- Transportation Unit resource (see [Transportation Unit Resource \[Page 138\]](#))

Prerequisites

- You have specified a factory calendar in Customizing for SAP Transportation Management (SAP TM) under ► *SCM Basis* ► *Master Data* ► *Calendar* ► *Maintain Factory Calendar*.
- If you want to create a vehicle resource, you have to have specified a means of transport in Customizing for SAP TM under ► *Transportation Management* ► *Master Data* ► *Resources* ► *Define Means of Transport*.

Procedure

1. You have the following options:
 - On the *SAP Easy Access* screen, choose ► *Transportation Management* ► *Master Data* ► *Resources* ► *Define Resource*.
 - In *SAP NetWeaver Business Client*, choose ► *Master Data* ► *Resources* ► *Define Resource*.
2. Choose the *Create Resources* pushbutton.
3. Select the tab page for the resource type for which you want to create a new resource.

Note

You cannot change the resource type later.

End of the note.

4. For *handling resources*, specify the resource class, the time zone or location, and the factory calendar.
For *calendar resources*, specify the time zone or location, and the factory calendar.

For *vehicle resources*, specify the resource class, the time zone or depot location, the factory calendar, the means of transport, the dimension, and the capacity.

For *transportation unit* resources, specify the resource class, the time zone or depot location, the factory calendar, the dimension, and the capacity.

Note

You can specify the depot location in the *Location* column.

End of the note.

For more information about resource classes, see [Classification of Resources \[Page 120\]](#).

5. In addition, you can define other resource-specific information, such as downtimes, attached equipment, time-continuous capacity, or qualifications.

More Information

[Definition of Means of Transport \[Page 126\]](#)

[Definition of Dimensions and Units of Measurement \[Page 134\]](#)

[Definition of Capacity \[Page 148\]](#)

[Definition of Downtimes \[Page 160\]](#)

[Definition of Attached Equipment \[Page 162\]](#)

[Definition of Qualifications \[Page 161\]](#)



Creating Drivers

You use this procedure to create the driver business partner.

Prerequisites

- You have defined a factory calendar in Customizing for *SCM Basis* under ► *Master Data* ► *Calendar* ► *Maintain Factory Calendar*.
- You have defined qualifications in Customizing for *Transportation Management* under ► *Master Data* ► *Resources* ► *Maintain Settings for Qualifications*.

Procedure

1. In transaction **BP**, you create a new business partner of the type *Person* and specify the BP role as *Driver*. The entry screen changes and a new *Driver* tab page is displayed.
2. On the *Driver* tab page, you enter the attributes of the driver such as the labor factor and the supply chain unit (the home location of the driver).
3. In the *Qualifications* screen area, you enter the qualifications that are held by the driver. This enables you to specify, for example, the type of license that the driver has or whether the driver has any experience of transporting dangerous goods. For more information, see [Definition of Qualifications \[Page 161\]](#).
4. In the *Availability* screen area, you enter the availability of the driver by specifying the valid from and valid to dates and times. You must also enter a factory calendar.

You can define a number of capacity variants and specify which of these variants is to be used as the active variant. Note that SAP TM does not evaluate the type of capacity (minimum, mean, or maximum capacity). For more information, see [Definition of Capacity Variants \[Page 149\]](#).

You can also enter planned absences such as vacation periods and unplanned absences such as sick leave in this area. For more information, see [Definition of Downtimes \[Page 160\]](#).

More Information

For more information about business partners, see [Definition of Business Partners \[Page 28\]](#).



Copying Resources

You use this procedure to create a copy of one or more resources of the following type:

- Handling resource (see [Handling Resource \[Page 136\]](#))
- Calendar resource (see [Calendar Resource \[Page 123\]](#))
- Transportation Unit resource (see [Transportation Unit Resource \[Page 138\]](#))

Prerequisites

You have created a resource. For more information, see [Creating Handling, Vehicle, and Calendar Resources \[Page 141\]](#).

Procedure

1. In the SAP Easy Access screen or in SAP NetWeaver Business Client, choose Master Data Resources Define Resource . Enter the resource you want to copy and choose the *Change* pushbutton. Select the resource you want to copy, and choose the *Copy Resources* pushbutton.
2. Choose the *Copy Resources* pushbutton.
3. In the *Copy Resources* dialog box, you can create one or more copies of a resource.
 - *Single copy*
Choose the copy mode *Copy Resources* and in the *To* field group maintain the name of the copy, its location, and a short description.
 - *Multiple copies*
Choose the copy mode *Make Multiple Copies of Resources*. Enter the number with which you want the copied resources to begin and the number of resources that you want to create. This number is added to the end of the resource name as a value for counting.



Example

Assume that the name of the resource that you want to copy is `Res_00`. If you choose 1 as the start number and 10 as the number of resources, the system creates the resource copies `Res_001` to `Res_0010`.

End of the example.

If you have selected more than one resource in the *Change Resources: Header Data* screen, the system calls up the selected resources consecutively in the *Copy Resources* screen.

Result

You have created a copy of one or more resources. Each copy has its own name.



Copying Resources from Templates

This procedure describes how to create a copy of one or more resources of the following type from resource templates:

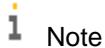
- Handling resource (see [Handling Resource \[Page 136\]](#))
- Vehicle resource (see [Vehicle Resource \[Page 124\]](#))

Prerequisites

- You have created a resource for which you have selected the *Resource Template* checkbox on the *Transportation* tab page.

For more information about creating resources, see [Creating Handling, Vehicle, and Calendar Resources \[Page 141\]](#).

- For handling resources that you want to mark as resource templates, you have specified template types in Customizing for SAP Transportation Management (SAP TM) under *Transportation Management* *Master Data* *Resources* *Specify Resource Template Types*.



Note

For vehicle resources, the template type is automatically *Means of Transport*.

End of the note.

Procedure

1. You have the following options:
 - On the *SAP Easy Access* screen, choose *Transportation Management* *Master Data* *Resources* *Define Resource* and choose the *Resources (Copy Resources from Template)* pushbutton.
 - On the *SAP Easy Access* screen, choose *Transportation Management* *Master Data* *Resources* *Copy Resource from Template*.
 - In *SAP NetWeaver Business Client*, choose *Master Data* *Resources* *Copy Resource from Template*.
2. In the *Name of New Resource* group box, you specify the data for the new resource that you want to create from the resource template.
3. In the *Choose Resource Template* group box, you specify whether the resource template is one of the following:
 - *Vehicle Resource*
By specifying a means of transport, the system displays a list with all vehicle resources marked as resource templates that you have assigned this means of transport to.
 - *Handling Resource*

By specifying a template type, the system displays a list with all handling resources marked as resource templates that you have assigned this template type to.

4. If you want to specify the name of the resource to be copied directly, select the *From other Resource* checkbox, and specify the name in the *Resource Name* field.

5.  Note

6. By selecting this checkbox, you can copy resources that have not been marked as templates or resources that cannot be marked as templates (for example, calendar resources).
7. End of the note.
8. To copy the data from the existing resource to the new resource, choose the *Resource (Copy Resource)* pushbutton.



Deleting Resources

This procedure describes how to delete the following resource types:

- Vehicle resources (see [Vehicle Resources \[Page 124\]](#))
- Handling resources (see [Handling Resources \[Page 136\]](#))
- Calendar resources (see [Calendar Resources \[Page 123\]](#))
- Transportation Unit resources (see [Transportation Unit Resource \[Page 138\]](#))

Prerequisites

You can only delete resources that are not planned or used in other master data. For this reason, check for existing dependencies on the *SAP Easy Access* screen by choosing ► *SCM Basis* ► *Master Data* ► *General Master Data Functions* ► *Where-used List* ▶.

Procedure

1. In the *SAP Easy Access* screen or in SAP NetWeaver Business Client, choose ► *Master Data* ► *Resources* ► *Define Resource* ▶. Enter the resource you want to delete and choose the *Change* pushbutton.
2. Select the resource you want to delete and choose *Delete Resource*.
If there are no dependencies, the system deletes the resource.
If the resource has dependencies, the system displays an error message. You must remove all of these dependencies before you can delete the resource.
3. Choose *Save* to confirm deletion.



Definition of Capacity

You use this function to specify the capacity that is available at specific points in time for a resource.

Features

You can define the following capacity categories:

- *Standard available capacity*

You specify this capacity in the header data when creating a new resource. This capacity does not take a multiple-shift operation into account, in other words, this capacity is always the same.

The standard available capacity is limited only by the resource availability (see [Definition of Availability \[Page 159\]](#)).

- *Time-continuous capacity*

The time-continuous capacity takes a multiple-shift operation into account. A capacity variant is used to define this capacity based on different shift programs. For more information, see [Definition of Capacity Variants \[Page 149\]](#).

You can define data for the time-continuous capacity for vehicle resources, drivers, and calendar resources. For handling resources, you define a capacity profile.

- *Capacity profile*

The capacity profile corresponds to the time-continuous capacity, but is only available for handling resources. For more information, see [Definition of Capacity Profiles \[Page 155\]](#).

Moreover, the capacity profile provides you with an overview of the available capacity based on the standard available capacity, and the capacity derived from capacity variants.

Note

In downtimes, only reduced capacity is available for handling resources, and no capacity is available for all other resources. For more information, see [Definition of Downtimes \[Page 160\]](#).

End of the note.



Definition of Capacity Variants

If you work in a multiple-shift operation and want to plan using shifts, you can use capacity variants to define different capacities for one or more resources.

Prerequisites

You have specified capacity variants in Customizing for SAP Transportation Management (SAP TM) under *Transportation Management* *Master Data* *Resources* *Specify Capacity Variants*. You can also specify these capacity variants on the *Transportation Resource Master* screen by choosing *Current Settings* *Capacity Variants*.

Features

You can define shift sequences with shifts, breaks, and shift factors in a capacity variant. You define these data based on definitions (see [Specification of Definitions \[Page 150\]](#)).

If you define a capacity variant as the *active variant* on the *General Data* tab page of a resource, the system uses the capacity information from the capacity variant instead of the standard available capacity.



Note

The system considers the data of a capacity variant only if you have defined it as an active variant.

End of the note.

You can use the capacity profile to gain an overview of the available capacity that is determined from the active capacity variant for the validity period of the resource. For more information, see [Definition of Capacity Profiles \[Page 155\]](#).



Specification of Definitions

You use this function to specify resource-independent and date-independent templates for defining the available capacities of the capacity variants.

Features

The definitions, their use, and their data are summarized in the following table.

Definition	Use	Data
Shift sequence	<p>In the shift sequence, you define the daily shifts for any number of consecutive days, for example, for a week. For each shift, you define working and break times, the utilization rate, and the capacity (in the case of handling resources).</p> <p>You assign shift sequences to the time intervals of a capacity variant. In each interval, the shift sequence is repeated periodically (for example, every seven days). You also specify on which day of a shift sequence an interval starts.</p>	<ul style="list-style-type: none">Day numbersZero to nine shifts per dayProcessing of shifts that start or end on non-workdays
Shift	You define shift data in a shift definition.	<ul style="list-style-type: none">ShiftStart and end of the shiftBreak patternShift factors
Breaks	In a break pattern, you define the breaks for a shift.	<ul style="list-style-type: none">Break patternBreak numberStart and end of the breaksRelative start of the break, in relation to the start of the shift, and the total break duration
Shift factors	You define a shift factor to define the rate of resource utilization and the capacity of a shift.	<ul style="list-style-type: none">Shift factor definitionValidityRate of resource utilizationCapacity for handling resources

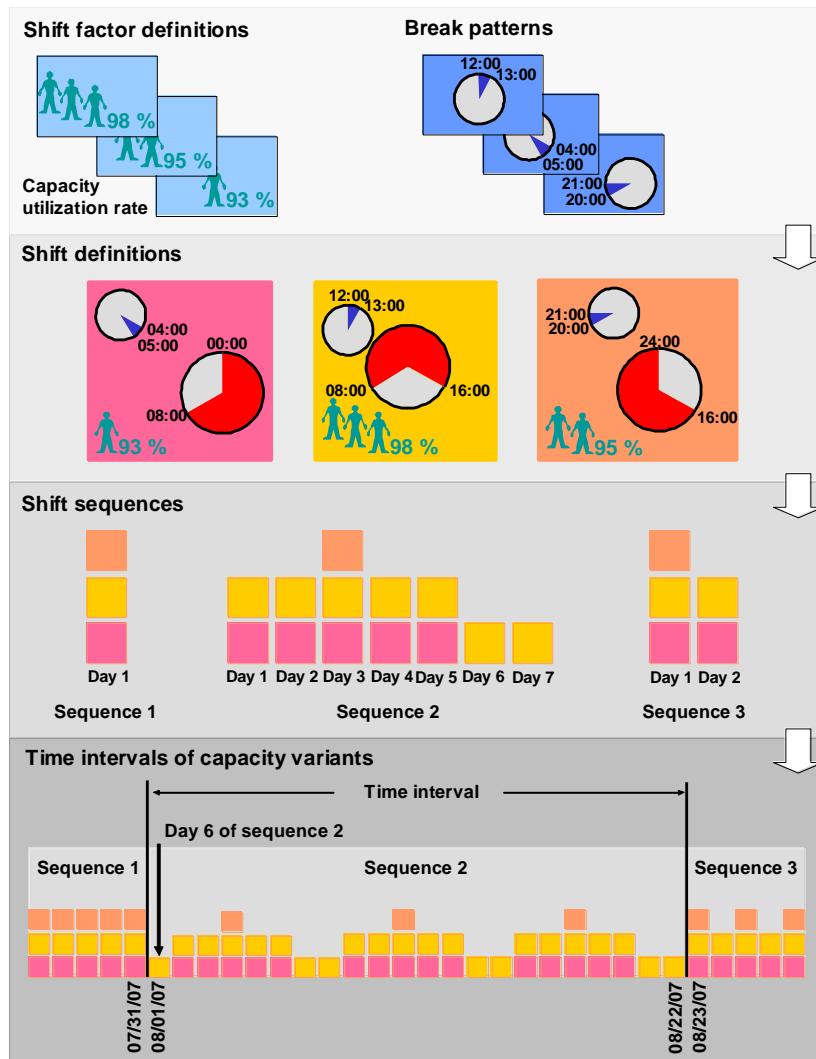
Activities

For more information about creating definitions, see [Creating Definitions \[Page 152\]](#).

To check whether a definition is used in resources, on the *Display Definitions* screen, choose  Resources (*Resources Where-Used List*).

Example

The following figure is an example of how you can use definitions to define the capacity of capacity variants for a resource.



Capacity Variants for a Resource



Creating Definitions

Prerequisites

You have created a resource. For more information, see [Creating Handling, Vehicle, and Calendar Resources \[Page 141\]](#).

Procedure

1. On the SAP Easy Access screen, choose *Transportation Management* *Master Data* *Resources* *Define Resource* or in SAP NetWeaver Business Client, choose *Master Data* *Resources* *Define Resource* .
2. You have the following options:
 - On the *Resources* screen, choose the *Definitions* pushbutton.
 - Choose the *Change* pushbutton. On the *Change Resources: Header Data* screen, choose the *Definitions* pushbutton.
3. Choose the *Breaks* tab page.
4. Create the new break pattern, for example, lunch, and assign a break number (dependent on how many breaks you want to define for the day).

There are two ways to define breaks:

- You specify the start and end of the break.
- You specify the number of hours after which you want the break to take place and enter the duration of the break. The reference point is always the beginning of the shift.

If you want to define a recurrent break, for example, a break for every 2 hours, you must define a break for 2 hours, 4 hours, 6 hours, and so on after the shift begins (taking into account the duration of any previous breaks).

5. Choose the *Shifts* tab page.
6. Enter a description for the shift, a validity end, and a start and end for the shift. Assign your break pattern to this shift.

Note

The system takes into account shift factors only for handling resources.

End of the note.

7. Choose the *Shift Sequences* tab page.
8. Enter a description, the day number, and the validity end. In the *Non-Workdays* field, you can choose from the following options to define the start and end of the shift:
 - *Can Finish on a Non-Workday*
 - *Can Start on a Non-Workday*

- *Can Only Start or Finish on a Workday*
- *Can Start or Finish on a Non-Workday*



Creating Capacity Variants

You can use this procedure to combine capacity-relevant data such as different shifts and breaks in a capacity variant.

Prerequisites

- You have created definitions (see [Creating Definitions \[Page 152\]](#)).
- You have specified capacity variants in Customizing for SAP Transportation Management (SAP TM) under *Transportation Management* *Master Data* *Resources* *Specify Capacity Variants* .

Procedure

1. On the *SAP Easy Access* screen or in SAP NetWeaver Business Client, open the resource for which you have created definitions.
2. On the *Change Resources: Header Data* screen, choose the *Capacity Variants* pushbutton. To create a new variant, choose *Interval*.
3. Enter a capacity variant and a validity period. Assign the shift sequence to the capacity variant. Select the first day so that the first day of the time interval is the first day of the shift sequence.



Example

You have defined a four-day shift sequence. If you enter 2 as the first day, the first day of the time interval has the shifts from the second day of the shift sequence.

End of the example.

The following ways exist for defining workdays:

- Workdays according to the factory calendar
 - No workdays (overwrites the factory calendar)
 - Workdays (overwrites the factory calendar)
4. Save the interval and go back to the resource master data.
 5. On the *General Data* tab page, assign the capacity variant to the resource by specifying its name in the *Act Var. (Active Variant)* field.



Definition of Capacity Profiles

The capacity profile provides you with an overview of the available capacity of a handling resource per day from the current date to the end of the resource's validity period for the following capacities:

- Standard available capacity
- Capacity variants

Prerequisites

If you want the capacities from capacity variants to be displayed in the capacity profile, you have to specify capacity variants for handling resources. For more information, see [Creating Capacity Variants \[Page 154\]](#).

Features

You can manually change the standard available capacity for selected resources without having to define a new shift or a new interval in the capacity variant if, for example, the working time or the rate of resource utilization varies for individual days. The system saves these changes to the database in a capacity profile for the standard available capacity or for the selected capacity variant.

If, for example, you change the standard available capacity by changing the shift the system adjusts all unchanged data in the capacity profile. All variants entered manually are retained.

As soon as a capacity profile for the standard capacity or for the capacity variant exists in the database, the system takes the variants defined there into consideration - instead of the corresponding capacity – when determining the valid capacity.



Note

Depending on the validity period defined for the resource and the number of shifts, the overview may contain a large number of entries.

End of the note.

Activities

Displaying the Capacity Profile

By choosing *Capacity Profile* on the *Display Resources: Header Data* screen, you can call an overview of the standard available capacity, and the available capacity generated from the capacity variants.

Changing the Available Capacity of a Shift

If you want to change the available capacity of a shift, proceed as follows:

1. In the capacity profile, choose the *Shifts (Change Shifts)* pushbutton.

A dialog box appears in which you can specify the period and shift for which you want to change the available capacity.

 Note

You can also mark the period on the calendar. The system then automatically marks the corresponding shifts in the overview. The marked period is also shown in the dialog box.

End of the note.

2. Enter the changed capacity in the *Available Capacity* group box.



Determination of the Valid Available Capacity

This process describes how the system determines the valid available capacity of a resource.

For planning purposes, the system takes the following capacity categories into consideration in a hierarchical sequence to determine the capacity that is available at a specific point in time at a resource:

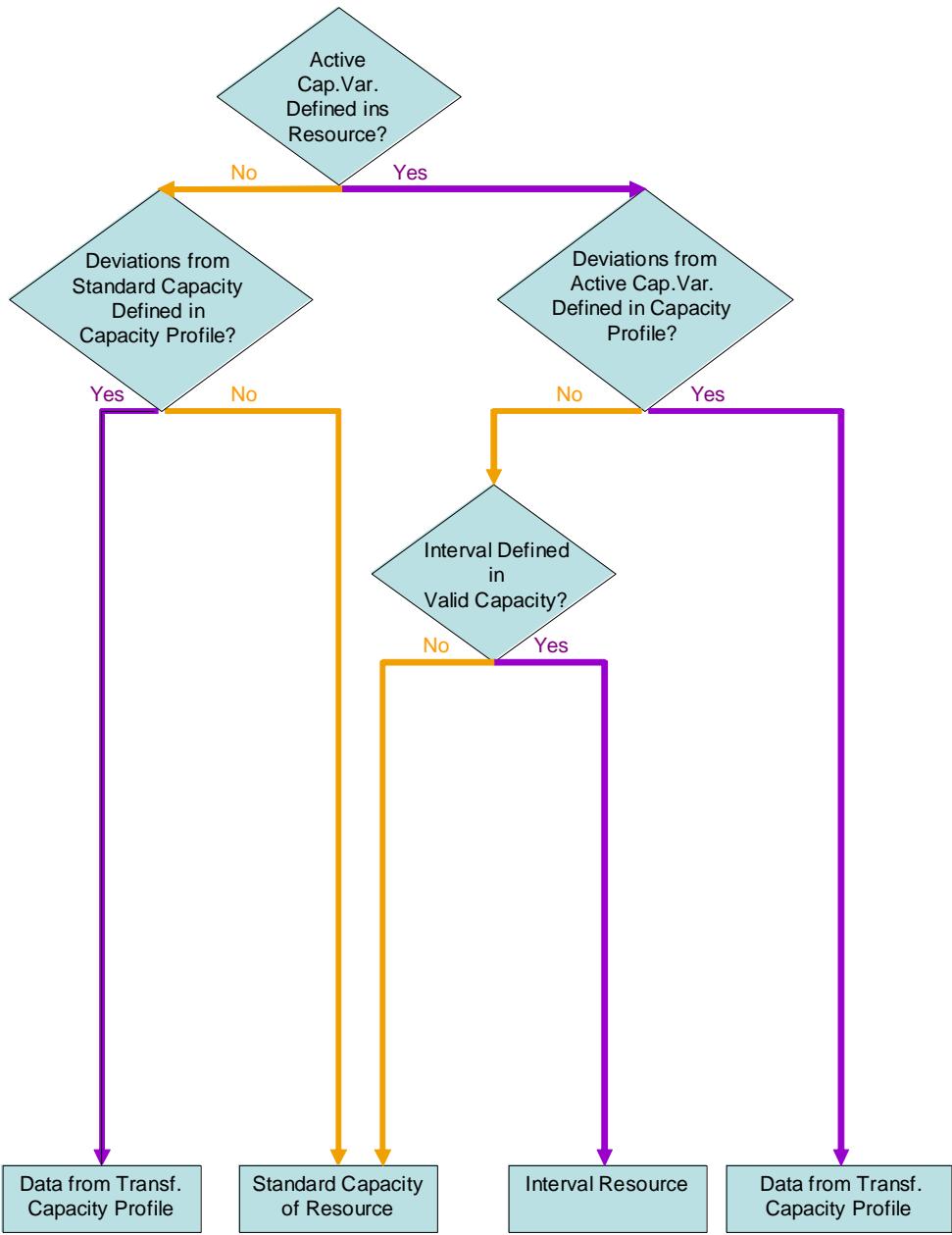
1. Standard available capacity (taking the factory calendar into account)
2. Capacity profile (for handling resources) or time-continuous capacity (for all other resources)

Process

The system checks the resource at the current point in time in the following sequence. If the result of the check is negative, the system moves on to the next step:

1. If you have defined a *downtime* for the resource for the current point in time, only reduced capacity is available for handling resources and no capacity is available for all other resources.
2. If you have specified an *active capacity variant* in the resource *and* different data is defined in a *capacity profile* for the current date, the system uses the capacity defined in the capacity profile.
3. If you have specified an *active capacity variant* for the resource, for which a *capacity profile does not exist*, and an *interval* with a capacity that is valid at the current time is defined in this variant, the system uses this capacity.
4. If you have also created a *capacity profile* for the *standard available capacity*, the system uses the capacity defined in the capacity profile.
5. The system only uses the *standard available capacity* if it could not determine a valid resource capacity for the current point in time during one of the previous checks.
6. If you have not defined any standard available capacity for the resource, the resource does not have any capacity.

The following figure shows the process flow:



Determination of the Valid Available Capacity



Definition of Availability

You use this function to specify general availability for the following resource types:

- Vehicle resources (see [Vehicle Resources \[Page 124\]](#))
- Handling resources (see [Handling Resources \[Page 136\]](#))

Features

The actual availability of a resource within the general availability depends on the factory calendar, downtimes, and shift and break definitions.



Note

Planning takes into account only available resources.

End of the note.

Activities

On the SAP Easy Access screen or in SAP NetWeaver Business Client, you can specify the general availability for vehicle resources or handling resources. Choose **Master Data** **Resources** **Define Resource** . Enter the resource you want to edit and choose *Change*. Choose the *Transportation* tab page.



Definition of Downtimes

You use this function to specify downtimes, that is time segments in which resources are not available.

You can define downtimes for all resource types and for the *Driver* business partner.

Prerequisites

You have created a resource. For more information, see [Creating Handling, Vehicle, and Calendar Resources \[Page 141\]](#).

Features

Downtimes override the availability of a resource. They exclude vehicle resources from planning. In the case of handling resources, downtimes can reduce the available capacity (but a remaining available capacity of 0 also excludes a handling resource from planning).

A differentiation is made between scheduled downtime (for example, for maintenance) and non-scheduled, unexpected downtime (for example, due to a machine breakdown).

Downtimes differ from a regular, scheduled non-working time based on the factory calendar or the shift sequence (for example, break or holiday).

Note

Downtimes outside the validity period are not taken into consideration during planning. It is not useful to define downtimes that are outside the validity period of the resource, since a capacity has not been defined for the resource for these times.

End of the note.

Activities

You define a downtime for the resource that you have created on the *Change Resources: Header Data* screen by specifying on the *Downtimes* tab page a start date/time and end date/time as well as the downtime type (scheduled or non-scheduled downtime). In addition, you can enter a language-dependent short text that describes the downtime in more detail.

For *Driver* business partners, you define downtimes in the *Absence* screen area of the business partner master data.

Example

A handling resource has a capacity of 5. Due to a reduced load, you specify a downtime to reduce the handling resource's capacity for a specific period of time to 2.



Definition of Qualifications

You use this function to specify qualifications, such as skills, capabilities, and permissions needed to operate vehicle resources and handling resources.

Prerequisites

- You have created a resource. For more information, see [Creating Handling, Vehicle, and Calendar Resources \[Page 141\]](#).
- You have defined qualification types and qualifications in Customizing for SAP Transportation Management (SAP TM) under ► *Transportation Management* ► *Master Data* ► *Resources* ► *Maintain Settings for Qualifications* ▶.

Features

You can rate qualifications with an efficiency factor for each resource.

You can use the incompatibilities to check the consistency of required and offered qualifications. For more information, see [Incompatibilities](#).

Activities

You assign qualification types and qualifications in the resource master on the *SAP Easy Access* screen, or in SAP NetWeaver Business Client, on the *Change Resources: Header Data* screen by choosing the *Qualifications* tab page.

Example

You have maintained the qualification type *Driving License* with qualification *A (Heavy Vehicle)*.

If you assign qualification *A (Heavy Vehicle)* of type *Driving License* to a vehicle resource, it means that this resource can only be operated with such a driving license.



Definition of Attached Equipment

You use this function to specify equipment that is attached ([attached equipment](#)) to the following resource types:

- Vehicle resource (see [Vehicle Resource \[Page 124\]](#))
- Handling resource (see [Handling Resource \[Page 136\]](#))
- Transportation Unit resource (see [Transportation Unit Resource \[Page 138\]](#))

Prerequisites

- You have created a resource. For more information, see [Creating Handling, Vehicle, and Calendar Resources \[Page 141\]](#).
- You have specified categories of attached equipment in Customizing for SAP Transportation Management (SAP TM) under *Transportation Management* *Master Data* *Resources* *Maintain Settings for Attached Equipment*

Activities

On the *SAP Easy Access* screen or in SAP NetWeaver Business Client, you assign attached equipment to the categories you have specified in Customizing on the *Change Resources: Header Data* screen by choosing the *Attached Equip.* (Attached Equipment) tab page.

Example

You have specified the following categories of attached equipment in Customizing:

- FIREEXTINGUISHER
- ON_BOARD_UNIT
- NAVIGATIONSYSTEM

A truck has the following attached equipment:

- On-board unit (serial number 001-001-001)
- Fire extinguisher (serial number 001-001-0815)
- Portable navigation system (serial number 010-101-010)

In the resource master, you assign the attached equipment to the categories of attached equipment:

- Attached equipment 001-001-001 to category FIREEXTINGUISHER
- Attached equipment 001-001-0815 to category ON_BOARD_UNIT
- Attached equipment 010-101-010 to category NAVIGATIONSYSTEM



Definition of Physical Properties

You use this function to specify the capacity requirement of a vehicle resource or transportation unit resource during transportation.

Prerequisites

- You have created a resource. For more information, see [Creating Handling, Vehicle, and Calendar Resources \[Page 141\]](#).
- If you want to use packaging materials as a template for the dimensions *Volume* and *Weight*, and for a dimensionless capacity, you have to have defined packaging materials in the product master (see [Product \[Page 108\]](#)).

Features

You can specify the capacity requirement with a unit of measure for multiple dimensions. For dimensionless capacities, you can specify multiple values.

You can use a packaging material as template for the dimensions *Volume* and *Weight*, and for dimensionless capacity. If the packaging material specifies values for volume, weight, or capacity the system automatically transfers these values into the physical properties of the resource. Here, you can overwrite the values that have been transferred automatically.

Activities

You specify or change the physical properties on the SAP Easy Access screen or in SAP NetWeaver Business Client by choosing on the *Change Resources: Header Data* screen the *Phys. Properties* (Physical Properties) tab page.

Example

To define how much volume a container needs on a ship, you specify physical properties for the dimension *Volume*.



Definition of Grouping Attributes

You use this function to group the following resource types into categories of grouping attributes:

- Vehicle resource (see [Vehicle Resource \[Page 124\]](#))
- Handling resource (see [Handling Resource \[Page 136\]](#))
- Transportation Unit resource (see [Transportation Unit Resource \[Page 138\]](#))

Prerequisites

- You have created a resource. For more information, see [Creating Handling, Vehicle, and Calendar Resources \[Page 141\]](#).
- You have specified categories of grouping attributes and grouping attributes in Customizing for SAP Transportation Management (SAP TM) under ► *Transportation Management* ► *Master Data* ► *Resources* ► *Maintain Settings for Grouping Attributes* ▶.

Activities

On the *SAP Easy Access* screen or in SAP NetWeaver Business Client, you assign resources to a grouping attribute category and one of its grouping attributes on the *Change Resources: Header Data* screen by choosing the *Grouping* tab page.

Example

You have specified the following:

- Grouping attribute category *Truck* with the grouping attributes *A*, *B*, and *C*
- Grouping attribute category *Container* with the grouping attributes *C*, *CC*, and *CCC*
- Grouping attribute category *Emissions Standard* with the grouping attributes *S1*, *S2*, *S3*, *S4*, and *S5*

Now you can group resources into trucks, containers, or resources with a specific emissions standard.



Definition of Alternative Names

You use this function to specify alternative names for the following resource types:

- Vehicle resource (see [Vehicle Resource \[Page 124\]](#))
- Handling resource (see [Handling Resource \[Page 136\]](#))
- Transportation Unit resource (see [Transportation Unit Resource \[Page 138\]](#))

Alternative names only play a role for selecting and displaying resources.

Prerequisites

- You have created a resource. For more information, see [Creating Handling, Vehicle, and Calendar Resources \[Page 141\]](#).
- You have specified categories of alternative names in Customizing for SAP Transportation Management (SAP TM) under *Transportation Management* *Master Data* *Resources* *Specify Categories of Alternative Names*

Activities

On the *SAP Easy Access* screen or in SAP NetWeaver Business Client, you assign categories of alternative names to resources and specify alternative names on the *Change Resources: Header Data* screen by choosing the *Alternative Names* tab page. Note that an alternative name has to be unique within an alternative name category.



Example

Resource 001000815 is a vehicle resource. For this resource, you have specified the alternative name TRUCK_007 for the category OURCUSTOMERS_RES_1. No other resource can have this alternative name within this category.

End of the example.



Charge Management and Service Product Catalogs

You use Charge Management and Service Product Catalogs to set up the master data that the system uses to calculate transportation charges, such as revenues, costs, and profits. Once the system calculates the charges, you can trigger invoice creation and verification.

You can also include service products in forwarding agreements or service product catalogs. This enables you to specify services, such as fumigation of a container and cargo insurance in a forwarding order.

Integration

Charge Management and Service Product Catalogs is a component of SAP Transportation Management (SAP TM). The following SAP TM components are integrated with Charge Management and Service Product Catalogs because you can automatically calculate transportation charges in these components on the basis of the data stored in Charge Management and Service Product Catalogs:

- [Forwarding Order Management \[Page 293\]](#)
- [Freight Order Management \[Page 471\]](#)
- [Forwarding Settlement](#)
- [Freight Settlement](#)

Charge Management and Service Product Catalogs is integrated with the Agreement Management component because SAP TM also calculates transportation charges on the basis of the data stored in agreements. For more information, see [Agreement Management](#).

Features

- The system calculates transportation charges based on agreements (see [Agreement](#)) and the following master data in Charge Management and Service Product Catalogs:
 - [Calculation Sheet \[Page 182\]](#)
 - [Rate Table \[Page 196\]](#)
 - [Scale \[Page 217\]](#)

Note that your SAP TM system can calculate transportation charges based on an agreement maintained in an external system. For more information, see [External Agreements \[Page 242\]](#).

- You can use the master data cockpit to access an overview of the charge management master data per organizational unit, business partner, and charge type. The system also shows the relationship between the different types of charge management master data. For more information, see [Master Data Cockpit \[Page 221\]](#).
- When resolving the calculation sheet, the system also takes into account the following:
 - Relevant rates
 - Additional charges

- Other surcharges
- Discounts for the selling (debit) as well as the buying (credit) side for all transportation modes such as trucking (land transport), rail, sea, air, and inland vessel cargo (barge)

More Information

[Setup of MD for Charge Management and SP Catalogs \[Page 168\]](#)

[Service Product Catalogs \[Page 174\]](#)



Setup of MD for Charge Management and SP Catalogs

Charge Management and Service Product Catalogs uses agreements and master data to calculate transportation charges for a forwarding order or freight order, and for transportation planning (see [Planning](#)).

You can also include service products in forwarding agreements or service product catalogs. This enables you to specify services, such as fumigation of a container and cargo insurance in a forwarding order.

Prerequisites

- You have configured the prerequisites for the individual charge management master data objects as mentioned in the prerequisites of the respective master data object.
- You have configured the prerequisites for agreements (see [Agreement Maintenance](#)).
- You have configured the prerequisites for service products (see [Service Product Catalogs \[Page 174\]](#)).
- If you use SAP Transportation Management (SAP TM) for air freight transportation, you must make certain air-freight-specific settings (see [Charge Management Settings for Air Freight \[Page 170\]](#)).

Process

1. Optionally, you define the following charge calculation rules on the *Maintain Charge Calculation Rules* screen:
 - *Agreement Determination Rules - Standalone*
 - *Agreement Determination Rules - Exclusion*
 - *Calc. Sheet Determination Rules - Standalone*
 - *Calc. Sheet and Calc. Sheet Item Precondition Rule*
 - *Grouping Rules for Resolution Base*
 - *Rules for Rate Table Determination*

Standalone means that the standard determination is switched off and the condition associated with the organizational unit is used for the charge calculation. If you select the *Std Determ.* checkbox, the system uses the standard determination if the standalone determination rule fails. *Exclusion* means that the standard determination is active and that constraint and filter options are available. For more information, see [Rules and Conditions for Charge Management and SP Catalogs \[Page 178\]](#).
2. Optionally, you define a condition with a condition type name starting with *Charge Calculation* (see [Condition \[Page 176\]](#)).
3. You create an agreement (see [Agreement](#)).

You can include service products in forwarding agreements or service product catalogs.

4. You create a calculation sheet (see [Calculation Sheet \[Page 182\]](#)).
5. You create a rate table definition and maintain rate values for defined validity periods (see [Rate Table \[Page 196\]](#)).

We recommend that you use calculation sheet templates and rate table templates to quickly define and maintain rates. We recommend that you do not create one central rate table with rates for all your business partners.

6. You create a scale (see [Scale \[Page 217\]](#)).

 Note

You can create an agreement, calculation sheet, rate table, and scale from one consolidated user interface, starting with creating the agreement. Once you create the agreement, you can create the following from within the agreement:

- A calculation sheet for each agreement item
- A rate table from the *Calculation Sheet* tab page for each charge line in the calculation sheet
- A scale from the *Rate* tab page of the *Calculation Sheet* tab page

If you copy an agreement, the system copies the calculation sheets, rate tables, and scales that you created from within the agreement or that you referenced in the agreement.

If you delete an agreement, the system deletes the calculation sheets, rate tables, and scales that you created from within the agreement. However the system does *not* delete the calculation sheets, rate tables, and scales that you referenced in the agreement.

End of the note.

More Information

[Charge Management and Service Product Catalogs \[Page 166\]](#)

[Charge Calculation \[Page 223\]](#)

Charge Management Settings for Air Freight

The following is an overview of the charge management master data settings you should make if using SAP Transportation Management (SAP TM) for air freight transportation.

Prerequisites

You have configured the prerequisites for the individual charge management master data objects as mentioned in the prerequisites of the respective master data object.

Customizing Settings

- You can maintain charges grouped as other charges by the International Air Transport Association (IATA) in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Maintain IATA Other Charge Codes* ▶.
- You can define IATA locations and assigned them to IATA city codes in Customizing for *Transportation Management* under ► *Master Data* ► *Transportation Network* ► *Location* ► *Define IATA Location Codes* ▶.
- You can define IATA airline codes in Customizing for *Transportation Management* under ► *Master Data* ► *Business Partner* ► *Define IATA Airline Codes* ▶.
- You can maintain IATA notes in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Air Freight Settings* ► *Maintain IATA Notes* ▶.
- You can define unit load device (ULD) rate types in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Air Freight Settings* ► *Define ULD Rate Types* ▶.
- You can map ULD types to ULD rate types in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Air Freight Settings* ► *Map ULD Types to ULD Rate Types* ▶.
- You can define IATA commodity codes in Customizing for *Transportation Management* under ► *Master Data* ► *Classification of Goods* ► *Define Commodity Codes* ▶.
- You can define air-freight-specific charge types with the following attributes in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Charge Types* ▶:
 - Charge type classification

In air freight, the transportation charges are broadly classified as follows:

- Weight charges
- Other charges
- Commission
- Additional charges
- Valuation charges

You can classify charge types to represent this classification in the system. You can specify charge type classifications for air freight in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Freight Term Settings for Transportation Modes* ► *Define Classifications for Transportation Modes* ▶.

- IATA other charge code
- Transportation mode category of *Air*
- IATA charge due of *Due Agent* or *Due Carrier*

If you classify the charge type as a *Weight* or *Valuation* charge, you specify the IATA charge due as being *Due Carrier*. If you classify the charge type as an *Other* charge, you can specify the IATA charge due as being *Due Agent* or *Due Carrier*, as appropriate. For example, although the printing of the air waybill is the responsibility of the carrier, it can be carried out by the logistics service provider. To allow the system to charge the correct business partner for the printing, you define a printing charge type, classify it as *Other*, and then specify the IATA charge due as being *Due Agent*.

- You can specify air-freight-specific freight terms in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Freight Term Settings for Transportation Modes* ► *Define Freight Terms for Transportation Modes* ▶.
- You can specify air-freight-specific pay definitions in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Freight Term Settings for Transportation Modes* ► *Define Pay Definitions for Transportation Modes* ▶.

TACT Rate Upload

If you want to calculate air freight transportation charges based on TACT rates, you should upload TACT rates to SAP TM (see [TACT Rate Upload \[Page 216\]](#)). Note that you can calculate an air freight transportation charge based on TACT rates or contract rates, as appropriate.

Calculation Sheet Settings

For each calculation sheet line item, you can specify whether the system should use contract rates, which are available in standard rate tables, or TACT rates to calculate air freight charges. If using a contract rate, you must specify a rate table, a rate table determination rule, or an amount. If using a TACT rate, the system automatically determines the relevant TACT rate based on mandatory parameters (see [TACT Rates \[Page 214\]](#)).

You must specify an air-freight-specific charge type for each relevant calculation sheet line item. The system automatically enters the charge type classification, charge due, and IATA other charge code, depending on the charge type's Customizing settings. If these settings are not specified in the charge type's Customizing settings, you can specify them directly in the calculation sheet.

For more information about calculation sheets, see [Calculation Sheet \[Page 182\]](#).

Rate Table Settings

If you specify an air-freight-specific charge type for a rate table, you must specify the rate category. Once you specify the rate category, you can define the rate table as follows:

- ULD

If you define a rate table as a ULD rate category, you must define a scale with a weight-based calculation base. With ULD rate tables, you can maintain rates specific to ULD rate types or across ULD rate types for a particular airport pair.

If you define a scale with the *ULD Rate Type* calculation base, the system applies default values for the weight-based scale items based on the ULD rate type. For example, the default rate values can be the minimum pivot weight (ULD charge code /A or /B, indicating rate class U (ULD rate)) and the over-pivot weight (ULD charge code /C, indicating rate class E (extension rate)) for each ULD rate type and airport pair combination. The scale item type for the minimum pivot weight can be a *To Scale* and for the over-pivot weight can be a *Base Scale*. You define the minimum pivot weights (chargeable weights) for ULD rate types in Customizing for *Transportation Management* under ► *Basic Functions* > *Charge Calculation* > *Air Freight Settings* > *Define ULD Rate Types* ▶. You then map ULD types to ULD rate types in Customizing for *Transportation Management* under ► *Basic Functions* > *Charge Calculation* > *Air Freight Settings* > *Map ULD Types to ULD Rate Types* ▶.

If you do not define a scale with the *ULD Rate Type* calculation base, you can enter the minimum pivot weight as a scale item. You specify the rate values for an airport pair.

When creating the scale items for weight-based scales in a ULD rate table, you can create multiple pivot weights for the ULD rate types. You can then use different pivot weights when required, for example, for different origin and destination location pairs, days of the week, or flight codes. When creating multiple pivot weights for ULD rate types, the system creates two weight scale items with ULD charge code /A or /B and one with charge code /C. These scale items represent the pivot and the over-pivot rates respectively. The scale value of the first pair of weight scale items defaults to the pivot weight defined for the ULD rate type in Customizing for *Transportation Management* under ► *Basic Functions* > *Charge Calculation* > *Air Freight Settings* > *Define ULD Rate Types* ▶. You must manually enter the scale value of subsequent scale items.

 Note

If there is no scale in the rate table with the *ULD Rate Type* calculation base, you create multiple pivot weights using asterisk (*) for the ULD rate type.

End of the note.

- Specific commodity rate (SCR)

If you define a rate table as an SCR rate category, you must define a scale with the *COMMODITY_CODE* calculation base and a commodity code type, and also a scale with a weight-based calculation base. The rate class S is associated with the scale items of an SCR rate table.

- General cargo rate (GCR) – M, N, & Q

If you define a rate table as a GCR – M, N, & Q rate category, you must define a scale with a weight-based calculation base and ensure that it is mandatory to maintain a minimum value for the calculated rate.

For more information about rate tables, see [Rate \[Page 196\]](#).

Scale Settings

A scale created from within a rate table automatically has the same transportation mode category as that of the charge type of the rate table. If the transportation mode category is *Air*, then you can specify attributes for the scale items of a scale with the *Weight* scale base (for example, ULD rate type, ULD charge code, and rate class).

In master data scale templates, the *Items* tab page displays the scale item attributes that are relevant for air freight.

For more information about scales, see [Scale \[Page 217\]](#).

More Information

[Setup of MD for Charge Management and SP Catalogs \[Page 168\]](#)



Service Product Catalogs

You can use a service product catalog to capture the services that you make available to your customer. A catalog acts as a template from which your customer can pick and choose, according to their business needs.

You can specify one or more of each of the following features:

- Services in a service product
- Service products in a service product catalog
- Forwarding agreements created from one or more service products in a service product catalog
- Forwarding orders or forwarding quotations created from forwarding agreements, or from the items and service products in a forwarding agreement

In this way, individual services flow from the catalog to the agreement, and on to the order, to fulfill your customer's needs.

For example, you can create services in the system for each of cleaning, fumigation, refrigeration, and cargo insurance. You can create one service product for cleaning and fumigation, another for refrigeration, and another for cargo insurance.

You can then create a service product catalog for transporting perishable food that contains the three service products. You can create an agreement directly from the service products in the catalog, and in turn create a forwarding order from the agreement.

Prerequisites

If you want the system to automatically add services and service products when you create a catalog, you make the following settings in Customizing:

1. Define service types in Customizing for *Transportation Management* under ► *Basic Functions* ► *General Settings* ► *Define Service Types* ▶.
2. Specify preconditions and assign service types to item types in Customizing for *Transportation Management* under ► *Master Data* ► *Agreements and Service Products* ► *Define FWA and Service Product Item Types* ▶.
3. Specify preconditions and assign item types to catalog types in Customizing for *Transportation Management* under ► *Master Data* ► *Agreements and Service Products* ► *Define FWA and Service Product Catalog Types* ▶.

You can also assign a calculation sheet template to a service product catalog type. When you create a service product catalog, the system uses the template to create a calculation sheet. For more information, see [Agreement Maintenance](#).

If you do not make these settings, the system uses the default catalog type that you specify in the *Define FWA and Service Product Catalog Types* Customizing activity to create a catalog.

You have assigned charge types to service types in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings for Charge Calculation* ► *Assign Charge Types to Service Types* ▶. The system uses these settings to assign calculation sheets to service products or catalogs.

Features

You can edit and delete the service product information in the following business documents:

- Service product catalog
- Forwarding agreement
- Forwarding order

You can create an agreement from one or more service products in a catalog. You can add service products to a standard agreement that you have not created from a catalog. You can add service products from a particular catalog to a different catalog.



Note

In a service product catalog, you can add services to a service product. In forwarding documents you can add services to an item. If you create a forwarding agreement from a service product, the system inserts the service product as an item in the agreement.

End of the note.

If you deselect the *Add Services* checkbox in the *Define FWA and Service Product Item Types* Customizing activity, the system creates a standard agreement line item. You cannot add services to these service products in the application. However, you can add a service type. In this case, the system treats the service product as a single-service product. For example, you can use this feature to provide insurance for an order.

The system adds the instructions that are assigned to the service product type in the Customizing activity *Define Service Types*. It displays instructions in the *Instructions* tab page, on the forwarding agreement and forwarding order screens. You can create, edit, and delete the instructions to suit your business needs.

For the service product catalog, the following features are available:

- Output management (See [Output Management](#))
- Notes
- Attachments

Notes and attachments features are also available for the individual service products in a service product catalog.

More Information

[Management of Instructions](#)

[Creation of Forwarding Order Items or Forwarding Quotation Items \[Page 346\]](#)



Condition

You use conditions to determine dependent values, for example, in the following areas:

- Filtering freight units
- Determining freight unit building rules (FUB rules) (see [Determination of Freight Unit Building Rules](#))
- Incompatibilities (see [Incompatibilities](#))
- Determining the sales organization
- Determining rate tables and agreements with charge calculation rules (see [Rules and Conditions for Charge Management and SP Catalogs \[Page 178\]](#))
- Change controller (see [Change Controller](#))

Features

You define input values for each condition. You can use the following to do so:

- Business object fields including user-specific fields
- Values determined in external determination classes
- Input values that you have defined in the data crawler (see [Use of Data Crawler Input Values](#))

The input values that are available each time depend on the condition type that was chosen. The condition type defines the area in which the system is to take the condition into account. SAP delivers a number of condition types in the standard system.

The output values are determined by the condition type. For example, the FUB rule results from FUB rule determination.

The system generates a BRFplus decision table (BRFplus = Business Rule Framework plus) from input and output values. The system then processes this table from top to bottom during determination. As soon as the system finds a row in the BRFplus decision table whose input values match the current input values, it copies the corresponding output values and processes them in the area that made the call. For more information about BRFplus, see [Business Rule Framework plus \(BRFplus\)](#).

Activities

You can define conditions in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *General Settings* ► *Conditions* ► *Create Condition* ▶.

You can use the *Transport* pushbutton to transport your conditions.

You can use the *Reset BRFplus* pushbutton to reset data objects that you have changed in BRFplus.

More Information

[Definition of Conditions](#)

[Definition of a Condition for Time Windows](#)



Rules and Conditions for Charge Management and SP Catalogs

You can use this function to define rules and conditions for the Charge Management and Service Product Catalogs component, including agreement determination, with a single point of entry. You do this in SAP NetWeaver Business Client by choosing Master Data Charge Management and Service Product Catalogs Maintain Charge Calculation Rules .

You use these rules to distinguish between the following:

- Whether the system calls a related Business Add-In (BAdI) to obtain the decision from enhanced coding
- Whether the system calls BRFplus (Business Rule Framework plus) with the configured BRFplus function

Integration

Each of the available rules has either a corresponding BAdI method in which you can hard code or delegate a decision or the link to BRFplus in which the business decision can be executed.

Prerequisites

You have set up the BRFplus function in the system by setting up a condition. For information about setting up conditions, see [Definition of Conditions](#).

Features

- You can define rules for agreement determination. You have the following options:
 - *Exclusion* (standard determination): The system can check both the condition and the BAdI option to see if an automatically determined agreement has to be considered for the given business context. The system checks the list of automatically determined agreements one by one to determine if they are still applicable. If more than one agreement remains after the system has applied the exclusion rule, the system considers the agreement priority.
 - *Standalone*: You have switched off standard determination, and instead, the system executes a condition that determines the agreement. If you select the *Std Determ.* checkbox, the system uses the standard determination logic if the condition execution fails or returns no result.

- You can define rules for calculation sheet determination.

Standalone: You have switched off standard determination, and instead, the system executes a condition that determines the calculation sheet. If you select the *Std Determ.* checkbox, the system uses the standard determination logic if the condition execution fails or returns no result.

- You can define a precondition rule for the calculation sheet and calculation sheet item.

You define a BRFplus condition or a BAdI to check if a certain calculation sheet or calculation sheet item is to be processed in a certain business context. The result of this rule is a true/false decision, that is, if the response from BRFplus or the BAdI is true, the

calculation sheet or calculation sheet item is considered for charge calculation. For more information, see the *Precondition* tab page in the *Items* screen area of the agreement or calculation sheet.

- You can define grouping rules for resolution bases. You have the following options:
 - *Condition*

The system can dynamically determine the attribute or field by which the data source is to be grouped. Both options, the direct grouping and the dynamic BRFplus-based attribute determination, work in the same way – the data source currently being processed (for example, all shipment items) is sorted by this specific attribute. The system then groups all items with the same attribute value and later handles them as one item.
 - *Group By*

If you know the calculation base by which the data source is to be grouped and this value is static, you can enter the calculation base directly. The system then groups all items with the same attribute value and later handles them as one item when looking up the rate table. For more information about grouping and collective rates, see [Calculation Logic \[Page 229\]](#).

-  Note
 - The target structures, into which the data to be grouped is cumulated, are limited in comparison to the original data source as only certain attributes can be logically cumulated. Data that cannot be grouped is handled as a separate record.
 - End of the note.
 - You can define rate table determination rules.

You use this rule to flexibly determine which rate table is to be used for the current charge item. This rule provides the following options:

- *Condition*

The flexible, rule-based determination of a specific rate table. To configure this determination, the complete logistical data source is available. Only a valid rate table is expected as the return parameter.
 - *Determin. By BAdl* (Rate Table Determination Using BAdl)

The rate table determination is coded inside the BAdl.
- You can define rules for charge calculation by a formula.

The system calculates the charge item without the normal rate table access. That is, either the BAdl or BRFplus directly returns the calculated amount for this charge item.

Note

If you decide to calculate the charge item through BRFplus, you can use a mathematical formula or any other BRFplus option. In this case, no information is available in the *Calculation Base* area.

End of the note.



BRFplus for Charge Management and SP Catalogs

You can use this function in Charge Management and Service Product Catalogs to do the following:

- Define specific business rules for various decisions within an automatic charge calculation process
- Determine agreements as follows:
 - Automatically by exclusion
 - Independently of built-in next level principle
- Influence if a certain calculation sheet or calculation sheet line item is calculated in a certain business context or if the calculation is only applied for certain logistical data
- Flexibly determine a rate during charge calculation
- Use a formula to calculate transportation charges

Features

Linking of Charge Management and Service Product Catalogs and BRFplus

Charge Management and Service Product Catalogs and BRFplus (Business Rule Framework plus) are linked using rules. For information, see [Rules and Conditions for Charge Management and SP Catalogs \[Page 178\]](#).

Any use of BRFplus in the Charge Management and Service Product Catalogs component is encapsulated by rules. If you can choose to use BRFplus, you can also use a Business Add-In (BAdI). With a BAdI, you can code a better-performing and simplified decision logic.

Data Source Supply for BRFplus

In SAP Transportation Management (SAP TM), the conditions maintenance manages the data source binding by naming certain fields within a certain business object. In Charge Management and Service Product Catalogs, you can either use the standard calculation bases or any data element in the forwarding order (FWO) or freight order (FO) as the basis for BRFplus conditions. You can use all available calculation bases for conditions. All available calculation bases are also available as data access definitions for conditions. The name is the same, with the suffix _TCMC. Charge management conditions can only use these data access definitions; other data access definitions will fail. For example, to define a condition based on source location you must use data access definition SOURCELOC_TCMC, which is mapped to calculation base SOURCELOC.

The calculation bases are in the context of the current resolution base if available, or the document header. The freight agreement and forwarding agreement determination rule and the calculation sheet precondition rule are executed on the header level. All other rules are executed on a specific resolution base, as specified in the calculation sheet. In contrast, the system evaluates calculation sheet line item precondition rules against the resolution base of the charge line. For example, a container type code would depend on the resolution base container.

You can also use any data element in the FWO or FO as the data access definition if the data element is mapped to a field in the communication structure. To do this, you create a BRFplus condition with a new criterion, for example, executing carrier, and then assign the BRFplus

condition to a determination rule. You then assign the determination rule to a calculation profile of the business partner or the sales organization. During charge calculation, the system uses the determination rule in the calculation profile to determine the appropriate charge management master data.

For BRFplus data supply, you have to name all attributes that are necessary for the specific business rule decision within the conditions maintenance.

More Information

[Business Rule Framework plus \(BRFplus\)](#)



Calculation Sheet

A calculation sheet is a hierarchical table used to calculate transportation charges.

A calculation sheet combines the charge types permitted for a document and the sequence in which the system takes these charge types into account during the calculation.

The system uses calculation sheets to specify which transportation charges to calculate and how to calculate them. This helps to bill customers for transportation services and to pay suppliers or carriers for subcontracted transportation services. Calculation sheets contain line items and each line item can result in a calculated amount.

You can create calculation sheet templates on which to base calculation sheets. For more information about master data templates, see [Calculation Sheet Maintenance \[Page 186\]](#). For more information about Customizing templates, see Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Templates* ► *Define Calculation Sheet Templates*.

Structure

A calculation sheet can contain the following main tab pages and screen areas:

- *General Data*

The *General Data* tab page contains general information about the calculation sheet. For example, the archiving status and whether you can use the calculation sheet to calculate charges billable to your customer, charges to be billed to you by your carrier, or both.

- *Items*

The *Items* screen area contains the details of the calculation sheet line items and you can create rate tables for each line item. You can insert blank line items one at a time or insert one or more line items with the charge type already specified. The system also displays certain attributes that you do not need for charge calculation, for your information.

The following columns are mandatory in the *Items* screen area:

- *Instruction Type*

If the instruction type is *Line Item Selection*, the *Operation* (Charge Item Operation) column is mandatory.

If the instruction type is *Standard*, the following columns are mandatory:

- *Currency*

If the currency is % and the calculation base is *not* amount-based, the *Reference-From Line Number* column is mandatory.

If the currency is % and the calculation base is *Customs Value*, *Goods Value*, or *Insurable Value*, you can specify a rate table for the line item. You do not need to specify a reference line item.

- *Rate Amount*, *Rate Table Det. Rule* (Rate Table Determination Rule) or *Rate Table*

- Charge Type

 Note

Each calculation sheet has an initial mandatory sum line, which you cannot delete. You can only maintain the rounding rule for this line because you cannot define a [charge type](#).

End of the note.

Depending on the type of calculation sheet item you select, the *Items* screen area contains some of the following main tab pages:

- Rate

The *Rate* tab page contains details of the rate table for each standard charge item. You can also create scales for each rate table. For more information about the *Rate* tab page, see [Rate Table \[Page 196\]](#).

- Basic Data

The *Basic Data* tab page contains information on each line item ([charge item](#)), including information that determines how the system processes and calculates the transportation charges for each line item. On the *Basic Data* tab page, the following important information is available for each line item:

- Dimensional weight profile

The dimensional weight profile the system uses to calculate the transportation charges for the line item. The system uses the dimensional weight factor in the dimensional weight profile to convert a product's gross volume into dimensional weight. The system then uses the dimensional weight to apply the correct rate. Note that a dimensional weight profile at the line item level of a calculation sheet has priority over a dimensional weight profile in an agreement. You define dimensional weight profiles in Customizing for *Transportation Management* under  *Basic Functions*  *Charge Calculation*  *Data Source Binding*  *Define Dimensional Weight Profiles* .

- Calculation resolution base

During charge calculation, the system determines the calculation resolution base by the origin of the data upon which the charge aspect is based. You can define the charge aspect in the resolution base objects, for example, container, product, and stage.

- Resolution base grouping rule

The rule the system uses to group selected input data, for example, destination location, weight, and volume. You use the grouping rule together with the resolution base to group charge lines by the calculation base specified in the *Group By* field of the grouping rule.



Example

A calculation sheet line item contains *Package* as the resolution base and has a grouping rule assigned to it. The grouping rule is grouped by the *Destination Location* calculation base. There is a freight order with 2

packages with the same destination location. The system groups the gross weight of the 2 packages and determines a rate for the cumulative weight. This rate is lower than the rate that the system would have determined for each package.

End of the example.

- Calculation method

When accessing rates during charge calculation, the system applies the specified calculation method to calculate the charges for the charge type. You define customer-specific calculation methods in Customizing for *Transportation Management* under ► *Basic Functions* > *Charge Calculation* > *Enhancements to Charge Calculation Engine* > *Define Calculation Methods*.

- *Classification*

The *Classification* tab page contains details on each charge item, such as whether the charge item is mandatory for charge calculation and its charge category.

- *Precondition*

The *Precondition* tab page contains the precondition rule or BRFplus condition for each charge item. The precondition rule determines if the system processes the charge item before charge calculation. This tab page also displays the text from the *Documentation* tab page of the condition. For information about conditions, see [Condition \[Page 176\]](#).

This tab page also contains *Trade Lanes*, *Service*, and *Partners* tab pages.

- *Cost Pull*

You can use the *Cost Pull* tab page to specify the charge types for each charge item that you want to transfer from the freight side to the forwarding side. The charge types contain the distributed costs from the freight side. If you do not enter a charge type, the system transfers the distributed costs for all charge types in the relevant freight orders. For more information, see [Cost Pull \[Page 264\]](#).

You define charge types in Customizing for *Transportation Management* under ► *Basic Functions* > *Charge Calculation* > *Basic Settings for Charge Calculation* > *Define Charge Types*.

- *Incoterms*

The *Incoterms* tab page contains the Incoterms for each charge item. If the Incoterm that is specified for a charge item matches the Incoterm that is specified in a forwarding order, the system adds the line item to the order. You define the Incoterms in Customizing for *Transportation Management* under ► *Basic Functions* > *Charge Calculation* > *Basic Settings for Charge Calculation* > *Define Charge Types*. You can change the Incoterms that you specify in Customizing, on the *Incoterms* tab page.

- *Related Calculation Bases*

In a calculation sheet, if you enter a calculation rule based on a calculation base that has related calculation bases, you can directly enter values for the related calculation bases on the *Related Calculation Bases* tab page. You specify related calculation bases in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Data Source Binding* ► *Define Calculation Bases* ▶.

- *Change Documents*

You can view all changes made to a calculation sheet on the *Change Documents* tab page or screen area. The changes are listed by date and time. You view the details of the changes at header level by selecting the relevant row in the *Transactions* screen area and at field level by selecting the relevant row in the *Record Level Changes* screen area. You must refresh the calculation sheet to view recently-saved changes.

Integration

A calculation sheet is integrated with agreements, rate tables, and scales. For more information, see [Agreement](#), [Rate Table \[Page 196\]](#), and [Scale \[Page 217\]](#).

More Information

[Calculation Sheet Maintenance \[Page 186\]](#)

[Rules and Conditions for Charge Management and SP Catalogs \[Page 178\]](#)

[Charge Calculation \[Page 223\]](#)

[Setup of MD for Charge Management and SP Catalogs \[Page 168\]](#)



Calculation Sheet Maintenance

You create and maintain calculation sheets as a step in the process to set up master data for charge calculation.

Integration

Calculation sheet maintenance is a step in the process to set up master data in the Charge Management and Service Product Catalogs component and is integrated with agreements, rate tables, and scales. For more information, see [Setup of MD for Charge Management and SP Catalogs \[Page 168\]](#).

You can use the master data cockpit to access an overview of the charge management master data per organizational unit, business partner, and charge type. The system also shows the relationship between the different types of charge management master data. For more information, see [Master Data Cockpit \[Page 221\]](#).

Prerequisites

You have defined number ranges in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Number Range Intervals* ► *Assign No. Ranges to Calc. Sheets, Rate Tables, & Scales* ▶.

Features

- Templates

You can use a template to create a calculation sheet and calculation sheet line items. You can define master data templates in SAP NetWeaver Business Client. You can define Customizing templates in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Templates* ► *Define Calculation Sheet Templates* ▶. You can view and update master data calculation sheet templates in the *Calculation Sheet Templates* personal object worklist.

To define a master data template for a calculation sheet, in SAP NetWeaver Business Client choose ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Calculation Sheet Templates* ▶.

- Rate tables and scales

You can create rate tables and scales from within a calculation sheet in the following ways:

- Create a rate table for each calculation sheet line item in the *Items* screen area.

You can assign a rate table to multiple line items if you allow multiple charge types in the rate table. Note that you can assign a calculation rule to each calculation sheet line item and so do not need to use a rate table. The calculation rule is applicable for the amount and not for the rate table.

- Create a scale for a rate by going to the rate table details in the *Items* screen area.

You can also copy and delete the rate tables and scales from within a calculation sheet. For more information, see [Rate Table \[Page 196\]](#) and [Scale \[Page 217\]](#).

Note

If you copy a calculation sheet, the system copies the rate tables and scales that you created from within the calculation sheet or that you referenced in the calculation sheet. If you delete a calculation sheet, the system deletes the rate tables and scales that you created from within the calculation sheet. However the system does not delete the rate tables and scales that you referenced in the calculation sheet.

End of the note.

- Index rate tables for fuel surcharges

You can enter an index rate table when fuel surcharges change frequently, and where you have different fuel surcharges in different zones in your country or region. You can use one of the following approaches to calculate your fuel surcharges:

- Use an actual fuel surcharge rate from an index rate table that is valid on a particular date.

To enable this approach, in the line item of the calculation sheet, specify a standard rate table with a calculation base of *FSC*, and an index rate table.

- Determine an index for the fuel surcharge and apply the index to the amount or percent you specify in a line item of a calculation sheet.

To enable this approach using amounts, specify a standard rate table or amount, the index rate table, and the index base date.

To enable this approach using percentages, specify two line items in the calculation sheet. In the first line item enter the standard rate table. In the second line item, enter the percent you want to apply, the index rate table, the index base date, and the reference-from line number for the first line item.

For both amounts and percentages, you must use the calculation method type *Fuel Surcharge Calculation* and the calculation method `FUEL_SURCHARGE`.

- Air freight charges

You can specify attributes in a calculation sheet to facilitate the calculation of air freight charges, for example:

- Rate type of *Contract Rate* or *TACT Rate*
- Rate category of *ULD*, *SCR*, or *GCR - M, N, & Q*
- Charge type classification
- IATA charge due of *Due Agent* or *Due Carrier*
- IATA other charge code

The system displays certain attributes that you do not need for charge calculation, for your information.

For more information, see [Charge Management Settings for Air Freight \[Page 170\]](#).

- Calculation rules

You can assign a calculation rule to a calculation sheet line item using the *Amount* field, instead of assigning a rate table. You can only assign one calculation rule to each calculation sheet line item and cannot assign both a calculation rule and a rate table to a calculation sheet line item.

If the calculation base has an amount-based scale base, the line currency must be % and you do not need a reference-from or reference-to line. During charge calculation, the system applies the percentage amount to the amount values, such as goods value and insurable value.

- Flat rates, relative rates, or percentages

You can specify a flat rate (amount) for a calculation sheet line item by entering an amount and a valid currency. You can specify that a calculation sheet line item is a percentage of another calculation sheet line item by entering a percentage value, % in the *Currency* field, and a reference line number. You can also have a relative rate for a calculation sheet line item by specifying a calculation rule in the calculation sheet line item. However, you can specify only one calculation rule at the line-item level.

- Minimum and maximum rate values

You can specify a minimum rate value and a maximum rate value for each calculation sheet line item with the *Standard* instruction type. Note that in order to specify minimum and maximum rate values, you must maintain the calculation rule for the calculation sheet line item. If the system calculates the charges to be lower than the minimum rate value or higher than the maximum rate value, the system enters the minimum rate value or maximum rate value as the charge. Note that the minimum rate value must be higher than zero and you cannot specify a minimum rate value or maximum rate value if there is a rate table or rate determination rule attached to the calculation sheet line item.

- Charge types

You can assign a charge type to calculation sheets and rate tables and specify one or more leading charge types in a calculation sheet. A charge type classifies a charge line, which plays an important role in how the system calculates the transportation charges for the charge line. For more information, see [Charge Types \[Page 193\]](#).

- Determination preconditions

The system uses preconditions during calculation sheet determination, for example, shipping type, stage category, transportation mode, and service level.

- Cost pull

You can transfer distributed costs from the freight side to the forwarding side, and use the costs as a basis for settling with a customer or an internal organization. To transfer the result of a cost distribution from the freight side to the forwarding side, in a calculation sheet you must specify *Customer* or *Internal* in the *Charge Usage* field. You use an instruction type of *Cost* at the item level. The system automatically includes an internal charge calculation method type, and the cost pull calculation method COST_PULL. You must specify a cost pull strategy, and in the *Cost Pull* tab page, you can specify the charge types the system transfers to the forwarding side. For more information, see [Cost Pull \[Page 264\]](#).

- Calculation date type

You can specify the calculation date type for each calculation sheet item. Based on the calculation date type you specify, the system uses a date, such as system date, invoice date, or order date, to determine a rate from the rate table and calculates the charges for each calculation sheet item.

- Charge relevance

You can specify whether a charge line must be included for charge calculation in the invoice, order, or both.

- Validity period

You can set a validity period for each calculation sheet line item so that the charge line is relevant only during that period.

- Mass update of calculation sheet amounts

You can use the *Update Calculation Sheet Amounts* function to change the charge item amount in one or more calculation sheets at the same time. You can navigate to the function in one of the following ways:

- In SAP NetWeaver Business Client, choose *Master Data -> Overview Charge Management and Service Product Catalogs -> Master Data Cockpit*. Choose the relevant agreement type and enter your search criteria. In the personal object worklist result, select the line items that contain the calculation sheets you want to update, and choose the *Update Rates/Calculation Sheet Amounts* button.
- In transaction SE38, enter /SCMTMS/TCCS_MASS_UPDATE.

For more information, see [Update Calculation Sheet Amounts \[Page 191\]](#).

Activities

To create a calculation sheet for an agreement item in an agreement, in SAP NetWeaver Business Client choose ► *Freight Agreement Management* ► *Freight Agreements* ▶, ► *Forwarding Agreement Management* ► *Forwarding Agreements* ▶, or ► *Forwarding Agreement Management* ► *Internal Agreements* ▶.

To change a calculation sheet for an agreement item in an agreement, in SAP NetWeaver Business Client choose ► *Freight Agreement Management* ► *Freight Agreements* ▶, ► *Forwarding Agreement Management* ► *Forwarding Agreements* ▶, or ► *Forwarding Agreement Management* ► *Internal Agreements* ▶. Edit the calculation sheet on the *Calculation Sheet* tab page of the *Items* screen area in the agreement.

To display a calculation sheet separately from the agreement it was created in, in SAP NetWeaver Business Client choose ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Calculation Sheets* ► *Display Calculation Sheet* ▶.

To create or change a reference calculation sheet, in SAP NetWeaver Business Client choose ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Calculation Sheets* ▶. A reference calculation sheet can be used in multiple agreements.



Recommendation

Adhere to the following guidelines when creating a calculation sheet:

- Line numbers must be greater than 10 because the system generates the first sum line as 10.
- The sum line must have reference lines greater than itself.
- A subtotal line must have reference lines less than itself.
- A subtotal line inherits the resolution base from the sum parent line.
- If you require a nested sum line, decide on the reference line numbers accordingly.

End of the recommendation.

More Information

[Calculation Sheet \[Page 182\]](#)



Update Calculation Sheet Amounts

You can use the /SCMTMS/TCCS_MASS_UPDATE program to change the charge item amount in one or more calculation sheets at the same time.

You can increase or decrease the amount by a percentage or an amount. You can apply the change to all charge items contained in the calculation sheets in your selection. You can also apply the change to absolute and relative charge items. A charge item is relative if you have specified a calculation rule for the charge item in the relevant calculation sheet.

You can further refine your selection by specifying the following settings; the function updates only the calculation sheets that fit the criteria you enter:

- Validity period

You must select an existing validity period. The system displays the valid-from date in the function.

- Charge type

You must enter a charge type that is used in the relevant calculation sheets.

You can update charge item amounts for forwarding, freight, and internal agreements from the master data cockpit.

To work with the master data cockpit, in SAP NetWeaver Business Client, choose ► *Master Data* ► *Overview Charge Management and Service Product Catalogs* ► *Master Data Cockpit* ▶.

Choose the relevant agreement type and enter your search criteria. In the personal object worklist result, if you select a line item that contains a calculation sheet only and choose the *Update Rates/Calculation Sheet Amounts* button, the system opens the *Update Calculation Sheet Amounts* function. The system automatically includes the calculation sheet in the update criteria when you open the function.

If you select a line item that contains both a rate table and a calculation sheet, the system opens the *Update Rates* function. If you select a line item that contains a rate table and a different line item that contains only a calculation sheet, the system opens both the *Update Rates* and *Update Calculation Sheet Amounts* functions on the same screen. The system automatically includes the calculation sheet and rate table in the update criteria when you open the function. For more information, see [Update Rates \[Page 211\]](#).

You can only update charge items that have an instruction type of *Standard*.

Integration

The update of calculation sheet amounts is a function in calculation sheet maintenance. For more information, see [Calculation Sheet Maintenance \[Page 186\]](#).

Prerequisites

You have specified the settings required for calculation sheet maintenance. For more information, see [Calculation Sheet Maintenance \[Page 186\]](#).

Example

You want to update charge item amounts in a calculation sheet. The following table describes the charge item settings in the calculations sheet:

Item Hierarchy	Instruction Type	Validity	Amount (USD)	Absolute/Relative
Basic rate	Standard	01.01.2013 to 02.01.2013	100	Absolute
Air freight charges	Standard	02.01.2013 to 03.01.2013	150	Relative
Insurance fees	Standard	03.01.2013 to 04.01.2013	250	Relative

The following table describes your inputs to the function:

Setting	Attribute
Validity period	None
Percentage for absolute charge items	+10%

The system updates the basic rate charge item from USD 100 to USD 110. The system does not include the charge items for air freight charges and insurance fees because these are relative charge items and you specified absolute charge items in the function.

More Information

[Master Data Cockpit \[Page 221\]](#)

Charge Types

When setting up charge management master data, you use charge types in calculation sheets and rate tables to classify charge lines. This classification plays an important role in how the system calculates the transportation charges for a charge line.

You can assign charge types to calculation sheet line items and to rate tables at header level or item level. Note that the system assigns rate tables to a line item in a calculation sheet only if the charge types match.

You define charge types in Customizing for *Transportation Management* under ► *Basic Functions* ➤ *Charge Calculation* ➤ *Basic Settings* ➤ *Define Charge Types*.



Recommendation

Group and categorize charge types by charge subcategory and charge category to help structure transportation charges. You define charge categories and charge subcategories in Customizing for *Transportation Management* under ► *Basic Functions* ➤ *Charge Calculation* ➤ *Basic Settings* ➤ *Define Category Codes* and ► *Define Subcategory Codes*.

End of the recommendation.

Charge Type Attributes

A charge type's attributes define how the charge type affects the calculation of transportation charges for a charge line in a calculation sheet. There are standard attributes, which apply for transportation charges for all transportation mode categories, and also air-freight-specific attributes. For more information about charge type attributes, see the Customizing activity *Define Charge Types*.

Standard Attributes

You can specify standard attributes for a charge type, for example:

- Whether the charge line can have a positive or a negative value
- Whether the charge line can be an absolute value (an actual amount) or a percentage value of another charge line

Note that if a charge line represents a percentage, then to calculate a chargeable amount, this charge line must refer to another charge line or to a subtotal that produces an absolute value.

- Whether the charge type is a leading charge type and so must have a value for the system to be able to calculate the charges
- The transportation mode category (road, rail, sea, or air) of the charge type

You can then only use the charge type in a calculation sheet that is associated with an agreement with the same transportation mode category or with no transportation mode category.

- The classification of the charge type for transportation mode categories
- The charge type description in multiple languages

- The Incoterm for the charge type

If a forwarding order has the same Incoterm, the system includes a line item from a calculation sheet in the forwarding order.

Air Freight Attributes

If you want to use the charge type for calculating air freight charges, you can also specify air-freight-specific attributes, for example:

- The classification of the charge type for the transportation mode category of *Air* as one of the following:
 - *Weight*
 - *Other*
 - *Commission*
 - *Additional Charge*
 - *Valuation*
- The charge code of the charge type for charges classified as *Other Charges* by the International Air Transport Association (IATA).
- The transportation mode category as *Air*.
- Whether the charges are due to the agent or to the carrier.

For more information about air freight settings, see [Charge Management Settings for Air Freight \[Page 170\]](#).

Leading Charge Types

You can have one or more leading charge types in a calculation sheet. A leading charge type must have a value for the system to consider the calculation sheet for charge calculation. If there are multiple calculation sheets available when calculating charges, the system skips the calculation sheets without a leading charge type. The system also skips the calculation sheets if the leading charge type does not have a rate. If there are no calculation sheets with a leading charge type with a rate, the system chooses a calculation sheet randomly. Note that if there are multiple leading charge types in a calculation sheet, all the leading charge types must have a rate defined for the system to consider the calculation sheet for charge calculation. For more information about leading charge types and calculation sheet determination, see [Agreement and Calculation Sheet Determination \[Page 244\]](#).



Note

For the system to take the leading charge type into account when calculating charges, you must select the *Evaluate All Agreements* checkbox in Customizing for *Transportation Management* under *Basic Functions* *Charge Calculation* *Basic Settings* *Define Charges Profiles* . The system then skips the agreements that use calculation sheets without a leading charge type or with a leading charge type that does not have a rate.

End of the note.

You can specify a charge type as a leading charge type in the Customizing activity *Define Charge Types*.

Multiple Charge Types

You can allow multiple charge types in a rate table for the following reasons:

- You want to avoid defining numerous similar rate tables.
- You want to use the rate table for multiple calculation sheet line items.

In this case, the charge type of the dimension in the rate table and calculation sheet line item must match.



Note

If you allow multiple charge types, you must adhere to the following guidelines when defining the rate table:

- One dimension must have the *Multiple Charge Type* (`MULT_CHRG_TYP`) calculation base.
- All charge types must have the same value type (absolute, percentage, or decided when assigning the charge type).

End of the note.

More Information

[Calculation Sheet \[Page 182\]](#)

[Rate Table \[Page 196\]](#)

[Charge Calculation \[Page 223\]](#)



Rate Table

A rate table is a grouping of prices for transportation services. The prices (or rates) are listed by validity period in the rate table. You can maintain up to 14 dimensions in a rate table.

You can define the scales and validities of the rate table. Once you define the rate table, you can maintain the rate values in the rate table. For more information, see [Rate Definition and Maintenance \[Page 199\]](#).

You can define a rate table manually or automatically by using a rate table template with predefined scales and validity dates. For more information about master data templates, see [Rate Definition and Maintenance \[Page 199\]](#). For more information about Customizing templates, see Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Templates* ► *Define Rate Table Templates* ▶.

You can use the standard, break-weight, or [clipping](#) calculation method for a rate. The break-weight calculation method compares and selects the lower rate from either the actual rate range or the lower end of the next rate range. It assumes that one of the scales in the rate is the weight. The clipping calculation method considers all scales, even if the value lies outside of a scale. With clipping, the system works through the pricing scale level-by-level. The calculation results from each scale level are then added up to produce the overall result.

Structure

A rate table can contain the following main tab pages and screen areas:

- *General Data*

The *General Data* tab page contains general information about the rate table, for example, whether you can use the rate table to calculate charges billable to your customer, charges to be billed to you by your carrier, or both. On this tab page, you can also indicate how the system uses the rate table to calculate transportation charges, and whether you can use an absolute value or a percentage value.

This tab page also displays scales. You can copy a reference scale into the rate table to create dimensions local to the rate table. However you cannot directly reuse a reference scale in the rate table. You can also create new scales for the rate table, with or without a scale template. The following columns can be mandatory:

- *Calculation Base* (always mandatory)
 - If the calculation base is amount-based, then the *Scale Currency* column is mandatory.
 - If the calculation base is not amount-based, then the *Scale Unit of Measure* column is mandatory.
- *Calculation Type* (always mandatory)
- *Scale Type* (conditionally mandatory)
 - If the calculation type of the calculation base is *Relative*, then the *Scale Type* column is mandatory.
- *Scale Type* and *Scale Unit of Measure* (conditionally mandatory)

If the scale base is numeric, then the *Scale Type* and *Scale Unit of Measure* columns are mandatory.

For more information, see [Scale \[Page 217\]](#).

The *Details* tab page contains the scale details.

- *Dates and Values*

The *Dates and Values* tab page contains general information about each rate, such as its validity period and currency. The *Valid From*, *Valid To*, and *Currency* columns are mandatory on this tab page.

On the *Dates and Values* tab page, you can display the information in different ways and perform certain actions, depending on the details already in the rate table, for example:

- You can generate incremental scale items if the rate table contains a numeric scale that does not contain any scale items.
- You can choose which rates to display, that is, all rate combinations or only rates that were maintained, if the rate table contains a scale item.
- You can select which scale to use as the dimension column if the rate table contains a numeric scale and more than one scale.
- You can display the description of a rate, delete a rate, copy a rate, and freeze the columns in the *Rate* table if the rate table contains a scale item.

You can also filter the rates that you want the system to display.

This tab page contains *Rates*, *Calculation Rules*, and *Scale Items* tab pages. On the *Scale Items* tab page, you can add and maintain scale items and specify the actual base or factor with which the system calculates the charges for the scale. On the *Calculation Rules* tab page, you determine the values with which the single rate is to be multiplied. If there is more than one calculation rule, the system multiplies the determined rate with each of the given entries and totals the final amount during charge calculation. If the scale items are relative, then the system applies the calculation rules. On this tab page, you can also specify the level at which the system applies the calculation rule in the rate table, for example, at rate-table or scale-item level.

 Note

If you specify that the system applies the calculation rule at the *Rate Table* level, the *Price Unit* column on the *Calculation Rules* tab page is mandatory. You must specify the level as *Scale Item* if the price unit of one of the scale items is not the same as the others. In this case, you must specify the price unit on the *Scale Items* tab page for the corresponding scale. The system applies the calculation rule only when the calculation type of the scale item for the selected rate is relative.

Calculation rules and scale items are validity-dependent, meaning you can have different calculation rules and scale items for each validity period listed in the rate table.

End of the note.

- *Excel Integration*

On the *Excel Integration* tab page, you can upload and download Microsoft Excel sheets to speed up the maintenance of large rate tables. For more information, see [Creation and Maintenance of Rate Tables Using Microsoft Excel \[Page 206\]](#).

- *Change Documents*

You can view all changes made to a rate table on the *Change Documents* tab page or screen area. The changes are listed by date and time. You view the details of the changes at header level by selecting the relevant row in the *Transactions* screen area and at field level by selecting the relevant row in the *Record Level Changes* screen area. You must refresh the rate table to view recently-saved changes.

Integration

A rate table is integrated with agreements, calculation sheets, and scales. For more information, see [Agreement](#), [Calculation Sheet \[Page 182\]](#), and [Scale \[Page 217\]](#).

More Information

[Charge Calculation \[Page 223\]](#)

[Setup of MD for Charge Management and SP Catalogs \[Page 168\]](#)

[TACT Rates \[Page 214\]](#)



Rate Definition and Maintenance

You define rate tables and maintain rates as a prerequisite for charge calculation. If the rates for each charge item are not fixed or are calculated using a Business Add-In (BAdI) or BRFplus (Business Rule Framework plus), charge calculation requires rates for every SAP Transportation Management (SAP TM) object, such as forwarding order or freight order. For more information, see [Rate Table \[Page 196\]](#).

You can use this function to define and maintain rates directly in SAP TM or to upload and download them from Microsoft Excel or a similar XML-enabled Application Programming Interface (API). Once you define the rate table, you can then maintain the rate values in the rate table.



Recommendation

Use rate table templates to quickly define and maintain rates in rate tables. We recommend that you do not create one central rate table with rates for all your business partners.

End of the recommendation.



Note

You can use TACT rates for calculating air freight charges (see [TACT Rates \[Page 214\]](#)).

End of the note.

Integration

Rate maintenance is a step in the process to set up master data in the Charge Management and Service Product Catalogs component and is integrated with agreements, calculation sheets, and scales. For more information, see [Setup of MD for Charge Management and SP Catalogs \[Page 168\]](#).

The system determines the most appropriate rate when calculating transportation charges, based on certain criteria and attributes. For more information, see [Rate Determination \[Page 249\]](#).

You can use the master data cockpit to access an overview of the charge management master data per organizational unit, business partner, and charge type. The system also shows the relationship between the different types of charge management master data. For more information, see [Master Data Cockpit \[Page 221\]](#).

Prerequisites

You have made the following settings in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ▾:

- ► *Data Source Binding* ► *Define Calculation Bases* ▾
- ► *Data Source Binding* ► *Define Resolution Bases* ▾
- ► *Basic Settings* ► *Number Range Intervals* ► *Assign No. Ranges to Calc. Sheets, Rate Tables, & Scales* ▾

Features

- Templates

You can use a template to create a rate table with predefined scales, calculation rules, and validity dates. You can define master data templates in SAP NetWeaver Business Client. You can define Customizing templates in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Templates* ► *Define Rate Table Templates* ▶.

To define a master data template for a rate table, in SAP NetWeaver Business Client choose ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Rate Table Templates* ▶.

- Creation and maintenance of rate tables using Microsoft Excel

You can create multiple rate tables in Microsoft Excel using rate table templates and upload them to SAP TM.

You can maintain a large rate table, with or without scale items, using Microsoft Excel. You can enter the rates and scales into a Microsoft Excel file and upload the file to your SAP TM system. Alternatively, you can define an empty reference rate table with validity periods in SAP TM and download it to Microsoft Excel. You can then maintain the rate table in the Microsoft Excel file and upload it to your SAP TM system.

You can also choose to download rate tables in the background and be notified by e-mail when the download to the application server path is complete (see [Background Download of Rate Tables \[Page 210\]](#)).

For more information, see [Creation and Maintenance of Rate Tables Using Microsoft Excel \[Page 206\]](#).

- Update of rates

You can use the *Update Rates* function to change the rate values in a single rate table or in multiple rate tables at the same time. You can navigate to the function in one of the following ways:

- In SAP NetWeaver Business Client, choose ► *Master Data* ► *Overview Charge Management and Service Product Catalogs* ► *Master Data Cockpit* ▶. Choose the relevant agreement type and enter your search criteria. In the personal object worklist result, select a line item that contains the rate tables you want to update, and choose the *Update Rates/Calculation Sheet Amounts* button.
- In SAP NetWeaver Business Client, choose ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Rate Tables* ► *Maintain Rate Table* ▶. Open the rate table in edit mode and choose the *Update Rates* button.
- In transaction SE38, enter /SCMTMS/RATE_MASS_UPDATE.

For more information, see [Update Rates \[Page 211\]](#).

- Approval workflow

You can enable an approval workflow when you create or change validity periods in rate tables.

You can specify that you want the system to notify the approver when you request approval for a new or changed validity period. You can also specify whether you can edit rate tables that contain the validity periods during the approval workflow. Note that the approver is the person assigned to the position that is the head of the organizational unit.

Therefore, at least one organizational unit must have a position that is the head of the organizational unit. For more information, see [Approval Check \[Page 46\]](#).

The approver uses Business Workplace to approve or reject the new or changed validity period. For more information, see SAP Library for *SAP Business Workflow* on SAP Help Portal at <http://help.sap.com/netweaver>. In SAP Library, choose ► *SAP NetWeaver 7.3* ► *Application Help* ► *Function-Oriented View* ► *Application Server* ► *Application Server ABAP* ► *Other Services* ► *Services for Application Developers* ► *SAP Business Workflow Reference Documentation* ▶.

 Note

You enable the approval workflow and allow the rate tables that contain the validity periods to be edited during the approval workflow when you define rate table types in Customizing for *Transportation Management* under ► *Master Data* ► *Rate Tables* ▶.

End of the note.

- Offline approval workflow

SAP TM can send work items for validity periods in rate tables by e-mail to the Microsoft Outlook inbox of a user, such as a customer agent. The user can accept or reject a work item and update the system from their inbox.

For more information, see [Offline Workflow for Sending and Approving Work Items](#).

- Rate table filter

On the *Date and Values* tab page, you can filter the rates that you want the system to display. In each rate table, you can also create filter variants and select a default filter variant.

When opening a rate table, the system can recommend that you use the rate table filter based on the number of rate table entries in the rate table. For larger rate tables, the use of the rate table filter can improve system performance.

You can activate the rate table filter and specify the maximum number of rate table entries the system should display before recommending the use of the rate table filter. You can make these settings in Customizing for *Transportation Management* under ► *Basic Functions* ► *General Settings* ► *Define General Settings for SAP TM* ▶.

- Validity periods

When adding a new validity period to a rate table, you can choose whether you want the system to copy the scale items from the existing validity period for the latest time period. The system does not copy the rates, just the scale items. If you choose not to copy the scale items, there will be no scale items copied into the validity period.



Example

You have the following validity periods in a rate table:

Valid From	Valid To
01.01.12	01.06.12

Valid From	Valid To
01.01.12	31.12.12
02.06.12	01.10.12

You decide to add a new validity period with scale items included. The system inserts the new validity period with the same scale items as the validity period 01.01.12 to 31.12.12.

End of the example.

- Multiple charge types

You can allow multiple charge types in a rate table if you want to avoid defining numerous similar rate tables or if you want to use the rate table for multiple calculation sheet line items. For more information, see [Charge Types \[Page 193\]](#).

- Rate categories

You can specify the rate category of a rate table to facilitate the calculation of air freight charges. The rate categories available are:

- Unit load device (ULD)
- Specific commodity rate (SCR)
- General cargo rate (GCR) – M, N, & Q

For more information, see [Rate Categories \[Page 208\]](#) and [Charge Management Settings for Air Freight \[Page 170\]](#).

- Zero rates

You can enter a zero rate in a rate table to indicate that there is no charge. The system confirms that you entered a rate and that the rate is zero by selecting the *Zero Rate* checkbox.

- Scales

You can create scales on the *Scales* tab page of a rate table, for example:

- You can enter a calculation base, scale type, and unit of measure.
- You can enter a scale template and calculation base.

The system creates the scale when you choose the *Create Scale* button. You can also select existing reference scales (see [Scale \[Page 217\]](#)).

 Note

If you copy a rate table, the system copies the scales that you created from within the rate table or that you referenced in the rate table. If you delete a rate table, the system deletes the scales that you created from within the rate table. However the system does not delete the scales that you referenced in the rate table.

End of the note.

You can also allow a scale item with no value to a scale. When calculating the charges, the system uses the scale item with no value if no scale items match the value of the scale item connected to the calculation base in the freight order or forwarding order or if the calculation base has no value.

- **Conditions**

You can specify conditions as scales in a rate table by using the calculation base **CONDITION**. This enables you to determine the most appropriate rate when you specify more than one rate for the same kind of scale base. You create conditions using BRFplus conditions and use these conditions in rate tables. In the rate table, you specify the value for a condition as true or false. If the system finds this condition in a forwarding order or freight order, it determines a rate from the rate table where the condition is met.

- **Scale items**

You can maintain scale items directly in a rate table, for example:

- In the *Rates* table, you can insert a scale item.
- In the *Rates* table, you can generate incremental scale items for a numeric scale if it does not already contain any scale items.
- On the *Scale Items* tab page, you can add a scale item.

Scale items are validity-dependent, meaning you can have different scale items for each validity period listed in the rate table. When you create a new validity period, the system copies the scale items from the most recently-created validity period into the newly-created validity period.

- **Index rate tables for fuel surcharges**

When you have fuel surcharges that change weekly and where you have different fuel surcharges in different zones in your country or region, you can use a standard index rate table that is valid on a particular date to minimize administration. You change the fuel surcharge rates in the index rate table just once each week or according to the time gaps in your validity periods. The system calculates fuel surcharges according to the rate in the zone on the validity date. You can use the following options to calculate fuel surcharges:

- Use the actual rate amounts that you specify in the standard index rate table.

To enable this approach, in the line item of the calculation sheet, specify a standard rate table with a calculation base of *FSC*, and an index rate table.

- Determine an index for the fuel surcharge and apply the index to the amount or percent you specify in a line item of a calculation sheet.

In this approach the index rate table specification stays the same, but you do not use the actual rate amounts in the index rate table. The system uses the fuel surcharge rate for the scale item that is valid on the date you specify in the *Index Base Date* field. It determines an index and uses the index in conjunction with the amount or percent you specify in the relevant line item in the calculation sheet to determine the fuel surcharge amount.

To enable this approach using amounts, specify a standard rate table or amount, the index rate table, and the index base date.

To enable this approach, specify two line items in the calculation sheet. In the first line item enter the standard rate table. In the second line item, enter the amount or percent you want to apply, the index rate table, the index base date, and the reference-from line number for the first line item.

- Calculation rules

You can define a calculation rule and apply it to a rate or scale item. When defining the calculation rule, you need to specify the calculation base, unit of measure, and price unit. If you want the system to apply the calculation rule at rate-table level, you must specify the price unit on the *Calculation Rules* tab page. If you indicate that you want the system to apply the calculation rule at scale-item level, you must specify the price unit on the *Scale Items* tab page. Note that you must specify the level as *Scale Item* if the price unit of one of the scale items is not the same as the others. The system applies the calculation rule only when the calculation type of the scale item for the selected rate value is relative.

You can define calculation bases in Customizing for *Transportation Management* under *Basic Functions* *Charge Calculation* *Data Source Binding* *Define Calculation Bases* .

Note

If you specify the validity period for a relative scale that has at least one scale item that is also relative, the system creates a default calculation rule for the scale items. The system applies the default calculation rule at the rate-table level.

End of the note.

- Calculation types

You must specify a calculation type before creating a scale item for a scale, which affects how the system calculates charges with the scale. The available calculation types are absolute and relative. Note that you can specify a relative calculation type for numeric scale bases only. If the calculation type is relative, you must apply the calculation rule at scale-item level and specify a price unit for each scale item.

You can also specify a default calculation type for a scale type based on the calculation base of the scale. The system then enters the default calculation type when you enter the calculation base for the scale. You can overwrite the default calculation type. You can specify the default calculation type in Customizing for *Transportation Management* under *Basic Functions* *Charge Calculation* *Data Source Binding* *Define Calculation Bases* .

- Currencies

You can have different currencies for each rate in the rate table. You can also indicate the scales that are relevant for the currency of the rate. The currency of the rate is then the same as the scale currency.

- Through rates

When you trigger charge calculation, the system finds a rate from the source location of the first stage to the destination location of the last stage. The system calculates the charges based on this rate. To use a through rate, you should maintain a rate for the location pair (source location and destination location). You can enable though rates in

Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Calculation Profiles* ▶.

- Capacity

You can assign capacity driver scales on the *Scales* tab page and specify the capacity dimension at the rate-table level. The capacity driver scales determine the scales that constitute the requested capacity in the rate value table. Freight and forwarding agreement management use capacity scales and capacity dimensions at rate level to specify confirmed capacity. For more information, see [Capacities in Rate Tables for Freight Agreement RFQ Masters](#).

Activities

To define or maintain a rate table for an agreement or calculation sheet, in SAP NetWeaver Business Client choose one of the following:

- ► *Freight Agreement Management* ► *Freight Agreements* ▶, ► *Forwarding Agreement Management* ► *Forwarding Agreements* ▶, or ► *Forwarding Agreement Management* ► *Internal Agreements* ▶
- ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Calculation Sheets* ▶

To define a reference rate table, in SAP NetWeaver Business Client choose ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Rate Tables* ► *Create Rate Table Definition* ▶. A reference rate table can be used in multiple agreements and calculation sheets.

To maintain a reference rate table, in SAP NetWeaver Business Client choose ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Rate Tables* ► *Maintain Rate Table* ▶.

To generate incremental scale items, select the relevant row on the *Dates and Values* tab page. If there is a numeric scale in the rate table that does not already contain any scale items, you can choose the *Generate Scale Items* button. Select the scale and the system generates the incremental scale items for that scale. You must enter the values you want the scale items to start and end at, and the step value you want each scale item to increment by.



Creation and Maintenance of Rate Tables Using Microsoft Excel

You can use Microsoft Excel to speed up the process of creating and maintaining large rate tables.

Features

Rate and Scale Maintenance

You can maintain a large rate table, with or without scale items, using Microsoft Excel. You can enter the rates and scales into a Microsoft Excel file and upload the file to your SAP TM system. Alternatively, you can define an empty reference rate table with validity periods in SAP TM and download it to Microsoft Excel. You can then maintain the rate table in the Microsoft Excel file and upload it to your SAP TM system.

You can choose to download a rate table to Microsoft Excel in one of the following ways:

- Rates for all validity periods in the rate table (scale ranges not included)
- Rates for one validity period and selected scale ranges
- Rates for multiple validity periods (scale ranges not included)

You can also choose to download the rate table in the background and be notified by e-mail when the download to the application server path is complete (see [Background Download of Rate Tables \[Page 210\]](#)).

You can view non-numeric scale items in the downloaded excel.

You can choose to upload all the rates and scale items of a rate table from Microsoft Excel to SAP TM.

Mass Creation of Rates Tables

You can create multiple rate tables in Microsoft Excel using rate table templates and upload them to SAP TM. You use the *Mass Creation of Rate Tables* (/SCMTMS/TCC_RATE_MASS_CREATE) program to download the Microsoft Excel template in which you enter the new rate table details and to upload the new rate table details to SAP TM. In the Microsoft Excel template, you can specify the following for each row in the Microsoft Excel:

- The way you want the name of the rate tables to be generated, that is, by the system, by using the rate table template name, or by using a rate table name that you provide

The system adds a number to the end of the name of each rate table to avoid any duplication. Note that if you specify that you want to provide a rate table name, you must enter the rate table name in the *Rate Table* column.

- The rate table template on which to base the rate tables

You must specify the rate table template for the system to be able to create the rate tables.

- The quantity of rate tables

The system creates 1 rate table if you do not enter a quantity.

The system provides you with a list of the created rate tables and also of those that were not created successfully.

Background Download of Rate Tables

When maintaining a large rate table using Microsoft Excel, you can download the rate table in the background. SAP Transportation Management (SAP TM) can notify you by e-mail when the download to the application server path is complete. For more information, see [Background Download of Rate Tables \[Page 210\]](#).



Rate Categories

You can specify the rate category of a rate table to facilitate the calculation of air freight charges. Once you specify the charge type for a rate table, you can specify the rate category. The rate category affects the scale items you should have in the rate table. The rate categories available are as follows:

Unit Load Device (ULD)

If you define a rate table as a ULD rate category, you must define a scale with a weight-based calculation base. Once you define a weight-based scale item, you can choose the *Maintain Scale Items* button to automatically create /A or /B scale items of rate class U (ULD rate) and /C scale items of rate class E (extension rate).

For weight-based scale items, you can choose a ULD charge code type of /A or /B. For ULD charge code types of /A and /B, the system automatically applies rate class U (ULD rate) for pivot weights. For ULD charge code types of /C, the system automatically applies rate class E (extension rate) for over-pivot weights.

If you choose ULD charge code type /A, the system applies charge codes /A and /C for pivot and over-pivot scale items respectively. If you choose charge code type /B, the system applies charge codes /B and /C for pivot and over-pivot scale items respectively. If you choose a rate table view type of *Column*, you use the *Maintain Scale Items* button to create scale items. If you choose the list view, the system uses the ULD charge code types you specify in ► *General Data* ► *Charge Type Settings* for all scale items.

When creating the scale items for weight-based scales in a ULD rate table, you can create multiple pivot weights for the ULD rate types. You can then use different pivot weights when required, for example, for different origin and destination location pairs, days of the week, or flight codes. The system displays the additional pivot weights in the over-pivot charge column of the rate table and in Microsoft Excel downloads.



Note

Scale items with ULD charge code /A are rates per kg based on the minimum pivot weight per the International Air Transport Association (IATA) ULD rating type. ULD charge code /A represents a relative rate against the scale item combination.

Scale items with ULD charge code /B are minimum flat charges per the IATA ULD rating type with a chargeable weight up to the first defined weight break. ULD charge code /B represents an absolute amount against the scale item combination.

End of the note.

Specific Commodity Rate (SCR)

If you define a rate table as an SCR rate category, you must define a scale with the *COMMODITY_CODE* calculation base and a commodity code type, and a scale with a weight-based calculation base. The rate class S is associated with the scale items of an SCR rate table.

General Cargo Rate (GCR) – M, N, & Q

If you define a rate table as a GCR – M, N, & Q rate category, you must define a scale with a weight-based calculation base and ensure it is mandatory to maintain a minimum value for the calculated rate. Once you define a weight-based scale item, you can choose the *Maintain Scale*

Items button to automatically create one scale item of rate class N (normal rate) and one or multiple scale items of rate class Q (quantity rate).

More Information

[Rate Definition and Maintenance \[Page 199\]](#)

[Charge Management Settings for Air Freight \[Page 170\]](#)



Background Download of Rate Tables

When maintaining a large rate table using Microsoft Excel, you can download the rate table in the background. SAP Transportation Management (SAP TM) can notify you by e-mail when the download to the application server path is complete.

Process

1. You define a logical path for the logical file *Rate Table Background Download* (/SCMTMS/RATE_DOWNLOAD_BKGRND) using transaction FILE and then assign a physical file to the logical file.
2. You download the rate table to the application server path provided in the logical path using the *Rate Excel Integration* (/SCMTMS/TCC_RATES_EXCEL_NEW) program.
3. You enter the rate table that you want to download in the background and specify the download details.
4. You specify that you want to download the rate table in the background.
5. You specify whether you want SAP TM to notify you by e-mail when the download to the application server path is complete.

Alternatively, you can use transaction SM37 to view the status of the download.

6. Once the download to the application server path is complete, you download the rate table from the application server path to your local desktop.

You download the rate table to your local desktop using the program *Rate Table Download from Application Server* (/SCMTMS/TCC_DOWNLOAD_FROM_AS) in transaction SE38.

More Information

[Rate Definition and Maintenance \[Page 199\]](#)



Update Rates

You can use the /SCMTMS/RATE_MASS_UPDATE program to change the values in a single rate table or in multiple rate tables at the same time.

You can change the values for one period, multiple periods, or all periods in an existing validity period. You can also increase or decrease a rate by a percentage or an amount.

If the validity period you need to update is not already specified in the existing validity periods, you can create a new validity period in which the rate change applies. You can specify a new validity period within the date ranges already specified in the existing validity periods. You can also specify a new validity period that is outside the existing validity periods in the rate table. By default, the system uses the rate, calculation rule, and scale item settings in the latest validity period when it creates the new validity period. For new validity periods, you can also automatically set the status to *Released* during the rate table update.

Integration

The update of rates is a function in rate maintenance. For more information, see [Rate Definition and Maintenance \[Page 199\]](#).

Prerequisites

You have specified the settings required for rate maintenance. For more information, see [Rate Definition and Maintenance \[Page 199\]](#).

Features

Master Data Cockpit

You can update rate tables for forwarding, freight, and internal agreements from the master data cockpit. To work with the master data cockpit, in SAP NetWeaver Business Client, choose ► *Master Data* ► *Overview Charge Management and Service Product Catalogs* ► *Master Data Cockpit* □. Choose the relevant agreement type and enter your search criteria.

In the personal object worklist result, if you select a line item that contains both a rate table and a calculation sheet, the system opens the *Update Rates* function when you choose the *Update Rates/Calculation Sheet Amounts* button. The system automatically includes the rate table from the selected line item in the update criteria when you open the function.

If you select a line item that contains a rate table and a different line item that contains a calculation sheet only, the system opens both the *Update Rates* and *Update Calculation Sheet Amounts* functions on the same screen when you choose the *Update Rates/Calculation Sheet Amounts* button. The system automatically includes that rate table and calculation sheet from the selected line items in the update criteria when you open the function.

For more information, see [Update Calculation Sheet Amounts \[Page 191\]](#).

Scale Ranges

When you specify a new validity period or when you update a rate in an existing validity period, you can also specify a scale range, for example, source location. This enables the system to change only the rates in a particular scale range. However, you can only specify a scale range that is already specified in an existing validity period of an existing rate.

Scale Items

You can update rates based on the calculation type of the scale items (for example absolute or relative, or both absolute and relative). For example, you can update the rates for relative scale items with one rate change and the rates for absolute scale items with a different rate change. For relative value scale items, you can also update the price unit. For more information, see [Rate Definition and Maintenance \[Page 199\]](#).

Display Currency

You can display the currency of a rate table so that you are fully informed before you make any updates.

Example

You want to create a new validity period that contains new rates where two validity periods already exist. The following table describes the settings in the first existing validity period of January 1, 2010 to December 31, 2010:

Source Location	Destination Location	Value (USD)
NYC	PHI	100
NYC	CHI	120
NYC	SFO	340

The following table describes the settings in the second existing validity period January 1, 2011 to December 31, 2011:

Source Location	Destination Location	Value (USD)
NYC	PHI	110
NYC	CHI	130
NYC	SFO	350

You need to create a new validity period with new rates to cover the period December 1, 2010 to December 31, 2010. The following table describes your inputs to the *Update Rates* function:

Setting	Attribute
New validity period setting from	12-01-2010
New validity period setting to	12-31-2010
Source location	NYC
Destination location	PHI, CHI
Percentage	+10%

The system creates a new validity period for December 1, 2010 to December 31, 2010 with new rates. It keeps the old validity period for 2010, but changes the validity dates to January 1, 2010 to November 1, 2010. The following tables describes the new validity periods:

Validity 1: January 1, 2010 to November 1, 2010

Source Location	Destination Location	Value (USD)
NYC	PHI	100
NYC	CHI	120
NYC	SFO	340

Validity 2: December 1, 2010 to December 31, 2010

Source Location	Destination Location	Value (USD)
NYC	PHI	110
NYC	CHI	132
NYC	SFO	340

More Information

[Rate Definition and Maintenance \[Page 199\]](#)

[Master Data Cockpit \[Page 221\]](#)



TACT Rates

You can calculate air freight transportation charges based on TACT rates, as well as using the contract rates available in standard rate tables in SAP Transportation Management (SAP TM). The International Air Transport Association (IATA) publishes TACT rates three times a year, and most of the world's major carriers use TACT rates for air freight. IATA represents more than 100 airlines comprising more than 70% of scheduled international air traffic. TACT rates are published between city pairs and can be specific to carrier and to unit load device (ULD) rate type.

The system automatically determines the relevant TACT rate based on the following mandatory parameters:

- City of departure and destination
- Chargeable weight

You can specify more parameters before the system determines the relevant TACT rate.

Prerequisites

- You have uploaded TACT rates to SAP TM (see [TACT Rate Upload \[Page 216\]](#)).
- You have defined unit load device (ULD) rate types in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Air Freight Settings* ► *Define ULD Rate Types* ▶.
- You have mapped ULD types to ULD rate types in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Air Freight Settings* ► *Map ULD Types to ULD Rate Types* ▶.
- You have defined IATA airport codes and mapped them to IATA city codes in Customizing for *Transportation Management* under ► *Basic Functions* ► *Type Codes and Role Codes* ► *General Type Codes and Role Codes* ► *IATA Codes* ► *Define IATA Location Codes* ▶.

Features

- *TACT Rates* personal object worklist

You can view and search for specific TACT rates in the *TACT Rates* personal object worklist.

- Contract rates

Generally, contract rates are lower than TACT rates for a specific city pair and weight range. As a logistics service provider, you can agree a contract rate with a carrier but charge a TACT rate to the customer. To enable this, you can specify a TACT rate for printing the settlement document and a contract rate for pricing. You specify which rate type to use for printing and which for settlement.

Note

If you charge a TACT rate to the customer, the default calculation method is air freight: standard rating. However, you can choose to use a different calculation method.

If you have a TACT rate in the air waybill (AWB) but charge a contract rate to the customer, you should not use a break-weight calculation method. However, if you use a break-weight calculation method, the system takes the chargeable weight in the AWB into account for the settlement document. Note that the system then may use a higher weight break than the one determined by the break-weight calculation method. For more information, see [Calculation Methods \[Page 236\]](#).

End of the note.

- TACT rate types

The following TACT rate types are available:

- ULD rate
- Specific commodity rate
- General cargo rate

More Information

[Rate Table \[Page 196\]](#)

[Rate Definition and Maintenance \[Page 199\]](#)

[Setup of MD for Charge Management and SP Catalogs \[Page 168\]](#)

[Charge Calculation \[Page 223\]](#)



TACT Rate Upload

Uploading TACT rates to database tables in SAP Transportation Management (SAP TM) allows SAP TM to use TACT rates when calculating air freight transportation charges. You upload TACT rates each time the International Air Transport Association (IATA) publishes them.

Process

1. You define a logical path for the `/SCMTMS/TACT_UPLOAD` logical file using transaction `FILE` and then assign a physical file to the logical file.
2. You upload the TACT rate file to the application server using the *TACT Rate Upload* (`/SCMTMS/TACT_RATE_UPLOAD`) report.
3. You trigger the system to process the TACT rates in database tables using the *TACT Rate Processing* (`/SCMTMS/TACT_RATE_PROCESS`) report.
You can specify selection parameters to restrict the TACT rates you want the system to process. The system processes the TACT rates in the background. You can view the status using transaction `SM37`.
4. The system automatically maps IATA codes to SAP codes using the *Mapping of IATA Codes to SAP Codes* (`/SCMTMS/TACT_MAP_IATA_TO_SAP`) report.
You can also run this report at a later point in time if, for example, more country codes are added.

More Information

[TACT Rates \[Page 214\]](#)

Scale

A scale is a dimension of a rate. A scale is used to define a parameter that then defines a rate. For example, if a rate depends upon distance and weight, you must define a separate scale for distance and for weight. The distance and weight scales are then used to define the rate.

You can create a scale manually or automatically by using a scale template with predefined scale bases and calculation type. For more information about master data templates, see [Scale Maintenance \[Page 219\]](#). For more information about Customizing templates, see Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Templates* ► *Define Scale Templates* ▶.

Structure

A scale can contain the following main tab pages and screen areas:

- *General Data*

The *General Data* tab page contains general information about the scale, for example, the scale unit measure and the scale base, which defines how the system interprets the scale values during calculation. Note that you can assign a default calculation type to the calculation base in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Data Source Binding* ► *Define Calculation Bases* ▶.

- *Items*

The *Items* tab page contains the details of the scale items such as the calculation type, which indicates how the system calculates charges with the scale item.

 Note

If you use a reference scale in a rate table and use the *Maintain Scale Items* button on the *Scales Items* tab page of the *Dates and Values* tab page, the system automatically enters the default calculation type for the calculation base of the scale item. If you enter a calculation type for a scale item, the system overwrites the default calculation type with the one you entered. You can also manually change the calculation type for a scale item.

End of the note.

- *Change Documents*

You can view all changes made to a scale on the *Change Documents* tab page or screen area. The changes are listed by date and time. You view the details of the changes at header level by selecting the relevant row in the *Transactions* screen area and at field level by selecting the relevant row in the *Record Level Changes* screen area. You must refresh the scale to view recently-saved changes.

Integration

A scale is integrated with agreements, calculation sheets, and rate tables. A scale is used by a rate table to define the rates. For more information, see [Agreement](#), [Calculation Sheet \[Page 182\]](#), and [Rate Table \[Page 196\]](#).

More Information

[Charge Calculation \[Page 223\]](#)

[Setup of MD for Charge Management and SP Catalogs \[Page 168\]](#)



Scale Maintenance

You create and maintain scales as a step in the process to set up master data for charge calculation. For example, you can configure the items of a scale according to one of the following:

- Quantities
- Volumes
- Weights
- Distances
- Points



Note

You can generate incremental scale items for a scale when you are defining a rate table. For more information, see [Rate Definition and Maintenance \[Page 199\]](#).

End of the note.

Integration

Scale maintenance is a step in the process to set up master data in the Charge Management and Service Product Catalogs component and is integrated with agreements, calculation sheets, and rate tables. For more information, see [Setup of MD for Charge Management and SP Catalogs \[Page 168\]](#).

You can use the master data cockpit to access an overview of the charge management master data per organizational unit, business partner, and charge type. The system also shows the relationship between the different types of charge management master data. For more information, see [Master Data Cockpit \[Page 221\]](#).

Prerequisites

- You have defined a valid scale base with a relevant unit of measure in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Data Source Binding* ► *Define Scale Bases* ▶.
- You have defined number ranges in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Number Range Intervals* ► *Assign No. Ranges to Calc. Sheets, Rate Tables, & Scales* ▶.

Features

- Templates

You can use a template to create a scale and scale items with predefined scale bases, calculation types, and rate categories. You can define master data templates in SAP NetWeaver Business Client. You can define Customizing templates in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Templates* ► *Define Scale Templates* ▶.

- Calculation types

You can specify a calculation type for a scale base, which affects how the system calculates charges with the scale. The available calculation types are absolute and relative. Note that you can specify a relative calculation type for numeric scale bases only.

You can also specify a default calculation type for a scale type based on the calculation base of the scale base. You can specify the default calculation type in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Data Source Binding* ► *Define Calculation Bases* ▶.

Activities

To define a master data template for a scale, in SAP NetWeaver Business Client choose ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Scale Templates* ▶.

To create or update a scale for an agreement, calculation sheet, or rate table, in SAP NetWeaver Business Client choose one of the following:

- ► *Freight Agreement Management* ► *Freight Agreements* ▶, ► *Forwarding Agreement Management* ► *Forwarding Agreements* ▶, or ► *Forwarding Agreement Management* ► *Internal Agreements* ▶
- ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Calculation Sheets* ▶
- ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Rate Tables* ▶ *Maintain Rate Table* ▶

To display a scale separately from the agreement, calculation sheet, or rate table it was created in, in SAP NetWeaver Business Client choose ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Scales* ► *Display Scale* ▶.

To create or update reference scales, in SAP NetWeaver Business Client choose ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Scales* ▶. A reference scale can be used in multiple agreements, calculation sheets, and rate tables.

More Information

[Scale \[Page 217\]](#)



Master Data Cockpit

The master data cockpit provides an overview of the agreements and charge management master data per organizational unit, business partner, and charge type. It also provides links directly to the main master data and shows the relationship between the different types of charge management master data.

The master data cockpit lists the master data by freight agreement, forwarding agreement, or internal agreement and by default, displays the agreements and rate tables that are valid on the current date. You can expand the list to see the rates, calculation sheets, and related information, such as currencies, scale bases, and scale items. You can use the master data cockpit to get specific information, for example:

- The rates for a transport between your sales organization and a specific customer or between your purchasing organization and a specific carrier
- All charges maintained for one item in an agreement that has many rate tables
- The agreements valid for a specific period

Note that the system always includes the agreements and rate tables that are valid on the current date, as well as those that are valid for the specific period.

Integration

The master data cockpit is integrated with agreements and with the charge management master data: calculation sheets, rate tables, and scales. For more information, see [Agreement](#), [Calculation Sheet \[Page 182\]](#), [Rate Table \[Page 196\]](#), and [Scale \[Page 217\]](#).

Features

Selection Criteria

You enter selection criteria, such as status, transportation mode, and source zone, to filter the agreements and master data objects you want to list in the master data cockpit. For freight agreements, you must enter the purchasing organization and carrier as selection criteria. For forwarding agreements, you must enter the sales organization and ordering party as selection criteria. For internal agreements, you must enter the organizational unit name and business partner as selection criteria.

Note

If an agreement item of an agreement or a calculation sheet item matches the selection criteria but the agreement header does not, the agreement still appears in the master data cockpit. It is sufficient for the selection criteria to match the agreement item or calculation sheet item. The agreement header does not need to match the selection criteria. However the business partner details specified in the agreement header must be a subset of the business partner details specified by the preconditions at the agreement item level.

End of the note.

You can also enter attributes in the selection criteria for the system to use when determining which calculation sheets to list in the master data cockpit. The attributes for calculation sheet and calculation sheet items are shipment type, stage type, and service level.

You can also enter preconditions in the selection criteria for the system to use when determining which agreements to list in the master data cockpit. The preconditions for agreement and agreement items can be, for example:

- Transportation mode
- Shipment type
- Traffic direction
- Stage type
- Service level
- Air waybill type

 Note

If an agreement item of an agreement or a calculation sheet item matches the preconditions or attributes but the agreement header does not, the agreement still appears in the master data cockpit. It is sufficient for the preconditions or attributes to match the agreement item or calculation sheet item. The agreement header does not need to match the preconditions or attributes.

End of the note.

The system also considers the trade lane preconditions specified for an agreement item. However, the system displays the calculation sheet item irrespective of the trade lane preconditions specified for a calculation sheet item.

Mass Update

You can change the charge item amount in one or more calculation sheets at the same time. For more information, see [Update Calculation Sheet Amounts \[Page 191\]](#).

You can change the rate values in a single rate table or in multiple rate tables at the same time. For more information, see [Update Rates \[Page 211\]](#).

Layout

You can add and remove columns to the master data cockpit, and save the changes as a personalized view. In the *Master Data Cockpit for Forwarding Agreements*, you can choose to use a layout with the *Agreement*, *Calculation Sheet*, and *Rate Table* columns always visible.

Activities

To access the master data cockpit, in SAP NetWeaver Business Client choose ► *Master Data* ► *Overview Charge Management and Service Product Catalogs* ▶ and one of the following, as appropriate:

- ► *Master Data Cockpit for Freight Agreements* ▶
- ► *Master Data Cockpit for Forwarding Agreements* ▶
- ► *Master Data Cockpit for Internal Agreements* ▶

Enter your selection criteria, including the mandatory criteria.



Charge Calculation

You can calculate the charges for transporting goods between locations based on the rates you maintain in a rate table. The system uses master data, such as, agreements, calculation sheets, and rate tables, when calculating transportation charges. For more information, see [Charge Management and Service Product Catalogs \[Page 166\]](#).

You can trigger charge calculation from the following SAP Transportation Management components:

- [Forwarding Order Management \[Page 293\]](#)
- [Freight Order Management \[Page 471\]](#)
- [Forwarding Settlement](#)
- [Freight Settlement](#)

Note that you can manually edit the transportation charges after charge calculation.

Types of Charge Calculation

The system uses a standard charge calculation process to calculate transportation charges for the following:

- Forwarding orders
- Freight orders
- Forwarding settlements
- Freight settlements
- Forwarding quotations
- Service orders
- Tendering
- Carrier selection

For more information, see [Standard Charge Calculation \[Page 227\]](#).

The charge calculation process can also vary depending on multiple factors, for example:

- Transportation mode category
 - The system uses a slightly different charge calculation process to calculate the charges for air freight. For more information, see [Air Freight Charge Calculation \[Page 269\]](#).
 - For rail transportation, you can calculate charges based on the number of railcar units. You can also calculate the transportation charges in rule 11 scenario in a rail freight order when the carrier that pays for the stage is the same or different from the carrier that executes the stage. For more information, see [Rail Freight Order \[Page 483\]](#).

- Services
 - You can charge your customers for the additional charges incurred due to varying fuel costs. For more information, see [Fuel Surcharge Calculation \[Page 283\]](#).
 - When you create a service order for a freight booking or a freight booking item, you can calculate the charges for the services. For more information, see [Service Order \[Page 575\]](#).

Features

- Calculating transportation charges enables you to analyze the profitability of a forwarding order. The system takes into account all the costs and revenues associated with the processing of a forwarding order and determines the associated profit.

For more information, see [Profitability Analysis \[Page 326\]](#).

- You can distribute costs in freight orders or freight settlement documents at an ERP-item level or forwarding-order level.

For more information, see [Cost Distribution Management](#).

- During carrier selection, calculating the transportation charges helps you to determine the lowest total costs.

For more information, see [Strategies](#).

- During tendering, calculating the transportation charges helps you to calculate the absolute price limit.

For more information, see [Tendering \[Page 657\]](#).

- You can consolidate freight units from multiple forwarding orders into a trailer freight unit and charge the customer based on specific criteria, for example, a standard rate or the weight of the trailer.

For more information, see [Use of Trailers](#).

- The system automatically triggers charge calculation when you create the following:

- [Forwarding settlement document](#)
- [Freight settlement document](#)
- [Internal settlement document](#)
- [Credit memo](#)

- You can calculate charges for multiple forwarding orders and freight orders.

You can calculate the charges for multiple forwarding orders using the *Mass Charge Calculation for Forwarding Orders* report. To access the report, in SAP NetWeaver Business Client choose *Forwarding Settlement* *Background Reports* *Calculate Charges for Fwd. Orders* .

You can calculate the charges for multiple freight orders using the *Mass Charge Calculation for Freight Orders* report. To access the report, in SAP NetWeaver Business

Client choose ► *Freight Settlement* ► *Background Reports* ► *Calculate Charges for Freight Orders* ▶.

- When you create a credit memo, the system recalculates the transportation charges for the relevant forwarding order.

For more information, see [Credit Memos](#).

- You can calculate transportation charges between organizations of the same company code and between organizations of different company codes. If the involved business units and gateway belong to different organizations of the same company code, you perform intracompany settlement. If the involved business units and gateway belong to the organizations of different company codes, you perform intercompany settlement. You can also calculate the internal charges in a freight order when a purchasing organization of the freight order subcontracts resources from another organization.

Note that the system calculates the internal charges in a freight order based on the resources. You use internal agreements to maintain the contract between the different organizations that belong to the same company code or different company code.

For more information, see [Internal Settlement Management](#).

- If you are using an agreement stored in an external system, you can establish a connection from SAP Transportation Management (SAP TM) to the external system. The system displays the external agreement and the freight agreement item number on the *Details* tab page of *Charges* tab page.

For more information, see [External Agreements \[Page 242\]](#).

- The system calculates the charges based on the settlement basis you specify in the forwarding agreement.

If you specify the settlement basis as trailer-based, the system sets the calculation level as stage level in the forwarding order. During settlement, the system creates a single forwarding settlement document for all the forwarding orders that meet the specified execution criterion and bills the business partners based on certain execution criteria, such as the number of trailers used to fulfill the order. The system also changes the invoicing status of the technical charge item in the *Charges* tab of the forwarding order accordingly. If you do not specify the settlement basis, the system sets the settlement basis as forwarding order-based. The system uses the calculation level specified in the calculation profile and settles each of the forwarding orders individually.

For more information, see [Forwarding Settlement](#).

- You can create invoices for partial amounts by manually entering the amounts in forwarding settlement documents.
- You can specify the calculation date type that the system uses as the basis for the rate, exchange rate, and agreement validity, and ultimately the charge calculation.

You specify the calculation date type in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Calculation Profiles* ▶.

- The charge lines created from the calculation sheet item with the **SERVICE** resolution base inherit the logistical data from the main item in the hierarchy.

When you assign a charge type to a service type, the system defaults the resolution base to SERVICE. You assign charge types to service types in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Assign Charge Types to Service Types* ▶.

For more information, see [Service Product Catalogs \[Page 174\]](#).

- You can selectively apply charges for certain charge types (for example, fuel), for active vehicle resources only (for example, truck) and not the passive vehicle resources (for example, trailer). You use the resolution bases ACTIVE_RESOURCE and PASSIVE_RESOURCE to differentiate between active vehicle resources and passive vehicle resources.
- You can access the details and messages generated during charge calculation on the *Charges* or *Internal Charges* tab page of the relevant business documents, such as a forwarding quotation, forwarding order, and freight order.

For more information, see [Charges Overview \[Page 233\]](#).

- When you create a follow-on settlement document from a freight order or forwarding order, you can manually change the charge amount for a charge line in the forwarding order or freight order. When you recalculate charges in the settlement document, the system can update the charge amounts in the settlement document based on the manually-changed charge amounts in the forwarding order or freight order.

You enable the system to update charge amounts in the settlement document based on manually-changed charge amounts in the forwarding order or freight order by selecting the *Update Settl. Chrgs from Order* checkbox in Customizing for *Transportation Management* under ► *Settlement* ► *Define Settlement Profiles* ▶.

- If you have freight order or a freight booking with items that have different source and destination locations, the system can determine a rate based on the locations in the item. Note that rate determination using locations in the item works only when calculating charges at item level and header level.

More Information

[Setup of MD for Charge Management and SP Catalogs \[Page 168\]](#)



Standard Charge Calculation

This process describes how the system calculates transportation charges when you trigger charge calculation from one of the following SAP Transportation Management components:

- [Forwarding Order Management \[Page 293\]](#)
- [Freight Order Management \[Page 471\]](#)
- [Forwarding Settlement](#)
- [Freight Settlement](#)

Prerequisites

- In Customizing, you have carried out the activities for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ▶.
- You have set up the master data for the Charge Management and Service Product Catalogs component.

For more information, see [Setup of Service Product Catalogs and Charge Management MD \[Page 168\]](#).

Process

1. You trigger charge calculation.

You can also calculate transportation charges between organizations of the same company code and between organizations of different company codes. For more information, see [Internal Settlement Management](#).

The system can calculate charges at header, item, or stage level, depending on your Customizing settings in the [calculation profile](#).

2. The system determines the agreement within organizational hierarchies (such as company organization or corporate organization) and calculation sheets.

You can specify a leading charge type that must have a value for the system to consider the calculation sheet for charge calculation. You specify leading charge types in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Charge Types* ▶. For more information, see [Calculation Sheet Maintenance \[Page 186\]](#).

You can also enter a zero rate for a mandatory charge line by selecting the *Zero Rate* checkbox in the rate table. The system still considers the calculation sheet for charge calculation.

For more information, see [Agreement and Calculation Sheet Determination \[Page 244\]](#).

3. The system determines rate tables and scales.

The system determines the most appropriate rate when calculating transportation charges, based on certain criteria and attributes. For more information, see [Rate Determination \[Page 249\]](#).

4. During calculation, the calculation sheet combines charge items while taking into account the sequence in which the system takes these charge items.
5. The system rounds the charges for each charge line before calculating the total charges or rounds the charges once it has calculated the total charge, depending on your settings.

You specify the level you want to round the charges at in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Rounding* ► *Assign Rounding Profiles to Document Currencies* ▶.

 Note

You can access the details and messages generated during charge calculation on the *Charges* or *Internal Charges* tab page of the relevant business documents, such as a forwarding quotation, forwarding order, and freight order. For more information, see [Charges Overview \[Page 233\]](#).

End of the note.

6. You can manually change the calculation bases, quantity, and unit of measure for a charge item and recalculate the charges.

When you manually change the quantity, the system determines the appropriate rate from the rate table for the changed quantity. If you have maintained only one calculation base in your rate table, the system displays it in the *Calculation Base* field on the *Charges* tab page by default. If you have maintained more than one calculation base in the rate table, you must choose one from the input help that displays all the calculation bases maintained in the rate table. Note that the system can recalculate the charges only if the charge item has a rate table and the calculation base is numeric.

More Information

[Charge Calculation \[Page 223\]](#)

[Air Freight Charge Calculation \[Page 269\]](#)

[Fuel Surcharge Calculation \[Page 283\]](#)

[Calculation Profiles \[Page 240\]](#)

[Calculation Logic \[Page 229\]](#)



Calculation Logic

This function enables the system to use the following objects when calculating transportation charges:

- Resolution base
- Calculation base
- Collective rate

Integration

This function is used in the charge calculation process, which is used in the following SAP Transportation Management (SAP TM) components:

- [Forwarding Order Management \[Page 293\]](#)
- [Freight Order Management \[Page 471\]](#)
- [Forwarding Settlement](#)
- [Freight Settlement](#)

For more information, see [Charge Calculation \[Page 223\]](#).

Features

Resolution Base

With the resolution base, you assign the charge type to a certain data source level. The charge type, for example, FB00, which is a single building block of the calculation sheet, is calculated with regard to the resolution base. During charge calculation, the system resolves the calculation sheet according to the given input data. At runtime, the calculation logic works as follows:

1. As a result of the initial resolution step, the system creates a calculation table based on the logistical data source. The system has not yet performed any calculations or determined any rates.
2. The system processes the calculation table and determines a value for each row given in the calculation sheet. If the system cannot determine any value for a certain charge type, the system issues a warning or error and does not apply a charge for that row in the calculation sheet. However the process is not interrupted.



Note

The resolution base is defaulted to SERVICE in the calculation sheet, when you maintain a charge type in the calculation sheet that is assigned to a service type in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Assign Charge Types to Service Types* ▶.

You can retain the default resolution base of SERVICE, if you maintain the service as a main item in the forwarding order and you want the system to apply the charges for the service only once in

the charge item. The system applies the service charges based on the availability of the service type in the forwarding order and the corresponding charge type in the calculation sheet.

You can change the default resolution base of SERVICE, if the charge type entered in the calculation sheet is for charging a service for a container or package or product. For the system to apply these charges, the item of corresponding service type should be specified as the main item. The system applies the service to the appropriate logistical items based on the resolution base of the corresponding charge type in the calculation sheet.

End of the note.



Example

In the forwarding order, you have three containers for which you have to apply the charges for fumigation service.

You have a charge type CT_FUMIG assigned to a service type SERV_FUMIG. In the calculation sheet, when you insert a charge line with the charge type CT_FUMIG, the system defaults the resolution base as SERVICE. You change the resolution base to CONTAINER in the calculation sheet. In the forwarding order, you insert an item with the service SERV_FUMIG as the main item. During charge calculation, the system creates three charge lines for three containers each and calculates the charges.

You can also charge a service to different logistical items. You must maintain a service type as a sub item under the corresponding container or package or product. You must maintain a charge type with the resolution base as SERVICE. During charge calculation, a service charge line is created for each logistical item which has service as a sub item.

End of the example.

Calculation Base

With the calculation base, you define the instruction to determine the data source. The calculation base represents the configurable link to the data source with which a rate is determined. The system uses the calculation base to automatically execute charge calculation.



Example

You have a two-dimensional rate table with the first dimension (scale) based on the destination harbor and the second dimension (scale) based on the weight of the cargo to be shipped. The rate that the system identifies after the two dimensions of the price matrix have been evaluated, for example USD 39.60, is multiplied by the volume to be shipped. In this example, the logistical data source has to provide at least three different pieces of information to calculate the correct charge. There is a calculation base for each of these three entities, describing the path to the certain data source.

End of the example.



Example

You are shipping a container from Europe to various destinations in the United States, such as New York and Los Angeles. You want to charge for the transportation based on the source location (Europe), the destination location (New York and Los Angeles), and the gross weight of the container. To enable this, you define a rate table with three scales (dimension) – source location, destination location, and gross weight. Each of these scales uses the corresponding calculation bases, which are SOURCELOC, DESTLOC, and GROSS_WEIGHT.

End of the example.

The calculation base and the resolution base are coupled in a way that the same calculation base leads to a different data source dependent on the currently processed resolution base.

 Example

You have the following master data maintained in a calculation sheet:

Calculation Base	Resolution Base	Calculation Rule
Gross Weight (maintained in rate table A for charge type FB00)	Container (for charge type FB00)	USD 10 per 100 kg
Gross Weight (maintained in rate table B for charge type BASE)	Package (for charge type BASE)	USD 25 per 100 kg

You have an FWO with 2 containers and 1 package with the following gross weights:

- Container 1 – 1000 kg
- Container 2 – 2000 kg
- Package 1 – 200 kg

In this situation, the system applies charge type FB00 for each container (resolution base = container) and calculates the transportation charges as follows:

- Container 1: $(1000/100)*10 = \text{USD } 100$
- Container 2: $(2000/100)*10 = \text{USD } 200$

The system also applies charge type BASE for each package (resolution base = package) and calculates the transportation charges as follows:

Package 1: $(200/100)*25 = \text{USD } 50$

End of the example.

Collective Rate

With a collective rate, you apply group discounts to charge types using a grouping rule. You base the grouping rule on a calculation base, such as resource type or destination location. The grouping calculation base is determined by a grouping rule either directly or dynamically using a condition. When you group charge types, the combined quantity of the charge items is used to calculate the rate.

 Example

You use a weight scale to charge for transporting containers, and you create a grouping rule to group containers by destination location. The system uses the combined weight of all containers going to the same location to calculate the collective rate, but each individual weight is applied to the grouping rule.

The standard rate for a container is USD 1 per kg. The collective rate is USD .7 per kg if the combined weight is over 600 kg. Each container going to one warehouse weighs 150 kg.

However the combined weight for five containers is 750 kg, so the system charges the collective rate of USD .7 per kg instead of USD 1 per kg.

End of the example.

Example

Resolution Base

You have an FWO with 3 stages and want to calculate the transportation charges for the entire FWO, not for each stage. Therefore you specify the header as the calculation level. You want the system to calculate charge type **BAF** once in this FWO. Therefore you specify the resolution base as **Root**. This ensures there is only one resulting row for the calculated calculation sheet in the *Charges* tab page of the FWO. For more information about the *Charges* tab page, see [Charges Overview \[Page 233\]](#).

You want the system to calculate charge type **THC** for each container in the FWO. Therefore you specify the resolution base as **Container**. If you ship three different containers, there are three resulting rows for the calculated calculation sheet – one for each container.

The final sum adds the transportation charges in the four rows:

- Row 1 for the **BAF** with amount *a*.
- Sum of rows 2, 3, and 4 of **THC** with the following amounts:
 - *b*: Charge for container 1
 - *b*: Charge for container 2 (amount is the same as for container 1, because it has the same attributes)
 - *c*: Charge for container 3 (different than amount *b* because container 3 is bigger)



Charges Overview

This function displays the results of the charge calculation on a *Charges* or an *Internal Charges* tab page for the following business documents:

- [Forwarding Quotation \[Page 338\]](#)
- [Forwarding Order \[Page 294\]](#)
- [Forwarding Settlement Document](#)
- [Credit Memos](#)
- [Freight Order \[Page 473\]](#)
- [Freight Booking \[Page 506\]](#)
- [Service Order \[Page 575\]](#)
- [Freight Settlement Document](#)

You can manually edit the charges on the *Charges* or the *Internal Charges* tab page.

Prerequisites

- In Customizing, you have carried out the activities for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ▶.
- You have set up the master data for the Charge Management and Service Product Catalogs component. For more information, see [Setup of MD for Charge Management and SP Catalogs \[Page 168\]](#).
- You have triggered charge calculation for the respective business document.

Features

This function displays the charge calculation results in a hierarchical table consisting of [charge items](#) and [charge lines](#). The charge items and charge lines correspond to the level at which the system determined the agreement and calculation sheets.

You can see the details of how the system calculated the charges on the *Charge Analysis Log* tab page. The system re-creates these details each time you trigger charge calculation for the business document. You can access all messages generated by the system during charge calculation on the *Charge Calculation Log* tab page.

Exchange rates are available at sum, charge item, and charge line level. You can get an overview of exchange rates on the *Exchange Rates* or *Calculated Amounts and Exchange Rates* tab page. For example, you can see the currencies, the type of currency conversion, and the exchange rate. If you enter different exchange rates, the system recalculates the currency conversions. If you change the exchange rates at the sum level, the system propagates the changes to all the charge items and charge lines under the sum level.

You can see the calculation date with a timestamp that specifies the date, time, and zone. You can use the timestamp for agreement validity, agreement item validity, calculation sheet line item

validity, and rate table validity. Note that only in newly created business documents, you can see the timestamps.

Grouped View

You can view charge lines with the *Container* resolution base, grouped into aggregated rows, if the charge lines have the following attributes in common:

- Charge type
- Equipment type
- Rate amount
- Rate currency

Similarly, you can view charge lines with the *Package* resolution base, grouped into aggregated rows, if the charge lines have the following attributes in common:

- Charge type
- Package type
- Rate amount
- Rate currency

The system totals the final amount, calculated amount, and group count for all of the grouped charge lines. You can expand the aggregated row to display the individual charge lines.

Note that if you change the rate amount or rate currency at the aggregated level, the system changes the rate amount for all the charge lines in the group. For example, if you change the rate amount and rate currency from USD 20 to EUR 25 at the aggregated level, the system passes the change down to all the charge lines in this group.

Note

If you change the exchange rate at the charge item level, the system automatically updates all relevant charge lines. If you change the exchange rate at the charge line level, the change only affects that charge line.

If you manually change an exchange rate for a charge item, the system no longer automatically updates the exchange rate at the charge item level. If you manually change an exchange rate for a charge line, the system no longer automatically updates the charge line with changes made at the charge item level.

End of the note.

You can specify that you want the system to group the charge lines by default in the Customizing activity for the respective business document. If you do not specify this in the Customizing activity for the respective business document, the system checks if there is a default view specified in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Charges Profiles*.

If you specify a default view in both the general settings and in the settings for a specific business document type, the business document settings take precedence. However, if you do not specify a default view, the system does not group the charge lines by default.

Charge Line Insertion

You can insert blank charge lines one at a time or insert one or more charge lines with the charge type already specified. When inserting charge lines with specific charge types, you can filter by the following attributes:

- Charge type
- Charge subcategory
- Charge category
- Positive/Negative
- Value type
- Description

Inserted charge lines inherit the calculation resolution base and group type of the charge line you inserted them from. If you insert charge lines from the charge item or the aggregated row of a group, the inserted charge lines inherit the `ROOT` calculation resolution base and the group type is blank. You can change the group type of inserted charge lines.

 Note

If you change the group type of an inserted charge line, the system does not group this charge line into the same aggregated row as the charge line you inserted it from. This is because the inserted charge line and the charge line you inserted it from no longer have the same equipment-type attribute.

End of the note.

More Information

[Charge Calculation \[Page 223\]](#)



Calculation Methods

This function enables the system to calculate transportation charges according to a specific logic, for example, by considering the break-weight or the deficit weight. You specify a calculation method for each [charge type](#) when defining a calculation sheet. The system applies the calculation method when calculating the charges for the charge type.

Integration

You specify a calculation method for each charge type when defining a [calculation sheet](#).

This function is used in the charge calculation process (see [Charge Calculation \[Page 223\]](#)).

Prerequisites

You have defined calculation methods in Customizing for *Transportation Management* under
► *Basic Functions* ► *Charge Calculation* ► *Enhancements to Charge Calculation Engine* ► *Define Calculation Methods* □.

Features

Calculation Method Types

You can choose the type of calculation method to use for each charge type. If you do not choose the type of calculation method, the system uses the standard calculation method.

The following calculation method types are available in SAP Transportation Management (SAP TM):

- Standard

The system calculates the transportation charges based on the specified rate, calculation rule, and actual weight. For example, the rate is USD 10 and the calculation rule specifies that the rate is for every 100 kg. The weight is 1800 kg, so the system calculates the transportation charges as USD 180 (1800 kg/100 kg * USD 10).

- Break-Weight

The system calculates the transportation charges by comparing and selecting the lower rate from either the actual rate range or the lower end of the next rate range. Break-weight is the weight from which it is cheaper to calculate the rate as opposed to the actual weight of the goods to be transported. One of the scales in the rate must be weight.



Example

You are shipping 490 kg and are using the following break-weights and rates:

Weight Scale	Rate
>= 100 kg	USD 10 per kg
>= 500 kg	USD 8 per kg

Weight Scale	Rate
>= 1000 kg	USD 6 per kg

Using the standard calculation method, the system calculates the transportation charges as USD 4900 ($490 \text{ kg} * \text{USD } 10$).

Using the break-weight calculation method, the system checks if it is cheaper to use the rate for the original rate range (USD 10 per kg for $\geq 100 \text{ kg}$) or the next rate range (USD 8 per kg for $\geq 500 \text{ kg}$). Since the next rate range is cheaper, the system considers the 490 kg as being $\geq 500 \text{ kg}$ and calculates the transportation charges as USD 4000 ($500 \text{ kg} * \text{USD } 8$).

End of the example.

- Clipping

The system calculates the transportation charges by working through all scales level-by-level, even if the value lies outside the scale. The system then totals up the calculation results from each scale level to produce the overall result. For clipping, one scale item must have a relative calculation type.



Example

The scale levels are defined with the following values:

- Up to 5 tons: USD 50 absolute
- Up to 7 tons: USD 14 per ton
- Up to 10 tons: USD 13 per ton
- Up to 15 tons: USD 12 per ton

Using the clipping calculation method for a load weighing 12 tons, the system calculates the transportation charges as follows:

- 5 tons at USD 50 = USD 50 (first scale level)
- 2 tons at USD 14 per ton = USD 28 (up to the second scale level)
- 3 tons at USD 13 per ton = USD 39 (up to the third scale level)
- 2 tons at USD 12 per ton = USD 24 (remainder in the fourth scale level)

This results in a charge of USD 141. If you do not use the clipping calculation method, the 12 tons fall into the "up to 15 tons" scale level and the transportation charge is USD 12 per ton, resulting in a charge of USD 144.

End of the example.

- Deficit weight rating

The system calculates the transportation charges for a weight greater than the actual weight of the goods to be transported, if it results in a lower transportation charge. The system calculates the difference between the actual weight and the next scale level and adds this difference to the goods to be transported as a deficit weight. The system then calculates the costs for the deficit weight using the cheaper rate. Deficit weight rating (DWR) is primarily used in U.S. land transportation.



Example

You are shipping two freight classes with different rates. For 500 kg of freight class A, the rates are as follows:

Weight Scale	Rate
< 1000 kg	USD 1.50 per kg
>= 1000 kg	USD 1 per kg

For 400 kg of freight class B, the rates are as follows:

Weight Scale	Rate
< 1000 kg	USD 2.50 per kg
>= 1000 kg	USD 2 per kg

Using the standard calculation method, the system calculates the transportation charges as USD 750 for freight class A ($500 \text{ kg} * \text{USD } 1.50$) and USD 1000 for freight class B ($400 \text{ kg} * \text{USD } 2.50$). The total charge is USD 1750.

Using the DWR calculation method, the system adds 100 kg to the actual weight to bring it to 1000 kg for both freight classes. The system then calculates the transportation charges as USD 500 for freight class A ($500 \text{ kg} * \text{USD } 1$) and USD 800 for freight class B ($400 \text{ kg} * \text{USD } 2$). The system calculates the deficit weight using the lowest rate, resulting in a charge of USD 100 ($100 \text{ kg} * \text{USD } 1$). The total charge is USD 1400.

End of the example.

- External system

The system connects to an external system to determine the rates.

- Internal charge calculation

The system can calculate transportation charges between organizations of the same company code and between organizations of different company codes. You can use internal agreements for internal charge calculation between two different business units and between business units and gateways. Using internal agreements between business units and gateways, you can maintain the contract between the different organizations that belong to the same company code or different company. You can calculate the external freight charges for each stage or combination of stages in freight orders or freight bookings. During internal charge calculation of a forwarding order, the external freight charges for each stage or combination of stages that belong to the same freight order and freight booking appear in the corresponding forwarding orders. The system cannot consolidate charges for two or more stages of the same forwarding order if these stages belong to different freight orders or freight bookings. Note that you can create an internal settlement document only between a business unit and a gateway.

If the involved business units and gateway belong to different organizations of the same company code, you perform intracompany settlement. If the involved business units and gateway belong to the organizations of different company codes, you perform intercompany settlement.

For more information, see [Internal Settlement Management](#).

- Air freight: standard rating

Depending on the rate type, the system calculates the air freight transportation charges based on TACT rates or contract rates. The system uses a combination of the clipping and break-weight calculation methods to calculate the charges using unit load device (ULD) rates. The system uses the standard rate determination process for general cargo rates (GCRs) and specific commodity rates (SCRs).

- Air freight: break-weight rating

Depending on the rate type, the system calculates the air freight transportation charges based on TACT rates or contract rates. The system uses a combination of the clipping and break-weight calculation methods to calculate the charges using ULD rates. The system uses the break-weight determination process for GCRs and SCRs. The break-weight calculation method for air freight compares the higher weight break charges with the sum of lower weight break charges and the over-pivot charges and chooses the minimum rate. The system compares the weight breaks for ULD rates, GCRs, and SCRs using a greater-than scale.

- Fuel surcharge calculation

You can calculate the fuel surcharge using the calculation method FUEL_SURCHARGE. For more information, see [Fuel Surcharge Calculation \[Page 283\]](#).

- Cost pull

You can transfer distributed external costs from the freight side to the forwarding side, and use the costs as a basis for settling with a customer or an internal organization. To transfer the result of a cost distribution from the freight side to the forwarding side, you use an instruction type of *Cost* at the item level. The system automatically includes an internal charge calculation method type, and the cost pull calculation method COST_PULL. For more information, see [Cost Pull \[Page 264\]](#).

Calculation Method Modeling

You can model your own calculation method types instead of choosing a calculation method type supplied by SAP TM. Each calculation method type is realized as an implementation of the interface *Calculation Methods Interface* (/SCMTMS/IF_TC_CALC_METHODS). You can override the implementations of the calculation method types with customer-specific implementations.



Calculation Profiles

This function provides a very central location to define the settings that you want the system to use when calculating transportation charges.

Integration

This function is used in the charge calculation process. For more information, see [Charge Calculation \[Page 223\]](#).

Features

The following are examples of settings you can define in a calculation profile:

- Specify the date type that the system uses as the basis for the rate, exchange rate, and agreement validity, and ultimately the charge calculation.

For example, the order date, the invoice date, or the expected end date of the [main carriage](#).

- Specify the level at which the system calculates the charges, for example, at header level, item level, or stage level.

The system can calculate charges for an agreement item at header level even when calculating the rest of the charges at stage level. To enable header-level charges when calculating charges at stage level, the calculation level must be stage level.

- Specify the determination rule that the system uses to determine the agreement and the calculation sheet.
- Specify a single rate, known as a through rate, for multiple stages of a transportation route.
- Specify the default dimensional weight profile for the organizational unit and the condition that the system uses to determine the dimensional weight profile.
- Specify the exchange rate type the system uses for currency conversion during the charge calculation process.
- Specify the source of the data that the system uses for charge calculation and invoicing, for example, actual route, ordered route, or actual and ordered route.

If you use the actual route, the system uses actual route information. If you use the ordered route, the system uses ordered route information from forwarding orders.

Once you have defined the settings, you can assign the calculation profile to an organizational unit or a business partner role.

Note

If you assign a calculation profile to an organizational unit and to a business partner role, the system applies the calculation profile for the business partner role.

End of the note.

Activities

You can define calculation profiles in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Calculation Profiles* ▶.

You can assign a calculation profile to an organizational unit in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Charges Profiles* ▶. You can specify both a sales calculation profile and a purchasing calculation profile if the organizational unit is a [forwarding house](#). You can also assign a calculation profile to a business partner with one of the following roles:

- Sold-to party
- Ship-to party
- Carrier
- Vendor

To assign a calculation profile to business partner roles, in SAP NetWeaver Business Client choose ► *Master Data* ► *General* ► *Define Business Partner* ▶. You can assign a calculation profile on the *Customer Org. Data* tab page of the business partner role. Here you can define individual profiles for each organizational unit of the business partner.



External Agreements

This function allows SAP Transportation Management (SAP TM) to use [agreements](#) stored in an external system when calculating transportation charges. When processing the [calculation sheet](#) and checking the relevant [rates](#), the SAP TM system connects to the external system to determine the rates. SAP TM can obtain accurate rates or estimated rates from the external system, depending on whether you specify the reference number of the external system's agreement.

Integration

This function is used in the charge calculation process, which is used in the following SAP TM components:

- [Forwarding Order Management \[Page 293\]](#)
- [Freight Order Management \[Page 471\]](#)
- [Forwarding Settlement](#)
- [Freight Settlement](#)

For more information about the standard charge calculation process, see [Standard Charge Calculation \[Page 227\]](#).

Prerequisites

To use this function, you have established a connection from SAP TM to the external system by configuring the following settings:

- You have integrated Web services into your SAP TM system.
- You have defined the bindings or logical ports for the Web service by using transaction SOAMANAGER.
- You have defined your user access by using transaction SE38 and executing the report *Secure Store Logon for SMC3 (/SCMTMS/TCC_SEC_STORE_LOGON)*.
- You have created a product freight group in Customizing for SCM Basis under ► *Master Data* ► *Transportation Lane* ► *Transportation Service Provider Profile* ► *Define Product Freight Groups* ▶.
- You have created a freight code set with freight codes and assigned the freight codes to the product freight group in Customizing for SCM Basis under ► *Master Data* ► *Transportation Lane* ► *Transportation Service Provider Profile* ► *Define Freight Code Sets, Freight Codes, and Determination* ▶.
- You have defined the connection parameters and charge types and mapped the external system's parameters to the calculation bases in SAP TM by using transaction SM34 and accessing the /SCMTMS/VC_SMC3 view cluster.

Activities

To use an agreement stored in an external system, enter *External System* in the *Calculation Method Type* field of the agreement's calculation sheet.

To obtain accurate rates from the external system, in the agreement specify the reference number of the external system's agreement.

To obtain estimated rates from the external system, do not specify the reference number of the external system's agreement.

More Information

[Agreement](#)

[Calculation Sheet \[Page 182\]](#)



Agreement and Calculation Sheet Determination

SAP Transportation Management (SAP TM) enables you to create agreements between business partners and sales groups or sales organizations. Agreements are integrated with calculation sheets and rate tables to enable the system to calculate charges. During charge calculation, the system determines the most appropriate agreement, and thereby calculation sheet, in order to determine a rate.

The system determines the agreement within organizational hierarchies (such as company organization or corporate organization) based on the following:

- Business partner
- Organizational unit (sales organization for forwarding agreements and purchasing organization for freight agreements)
- Business partner hierarchy
- Organizational unit hierarchy

If the system does not find an agreement between the business partner and sales group, it determines an agreement between the business partner and sales organization.

If the system finds multiple agreements between a business partner and a sales organization, the system does one among the following based on the agreement determination type:

- The system finds the final amounts for all the agreement items and chooses the agreement item with the minimum final amount for charge calculation.
- The system finds the final amounts for all the agreement items and chooses the agreement item with the maximum final amount for charge calculation.
- The system displays all the agreements from which you can select an agreement for charge calculation.

Note that when you select the *Eval. All Agreements* checkbox in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Charges Profiles* □, the system displays agreements or agreement items based on the leading charge type. If the charge item has one or more agreement or agreement items with a leading charge type, the system displays only the agreements or agreement items with a leading charge type. If the charge item has agreement or agreement items without a leading charge type, the system displays all the relevant agreements and agreement items.

You specify an agreement determination type in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Calculation Profiles* □. If you do not specify an agreement determination type, the system does not consider the agreement determination type for charge calculation and follows the standard agreement determination process.

Once the system determines an agreement, it determines a calculation sheet based on various attributes specified in the forwarding order or freight order such as, shipping type and stage category. If you have not specified any attribute in the forwarding order, the system arbitrarily determines a calculation sheet for charge calculation.

Integration

The system determines agreements and calculation sheets during charge calculation. For more information, see [Charge Calculation \[Page 223\]](#).

Prerequisites

You have set up the master data for the Charge Management and Service Product Catalogs component. For more information, see [Setup of MD for Charge Management and SP Catalogs \[Page 168\]](#).

Features

The agreement and calculation sheet determination process can slightly differ from the usual way when you specify additional attributes in the agreement, forwarding order, freight order, or calculation profile. The system then determines the most appropriate agreement and calculation sheet based on the following:

- Leading charge type

The system takes the leading charge type into account by skipping agreements that use calculation sheets without a leading charge type. The system then skips agreements if the leading charge type does not have a rate. If there are multiple leading charge types in a calculation sheet, all the leading charge types must have a rate defined for the system to consider the agreement and calculation sheet for charge calculation. We recommend that you maintain a single leading charge type in a calculation sheet.

To allow the system to take leading charge type into account, select the *Evaluate All Agreements* checkbox in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Charges Profiles* ▶.

- Incoterms

In forwarding orders with Incoterms, the system determines the charges from the calculation sheet item based on the Incoterm and the payer role. For the system to be able to determine a calculation sheet item for charge calculation, the Incoterm and the payer role specified in the forwarding order must match the Incoterm and payer role specified in the calculation sheet item. The system then adds a charge line to the forwarding order. For more information, see [Incoterms in Forwarding Orders \[Page 313\]](#).

- Manually-specified agreement

You can specify a freight agreement or freight agreement item for a freight order stage. The system calculates the charges based on the specified freight agreement or freight agreement item and does not determine any other agreement.

- Default route

You can specify a default route in a forwarding order and a list of default routes at the agreement-item level. If the default route specified in a forwarding order or freight order matches one of the default routes specified in an agreement item, the system uses the calculation sheet associated with the agreement item during charge calculation.



You can also specify a blank default route in the agreement item. For a forwarding order with or without default route, the system may select this agreement item for charge calculation.

End of the note.

- Stage type

You can specify a stage type for a stage in a forwarding order or freight order and also in an agreement item. If the stage type specified in a forwarding order or freight order stage matches the stage type specified in an agreement item, the system uses the calculation sheet associated with the agreement item during charge calculation.

- Resource ownership type

You can specify a resource ownership type for a resource item in a forwarding order or freight order and also in an agreement. If the ownership type specified in a forwarding order or freight order matches the ownership type specified in an agreement item, the system uses the calculation sheet associated with the agreement item during charge calculation.

- Business partner hierarchy

You can specify a hierarchy tree name as a precondition in a forwarding agreement or freight agreement at the agreement-item level. The system calculates charges using a single calculation sheet for a business partner group hierarchy. For more information, see [Calculation Sheet Determination Based on BP Hierarchy \[Page 247\]](#).

 Note

If you are using an agreement stored in an external system, you can establish a connection from SAP TM to the external system. The system displays the external agreement and the freight agreement item number on the  tab page. For more information, see [External Agreements \[Page 242\]](#).

You use internal agreements to maintain the contract between the different organizations that belong to the same company code or different company code. For more information, see [Internal Settlement Management](#).

End of the note.

More Information

[Agreement Maintenance](#)

[Calculation Sheet Maintenance \[Page 186\]](#)

[Rate Definition and Maintenance \[Page 199\]](#)



Calculation Sheet Determination Based on BP Hierarchy

As a logistics service provider, you can maintain contracts with a group of business partners or customers that belong to a single hierarchy. In such cases, SAP Transportation Management enables you to maintain a single calculation sheet for a business partner group hierarchy. To enable charge calculation using a single calculation sheet for a business partner group hierarchy, you can specify a hierarchy tree name as a precondition in forwarding agreements or freight agreements at the agreement-item level.

Integration

Calculation sheet determination based on business partner hierarchy is part of the calculation sheet determination process during charge calculation. For more information, see [Agreement and Calculation Sheet Determination \[Page 244\]](#) and [Charge Calculation \[Page 223\]](#).

Prerequisites

You have set up the master data for the Charge Management and Service Product Catalogs component. For more information, see [Setup of MD for Charge Management and SP Catalogs \[Page 168\]](#).

Features

In the forwarding order or freight order, when you specify a business partner that belongs to the business partner hierarchy specified on the *Precondition* tab page of the agreement or agreement item, the system considers the agreement or agreement item for charge calculation. Note that the party role specified in the forwarding order or freight order must match the party role specified in the agreement-item precondition.

Activities

- You can create and assign multiple business partners to a business partner hierarchy in the *BP Group Hierarchy* transaction (transaction `BPH`). Note that when you create a business partner hierarchy, you must specify a hierarchy category.

You define hierarchy categories in Customizing for *Cross-Application Components* under
► *SAP Business Partner* ► *Business Partner Group Hierarchy* ► *Establish Hierarchy Category* □.

- You can specify the hierarchy category used for creating business partner hierarchies in the *Hierarchy Category* field in Customizing for *Transportation Management* under
► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Charges Profiles* □.
- On the *Precondition* tab page of the agreement item, you can specify a business partner hierarchy in the *Hierarchy Tree Name* field. Note that when you enter a value in the *Hierarchy Tree Name* field, you must enter a party role.

Example

You create business partner hierarchy `BP_HIER1` with the hierarchy category as `SC` in transaction `BPH` with the following business partners:

Business Partners	Description	Valid From	Valid To
BP1	AB Carrier Company	12-01-2013	12-01-2020
BP2	CD Organization	12-31-2013	12-31-2020
BP3	EF Customer	02-20-2014	02-20-2020

You specify the hierarchy category as `SC` in Customizing for *Transportation Management* under
 ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Charges Profiles* ▶.

You create agreement `AGR_BPH`. For one of the agreement items `AGR_ITEM1`, on the *Precondition* tab page, you specify the hierarchy tree name as `BP_HIER1` and the party role as `12` (carrier).

You have a freight order with the business partner as `BP2` and the party role as *Carrier*. Since the business partner `BP2` is part of the business partner hierarchy `BP_HIER1`, and the party roles specified in the agreement-item precondition and the freight order match, the system determines agreement item `AGR_ITEM1` for charge calculation.



Rate Determination

SAP Transportation Management determines the most appropriate rate when calculating transportation charges, based on certain criteria and attributes. The system determines a rate from the rate table automatically during charge calculation based on the attributes specified in the business document and the agreement.

With rate determination, you can also determine appropriate rates for various scenarios, for example:

- You need to charge customers additional charges for providing a value added service, such as overnight service, first priority service, and service provided on a holiday.
- You need to charge customers for a single transportation rate instead of multiple rates.

Rate Determination Techniques

- [Through Rates \[Page 251\]](#)

The system can determine a through rate from the source location of the first stage to the destination location of the last stage in a forwarding order or freight order. You can also determine a through rate for two or more stages.

- [Rate Determination with Partial Information \[Page 253\]](#)

The system can determine the correct rate even when relevant information is missing from the forwarding order, freight order, or rate table.

- [Rate Determination with Scales of Different Dimensions \[Page 255\]](#)

The system can determine the correct rate even when you maintain a rate table with scales that contain different dimensions.

- [Rate Determination Based on Holiday Calendar \[Page 256\]](#)

You can charge customers additional charges incurred for providing services on non-working days in a particular country or a region, such as weekend days and public holidays.

- [Rate Determination for Direct Shipment of Parcels \[Page 257\]](#)

During the direct shipment of parcels, you can charge customers additional charges incurred for providing an overnight service or a first priority service.

- [Rate Determination Based on Zone Hierarchy and Postal Codes \[Page 259\]](#)

Based on zone hierarchy, the system can determine the correct rate even when you do not maintain rates for a specific zone. Also, you can maintain a single rate in the rate table for multiple postal codes within a specific range by using the wildcard character (*) in place of numerals for the postal code.

- [Collective Rate Determination \[Page 261\]](#)

When you create a collective settlement document from multiple forwarding orders or freight orders, you can choose to sum up the values of the calculation bases with scales

of different dimensions (as specified in the grouping rule) in multiple forwarding orders and determine a rate for the collective value.



Through Rates

This function allows the system to use stage categories to calculate through rates in a forwarding order or freight order. You can have a through rate for each stage category (for example, pre-carriage, main carriage, or on-carriage), a combination of successive stage categories (for example, pre-carriage and main carriage), or an overall through rate. An overall through rate is a single rate that can be used from the source location of the first stage category to the destination location of the last stage category.

You can also enable through rates for internal transfer pricing (ITP) while calculating internal charges in a forwarding order. Depending on the agreement settings, you can calculate the internal charges for each stage or combination of stages of a forwarding order in a freight order or a freight booking.

Integration

This function is used in the charge calculation process. For more information, see [Charge Calculation \[Page 223\]](#).

Prerequisites

- You have enabled the calculation of through rates in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Calculation Profiles* ▶.

- You have entered a rate in the rate table for the location pair (source location and destination location).

Alternatively, if the leading charge type has a rate specified and you assign a rate directly to a calculation sheet line item without using a rate table, you must enter a trade lane precondition for the calculation sheet line item.

- To enable internal charge calculation between the business unit and the gateway, you have performed the following:

- You have maintained an internal agreement between the business unit and the gateway.
- You have maintained a calculation sheet line item with the calculation method type *Internal Charge Calculation*.

- To enable through rates for ITP, you have selected the *Through Rate* checkbox and you have maintained the calculation level as *Calculation at Stage Level* in the calculation profile for the gateway. You define calculation profiles in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Calculation Profiles* ▶.

Features

While calculating through rates, the system evaluates through rates for a single stage category or a combination of stage categories. The system also evaluates partial through rates when a through rate is available for the main carriage but not for the pre-carriage and on-carriage. The system does not consider through rates that split a stage category.

The use of stage categories simplifies and speeds up the calculation of through rates as the system checks for rates for every location pair (source location and destination location).

You can see in the application log how the system evaluated and determined the through rates. You can use transaction `SLG1` to access the log object `/SCMTMS/TMS` with sub-object `TCM`. For the external ID, search with a wildcard and the user name.

Example

You want to calculate the charge of a carriage on a route with the following stage categories:

- Pre-carriage stage category with two stages: pick-up and pre-carriage 1
- Main carriage stage category with two stages: main carriage 1 and main carriage 2
- On-carriage stage category with two stages: on-carriage 1 and delivery

While calculating the through rates, the system evaluates the through rates for a single stage category or a combination of stage categories, as follows:

- Pre-carriage, main carriage, and on-carriage together
- Pre-carriage and main carriage together
- Main carriage and on-carriage together
- Main carriage only
- Pre-carriage, main carriage, and on-carriage separately

The system does not consider through rates that split a stage category. For example, the system does not consider a through rate for pre-carriage and main carriage 1. The system does not split the main carriage stage category even if you maintain the rates in a split manner. But you can have a partial through rate where the through rate is maintained for the main carriage only but no through rate is available for the pre-carriage and on-carriage.

In the application log, you can see the through rates that the system used to calculate the charges and how the system determined those through rates.

More Information

[Rate Determination \[Page 249\]](#)

[Charge Calculation \[Page 227\]](#)



Rate Determination with Partial Information

The system can determine the correct rate even when relevant information is missing from the forwarding order (FWO), freight order (FO), or rate table. When one or two attributes are missing from the FWO or FO but the rates are present, the system determines multiple rates and you select the applicable rate. Note that the system can determine multiple rates only if the calculation base that is missing in the FWO or FO is not numeric. When a carrier is assigned to a stage in the FWO or FO, but there is no rate for the carrier in the rate table, the system determines a generic rate.

Integration

The system determines the rate during the charge calculation process. For more information, see [Charge Calculation \[Page 223\]](#).

Prerequisites

For the system to determine multiple rates, you have assigned a rate table with two or more attributes to the calculation sheet. Depending on the attributes, you have also specified the resolution base for the charge type.

Note that if you maintain the calculation base as general note or IATA note, the system determines multiple rates, since the IATA note or general note information is not available in the business document. Now, if the multiple rate determination results in a single rate, then the system performs an automatic rate lookup and calculates charges.

For the system to determine a generic rate, you have a rate table containing a scale item with no value. To allow a rate table to contain a scale item with no value, choose the carrier's calculation base on the *Scales* tab page of the rate table and select the *Item with No Value Allowed* checkbox. The system adds a scale item with no value to the scale.

Activities

The system determines multiple rates when you choose the *Multiple Rates* pushbutton and you can choose the applicable rate. Note that you can choose to show or hide scale value descriptions and rate table notes in the *Multiple Rates* dialog box.

Note

The system determines a generic rate instead of displaying multiple rates when the charge type under the instruction type *Line Item Selection* and the corresponding rate table has more than one scale base with a generic value.

End of the note.

For the system to determine a generic rate when calculating the charges, the system uses the scale item with no value if no scale items match the value of the calculation base in the FO or FWO or if the calculation base has no value.

Example

You assign the following rate table to the calculation sheet:

Source Location	Destination Location	Transshipment Location	Rate

Source Location	Destination Location	Transshipment Location	Rate
HAM	HOU	CY_NUE	USD 100 per 10 kg
HAM	HOU	CY_NUE	USD 200 per 10 kg

The trans-shipment location is missing in the FWO or FO. The system determines multiple rates from which you can select the applicable rate.

When entering the data for another rate table, you enter the following data:

Source Location	Destination Location	Carrier	Rate
HAM	HOU	A	USD 100 per 10 kg
HAM	HOU	*	USD 200 per 10 kg

The system determines a generic rate as follows:

- If the carrier is A in the FWO or FO, the system applies USD 100.
- If the carrier is anything other than A in the FWO or FO, the system picks up the scale item with no value and applies USD 200.

If no carrier is assigned to a stage in the FWO or FO, the system determines both rates and you select the applicable one.

More Information

[Rate Determination \[Page 249\]](#)

[Rate Definition and Maintenance \[Page 199\]](#)

[Scale Maintenance \[Page 219\]](#)



Rate Determination with Scales of Different Dimensions

When you maintain a rate table with scales of different dimensions, the system can determine the correct rate based on the information in the forwarding order (FWO) or freight order (FO). The system performs the following tasks to determine the correct rate:

1. Selects the rate table item in which different attributes of the same scale match the attributes in the FWO or FO.
2. Uses this rate table item to determine the correct rate that matches the other attributes in the FWO or FO.

Integration

The system determines the rate during the charge calculation process. For more information, see [Charge Calculation \[Page 223\]](#).

Activities

To define or change a rate table for an agreement or calculation sheet, in SAP NetWeaver Business Client choose one of the following:

- ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Agreements* ▾
- ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Calculation Sheets* ▾

Example

You specify the following attributes in a rate table:

Source Location	Destination Location	<=200 kg	<=400 kg	<=600 kg
A	B	USD 50	USD 90	USD 130
A	C		USD 75	USD 100

In the FWO, you specify the source location as A and the destination location as C for a freight unit of 150 kg.

During charge calculation, the system determines the rate table item for source location A and destination location C. The system then determines the less than 400 kg rate of USD 75 as the correct rate from the rate table because you have not entered a rate for the less than 200 kg.

More Information

[Rate Determination \[Page 249\]](#)

[Rate Definition and Maintenance \[Page 199\]](#)



Rate Determination Based on Holiday Calendar

As a logistics service provider or carrier, you can charge your customers additional charges incurred for providing services on non-working days, such as weekends and public holidays, in a particular country or region.

Integration

The system determines the rate during the charge calculation process. For more information, see [Charge Calculation \[Page 223\]](#).

Features

In a rate table, you can maintain the calculation base as either `PICKUP_HOLIDAY` or `DELIVER_HOLIDAY`. If you specify the calculation base as `PICKUP_HOLIDAY`, the system uses the source location specified in the forwarding order or freight order for rate determination, and if you specify the calculation as `DELIVER_HOLIDAY`, the system uses the destination location specified in the forwarding order or freight order for rate determination.

Based on the calculation date type specified at the charge type level in the calculation sheet, the system chooses the calculation date as order date, system date, or invoice date. If you have not maintained any calculation date type for a calculation sheet item, the system uses the calculation date specified in the calculation profile to determine rates for charge calculation. Using the location and date information, the system determines from the factory calendar whether the date used for charge calculation is a non-working day or a working day in a specific region.

Activities

You define a location calendar for a specific country and a region using a factory calendar in the view *Define Location Calendar* (/SCMTMS/V_LOC_CA) using transaction SM30.

You maintain factory calendars in transaction SCAL.

More Information

[Rate Determination \[Page 249\]](#)

[Rate Definition and Maintenance \[Page 199\]](#)



Rate Determination for Direct Shipment of Parcels

As a logistic service provider or carrier, you may need to transport parcels to the customer as soon as possible and hence you forward them directly without consolidation. In such cases, you can charge the customer for the additional charge incurred for providing an overnight service or a first priority service.

SAP Transportation Management enables you to determine rates for direct shipments from either the Web services provided by an external parcel service provider or from a standard rate table.

Integration

This function is a part of the charge calculation process. From more information, see [Charge Calculation \[Page 223\]](#).

Prerequisites

- You have defined a calculation profile with the calculation level as *Calculation at Item Level* in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Calculation Profiles* ▶.
- You have assigned the calculation profile to a charges profile and maintained a local currency in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Charges Profiles* ▶.
- You have assigned the charges profile to an organizational unit in the transaction PPOME.
- You have defined a manifest or express freight order type in Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶.
- You have maintained the direct shipment option settings in Customizing for *Transportation Management* under ► *Planning* ► *Freight Units* ► *Define Freight Unit Types* ▶.
- You have maintained a master waybill stock between the purchase organization and the carrier in SAP NetWeaver Business Client by choosing ► *Master Data* ► *General* ► *Overview Waybill Stock* ▶.

Features

You can determine rates from a standard rate table. You can create an agreement with a carrier and assign each agreement item to one carrier product. You can specify the attributes, such as length, width, height, and girth, on the *Parcel* tab page of the agreement. When you perform direct shipment option determination, the system compares the attributes of the parcel specified in the freight unit with that specified in the agreement. For the system to consider an agreement for charge calculation, all the attribute values specified in the freight unit must be less than or equal to the attribute values specified in the agreement. If there are multiple agreements that meet this condition, the system displays a list from which you can choose one.

Activities

To create a parcel freight order, in SAP NetWeaver Business Client choose ► *Freight Order Management* ► *Road* ► *Create Road Freight Order* ▶. Note that a parcel freight order is created as

a road freight order that has a corresponding freight order type and the shipping type *Parcel*. For more information see [Parcel Shipment \[Page 495\]](#).

More Information

[Rate Determination \[Page 249\]](#)

[Rate Definition and Maintenance \[Page 199\]](#)

[Agreement Maintenance](#)



Rate Determination Based on Zone Hierarchy and Postal Codes

The system determines the correct rate in the following scenarios:

- If you do not maintain the rates for a specific zone, the system determines the appropriate rate based on zone hierarchy.
- If you do not maintain the rates for a specific postal code, the system determines the rate based on wildcard search.

Integration

The system determines the rate during the charge calculation process. For more information, see [Charge Calculation \[Page 223\]](#).

Features

Zone Hierarchy

The system calculates the charges based on the transportation zone hierarchy you maintain. For example, you have maintained the following zones in the following hierarchy:

1. Zone A
2. Zone B
3. Zone C
4. Zone D

During charge calculation, for a forwarding order with zone D, the system determines a rate for zone D from the rate table. If you have not maintained any rates for zone D, the system determines the next appropriate rate from the rates maintained for the superordinate zones in the hierarchy as follows:

1. Zone C
2. Zone B
3. Zone A

Postal Codes

You can maintain a single rate for multiple postal codes within a specific range by using the wildcard character (*) in place of numerals in the postal code and maintain rates in the rate table. For example, you maintain a rate table as follows:

Postal Code/ Weight	>100 kg	>200 kg
90210	10 USD	-
9021*	12 USD	-

Postal Code/ Weight	>100 kg	>200 kg
902*	15 USD	25 USD

You have a forwarding order with a postal code of 90210 and gross weight of 250 kg. During charge calculation, the system determines 25 USD as the rate from the rate table and calculates charges. The system looks for the most specific rate (for postal code 90210) and when not found, it determines the next appropriate rate with a wildcard-based search. Here, the rate determination is based on the following sequence:

1. 90210
2. 9021*
3. 902*

More Information

[Rate Determination \[Page 249\]](#)

[Rate Definition and Maintenance \[Page 199\]](#)



Collective Rate Determination

When you create a collective settlement document from multiple forwarding orders or freight orders, you can choose to sum up the values of the calculation bases with scales of different dimensions (as specified in the grouping rule) in multiple forwarding orders and determine a rate for the collective value. The system controls the grouping based on the resolution base.

Prerequisites

You create either a collective forwarding settlement document from multiple forwarding orders, or a collective freight settlement document from multiple freight orders as follows:

- To create a collective forwarding settlement document in SAP NetWeaver Business Client, choose *Forwarding Settlement* *Worklist* *Overview Forwarding Settlement Documents* .
- To create a collective freight settlement document in SAP NetWeaver Business Client, choose *Freight Settlement* *Worklist* *Overview Freight Settlement Documents* .

Features

The system groups the calculation base values if you specify *Yes* in the *Group Across Orders* field and specify the calculation base that the system must use for grouping in the *Group By* field. You must deselect the *By Calculation Level* checkbox for the system to determine a rate for the collective value.

Based on the resolution base you specify in the calculation sheet, the system determines the level (for example, item level, container level) at which rates must be determined.

The system determines a rate from the rate table for the collective value, which may be less than the rate for individual values.

If you select the *Fallback Required* checkbox, the system performs standard charge calculation when you do not maintain a rate for collective quantity.

Activities

You define grouping rules in view *Define Grouping Rules for Charge Calculation Resolution* (/SCMTMS/V_RUL113) using transaction SM30.

More Information

[Flexible Creation of Forwarding Settlements](#)

[Forwarding Settlement](#)

[Charge Calculation \[Page 223\]](#)



Charge Estimation

This function allows you to estimate freight charges, forwarding charges, and internal charges for a single route based on minimum input. You can estimate charges for the entire route (header-level calculation) or for individual stages of the route (stage-level calculation). Note that the more data you enter, the more accurate the charge estimation.

Using this function, the system allows you to provide an immediate response to a query. This is useful, for example, to allow a sales person to respond promptly to a query from a business partner about the charge for a transport over a particular route.

Note

The system does not save the data that you enter, or the charge estimation.

End of the note.

Integration

This function is available as part of the charge calculation process. For more information, see [Charge Calculation \[Page 223\]](#).

Prerequisites

- In Customizing, you have carried out the activities for *Transportation Management* under *Basic Functions* *Charge Calculation* .
- You have set up the master data for the Charge Management and Service Product Catalogs component (see [Setup of MD for Charge Management and SP Catalogs \[Page 168\]](#)).
- If you want to estimate freight and forwarding charges for air transportation, you must make the charge management settings that are relevant for air freight (see [Charge Management Settings for Air Freight \[Page 170\]](#)).

Features

You can estimate charges for existing or new business partners. You must enter the following information:

- Sales organization
- Source location
- Destination location

For existing business partners, you must also enter the ordering party.

Note

During the charge estimation of freight and forwarding charges for air transportation, the system determines the air waybill type, printing, and settlement based on TACT rates or contract rates as specified in the calculation profile settings. If the system does not determine the air waybill type, printing, and settlement, you can also manually enter these values.

During charge estimation of ocean freight charges, you can calculate the transportation charges either from port-to-port or door-to-door. You specify the consolidation settings to estimate charges for a freight booking in Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types* ▶.

During strategic freight procurement, the system can estimate the cost of using a carrier to provide transportation services in a trade lane. For more information, see [Strategic Freight Procurement](#) and [Post-Bid Analysis](#).

End of the note.

When estimating the charges for existing business partners, the system uses the specific agreement between the business partner and the sales organization. When estimating the charges for new business partners, the system uses a generic agreement that is not specific to any business partner.

Note that if you do not enter the pick-up date, the system uses the system date as the pick-up date.

Activities

To estimate freight charges, in SAP NetWeaver Business Client choose ► *Freight Order Management* ► *Estimate Freight Charges* ▶.

To estimate forwarding charges, in SAP NetWeaver Business Client choose ► *Forwarding Order Management* ► *Estimate Forwarding Charges* ▶.



Cost Pull

You have a business scenario wherein you would want use the execution cost as a basis for settling with your customers or internal organization. SAP Transportation Management enables you to transfer distributed costs from the freight side to the forwarding side, and use the costs as a basis for settling with a customer or an internal organization. You can charge the customer for the total or partial execution charges and the additional charges using the cost pull calculation method.



Note

Cost pull works only for external costs in the freight side. You cannot use cost pull calculation method to pull internal costs from the freight side to the forwarding side.

End of the note.

Integration

Cost pull calculation method is used in the cost distribution process and charge calculation process. For more information, see [Cost Distribution Management](#) and [Charge Calculation \[Page 223\]](#).

Prerequisites

- You have specified the cost distribution settings in Customizing for *Transportation Management* under ► *Basic Functions* ► *Cost Distribution* ▶.
- You have assigned the distribution profiles to the relevant organization in the Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Charges Profiles* ▶.
- For logistics service providers that want to use the freight cost in a freight order or freight booking for internal settlement, you must enable freight orders or freight bookings for cost distribution. For more information, see the following Customizing activities:
 - For freight orders, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶.
 - For freight bookings, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Bookings* ► *Define Freight Booking Types* ▶.
- To transfer the result of cost distribution from the freight side to the forwarding side, in the calculation sheet, you must specify *Customer and Service Provider* in the *Charge Usage* field. For internal charge calculation, you must specify *Internal* as the charge usage. You must specify the instruction type as *Cost* when defining a calculation sheet. For more information, see [Calculation Sheet \[Page 182\]](#).

You define calculation sheets in SAP NetWeaver Business Client by choosing ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Calculation Sheets* ► *Create Calculation Sheet* ▶.

Features

Cost Instruction Type

You use an instruction type of *Cost* at item level. When you use a cost instruction type, the system automatically includes an internal charge calculation method type, and the cost pull calculation method `COST_PULL`. You can insert a markup charge line for a percentage value with reference to the cost charge line. For a cost charge line, you can specify a cost pull strategy based on which the system transfers the results of cost distribution to the forwarding side.

Cost Pull Strategy

You specify the cost pull strategy in the calculation sheet. Based on the cost pull strategy you specify, the cost charge line appears in the forwarding order with or without standard charge lines. Based on the cost pull strategy, the system can either add the costs and aggregate it in a standard charge line or just copy the costs under the cost charge line or the standard charge line.

You can specify one of the following settings:

- *Aggregation*

The system adds the charges in all the distributed charge lines in the freight order and displays the totals in a standard charge line in the forwarding order. Note that a standard charge line is mandatory when you specify the cost pull strategy as *Aggregate*. For more information, see [Internal Settlement Management](#).

- *Active Copy*

The system copies the individual distributed charge lines in the freight order to the forwarding order under a cost charge line as active charge lines.

- *Inactive Copy*

The system copies the individual charge lines from the air waybill charge item to the forwarding order under a cost charge line as inactive charge lines. For more information, see [Air Waybill Direct Cost Pull \[Page 276\]](#).

On the *Cost Pull* tab page in the calculation sheet, you can specify the charge types the system transfers to the forwarding side.

Note that you cannot edit the *Amount* or *Currency* fields for the cost charge line and the standard charge lines under the cost charge line.

Source Charge

You can specify the source of the charges in the calculation sheet. Based on the source charge you specify, the system pulls the charge lines from either the distributed charge lines of the freight order or the air waybill charge item to the forwarding order.



Note

The system enables the *Source Charge* field in the calculation sheet only when you specify the cost pull strategy as *Active Copy*. If you do not enter a value in the source charge field, the system pulls the distributed costs in the freight order to the forwarding order. The system copies all the charge lines as active charge lines in the forwarding order.

End of the note.

More Information

[Cost Distribution for LSPs](#)

[Calculation Sheet Maintenance \[Page 186\]](#)



Rate Split

After calculating transportation charges, you can split the charge lines in the freight booking for air waybill printing purposes.

Integration

This function is used in the air freight charge calculation process. For more information, see [Air Freight Charge Calculation \[Page 269\]](#).

Features

The *Air Waybill View* displays only the weight-based charge lines under the air waybill charge item. You can split weight-based charge lines under the air waybill charge item.

When you insert a split line, the system copies certain parameters from the main charge line. For the inserted charge line, you can enter values for the following attributes:

- Rate category
- Chargeable weight
- Gross weight
- Number of pieces
- Commodity code
- Reference percentage of class rate



Note

You can only edit the chargeable weight and not the number of pieces and gross weight information in the main charge line. Also, you can only insert a maximum of eleven split charge lines.

End of the note.

The system subtracts the logistical data values of the inserted charge lines from the corresponding logistical values of the main charge line.

A summary line displays the total values of quantity, gross weight, and chargeable weight of all the charge lines under the air waybill charge item. A header line displays the initial values of quantity, gross weight, and chargeable weight from the logistical data and charges data.

In the *Air Waybill View*, you can choose to switch from ULD rate category to general cargo rate category or specific commodity rate category. When you do so, the system refers to the logistical data of loose cargo. Note that you cannot revert back to the ULD rate category after you switch to the general cargo rate category or specific commodity rate category. However, if you use the *Reset* button in the *Air Waybill View*, the system reverts back to the original copy and resets all the changes you have made in the *Air Waybill View*.

Activities

You can navigate to the *Air Waybill View* from the *View* button on the *Charges* tab page to split charge lines.

More Information

[Charge Calculation \[Page 223\]](#)



Air Freight Charge Calculation

You can use SAP Transportation Management (SAP TM) to calculate air freight charges based on the following:

- TACT rates published by the International Air Transport Association (IATA)

Air freight transportation charges are calculated based on TACT rules and regulations. For more information, see [TACT Rates \[Page 214\]](#).

- Contract rates available in standard rate tables in SAP TM

For more information, see [Rate Table \[Page 196\]](#).

Prerequisites

- You have defined a calculation profile with the calculation level at header level in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Calculation Profiles* ▶.
- You have defined a settlement profile with the calculation option as *Copy All Charges* in Customizing for *Transportation Management* under ► *Settlement* ► *Define Settlement Profiles* ▶.
- You have assigned the calculation profile and settlement profile defined above to an organizational unit in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Charges Profiles* ▶.
- You have defined the transportation mode category as *Air* for the charge types you want to use for air freight.

You define charge types in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Charge Types* ▶.

- You have made the master data settings for the Charge Management and Service Product Catalogs component (see [Charge Management Settings for Air Freight \[Page 170\]](#)).

Process

1. You trigger charge calculation for the air freight booking from the Freight Order Management component of SAP Transportation Management (SAP TM).

For more information, see [Management of Air Freight Bookings for Airlines \[Page 521\]](#).

The system determines the air waybill (AWB) printing and settlement based on TACT rates or contract rates, depending on the calculation profile settings. If the system does not determine the AWB printing and settlement, you can also manually enter the values on the *Charges* tab page of the air freight booking. The system creates two charge items, one for AWB printing and the other for the settlement with the carrier. The system prints the charge calculation details, based on the settings that you maintain on the *Charges* tab page of the air freight booking for printing freight charges and other charges.

Note

Based on the calculation sheet settings, the system displays the IATA charge code and the charge due for other charges.

The system displays the additional charges and commission only under the settlement charge item. Since these charges are not printed on the AWB, these charges do not appear in the AWB charge item.

End of the note.

You can enter a description for the nature of goods, which is printed in the AWB.

The system determines whether the payment is on the import side or export side based on the charge type classification and the freight term.

2. The system either activates or deactivates the charges based on the traffic direction, charge due, and payer, for example:
 - Due agent charges are activated on the export freight booking irrespective of the payer.
 - Due carrier prepaid charges are active on the export freight booking and inactive on the import freight booking.
 - Due carrier collect charges are deactivated on the export freight booking and activated on the import freight booking.
3. Depending on whether you are using TACT rates or contract rates, the process continues as follows:

Rate Type	Next Steps
TACT	<ol style="list-style-type: none">1. The system chooses the unit load device (ULD) rate table, specific commodity rate (SCR) table, or general cargo rate (GCR) table based on the rate category you specify on the <i>Charges</i> tab page of the freight order. The system determines the rate class based on the rate category and chargeable weight. Note that the system determines the TACT rates based on chargeable weights only. If you specify the rate category as a class rate, you can specify either a percentage reduction or a percentage surcharge to a reference rate class depending on the type of goods. If you use no rate lookup, rates are neither determined nor calculated for the charge line and you can maintain blank or zero value for the chargeable weight.2. If you do not specify a rate category, the system follows the access sequence to determine the charges. Depending on the logistical item type, the system determines the economical rate. For ULDs, the access sequence is as follows:<ol style="list-style-type: none">1. ULD2. SCR3. GCRFor packages and loose cargo, the access sequence is as follows:

Rate Type	Next Steps
	<p>4. SCR</p> <p>5. GCR</p> <p>Note that the system follows the access sequence only if you maintain the resolution base as <i>Main_Item</i>.</p> <p>If the system chooses a GCR, the system compares the calculated charge with the minimum charge. If the calculated charge is less than the minimum charge, the system chooses the minimum charge.</p> <p>Note that for the system to choose an SCR rate table, you must have maintained the commodity item code on the <i>Capacity and Cargo</i> tab page of the air freight booking.</p>
Contract	<p>3. You manually define the access sequence in the calculation sheet using the <i>Line Item Selection</i> instruction type. For more information, see Calculation Sheet [Page 182].</p> <p>4. You cannot specify the rate category since the system determines the rate category based on the charge calculation. As a result, rate class is also an output of charge calculation.</p> <p>5. If there are special handling requirements for the shipment, you can specify a handling code in the air freight booking. For example, handling code <i>DGR</i> specifies dangerous goods. You can calculate the charges for charge types based on specific handling codes. If there are multiple handling codes and corresponding rates in the same air freight booking, the system displays all the available rates. You can manually choose a handling code with which you want to charge the customer.</p>

 Note

You can manually insert a charge line. For a manually-inserted charge line, you can enter the rate category, rate class, rates, calculation rule, and chargeable weight. If you have specified the rate class as *B* rate or *M* rate, the calculated amount is the same as the rate you have specified. The system does not calculate the charges based on the chargeable weight.

End of the note.

4. You specify the calculation method as either *Air Freight: Standard Rating* or *Air Freight: Break-Weight Rating*.

Based on the calculation method you specify, the system uses the break-weight or standard rate determination process as appropriate. Note that for ULD rates, the standard rate determination process supports break-weight calculation methods. For more information, see [Calculation Methods \[Page 236\]](#).

 Note

If you selected to group the charge types, the system consolidates multiple packages and ULDs, based on the following criteria.

The system consolidates multiple packages if the packages have the following attributes in common:

- Commodity code (valid for SCR)
- Rate category (valid for TACT rates)
- Rate table (valid for contract rates)

The system consolidates multiple ULDs if the ULDs have the following attributes in common:

- Commodity code (valid for SCR and ULD rates)
- Rate category (valid for TACT rates)
- Rate table (valid for contract rates)
- ULD rate type

If the ULDs and packages have the rate category as GCR, the system consolidates multiple packages and ULDs. Note that the system uses the GCR rates for ULDs only when you do not maintain ULD rates. Also, for the system to consolidate packages and ULDs, they must have the following attributes in common:

- Rate category
- ULD rate type
- Commodity code (valid for SCR and ULD rates)

You can group charge types in Customizing for *Transportation Management* under *Basic Functions* *Charge Calculation* *Basic Settings* *Define Charge Types* . If you did not select this option, the system determines the rates for individual packages and ULDs.

End of the note.

The system determines multiple rates when one or more attributes are missing in the air freight booking. For example, if the note information is not maintained in the air freight booking and you are maintaining rates for carrier-specific notes, the system determines multiple carrier-specific rates from which you can select the appropriate rate. Note that you cannot determine multiple rates for a B rate, a K rate, or a ULD rate. For more information, see [Rate Determination with Partial Information \[Page 253\]](#).

During contract-based charge calculation, the system can determine the correct rate even when you maintain a rate for a specific weight break that belongs to a combination of same scale. Note that for a combination of same scale values, if you maintain rates for more than one weight break, the system does not calculate the correct charges.



Example

You specify the following attributes in a rate table:

Source Location	Destination Location	ULD Rate Type	<=200 kg	>201 kg	<=300 kg	>301 Kg	<=400 kg	>401 Kg
A	D	08	USD	USD 1				

Source Location	Destination Location	ULD Rate Type	<=200 kg	>201 kg	<=300 kg	>301 Kg	<=400 kg	>401 Kg
			250	per kg				
B	D	08			USD 650	USD 2 per kg		
C	D	08					USD 1250	USD 3 per kg

In the FWO, you specify the ULD rate type as 08, source location as B, and the destination location as D for a freight unit of 350 kg.

During charge calculation, the system determines the rate table item for ULD rate type 08, source location B, and destination location D and calculates the transportation charges as USD 700 (350 kg * USD 2). Note that the system displays the charges for the pivot weight and the over-pivot weight in two separate lines. You can view the air freight messages on the *Charge Analysis* tab page.

End of the example.

- If the main item in the cargo is a ULD, the system calculates the chargeable weight by comparing the net weight with the dimensional weight. If the main item in the cargo is not a ULD, the system calculates the chargeable weight by comparing the gross weight with the dimensional weight.

The system chooses the highest weight as the chargeable weight.

You maintain the gross weight and gross volume on the *Capacity and Cargo* tab page of the air freight booking. The system calculates the dimensional weight using the gross volume and the dimensional weight factor maintained in the dimensional weight profile. You maintain a dimensional weight profile either in the calculation sheet, agreement, or calculation profile. You can also modify the chargeable weight manually. If the chargeable quantity is less than the first weight break of 1 kg, the system applies the rate for 1 kg and calculates the charges. Note that if you modify the chargeable weight, the system recalculates the charges.

You define dimensional weight profiles in Customizing for *Transportation Management* under ► *Basic Functions* > *Charge Calculation* > *Data Source Binding* > *Define Dimensional Weight Profiles*.

- The system rounds the chargeable weight based on the rounding profile you maintained in the rate table.

The system rounds the dimensional weight in each charge line before calculating the total charges. Dimensional weight rounding is based on the rounding rule you specify in the dimensional weight profile.

Note

The air freight charge calculation works in a different manner in the following scenarios:

- Direct Shipments

For direct shipments that are not consolidated and have to be forwarded as soon as possible, you can charge the customer based on the AWB printing charges in the air freight booking.

Using the `air_cost` calculation method, the system can copy the AWB printing charges in the air freight booking as the settlement amount for the main carriage in the forwarding order. The system deactivates the sub-charge lines in the forwarding order and uses only the total charge for settlement. Note that you can determine the AWB printing charges irrespective of whether the printing calculation is TACT-based or contract-based. For more information, see [Air Waybill Direct Cost Pull \[Page 276\]](#).

- Air freight bookings with general sales agents (GSAs)

If the airline (issuing carrier) has a GSA operating at the source location, you can calculate the charges based on the agreement with the GSA. You can maintain a freight agreement with the general sales agent (GSA) specifying the GSA as the business partner in the freight agreement. In the *Items* screen area, you can specify the airline code that the GSA represents. In the freight booking, on the *Booking* tab page, you can specify the airline code that the GSA represents, and you can specify the local carrier as GSA in the *Issuing Carrier Airline Code/Local Carrier* field.

During charge calculation, the system determines a rate based on the agreement with the GSA. Note that if you have not maintained an agreement with GSA, the system determines the agreement with the airline.

- Charge calculation based on volumetric weight factor

Sometimes, lightweight packages and unit load devices (ULDs) occupy large volumes of space in an aircraft. Therefore, the space in the aircraft becomes fully occupied even before reaching its maximum weight capacity. In such cases, the system calculates the charges based on volumetric weight factor. The volumetric weight factor is calculated using the following formula:

$$\text{Volumetric weight factor} = \text{Volume}/\text{Weight}$$

You can maintain rates for the volumetric weight factor in cubic centimeter per kilogram (ccm/kg) in the rate table.

 Note

- Before calculating the volumetric weight factor, the system converts the unit of measure (UoM) for volume into ccm and the UoM for weight into kg if the volume and weight are specified in any other UoM.
- To enable the system to calculate the volumetric weight factor, you must specify the volume of the package or ULD in the order.
- For ULDs, the system uses the net weight to calculate the volumetric weight factor. For packages, the system uses the gross weight to calculate the volumetric weight factor.

End of the note.

End of the note.

More Information

[Standard Charge Calculation \[Page 227\]](#)

[Forwarding Order Management \[Page 293\]](#)



Air Waybill Direct Cost Pull

SAP Transportation Management enables you to use execution costs as a basis for settling with your customers or internal organization. In this scenario, you can transfer the charge lines from the air waybill charge item to the forwarding side. You can charge customers for total or partial execution charges and additional charges using the cost pull calculation method.

Integration

The system pulls the costs from the air waybill to the forwarding order during the air freight charge calculation process. For more information, see [Air Freight Charge Calculation \[Page 269\]](#).

For more information on standard cost pull feature, see [Cost Pull \[Page 264\]](#).

Prerequisites

You have made the master data settings for the Charge Management and Service Product Catalogs component (see [Charge Management Settings for Air Freight \[Page 170\]](#)).

Features

You can copy charge lines from the air waybill charge item to the forwarding order as either active or inactive charge lines. Copying charge lines as active enables you to edit charge lines in the forwarding order. You specify the cost pull strategy as *Active Copy* or *Inactive Copy* in the calculation sheet.

Note

When you specify the cost pull strategy as *Active Copy*, the system enables the *Source Charge* field. For the system to copy individual charge lines from the air waybill charge item to the forwarding order, you must use air waybill as the source charge. Also, when you use air waybill as the source charge, the system considers the following freight order attributes to calculate the final amount in the forwarding order:

- Calculation rule
- Calculation base
- Calculated amount

If you do not specify a value in the source charge field, the system copies the distributed charge lines in the freight order to the forwarding order.

End of the note.

Based on the freight term and the Incoterm you specify in the forwarding order, the system settles the charges to the shipper, consignee, import business unit, or export business unit as appropriate.

Based on the freight term, you determine whether the payment is on the import side or export side. Based on the Incoterm, you identify who pays for the individual stages of a transport.

Example

You have a forwarding order with the Incoterm EXW (Ex Works). According to EXW, the consignee pays for all the stages in the forwarding order. However, the pre carriage and the main carriage stages are executed by the export business unit on behalf of the import business unit. So, there is an internal settlement between the export business unit and the import business unit.

Based on the freight term you specify in the forwarding order, one of the following happens:

- Freight term PP

If you specify the freight term as *PP*, all the charges are prepaid in both the export freight booking and the import freight booking. Prepaid charges are active in the export freight booking and collect charges are active in the import freight booking.

Export Freight Booking

Charge Type	Amount	Freight Term	Status
FB00	100	Prepaid	Active
SCC1	20	Prepaid	Active
DOCF	30	Prepaid	Active

Import Freight Booking

Charge Type	Amount	Freight Term	Status
FB00	100	Prepaid	Inactive
SCC1	20	Prepaid	Inactive
DOCF	30	Prepaid	Inactive

During charge calculation, the following happens:

1. The charge types in the export freight booking are pulled into the export forwarding order and the export business unit internally charges the import business unit 150 USD for the prepaid charges.
 2. The charges in the import freight booking are pulled into the import forwarding order and the import business unit charges the consignee 150 USD.
- Freight term CC

If you specify the freight term as *CC*, all the charges are collect in both the export freight booking and the import freight booking. Collect charges are active in the import freight booking.

Export Freight Booking

Charge Type	Amount	Freight Term	Status
FB00	100	Collect	Inactive

Charge Type	Amount	Freight Term	Status
SCC1	20	Collect	Inactive
DOCF	30	Collect	Inactive

Import Freight Booking

Charge Type	Amount	Freight Term	Status
FB00	100	Collect	Active
SCC1	20	Collect	Active
DOCF	30	Collect	Active

The system does not calculate the charges in the export forwarding order since all the charges are collect in the export freight booking.

During charge calculation in the import forwarding order, the charges in the import freight booking are pulled into the import forwarding order and the import business unit charges the consignee 150 USD.

- Freight term PC

If you specify the freight term as *PC*, the weight charges are prepaid and the other charges are collect in both the export freight booking and the import freight booking. Prepaid charges are active in the export freight booking and collect charges are active in the import freight booking.

Export Freight Booking

Charge Type	Amount	Freight Term	Status
FB00	100	Prepaid	Active
SCC1	20	Collect	Inactive
DOCF	30	Collect	Inactive

Import Freight Booking

Charge Type	Amount	Freight Term	Status
FB00	100	Prepaid	Inactive
SCC1	20	Collect	Active
DOCF	30	Collect	Active

During charge calculation, the following happens:

- The charge types in the export freight booking are pulled into the export forwarding order and the export business unit internally charges the import business unit 100 USD for the prepaid charges.

2. The charges in the import freight booking are pulled into the import forwarding order and the import business unit charges the consignee 150 USD.



Event-Based Charge Calculation

SAP Transportation Management (SAP TM) enables you to coordinate between your transportation planning and the actual execution by exchanging information with SAP Event Management. You can track various events that occur during transportation execution, such as delays, arrivals, and departures, and thereby enabling you to charge the customer appropriately.

With the help of SAP Event Management, you can also charge the customer for additional services, such as fumigation and container cleaning by maintaining events for these services. The system also notifies the progress of the additional services.

Integration

SAP TM is integrated with SAP Event Management to coordinate between the transportation planning and the actual execution. For more information, see Help Portal at <http://help.sap.com/em>.

Features

Event Profile

You can control the event handler through the event profile. An event handler represents business processes or business objects (for example, purchase order, shipment, production order, or handling unit) that are to be tracked within the supply chain by SAP Event Management. An event handler contains expected, reported, or unexpected events and attributes to identify and track the related business processes. With the event profile, you can configure events for charge calculation. You can also define the following rules based on which the system performs the charge calculation in the forwarding order or freight order:

- Event code
- Event reason
- Event status
- Reference event code
- Reference event reason
- Reference event status
- Business documents in which the event needs to be charged

For example, forwarding orders, freight orders, internal forwarding orders, and internal freight orders in which the event needs to be charged.

You can also link service types to the events, which enables you to bill the customer based on services. If you assign a specific service type to an event code, the system charges the customer for the service when the assigned event code occurs in the forwarding order or freight order.

You can also maintain different event profiles for the customer and carrier by assigning different event profiles to the forwarding order type, freight order type, or freight booking type.



Note

You can also report events at the item level in a freight order. For example, during buyer's consolidation (consolidation of multiple forwarding order), you can report an event for one of the containers and the system calculates the charges for the event only on related forwarding order that has the container.

End of the note.

Related Calculation Bases

In a calculation sheet, if you enter a calculation rule based on a calculation base that has related calculation bases, you can directly enter values for the related calculation bases on the *Related Calculation Bases* tab page.

For example, to calculate charges in the event of demurrage, for the calculation base `delay_days`, you maintain a related calculation base `grace_days` in Customizing for Transportation Management under ► *Basic Functions* ► *Charge Calculation* ► *Data Source Binding* ► *Define Calculation Bases*. In the calculation sheet, you can specify the number of grace days allowed to the customer.

You can also specify your own calculation rule and charge type using the BRFplus (Business Rule Framework plus) condition. You can assign the BRF plus rules to the calculation base. The system processes the condition for all the data access definitions based on the condition you specify. For more information, see [BRFplus for Charge Management and SP Catalogs \[Page 180\]](#).

Activities

You define event profiles in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Charges Profiles*. You maintain the event type, event reason, and charge type on the *Event Assignment* tab page of the *Define Event Profiles* Customizing.

You assign event profiles to forwarding order type in Customizing for *Transportation Management* under ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Forwarding Order Types*.

You assign event profiles to freight order type in Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types*.

You assign event profiles to freight booking type in Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types*.

You define calculation bases and the related calculation bases in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Data Source Binding* ► *Define Calculation Bases*.

Example

To calculate demurrage charges, you perform the following:

1. You define the calculation base (for example, `delay_days`) and the related calculation base (for example, `grace_days`) in the Customizing activity *Define Calculation Bases*.
2. You maintain a calculation sheet with a calculation rule (for example, `delay_days`) and a charge type (for example, `delay`) in SAP NetWeaver Business Client. `Delay_days` is calculated by the following formula:

$$\text{Delay days} = \text{Actual data} - \text{Panned data} - \text{Grace days}$$

In the calculation sheet, you can define the number of grace days provided to the customer on the *Related Calculation Bases* tab page.

3. You define event profiles with a charge type (for example, delay/demurrage) in the Customizing activity *Define Event Profiles*.
4. The system calculates the demurrage charges based on the calculation rule and the rates you specify in the calculation sheet.



Fuel Surcharge Calculation

Due to uncertainties in fuel prices, it is significant to charge the customer appropriately based on the fuel surcharge index published by the government. As a logistics service provider or carrier, you need to recover, the additional charges incurred due to varying fuel costs. SAP Transportation Management simplifies the fuel surcharge calculation by providing an easy-to-maintain fuel surcharge calculation method.

You can determine fuel surcharge based on two different models. For more information, see [Fuel Surcharge Calculation: Model 1 \[Page 284\]](#) and [Fuel Surcharge Calculation: Model 2 \[Page 287\]](#).



Fuel Surcharge Calculation: Model 1

You can calculate the fuel surcharge based on a fuel surcharge model widely used in North America. In this model, you calculate the fuel surcharge based on the fuel surcharge index published by the government. The fuel surcharge index is based on the origin location or zones.

Prerequisites

- You have defined a calculation profile in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Calculation Profiles* □.
- You have assigned the calculation profile to a charges profile in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Charges Profiles* □.
- You have assigned the charges profile to an organizational unit in the transaction PPOME.

Process

To calculate the fuel surcharge, you must maintain two rate tables; a standard rate table with the fuel surcharge rates for corresponding fuel surcharge values, and an index rate table with the location, dates or validity, and the respective fuel surcharge values. You proceed as follows:

1. Define an index base rate table.

Define an index rate table with the fuel surcharge values based on scale items such as location and calculation date. You can define a calculation rule in the *Calculation Rules* tab page.

2. Define a standard rate table.

Define a standard rate table with the calculation base as *FSC* and scale type as either *Base Scale* or *To Scale*. Define the rates for fuel surcharge values.

Note

You define rate tables in SAP NetWeaver Business Client by choosing ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Rate Tables* ► *Create Rate Table Definition* □. For more information, see [Rate Table \[Page 196\]](#).

End of the note.

3. Define a calculation sheet with a charge item for fuel surcharge and define the following attributes:

- Enter the charge type as *Fuel*.
- Enter the standard rate table in the *Rate Table* field and the index rate table in the *Index Rate Table* field.
- Enter the calculation method type as *C* and calculation method as *FUEL_SURCHARGE* in the *Basic Data* tab page.

Note

You define calculation sheets in SAP NetWeaver Business Client by choosing  **Master Data**  **Charge Management and Service Product Catalogs**  **Calculation Sheets**  **Create Calculation Sheet**. For more information, see [Calculation Sheet \[Page 182\]](#).

End of the note.

4. Trigger charge calculation.

You can trigger charge calculation from a forwarding order or freight order.

5. The system determines the fuel surcharge and calculates the transportation charges along with the fuel surcharge.

Based on the location and date specified in the forwarding order or freight order, the system determines a fuel surcharge value from the index rate table. The system then uses this fuel surcharge value to determine a rate from the standard rate table.

Example

You maintain an index rate table with the following fuel surcharge values:

Calculation Date	Source Location: A	Source Location: B	Source Location: C
09-05-2013	3.12	3.99	3.45
09-12-2013	3.24	3.78	3.65
09-19-2013	3.15	4.12	3.55

You maintain the scale type as *To Scale*.

You maintain a standard rate table with the following rates for fuel surcharge values:

Fuel Surcharge Value	Rate (USD)
3.12	0.33
3.15	0.35
3.24	0.41
3.42	0.43
3.55	0.47
3.62	0.49
3.75	0.53
3.97	0.62
4.10	0.68

You have a calculation profile with the calculation date type as *Order Date*. You have a forwarding order with the *Order Date* as 09.10.2013 and the *Source Location* as *B*.

As you have specified the calculation date as *To Scale* (less than or equal to), the system determines a fuel surcharge value of 3.78 which you have maintained for the date 09.12.2013 for location B.

Now, the system determines a rate for the fuel surcharge value 3.78 from the standard rate table. If you maintain the scale type as *Base Value* (greater than or equal to) in the standard rate table, the system picks the rate of 0.53 which is maintained for 3.75 (as 3.78 is ≥ 3.75) to calculate fuel surcharge. If you have maintained the scale type as *To Value* (less than or equal to) in the standard rate table, the system picks the rate of 0.62 which is maintained for 3.97 (as 3.78 is ≤ 3.97) to calculate fuel surcharge.

More Information

[Fuel Surcharge Calculation: Model 2 \[Page 287\]](#)

[Rate Definition and Maintenance \[Page 199\]](#)

[Agreement Maintenance](#)



Fuel Surcharge Calculation: Model 2

You can calculate the fuel surcharge based on a base fuel surcharge value. The logistic service provider or carrier agrees with the customer on an index base date based on which the system determines the base fuel surcharge value. The actual fuel surcharge is calculated based on the current fuel surcharge value and base fuel surcharge value.

Prerequisites

- You have defined a calculation profile in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Calculation Profiles* □.
- You have assigned the calculation profile to a charges profile in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Charges Profiles* □.
- You have assigned the charges profile to an organizational unit in the transaction PPOME.

Process

To calculate the fuel surcharge, you define an index base rate table with the fuel surcharge values for specific calculation dates or validities. Optionally, you can define a standard rate table with the fuel surcharge values for scale items such as location and calculation dates or validity periods. You proceed as follows:

1. Define an index base rate table.

Define an index rate table with the calculation base as *Calculation Date*, scale type as *To Scale* or *Base Scale*, and the value type as *Absolute* or *Percentage*. Note that you must not maintain a calculation rule in this rate table.

Note

You define rate tables in SAP NetWeaver Business Client by choosing ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Rate Tables* ► *Create Rate Table Definition* □. For more information, see [Rate Table \[Page 196\]](#)

End of the note.

2. Optionally, you can define a standard rate table.

Define a standard rate table with a calculation base and scale type as either *Base Scale* or *To Scale*. Define the fuel surcharge values for scale items such as source location and destination location.

Note

If you do not define a standard rate table, the system determines the fuel surcharge using the base rate specified in the calculation sheet.

End of the note.

3. Define a calculation sheet with a charge item for fuel surcharge and define the following attributes:

- Enter the charge type as *Fuel*.
- Enter the index rate table in the *Index Rate Table* field.
- Enter an index base date in the *Index Base Date* field.
- If you have defined a standard rate table, enter it in the *Rate Table* field. Otherwise, you must enter a rate in the *Base Rate* field as a percentage or absolute value.
- Enter the calculation method type as C and calculation method as FUEL_SURCHARGE in the *Basic Data* tab page.

 Note

You define calculation sheets in SAP NetWeaver Business Client by choosing  *Master Data*  *Charge Management and Service Product Catalogs*  *Calculation Sheets*  *Create Calculation Sheet*. For more information, see [Calculation Sheet \[Page 182\]](#).

End of the note.

4. You trigger charge calculation.

You can trigger charge calculation from a forwarding order or freight order.

5. The system determines the current fuel surcharge value.

Based on the calculation date specified in the forwarding order or freight order, the system finds the current fuel surcharge value from the index rate table.

6. The system determines the base fuel surcharge value.

The system finds the fuel surcharge value for the index base date specified in the calculation sheet from the index rate table.

Note that for the system to determine the base fuel surcharge value, you must specify an index base date in the *Index Base Date* field and specify a fuel surcharge value for the index base date in the index base rate table.

7. The system determines the fuel surcharge and calculates the transportation charges along with the fuel surcharge.

If you do not define a standard rate table, the system calculates the fuel surcharge using the following formula:

Fuel surcharge in percentage = (Current fuel surcharge value/Base fuel surcharge value)* Base rate in calculation sheet

If you define a standard rate table, the system determines a fuel surcharge value for the scale items in the forwarding order or freight order and calculates the fuel surcharge using the following formula:

Fuel surcharge in percentage = (Current fuel surcharge value/Base fuel surcharge value)* Fuel surcharge value from the standard rate table

Example

You maintain an index rate table with the following fuel surcharge values:

Calculation Date	Fuel Surcharge Value
09-05-2013	3.45
09-12-2013	3.65
09-19-2013	3.55
09-25-2013	3.82
09-30-2013	3.91

You maintain the scale type as *To Scale*.

You maintain a base rate of 1.19% in the calculation sheet.

You have a calculation profile with the calculation date type as *Order Date* and in the forwarding order, the order date is 09.18.2013 and the *Index Base Date* maintained in the calculation sheet is 09.28.2013.

The system determines the current fuel surcharge using the order date. The order date 09.18.2013 occurs earlier than 09.19.2013 in the index rate table. Hence, the value 3.55 is determined as the current fuel surcharge value.

The system determines the base fuel surcharge using the index base date of 09.28.2013. The index base date 09.28.2013 occurs earlier than 09.30.2013 in the index rate table. Hence, the value 3.91 is determined as the base fuel surcharge value.

The fuel surcharge is calculated as follows:

Fuel surcharge in percentage = (Current fuel surcharge value/Base fuel surcharge value)* Base rate in calculation sheet

Fuel surcharge in percentage = $(3.55/3.91)*1.19 = 1.08$

Alternatively, you can also use standard rate tables to calculate the fuel surcharge. You maintain a standard rate table as follows:

Source Location	Destination Location	Fuel Surcharge Value
A	B	3.12
B	C	3.15
C	D	3.24
D	E	3.42

Once the system determines the current fuel surcharge value and the index fuel surcharge value as mentioned above, the system determines the fuel surcharge value for the source location and destination location specified in the forwarding order. In the forwarding order, if you have maintained the source location as *B* and the destination location as *C*, the system determines the fuel surcharge value of 3.15 from the standard rate table.

The fuel surcharge is calculated as follows:

Fuel surcharge in percentage = (Current fuel surcharge value/Base fuel surcharge value)* Fuel surcharge value from standard rate table

Fuel surcharge in percentage = $(3.55/3.91) * 3.15 = 2.86$

More Information

[Fuel Surcharge Calculation: Model 1 \[Page 284\]](#)

[Rate Definition and Maintenance \[Page 199\]](#)

[Agreement Maintenance](#)



Waybill Stock Definition

You can define number stocks for business documents to uniquely identify and track transports. The system enables you to use these stocks to allocate waybill numbers to business documents, such as forwarding orders, freight bookings, and freight units.

You can create, edit, and delete waybill stock number ranges for business documents of all modes of transport in SAP NetWeaver Business Client under ► *Master Data* ► *General* ► *Overview Waybill Stock*.

Prerequisites

You have created number stock types in Customizing for *Transportation Management* under ► *Master Data* ► *Waybill Stock* ► *Define Waybill Number Stock Types*.

If you want to define master air waybill stocks, you have defined airline codes for IATA carriers or non-IATA carriers in Customizing for *Transportation Management* under ► *Master Data* ► *Business Partners* ► *Define IATA Airline Codes*. You can also enter a prefix for the carrier.

To specify a [local carrier](#) for a master waybill stock, you have performed the following steps:

1. Go to the *Maintain Business Partner* transaction (transaction BP).
2. Enter the business partner for the [local carrier](#).
3. Enter *Carrier* in the *Display in BP role* field.
4. On the *Vendor Data* tab page, enter the airline code in the *Airline Codes* screen area.
5. Save your entries.

Features

For business documents with a transportation mode of *Parcel*, you can specify tracking number stocks for multiple purchasing organization and carrier combinations. You can draw a number from this stock if the combination of purchasing organization and carrier in the business document matches a purchasing organization and carrier combination in the tracking number stocks.

For house waybills, you can specify a waybill number range stock for multiple sales organizations and ordering parties. You can draw a number from this stock in a house waybill. When you draw a number in the waybill, the system matches the attributes in the business document with the attributes of the waybill stock until it recognizes a matching attribute. The system checks the attributes of the stock in the following order:

1. Sales organization and ordering party combination
2. Ordering party
3. Sales organization

Note that a forwarding order with a transportation mode of air must contain an air waybill type before you can draw a waybill number.



Example

You have created a waybill stock for sales organization 245006 and another waybill stock for ordering party FL_1. When you draw a waybill number in a business document with sales organization 235006 and ordering party FL_1, the system first searches to see whether there is any existing stock that possesses both these attributes. As it does not find a match, it searches for a stock with the ordering party and draws the number from the stock with ordering party FL_1.

End of the example.

For master waybills, you can specify a stock for multiple purchasing organizations, and for [local carriers](#) or [global carriers](#). You can draw a number from this stock in a master waybill if the combination of purchasing organization and carrier in the business document matches the combination of purchasing organization and carrier of the waybill stock.

You must specify the airline code for a master air waybill (MAWB). For master bills of lading with transportation mode of ocean or land, you have the option to specify a SCAC.



Example

You have created a waybill stock for an airline code LUU, a purchasing organization 560011, and a carrier SD_01. When you draw a waybill number in a MAWB, the system compares the airline code, purchasing organization, and ordering party of the business document with the airline code, purchasing organization and ordering party of the stock. If the entities match, it draws a number.

End of the example.

In master waybill stocks, you can delegate a waybill number to a purchasing organization. When you draw a waybill number in a business document with this purchasing organization, the system makes the waybill number that you have delegated available in the document.



Example

A business unit in Frankfurt with purchasing organization FRA001 needs a MAWB number for a MAWB document. A business unit in Berlin can delegate a number to the purchasing organization FRA001. When the Frankfurt business unit draws a waybill number in the MAWB, the system makes the delegated waybill number available in the document.

End of the example.



Note

If the system does not find a waybill stock or tracking number stock from which you can draw a waybill number or tracking number in a business document, it performs the following steps:

1. Checks the transaction PPOME for parent organizations of the organization you have entered in the business document
2. Traverses through the parent organizations until it finds a parent organization that has a waybill stock.
3. Makes a waybill number from this parent stock available in the business document.

End of the note.

More Information

[Management of Air Freight Bookings for Airlines \[Page 521\]](#)

[Building and Printing of House Bills of Lading and House Air Way \[Page 667\]](#)



Forwarding Order Management

You can use the *Forwarding Order Management* component in SAP Transportation Management (SAP TM) to create, edit, and confirm forwarding orders from your ordering parties. You can also already specify the route and have the transportation charges calculated here. The orders then form the basis for transportation planning.

In addition to creating the forwarding order, you can also enter the data as a forwarding quotation and send it to the ordering party. You can then create a forwarding order based on the forwarding quotation.

Integration

The SAP TM component *Forwarding Order Management* is integrated with the following other SAP TM components:

Component	Integration Type
Freight Order Management [Page 471]	You can create freight orders and freight bookings from forwarding orders.
Planning	Forwarding orders form the basis for planning and executing the transportation.
Forwarding Settlement	Based on the forwarding order, you can create a forwarding settlement to trigger the invoice creation process.
Master Data [Page 24]	As a prerequisite for creating forwarding orders, the necessary master data must have been created.

Forwarding Order Management is also integrated with the dangerous goods management and global trade processes. For more information, see [Considering Dangerous Goods](#) and [Global Trade](#).

Features

You can use the business documents from Forwarding Order Management to enter all the information required for planning and executing the transportation of goods, such as pick-up and delivery addresses, dates/times, and goods to be transported. You can enter the data manually or transfer it automatically via PI interfaces.

After you have edited the data, you can send a confirmation to your ordering party. Moreover, you can trigger transportation planning from the forwarding orders and generate the following objects, for example, to further plan and execute the transportation:

- [Freight units](#)
- [Freight orders \[Page 473\]](#)

More Information

[Creation of a Forwarding Order \[Page 304\]](#)

[Creation and Editing of a Forwarding Quotation \[Page 340\]](#)



Forwarding Order

An order from an ordering party to a carrier or logistics service provider with respect to the transportation of goods from a shipper to a consignee according to the agreed-upon conditions.

You can use the forwarding order business document in SAP Transportation Management (SAP TM) to enter data for the transportation of goods that you have agreed upon with an ordering party. You can enter the data manually (for example, after a telephone call) or you can transfer it automatically (via PI interfaces, EDI). The forwarding order is the basis for further transportation planning. It contains the most important data for planning and executing the transportation, such as the pick-up and delivery address, dates/times, and the goods that are to be transported. From the forwarding order, you can determine and define the transportation route, and create freight units and a transportation plan. You can also have the system calculate the transportation charges and start the invoicing.

Structure

The design of the user interface for the forwarding order is determined by the following factors:

- Transportation mode (air, sea, or land)
- Forwarding order type that you define in Customizing (see [Settings for the Forwarding Order \[Page 301\]](#))
- Individual screen settings in SAP NetWeaver Business Client

On the initial screen of the forwarding order, you can specify the forwarding order type and the transportation mode (if you have not already predefined this in the forwarding order type). The user interface for the forwarding order is automatically adjusted to the requirements of the transportation-mode-specific business processes. The forwarding order type also predefines which additional information or special tab pages are displayed for each business process (such as displaying dangerous goods information for the order items).

You can also configure your settings in SAP NetWeaver Business Client to define whether a tab page, assignment block, or specific fields in the forwarding order are displayed or hidden. The forwarding order generally has the following basic structure:

- Areas for general data, business partners, locations, and dates/times
- In these areas of the forwarding order, you enter data (or the system displays data) that is valid for all items in the order. This data includes, for example, the sales organization, Incoterms, and service level. In addition, the totaled quantity data and weight data for the order items is displayed.

Furthermore, you can specify attributes for process control, such as the transportation mode and shipping type.

For more information, see [Creation of a Forwarding Order \[Page 304\]](#) and [Attributes for Process Control \[Page 309\]](#).

- Stages
- In this assignment block or on the tab, you can enter the route requested by the ordering party and the actual route with the individual transportation stages. For more information, see [Determination of the Route \[Page 357\]](#).

- List of order items

In this table, you enter the item-specific data in the form of an item hierarchy. For more information, see [Creation of Forwarding Order Items or Forwarding Quotation Items \[Page 346\]](#).

- Document flow

The system displays here which business documents have been entered into the forwarding order and which business documents were created based on it. You can also display the follow-on documents from here, and call a freight unit, for example.

- Output Management

Here the system displays which documents were already printed or sent (by e-mail or fax, for example) for this forwarding order. Moreover, you can print documents such as bills of lading from here. For more information, see [Output Management](#).

- Status

Here the system displays the different statuses of the document, such as the life cycle status and the blocking status. For more information, see [Status of a Forwarding Order \[Page 297\]](#).

- HBL or HAWB

You can display data for house bills of lading (HBLs) or house air waybills (HAWBs) in this assignment block or on the tab. In addition, you can make individual allocations of waybill numbers to freight units or remove the allocations again. For more information, see [Building and Printing of House Bills of Lading and House Air Waybills \[Page 667\]](#).

- Profitability

You can display a profitability analysis in this assignment block or on the tab page. From here, you can also navigate to the individual business documents. For more information, see [Profitability Analysis \[Page 326\]](#).

- Specialist, process-dependent tab pages

In addition to those described above, the system also displays additional tab pages or assignment blocks if you have activated the corresponding business process in the document type, such as:

- Charge calculation and internal charge calculation

The system displays the data from an (internal) transportation charge calculation that you have made for the forwarding order. Moreover, you can enter the transportation charges manually as well. For more information, see [Charge Calculation \[Page 227\]](#).

- Air Cargo Security

You can enter the data required if you want to perform an air cargo security check. For more information, see [Air Cargo Security \[Page 524\]](#).

- Instructions

If you have defined instructions for executing services in Customizing (such as an instruction for cleaning a container), the system displays these here. You can also change or delete instructions or create new instructions on this tab page. For more information, see [Management of Instructions](#).

When you create air forwarding orders, you can enter the nature of goods on the *Nature of Goods* tab page. You can enter the nature and quantity of goods, which is printed on air waybills, and the nature of goods for manifest, which is printed on the security manifest and cargo manifests. For more information, see [Nature of Goods \[Page 671\]](#).

In addition to the comprehensive view of the forwarding order user interface, you can also use the *Page* function to access a view for fast order entry. This view contains all input fields that are required to complete a forwarding order on a single screen (without tab pages). You can also enter values more quickly by using the keyboard (with the exception of the list of order items).

Integration

The business document for the forwarding order is integrated with further business documents in SAP TM, such as the following:

- [Forwarding Quotation \[Page 338\]](#)

If you have sent a forwarding quotation to an ordering party and it was accepted by the ordering party, you can create a forwarding order based on this forwarding quotation.

- [Freight Unit](#)

You can create freight units for this forwarding order from the order.

- [Forwarding Settlement Document](#)

You can create a forwarding settlement document for this forwarding order from the order.

More Information

[Creation of a Forwarding Order \[Page 304\]](#)

[Editing of a Forwarding Order \[Page 322\]](#)



Status of a Forwarding Order

The following document describes important statuses of a forwarding order, which are mainly displayed on the *Status* tab page.

Life Cycle Status

Status	Description
New	A new forwarding order was created, and no freight units have been created for this order yet.
In Planning	The forwarding order is in the planning process, and at least one freight unit has been created for the order.
Planned	The forwarding order is in the planning process. All freight units assigned to it have been planned.
In Execution	The forwarding order is in the execution process. At least one follow-on document (not necessarily a freight unit) is in execution. For more information about the execution of a forwarding order, see the execution status of the forwarding order or of the follow-on documents.
Executed	Execution of the forwarding order has been completed. Execution of all planning documents assigned to the forwarding order has been completed.
Partially Invoiced	The forwarding order is in the invoicing process. One or more forwarding settlement documents were created, but the invoicing has not been carried out completely yet.
Completed	Processing of the forwarding order has been completed. Execution has finished, and the invoicing has taken place. This status is also set if the execution is designated as not relevant and all follow-on documents are closed.
Canceled	The forwarding order was canceled.
Draft	The system sets this status if an import forwarding order is created or updated. You can change the sales organization but the forwarding order is locked for all other changes.

Planning Status

Status	Description
Planning Not Started	The planning process has not yet been started for the forwarding order.
In Planning	The forwarding order is in the planning process, and at least one freight unit has been created for the order.
Planned	The forwarding order is in the planning process. All freight units assigned to it have been planned.

Execution Status

Status	Description
Execution Not Started	Execution of the forwarding order has not yet been started.
In Execution	The forwarding order is currently being executed. At least one of the planning documents linked to the forwarding order is in the execution process.
Executed	Execution of the forwarding order has been completed. Execution of all planning documents assigned to the forwarding order has been completed.

Confirmation Status

Status	Description
Not Confirmed	No forwarding order confirmation has been created yet, or an existing confirmation was reset because data in the forwarding order has changed.
Confirmed	A forwarding order confirmation has been created.

Completeness Status

Status	Description
Check Pending	A completeness check for the forwarding order is still outstanding.
Incomplete	The data in the forwarding order is incomplete.
Complete	The data in the forwarding order is complete.

Approval Status

This status is only displayed if you have activated the approval workflow.

Status	Description
Not Checked	The approval limits were not yet checked for this forwarding order.
No Approval Required	The approval check was conducted for this forwarding order. The defined limits were not exceeded.
Approval Required	The approval check was conducted for this forwarding order, and the defined limits were exceeded. The forwarding order was blocked for further processing.
Approved	The approval workflow was executed, and the forwarding order was approved by the person responsible. The block of the forwarding order for further processing was removed.
Not Approved	The approval workflow was executed, and the forwarding order was not approved by the person responsible. The forwarding order remains blocked for further processing.

Delivery Status

The status shows at header level of the forwarding order whether the freight units assigned to the forwarding order were actually delivered. This data originates from the associated freight document. In addition to this status at header level, there is an additional status at order item level that specifies whether the freight units for the order item were delivered (cargo receipt status).

Status	Description
Delivered	All freight units that are assigned to the forwarding order have been delivered.
Partially Delivered	At least one but not all freight units in the forwarding order requests were delivered.
Not Delivered	None of the freight units in the forwarding order requests were delivered.

FWQ Assignment Status

This status indicates whether the forwarding order was created on the basis of a forwarding quotation or whether a forwarding quotation was assigned to it subsequently. For more information, see [Subsequent Assignment of Forwarding Quotations \[Page 343\]](#).

Organization Interaction Status

This shows the status of the interaction between organizational units, for example, between a sales organization and a planning and execution organization. It is available for a stage of the route and also as an aggregated status.

For more information, see [Interaction Between Organizational Units \[Page 372\]](#).

HBL or HAWB Status

This status is displayed on the *General Data* and *HBL or HAWB* tabs of a forwarding order. It supports, for example, communication between a customer service agent and a capacity manager at the gateway. The status shows you whether the house bills of lading (HBLs) or house air waybills (HAWBs) assigned to the forwarding order have been completed by the customer service agent (*finalized*) and are available for subsequent processes.

You can set the status manually for the forwarding order using a menu option and reset it to *Not Finalized*. If the HBL or HAWB number has not been assigned, this is done automatically by setting the status.

If you set the status for a forwarding order with the forwarding order type *Direct Shipment*, it is set for both the HAWB and the master air waybill (MAWB).

Status	Description
Finalized	All house air waybills in the forwarding order have been completed.
Partially Finalized	At least one but not all house air waybills in the forwarding order requests were completed.
Not Finalized	No house air waybill in the forwarding order has been completed.

Status for Air Cargo Security and Compliance with Foreign Trade Regulations

This status is displayed on the *Status* tab if you have activated the corresponding processes in Customizing for the forwarding order type. For more information, see [Settings for the Forwarding Order \[Page 301\]](#), [Air Cargo Security \[Page 524\]](#), and [Trade Compliance Check](#).

Blocking the Forwarding Order

In addition to the forwarding order statuses described above, the system displays the blocking status for this order. You can set blocks manually or have the system set blocks automatically for the following functions and processes:

- Planning of the forwarding order, in other words, creation of freight units and creation of freight orders
- Execution of the forwarding order and associated planning documents
- Confirmation of the forwarding order
- Creation of the forwarding settlement document

The system sets automatic blocks when executing the approval workflow or during the dangerous goods check, for example. The reason for the block is also displayed for the block status. If you set the block manually, you can use the value help to select the reason for the block.



Settings for the Forwarding Order

The following describes the general settings that you can or must make for a forwarding order. Specific settings for individual functions or processes can be found in the individual chapters.

Profiles

You have created the following profiles in Customizing. Creating these profiles is optional, but you do need them for important follow-up actions such as planning or printing:

- Planning profile

You use the planning profile to determine how transportation planning proceeds further, which you can trigger from the forwarding order, or on what basis the system determines the routes. For more information, see [Planning Profile](#).

- Output profile

You can use the output profile to determine which outputs are possible for the forwarding order (print documents and EDI messages). Standard profiles are available, but you can also define your own profile.

For more information, see Customizing for *Cross-Application Components* under ► *Processes and Tools for Enterprise Applications* ► *Reusable Objects and Functions for BOPF Environment* ► *PPF Adapter for Output Management* as well as [Output Management](#).

- Dangerous goods profile

If you transport dangerous goods with the forwarding order, you can use the dangerous goods profile to make settings for the processing of the dangerous goods items, such as for the output of error messages.

For more information, see Customizing for *Transportation Management* under ► *Basic Functions* ► *Dangerous Goods* ► *Define Dangerous Goods Profile* as well as under [Considering Dangerous Goods](#).

- Partner Determination Profile

You can use this profile to indicate that the system is to assign business partners to your forwarding order automatically.

For more information, see Customizing for *Transportation Management* under ► *Master Data* ► *Business Partner* ► *Define Partner Determination Profiles* and under [Business Partner Determination \[Page 33\]](#).

Other Customizing Activities

- You have defined the *forwarding order type*. You use this document type to determine a series of characteristics for the forwarding order. In this way, you can assign the profiles described above and the freight unit building rule or condition to the forwarding order type, and make certain default settings, such as the following:

- Transportation mode (air, sea, land)
- Define default shipping type, traffic direction and sales organization

- Automatic confirmation of the forwarding order
- Activate an approval workflow and a credit limit check
- Activation and deactivation of charge calculation and internal charge calculation
- Activation and deactivation of forwarding settlement and internal settlement
- Automatic charge calculation and internal charge calculation
- Define and activate process-specific parameters and functions, such as the air waybill type (AWB type) and air cargo security check

In addition, you use the forwarding order type to determine the appearance of the user interface. This means for instance that the input fields and menu options are tailored to the transportation mode. The system only displays dangerous goods information for the order items, for example, if you have assigned a dangerous goods profile to the forwarding order type.

For more information, see Customizing for *Transportation Management* under  *Forwarding Order Management*  *Forwarding Order*  *Define Forwarding Order Types* .

- You have defined a *number range interval*, within which the system creates the identifiers (IDs) of the forwarding orders of a previously defined type. For more information, see Customizing for *Transportation Management* under  *Forwarding Order Management*  *Define Number Range Intervals for Forwarding Order Management* .
- You have defined the *transportation mode*, such as sea, air, and road. For more information, see Customizing for *Transportation Management* under  *Master Data*  *Transportation Network*  *Transportation Lane*  *Define Transportation Mode* .
- If you want to use Forwarding Order Management to support an air or sea freight-specific process, you have defined *transportation mode-specific codes*, such as airline codes or standard carrier alpha codes (SCAC) in Customizing and assigned them to your business partners as required. For more information, see [Transportation-Mode-Specific Codes \[Page 106\]](#) and [Business Partner \[Page 25\]](#).
- You can specify that the *transportation service levels* available in a forwarding order are assigned to the same transportation mode as that for the forwarding order, or are not assigned to any specific transportation mode. If you do not make any setting here, the selection of service levels in the forwarding order is not restricted. For more information, see Customizing for *Transportation Management* under  *Forwarding Order Management*  *Define Transportation Service Level Codes*  as well as [Transportation Service Levels \[Page 494\]](#).
- If you want to use your own *shipping types*, you have defined shipping types in Customizing and assigned them to transportation modes if required. You can then select these shipping types in Customizing for forwarding order types and forwarding quotation types using the input help on the user interface for the forwarding order and forwarding quotation. For more information, see Customizing for *Transportation Management* under  *Forwarding Order Management*  *Define Shipping Types* .
- If you want to define reasons for blocking a forwarding order, you have defined *block reasons* in Customizing. For more information, see Customizing for *Transportation Management* under  *Basic Functions*  *General Settings*  *Define Block Reason Codes* .

Master Data

- You have defined the *business partners and locations* as well as data such as Incoterms or service level. For more information, see [Master Data \[Page 24\]](#).
- If you want to have an *approval workflow* for your forwarding order, you have activated this workflow in Customizing for the document type (see above) and have made the required settings for the workflow. For more information, see [Approval Check \[Page 46\]](#).
- If you want to support a process for which a house bill of lading (HBL) or house air waybill (HAWB) is required, you have assigned *number ranges for house bills of lading or house air waybills* to sales organizations and ordering parties in the master data for Transportation Management. On the user interface of the forwarding order, you can then assign these HBL or HAWB numbers to a forwarding order or assign a number from the corresponding number range.

If for particular scenarios you want to exclude being able to assign an HBL or HAWB number from a number range in the forwarding order document, you can deactivate this function in Customizing for the forwarding order type.

For more information, see [Waybill Stock Definition \[Page 291\]](#).

Other Settings

- You have optionally defined a *freight unit building rule* (FUB rule) and determined a condition for determining the FUB rule. For more information, see [Freight Unit Building Rule](#).
- You have made the settings for defining stages of a *route*. For more information, see [Determination of the Route \[Page 357\]](#).
- You have made the settings for creating *order items*. For more information, see [Creation of Forwarding Order Items or Forwarding Quotation Items \[Page 346\]](#).



Creation of a Forwarding Order

In SAP Transportation Management (SAP TM), you can create forwarding orders (see [Forwarding Order \[Page 294\]](#)) both manually and automatically. You can create a forwarding order in the following ways:

- On the basis of a quotation or a template

You first create a forwarding order as a template, or you create a forwarding quotation and use the data entered there to create a forwarding order. A template can contain the most important default data, such as sales organization or Incoterms, and thus facilitates the creation of new orders.

You can also subsequently assign a forwarding quotation to a forwarding order. However, this is subject to certain prerequisites such as corresponding data between the documents.

- As copy of an existing forwarding order

The new order already contains a lot of the data that has been copied, including data about the route. However, it does not contain any dates/times and no follow-on documents, such as freight units or freight orders, are assigned to it. The life cycle status is *New*.

- From the order management overview

You create a new forwarding order without reference to another object.

Instead of creating the forwarding order fully, you can also first enter the order in a fast entry screen and save it there. This screen provides an overview of the most important data. You can call up the screen again later on and add further data.

- From a forwarding agreement

You can create a forwarding order from a forwarding agreement or with reference to the forwarding agreement. Service items in the forwarding agreement are then also available in the forwarding order. In addition, further information from the forwarding agreement is automatically transferred to the forwarding order, such as transportation mode, shipping type, and sales organization.

- Using PI interfaces

You receive the data directly from the ordering party by means of an SAP NetWeaver Process Integration (SAP NetWeaver PI) interface.

Note that the enterprise services of forwarding order management are only released with restrictions. For more information, see [Released with Restrictions](#).

The following describes how you create a new forwarding order manually. For more information about creating forwarding quotations and their conversion to forwarding orders, see [Creation and Editing of a Forwarding Quotation \[Page 340\]](#).

Prerequisites

You have made the settings required for the forwarding order. For more information, see [Settings for the Forwarding Order \[Page 301\]](#).

Process

1. Entering the Data on the Initial Screen

On the initial screen of the forwarding order, you specify important data for the forwarding order, such as the forwarding order type and the transportation mode. You can also specify whether you want to create the forwarding order with reference to other documents, as a copy of other documents, or as a template. Note the following:

- You must enter the forwarding order type and transportation mode; entry of all other parameters is optional.
- If you have already defined the transportation mode in the forwarding order type, this is displayed and can no longer be changed. If you specify a transportation mode first, the input help for the forwarding order type only allows you to select order types that are valid for this transportation mode.
- You cannot change the forwarding order type or transportation mode subsequently in the document itself. However, you can still change some of the other parameters in the document, such as the sales organization. This depends on whether you have predefined a value in Customizing that can still be changed.
- If you copy an existing forwarding order, you can enter a new forwarding order type for the new forwarding order you are creating. This can, however, lead to inconsistencies with copied data, if, for example, the copied data has been determined from the Customizing settings for the forwarding order type (such as the transportation mode and the shipping type). If the data for the new forwarding order type is unique, the system updates the data automatically. Otherwise you have to change the inconsistent data manually.
- You can enter a default route on the initial screen. The system takes this route into account when it creates the requested route. In addition, the system checks whether the data for the default route matches the other data that you have entered on the initial screen, for example, the transportation mode or shipping type.

If you create a forwarding order based on an item from a forwarding agreement (FWA), you can select a default route that has been defined for the FWA item.

The default route that you enter or select here is displayed in the general data area of the forwarding order. You can still change it here. In this case, the system again checks whether the new default route corresponds to the data in the forwarding order or to an assigned FWA item.

The forwarding order that has the life cycle status *New* then appears.

2. Entering the General Forwarding Order Data

You first create the general data for the forwarding order such as data for the sales organization, process control attributes and Incoterm data. Note the following:

- If you have defined this data in Customizing for the forwarding order type, the system has already automatically determined the sales organization data.
- You can specify a series of attributes for process control, such as the shipping type, movement type, and air waybill type. Depending on the Customizing

settings, these attributes are already automatically pre-defined. For more information, see [Attributes for Process Control \[Page 309\]](#).

- The Incoterms data is considered during planning and invoicing. For more information about processing Incoterms in SAP TM, see [Incoterms in Forwarding Orders \[Page 313\]](#).
- If the carrier to whom the main carriage of the forwarding order is assigned performs invoicing directly with the ordering party based on a special freight agreement, you must specify this in the forwarding order. For more information, see [Uncontrolled Transportation \[Page 312\]](#).
- If you want to consolidate goods from several vendors before the main carriage and load them in one container, you can specify that this is to be *Buyer's Consolidation*. You can also consolidate goods that originate from a supplier and that are intended for several consignees (*Shipper's Consolidation*). For more information, see [Buyer's Consolidation \(BCO\) in Export/Import \[Page 554\]](#) and [Shipper's Consolidation \(SCO\) in Export/Import \[Page 558\]](#).

3. Enter Business Partner, Locations and Dates/Times

Enter data for your business partner, such as the shipper, consignee and ordering party and define the location and dates for the entire forwarding order. Note the following:

- If you have defined this data in Customizing, the system determines the business partner automatically using the partner determination profile specified in the forwarding order type. For more information, see [Business Partner Determination \[Page 33\]](#).
- If you specify a location and have activated this in movement type Customizing, the system automatically determines the associated shipper or consignee from the master data. If you specify a business partner, the system determines the associated location data, as long as this data is unique (in other words, only one location exists for which the business partner has been specified in the master data).
- You can manually overwrite the address of the business partner that was automatically determined. It is marked as a deviating address and copied to the follow-up documents. You can also already define a business partner in the master data as a one-time business partner without address data. The address entered is then also a one-time address.
- You can enter additional print-specific (such as L/C-compliant) address information for business partners. The system uses this address information automatically in print forms.
- If you have specified this in Customizing for the forwarding order type, you can make a credit limit check for a business partner (that is, for the ordering party or other paying business partners). For more information, see [Credit Limit Check \[Page 316\]](#).
- You can specify that a forwarding order can only be planned and executed in the subsequent processes once you have received your business partner's payment. For more information, see [Prepayment of Forwarding Orders \[Page 319\]](#).
- You can also define alternative business partners, locations and dates for individual items in your forwarding order (see process step 6).

For more information about business partner master data, see [Business Partner \[Page 25\]](#).

4. *Enter and Change Business Process-Dependent Data*

If you want to use the forwarding order in specialist business processes and have activated these in the Customizing settings for the forwarding order type, you can enter and change additional data, such as:

- Air Cargo Security

You can enter data for the air cargo security check. For more information, see [Air Cargo Security \[Page 524\]](#).

- Instructions

You can display instructions that have been defined in Customizing. You can also create, change and delete them. For more information, see [Management of Instructions](#).

- Export/Import Processing

For export/import processing, you can predefine the traffic direction in Customizing of the forwarding order type or you can specify it in the forwarding order itself. You must also observe certain specifications when defining business partners and sales organizations in your forwarding order. For more information, see [Export/Import Processing \[Page 542\]](#).

- Handling codes

Handling codes allow you to specify certain properties of your transportations and goods to be transported (such as dangerous goods) that may also be relevant for planning. For more information, see [Handling Codes \[Page 534\]](#).

5. *Determining the Route*

If you have already received information about the ordered route from the ordering party, you can create the stages of the route. For more information, see [Determination of the Route \[Page 357\]](#).

6. *Creating the Order Items*

You create the items of a forwarding order in an item hierarchy consisting of container, packaging, and product, for example. Only the top level of this hierarchy is relevant to planning. The quantities and weights of these levels are totaled and copied to the header data.

For more information, see [Creation of Forwarding Order Items or Forwarding Quotation Items \[Page 346\]](#).

7. *Saving the Forwarding Order*

You save the forwarding order. The system now assigns the document an ID from the number range for this document type. In addition, the system checks the entered data for completeness and consistency. The system displays the results of these checks in the form of error messages and as a completeness status.

If you have defined this in Customizing, the system performs a series of automatic functions, such as the following:

- Automatic creation of freight units
- Automatic confirmation of the forwarding order, with sending of the confirmation to ordering party
- Automatic calculation of transportation charges
- Check whether the limits for triggering an approval workflow have been exceeded and, if necessary, trigger the workflow.
- Check of the credit limit of the business partners
- Check whether the foreign trade regulations have been followed in the forwarding order (see [Trade Compliance Check](#)).

More Information

[Editing of a Forwarding Order \[Page 322\]](#)

[Confirmation and Completion of a Forwarding Order \[Page 330\]](#)

[Creation of a Forwarding Order for Rail Transportation \[Page 332\]](#)



Attributes for Process Control

In SAP Transportation Management (SAP TM), you can already specify several attributes when entering order data in the forwarding order or forwarding quotation. These attributes then control the further process of order creation and execution. They are entered in the header data of the business document in the *General Data* area and are valid for the whole business document.

The following section briefly describes these attributes. For more information, see the individual chapters in which the process is described.

Prerequisites

You have defined transportation modes and movement types in Customizing. For more information, see Customizing for *Transportation Management* under the following Customizing activities:

- ► *Master Data* ► *Transportation Network* ► *Transportation Lane* ► *Define Transportation Mode* ▶
- ► *Forwarding Order Management* ► *General Settings for Forwarding Order Management* ► *Define Movement Types* ▶

If required, you have already defined the transportation mode, the traffic direction and the shipping type in Customizing for the forwarding order or forwarding quotation type. If you use this option, the attributes are automatically entered in the business document and cannot be changed there. For more information, see Customizing for *Transportation Management* under the following Customizing activities:

- ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Forwarding Order Types* ▶
- ► *Forwarding Order Management* ► *Forwarding Quotation* ► *Define Forwarding Quotation Types* ▶

If you want to use your own shipping types, you have defined shipping types in Customizing and assigned them transportation modes if required. You can then select these shipping types in Customizing for forwarding order types and forwarding quotation types using the input help on the user interface for the forwarding order and forwarding quotation. For more information, see Customizing for *Transportation Management* under ► *Forwarding Order Management* ► *Define Shipping Types* ▶.

Note

If you want to create a forwarding order based on a forwarding quotation and predefine the shipping type and the transportation mode in Customizing for the forwarding quotation type, these settings must be the same as those in the forwarding order type.

End of the note.

Features

Transportation Mode

This attribute determines how the freight is transported, that is, via sea, air, or road transportation, or by train. It is valid for all items and main carriage stages of the business document and is taken

into account during manual planning as well as during the creation of freight bookings and freight orders.

Traffic Direction

This attribute determines whether the transport is an import or export from the point of view of the sales organization entered in the header data of the forwarding order or forwarding quotation. This information then determines, for example, the stage for which the sales organization and the processor of the business document is responsible (for example, up to the main carriage that starts in a different country).

Shipping Type

This attribute determines how the planning and execution of the transportation of the freight is performed for a transportation mode. For example, you can define the following information for the individual transportation modes:

- *Sea*: Transport of cargo as a full container load into which no other package or product may be loaded (*Full Container Load, FCL*), or as individual packages and products (*Less Than Container Load, LCL*).
- *Air*: Transport of cargo in unit load devices (*ULDs*) or as loose cargo (*Loose*)
- *Rail*: Transport of cargo as a full carload (*Carload*), individual cargo items (*Intermodal Rail*), or as a complete train (*Unit Train*)
- *Road*: Transport of cargo as a full truck load (*Full Truck Load, FTL*) or as individual packages and products (*Less Than Truck Load, LTL*)

The shipping type allows you to specify, for example, that when you enter items, only the container (or ULD) may be entered as a planning-relevant item (top level of the item hierarchy) or that no container items may be created at all.

Movement Type

This attribute allows you to specify for which stages the logistics service provider is responsible as well as which stage types are allowed for a forwarding order or a forwarding quotation. You can, for example, define the following movement types:

- *Door to Door*: The logistics service provider is responsible for picking up the goods at the shipper (source location) and delivering to the consignee (destination location).
- *Port to Port*: The logistics service provider is only responsible for the sea transportation of the freight. The transportation of the freight from the shipper (source location) to the port of loading and from the port of discharge to the consignee is arranged by the ordering party.

Depending on your Customizing settings for the movement type, certain stages of the actual route are displayed automatically. Additionally, the stage types that you can enter may be restricted. For more information, see [Determination of the Route \[Page 357\]](#).

If you change the movement type, the system automatically adjusts the actual route to the new movement type. To transfer the existing route to the new route, the system applies standard logic. It determines which stages can remain in the new route, which have to be deleted, and which have to be created. You can use a Business Add-In (BAdI) to change this logic. For more information, see Customizing for *Transportation Management* under ► *Business Add-Ins (BAdIs)*

Air Waybill Type

You use this attribute to control the air freight-specific consolidation processes. You can also restrict the consolidation options and define how many forwarding orders you can assign to a freight booking or to a master air waybill. You cannot assign any additional forwarding orders to a freight booking or a master air waybill if a forwarding order is marked as *Back-to-Back*.

You can predefine the attribute in Customizing for the forwarding order type or forwarding quotation type; or you can define it directly in an air forwarding order or quotation. For more information, see [Air Freight-Specific Consolidation Processes \[Page 363\]](#).

Effects on the Follow-On Processes

The attributes mentioned are obligatory for follow-on processes such as transportation planning or the creation of freight orders and freight bookings. If you change the transportation mode, shipping type, or the movement type, the freight units assigned will be created again and the freight costs will be calculated again. If follow-on documents exist for freight units that are assigned to the business document or if at least one not yet canceled freight settlement document exists, the attributes cannot be changed.

The attributes (except for air waybill types) are not copied directly to the freight orders and freight bookings, but rather the system determines them again based on the business documents.



Uncontrolled Transportation

You use this function to specify that the carrier assigned to the main carriage stage of a forwarding order bills the ordering party directly based on a special freight agreement between the carrier and the ordering party. In this case, you are still responsible for organizing the transportation of the goods and for planning all stages including the main carriage stage; however, you can calculate charges and create settlement documents only for the pre-carriage and on-carriage stages.

Activities

To specify that transportation is uncontrolled, deselect the *Controlled* checkbox on the *General Data* tab page of the forwarding order UI. You can then enter the ID of the external freight agreement that exists between the ordering party and the carrier. Deselecting the checkbox and entering the freight agreement ID has the following effect on further processing:

- When you assign freight units that belong to the forwarding order to a freight booking, the system displays the *Controlled* checkbox and the *External Freight Agreement* field on the *Terms and Conditions* tab page of the freight booking. Both fields are read-only. They are visible in a freight booking only if the *Controlled* checkbox has been deselected in the corresponding forwarding order.

Note the following:

- You can assign freight units from other forwarding orders to this freight booking only if the forwarding orders contain the same external freight agreement ID.
- You cannot consolidate forwarding orders in the case of a less than container load (LCL) freight booking.
- The system determines a suitable forwarding agreement or forwarding agreement item where you deselected the *Controlled* checkbox. For the system to be able to calculate the charges for an uncontrolled transportation, you must specify a carrier for the stage or an external freight agreement in the forwarding order or freight agreement. Note that the system can determine the forwarding agreement or forwarding agreement item even if you have not specified the external freight agreement for the forwarding agreement or forwarding agreement item. The system cannot calculate the charges for an uncontrolled transportation if the system cannot determine a suitable forwarding agreement or forwarding agreement item.
- When you calculate charges and carry out forwarding settlement or freight settlement, the system ignores the main carriage stage. You can calculate charges and create settlement documents only for the pre-carriage and on-carriage stages.



Incoterms in Forwarding Orders

This function enables you to specify who pays for the individual stages of a transport.

In SAP Transportation Management (SAP TM), you create a [forwarding settlement document](#) (FWSD) when you need to send an invoice to a customer. The settlement is based on an associated forwarding order. To create a settlement, you must have a forwarding agreement between the business partner and sales organization in a forwarding order. This means you can have a forwarding order on the export side with a settlement to the shipper, and another forwarding order on the import side with a settlement to the consignee.

The Incoterms function addresses the following business requirements:

- Settlement with shipper or consignee

The settlement is independent of the organizational unit that organizes the parts of the transport.



Example

In a full container load (FCL) transport with an Incoterm of FOB (Free On Board), the shipper pays for the pre-carriage to the export organization. The consignee pays the main carriage and on-carriage to the import organization. This applies even if the export organization organizes the main carriage.

End of the example.

- Settlement between the export and import organizations

The settlement depends on the organizational unit that organizes the parts of the transport.



Example

In an FCL transport with FOB, the export organization that organized the main carriage actually pays for the main carriage. It then invoices the import organization to recover the main carriage costs from the consignee.

End of the example.

In this way, the Incoterm you specify in the forwarding order drives the overall settlement process.

Prerequisites

You have specified the agreement party role for a stage type and Incoterm combination. When you specify an Incoterm in a forwarding order, the system uses the agreement party role to identify the default agreement party for a stage.

For more information, see Customizing for *Transportation Management* under ► *Forwarding Order Management* ► *Define Default Agreement Party Roles for Stages* ▶.

Features

Incoterms

You can use Incoterms to determine who pays for the stages of a transport. The following are the main party roles for Incoterms:

- [Prepaid agreement party](#)
- [Collect agreement party](#)
- [Prepaid bill-to party](#)
- [Collect bill-to party](#)
- [Prepaid payer](#)
- [Collect payer](#)

The prepaid party sends the goods; the collect party receives the goods. The party roles are not necessarily the shipper or consignee, and can be internal organizational units.



Example

An internal organization can be the collect agreement party in a settlement between internal organizational units.

For an export forwarding order, the collect bill-to party and collect payer party can be the import organization.

End of the example.

You can specify the party roles and business partners for Incoterms on the *Business Partners* tab page. The system uses the parties you specify on this tab page to determine who pays for a stage when you create a settlement.

You can only specify agreement party roles in the *Stages* tab page. The system uses the information you specify on the *Stages* tab page to determine the agreement and therefore to calculate charges.

The following table explains how you assign party roles to business partners in the *Business Partners* tab page:

Business Partner	Party Role
BP1	Prepaid agreement party
BP2	Collect agreement party

The following table explains how the system determines the agreement party when you specify the agreement party role in the *Stages* tab page:

Stage Description	Stage Type	Agreement Party Role	Agreement Party
Stage 1	Pre-carriage	Prepaid agreement party	BP1

Stage Description	Stage Type	Agreement Party Role	Agreement Party
Stage 2	Main carriage	Collect agreement party	BP2

Stage Status

The system uses the following logic to determine the stage status:

- The planning and execution organization for a stage belongs to a company organization. A company organization is specified in the sales organization of the forwarding order. If these company organizations match, the stage status is relevant for planning and execution.

The system displays the appropriate status in the *Stage Status* field.

- If the company organizations do not match, the stage status is not relevant for planning and execution.

The system displays a status of *Not Relevant* in the *Stage Status* field.

When you manually create an FWSD, the system displays a dialog box in which you select the relevant business partner. You can create the FWSD for one of the new party roles. The party role that you select depends on the Incoterm specified in the forwarding order.



Example

You have a forwarding order with an Incoterm of EXW (Ex Works) to which you have assigned a collect agreement party. You can create a collect FWSD for the collect agreement party.

You have a forwarding order with an Incoterm of DDP (Delivery Duty Paid) to which you have assigned a prepaid agreement party. You can create a collect FWSD for the prepaid agreement party.

You can create more than one settlement document for these forwarding orders.

End of the example.

More Information

For more information about forwarding orders, see [Forwarding Order Management \[Page 293\]](#).

For more information about forwarding settlement documents, see [Forwarding Settlement Document](#).



Credit Limit Check

You can use this function to determine the risk of losses on receivables from business partners and to make timely and efficient credit decisions.

Integration

SAP Transportation Management (SAP TM) integrates with the SAP Credit Management application to provide the credit limit check feature.

Features

Business Partner Party Role Checks

The system checks the business partners you specify in the party roles in a forwarding order during a credit limit check.

It checks in the following order of priority if you have specified an Incoterm.

1. Prepaid side
 1. Prepaid payer
 2. Prepaid agreement party
2. Collect side
 1. Collect payer
 2. Collect agreement party

The system checks in the following order of priority if you have not specified an Incoterm:

1. Payer
2. Ordering party

We deliver these party role checks as standard. You cannot change the settings for these checks in Customizing.

SAP Credit Management Integration

SAP TM updates SAP Credit Management at the following points in the business transaction flow:

- When you create, change, or cancel a forwarding order with a credit limit check status of successful, or when you manually approve a credit limit check failure
- When SAP ERP posts a billing document
- When SAP ERP makes FI postings from a billing document
- When you cancel a forwarding settlement document and the corresponding FI and billing documents are canceled in SAP ERP

When you save, change, or cancel a forwarding order, the credit limit amount is updated in the *Credit Exposure Tot.* (Credit Exposure Totals) table in the SAP Credit Management application. The application updates the amount in the *Open Orders* exposure category.

The SAP TM system automatically checks the credit limit when you change the amounts or organizational entities in the forwarding order. For example, the system automatically checks the credit limit when you change the following settings:

- Sales organization
- Calculated amount or credit limit check amount
- Business partner
- Logistics data that can influence the calculated amount, such as stages, weights, and volumes

When you successfully create and transfer a forwarding settlement document to SAP ERP, the credit limit check amount is updated in SAP Credit Management. The application reduces the exposure value of the open order for the forwarding order by the amount of the forwarding settlement document and moves the new amount to the *Billing Document Value* exposure category. The system also performs these updates when you change and cancel a forwarding settlement document.

Check Enabling

In Customizing, you can specify that the credit limit check feature can be enabled by forwarding order type. If you make this specification, the system automatically performs a credit limit check when you save a forwarding order. You can review the credit limit check status for orders in the *Forwarding Orders* worklist, and perform a manual check in an individual forwarding order.

For more information on enabling the credit limit check for a forwarding order type, see Customizing for *Transportation Management* under ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Forwarding Order Types* ▶.

For more information on defining the credit segment IDs that the SAP TM system uses to access the credit management functionality in the SAP Credit Management application, see Customizing for *Transportation Management* under ► *Basic Functions* ► *Credit Management Integration* ► *Assign Credit Segments to Sales Orgs and Company Orgs* ▶.

Check Failures

If the credit limit check fails, the system uses the setting you specified in the *Act. If CLC Failed* (Action if Credit Limit Check Failed) field of the Customizing for *Define Forwarding Order Types*. You can choose to block the order or take no action.

You can review the results of a credit limit check failure, including details on the credit limit for the business partner, and the exposure amount. You can approve or reject an order that has failed. You must enter a reason for the approval or rejection.

When you approve the order, the system automatically removes the block, and you can process the order as normal. When you reject the order, the system cancels the order.

More Information

The SAP TM system informs the SAP Credit Management application about the credit limit check amount approved for a customer in a specific forwarding order using the *Notify of Credit*

Commitment (`CreditCommitmentNotification_Out`) service operation in the *Transportation Request Processing* process component

The SAP TM system informs the SAP Credit Management application about the credit limit check amount in billing documents that are related to an approved forwarding order using the *Notify of Credit Commitment* (`CreditCommitmentNotification_Out`) service operation in the *Customer Freight Invoice Request Processing* process component.



Prepayment of Forwarding Orders

You can prevent forwarding orders from entering your planning and execution process until you have received prepayment from a business partner. This is useful for orders in the following circumstances:

- The transportation costs are high and you have a new business partner
- You have a business partner with a history of credit issues
- You have a business partner with whom you do not deal regularly

Prerequisites

You have specified a block reason code to block planning and execution in Customizing for *Transportation Management* under ► *Basic Functions* ► *General Settings* ► *Define Block Reason Codes* ▶.

You have specified a term of payment in Customizing for *SCM Basis* under ► *Master Data* ► *Business Partner* ► *Define Terms of Payment* ▶. You have added the block reason code to the term of payment.

You also have the option of adding the payment term to the relevant business partner in the *Customer Organization Data* view and *Customer Company Organization Data* view of the *Maintain Business Partner* transaction. You can access this transaction under ► *SAP Menu* ► *Transportation Management* ► *Master Data* ▶.

Features

Blocking the Forwarding Order

The system blocks the forwarding order after you create the associated freight unit. When you receive payment, you must manually update the payment received status in the order, so that the system removes the block.

For example, in a forwarding order with an Incoterm of FOB (Free On Board), you have a prepaid agreement party who is not a regular business partner. You decide that you will not process forwarding orders from the business partner, until you have received payment in advance.

You set the business partner up with a term of payment that includes a block on planning and execution. When you create a freight unit for a forwarding order, the system blocks the forwarding order. When you receive the advance payment, the system does not automatically remove the block. You must manually select the relevant *Payments Received* checkbox on the *Business Partner* tab of the forwarding order.

If there is more than one business partner in the order that needs to make a payment, but just one of the parties is blocked according to the criteria in the terms of payment, the system blocks the full order.

Checking the Credit Limit

The system does not perform a credit limit check on a business partner who has paid in advance.

Changing the Terms of Payment

You can manually change or delete a term of payment on the *Overview* tab page for a charge item. If you change the term of payment, the system uses the updated term, and if you delete the term of payment, the system does not use any payment term for charge calculation. The system also selects the *Manually-Changed Payment Terms* checkbox and disregards the term of payment you have specified elsewhere. Note that for charge calculation, the system sources the term of payment based on the following precedence:

1. *Business Partner* tab page
2. Agreement item
3. *Maintain Business Partner* transaction

If you have a prepaid agreement party that is blocked until you receive payment in advance, and you change the terms of payment for the prepaid payer in the business partner tab page, the system also automatically changes the terms of payment for the prepaid agreement party. The system automatically calculates charges on the terms you specify for the prepaid agreement party, and the terms for both the prepaid payer and prepaid agreement party must match.

For example, you change the terms of payment for the prepaid payer to 0002 in the forwarding order. The system automatically changes the terms for the prepaid agreement party in the forwarding order to 0002.



Transportation Service Levels

You use transportation service levels to describe the priority of transportation services. Examples are Express or Standard.

Features

A distinction must be made between the transportation service levels for the sales side and the purchasing side:

- Sales side

On the sales side, you specify transportation service levels for your customers. To do this, you define transportation service level codes in Customizing. For more information, see *Customizing for Transportation Management* under ► *Forwarding Order Management* ► *Define Transportation Service Level Codes*. If you then create one of the following documents the system offers you the transportation service level codes defined in Customizing for selection:

- Forwarding order
- Forwarding agreement (item level)
- Forwarding quotation
- Forwarding agreement quotation

If you are working with order- and delivery-based transportation requirements, you do not have to define any transportation service level codes. In this case, these are taken from the sales order (*Shipping Condition* field).

- Purchasing side

On the purchasing side, you define carrier service codes in the master data for your carriers. You do this on the *SAP Easy Access* screen under ► *Transportation Management* ► *Master Data* ► *Maintain Business Partner* (Carrier role, Vendor Data tab page). If you then create a freight document and enter one of these carriers the system offers you the corresponding values in the *Service Level* field for selection. This also applies to freight agreements (item level).



Note

If you are a logistics service provider and can commit all the carriers who work for you to the same transportation service level, we recommend you make the following settings:

- Define transportation service level codes in Customizing. For more information, see *Customizing for SCM Basis* under ► *Master Data* ► *Business Partner* ► *Define Transportation Service Level Codes*.
- Enter one of these values as the standard service level when you define your freight order type. For more information, see *Customizing for Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types*. The system then uses this value when you create a freight order.

End of the note.



Editing of a Forwarding Order

After you have created and saved a forwarding order, you can use this business document to perform further actions, such as the following:

- Create freight units
- Determine route
- Start transportation planning
- Create freight documents
- Calculate transportation charges
- Create forwarding settlement document

Prerequisites

See [Creation of a Forwarding Order \[Page 304\]](#).

Process

The following describes an example of a process for editing the forwarding order and starting the transportation planning:

1. *Creation of Freight Units*

If the freight units are not created automatically after you save the forwarding order, you trigger the creation manually on the user interface for the forwarding order (*Follow-Up Actions* menu). In this case, the system considers either the freight unit building rule (FUB rule) or the condition for determining an FUB rule that you have specified in Customizing. A prerequisite for the creation of freight units (automatically or manually) is that all required data has been entered in the forwarding order.

You can have the system create the freight units per order item, for example, or define that the system merges as many order items as possible into one freight unit. For more information, see [Creation and Editing of Freight Units](#).

After the system has created the freight units, the life cycle status changes from *New* to *In Planning*.

2. *Manual Transportation Planning*

You call the transportation cockpit. You enter your planning profile and selection profile and start the planning. The freight units created by the system are displayed in the transportation cockpit.

You can now execute manual transportation planning by pulling the freight units to the resources via drag and drop. The system then creates a freight order, which is displayed in the document flow for the forwarding order.

For more information about transportation planning, see [Planning](#).

As an alternative to manual transportation planning, you can proceed as follows:

- Determination of a route

You can have the system determine a route. In doing so, the system generates several alternative routes for each freight unit, one of which you can then accept. In Customizing for the forwarding order type, you can determine whether only the freight units (that is, only the route) are to be saved when you accept the route or whether the freight orders (that is, the planning) are to be saved as well. The system adjusts existing freight units.

If the freight orders are also saved, the life cycle status changes to *Planned* after you accept the proposed route. The route is displayed in the forwarding order in the form of stages. For more information, see [Determination of the Route \[Page 357\]](#) and [Generation of Transportation Proposals](#).

- Automatic planning

You can use the VSR optimizer to perform automatic planning from the transportation cockpit. For more information, see [VSR Optimization](#).

- Direct creation of freight documents

Directly from the forwarding order, you can already create freight documents, such as freight orders or freight bookings for the transportation stages defined in the document. You can also select available freight bookings. For more information, see [Direct Creation of Freight Documents and Selection of Schedules \[Page 335\]](#).

When all freight units of the forwarding order have been planned, the life cycle status changes to *planned*.

3. *Calculating Transportation Charges*

If you have activated transportation charge calculation in Customizing for the forwarding order type, and if the transportation charges are not calculated automatically when you save the forwarding order, you can allow the forwarding order to calculate these charges (internal and external charges). Moreover, you can enter the charges manually in the forwarding order. The system recalculates the transportation charges each time the forwarding order is saved again. However, transportation charges that you entered manually are fixed by the system and are kept during recalculation. For more information, see [Charge Calculation \[Page 227\]](#).

If you quickly want to estimate the transportation charges based on a minimum of data, you can use the *Estimate Forwarding Charges* function to do so. For more information, see [Charge Estimation \[Page 262\]](#).

You can also display a profitability analysis in the forwarding order (separate tab page). In the analysis, the system takes into account all costs and revenues associated with the execution of a forwarding order. For more information, see [Profitability Analysis \[Page 326\]](#).

4. *Creating a Forwarding Settlement Document*

If you have activated this function in Customizing for the forwarding order type, you can create a forwarding settlement document or an internal settlement document from the forwarding order based on the transportation charge calculation (*Follow-Up Actions* menu). For more information, see [Forwarding Settlement](#) and [Internal Settlement Management](#).

5. Printing Documents

You can print the forwarding order directly or after previewing it. The default printout contains information such as item descriptions and weights. If you have entered your order items in an item hierarchy, information about the lower hierarchy levels are also displayed.

The print history is displayed in the forwarding order under *Output Management*. This history also contains information about all the documents you have faxed or sent by e-mail or EDI.

For more information, see [Output Management](#).

6. Editing or Canceling the Forwarding Order

Depending on the extent to which the forwarding order has been processed, you can still change data such as dates and quantities. For example, you can change quantities up to the point at which the forwarding order is assigned the status *Completed*. The system adjusts the follow-on documents such as freight units, freight orders, and freight bookings accordingly. However, if quantity data has been transferred to the freight unit from the execution process and the status of the freight unit has been changed to *Available*, the system no longer adjusts the follow-on documents automatically. In this case, the system prompts you to change the data manually.

You can also cancel a forwarding order. Depending on your Customizing settings, you can enter a reason code that is then displayed in the *General Data* area of the forwarding order. For more information, see *Customizing for Transportation Management* under ► *Forwarding Order Management* ► *Define Cancellation Reason Codes*.

After the cancellation, the planning is invalid and the system deletes the freight units. The life cycle status changes to *Canceled*.

Note

The cancellation of a forwarding order cannot be changed. A forwarding order cannot be canceled if it has been assigned a freight document.

End of the note.

For more information, see [Processing of Changes and Deletion of Forwarding Orders \[Page 390\]](#).

7. Executing a Forwarding Order

You can use SAP Event Management to monitor the further execution of the forwarding order. To do this, you need to have set the corresponding indicator in Customizing for the document type. The forwarding order receives a tracking number (tracking ID) upon creation. You can provide this number to your ordering party, who can then use it to track the execution of the order on a special Web user interface. The system later creates event handlers for the follow-up documents freight unit and freight order. For more information, see [Integration with SAP Event Management](#).

Irrespective of SAP Event Management, the system displays the execution status in the forwarding order. It reflects the execution status of the freight order (or rather, the cumulated execution status if several freight orders exist for the forwarding order).

More Information

[Confirmation and Completion of a Forwarding Order \[Page 330\]](#)

[Forwarding Order Management Preparation](#)



Profitability Analysis

You can view a profitability analysis in the forwarding order. The system takes into account all the costs and revenues associated with the execution of a forwarding order in the analysis. You can also include the drayage charges to calculate profitability. You cannot edit the analysis.

The system displays the revenues, costs, and profits for the planned profitability and estimated profitability. You can navigate to business document level in the analysis hierarchy, and you can open the individual business documents.

The sources of costs are freight orders, freight bookings, and freight settlement documents. The sources of revenue are forwarding orders and the corresponding forwarding settlement documents. Internal settlement documents are costs for the company receiving the settlement and revenue for the company sending the settlement.

The system performs the following analysis:

- Planned profitability

The system calculates the revenue and cost charges from forwarding orders. It retrieves the planned revenue from the charge calculation done in a forwarding order. It retrieves the planned cost from the following sources:

- Cost distribution done in a freight order or freight booking
- Internal charge calculation done on a forwarding order. This is the planned internal cost for a forwarding order. Note that the system does not consider the internal charges in the freight order and freight booking for profitability calculation.

- Expected profitability

The system calculates the revenue and cost charges from settlement documents. It retrieves the expected revenue calculations from the charge calculation done in the forwarding settlement documents that are associated with the relevant forwarding order. It retrieves the expected cost from the cost distribution done on freight settlement documents and internal settlement documents.

Prerequisites

You have made the following settings in customizing to enable a profitability analysis in a forwarding order:

- Enabled the relevant freight order or freight booking type for cost distribution. This is the freight order or freight booking that you use as a basis for determining the freight cost source for the expected profitability. For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types and Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types* ▶.
- If you use an internal agreement to calculate the planned costs, you have enabled the relevant forwarding order type for internal charge calculation. For more information, see Customizing for *Transportation Management* under ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Forwarding Order Types* ▶.

- Specified a cost distribution profile with distribution level of *Forwarding Order* for the purchasing organization. To specify a distribution profile, see Customizing for *Transportation Management* under ► *Basic Functions* ► *Cost Distribution* ► *Define Cost Distribution Profiles*. To assign the distribution profiles to the purchasing organization, see Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings for Charge Calculation* ► *Define General Settings*.
- Enabled the freight settlement document for cost distribution so the expected costs are available for the profitability analysis in the forwarding order. For more information, see Customizing for *Transportation Management* under ► *Settlement* ► *Freight Settlement* ► *Define Freight Settlement Document Types*.

 Note

- The system only calculates the complete planned profitability after you have performed charge calculation in the following business documents:
 - Forwarding order
 - Freight order or freight booking in which you have enabled cost distribution at the level of *Forwarding Order*
- If you need to use an internal agreement to make the planned costs available to the profitability analysis, you must perform an internal charge calculation in the forwarding order.
- The system only calculates the complete expected profitability after you have completed the following tasks:
 - Generated all the necessary freight settlement documents for the freight order or freight booking that execute the relevant forwarding order
 - Enabled the freight settlement documents for cost distribution at forwarding order level or created internal settlement documents
- In an export-import situation, you create two forwarding orders; one for each of the export and import sides. The system restricts the profitability analysis to each of the forwarding orders individually. For example, it does not include the revenue and costs from the forwarding order on the import side in the profitability analysis of the forwarding order on the export side.

End of the note.

Example

You are sales organization Nuremberg. You receive a forwarding order, with an Incoterm of FOB (Free On Board), from a customer in Germany. The following table describes the planning, execution, and payment responsibilities.

Sales Organization (Company Code)	Stage	From/To	Planning and Execution Organization (Company Code)	Billed By	Billed To
Nuremberg (0001)	Pre-carriage	Nuremberg to Hamburg	Nuremberg (0001)	Nuremberg	Shipper

Sales Organization (Company Code)	Stage	From/To	Planning and Execution Organization (Company Code)	Billed By	Billed To
New York (0003)	Main carriage	Hamburg to New York	Hamburg (0002)	Hamburg* Nuremberg** New York (Consignee)	Nuremberg New York (Consignee)
New York (0003)	On-carriage	New York to Chicago	New York (0003)	New York	Consignee

* These are internal calculations and settlements. The internal organization that incurs the costs creates the settlements. In this case Hamburg sends an internal settlement to the Nuremberg sales organization for the cost incurred in the main carriage.

** Nuremberg sends a forwarding settlement to New York to recover its costs, because New York receives the payment from the customer, the consignee.

In the forwarding order, the planned revenue for the Nuremberg sales organization is as follows:

- Charge in the forwarding order for the shipper for the execution of the pre-carriage. This is driven by the FOB Incoterms that the Nuremberg sales organization has for the shipper.
- Charge in the forwarding order for the destination organization, to recover the cost of the main carriage and any other charges at the origin or destination due back to the origin organization. The import organization recovers these charges from the consignee (customer) because of the FOB Incoterms.

The planned costs for the Nuremberg sales organization are as follows:

- Cost of pre-carriage
- Cost of main carriage

The system retrieves the planned cost from the cost distribution of the charge calculation in the freight orders and freight bookings that are in place to execute the pre-carriage and main carriage. The following table describes the profitability calculation.

Source	Planned Revenue (EUR)	Planned Cost (EUR)	Planned Profitability (EUR)
Charge for shipper in forwarding order	500	None	None
Charge for import organization in forwarding order	1500	None	None
Cost of pre-carriage (Charge in freight order for pre-carriage)	None	400	None
Cost of main carriage (Charge in freight	None	1200	None

Source	Planned Revenue (EUR)	Planned Cost (EUR)	Planned Profitability (EUR)
booking for main carriage)			
Total	2000	1600	400

Some additional costs are incurred during execution, and these are included in the respective settlements. For example, a demurrage cost of EUR 50 is incurred at the pick-up location and is billed to the shipper.

The system retrieves the expected profitability from the settlement documents. The following table describes the expected profitability for the forwarding order.

Source	Expected Revenue (EUR)	Expected Cost (EUR)	Expected Profitability (EUR)
Settlement for shipper	$500 + 50 = 550$	None	None
Invoice for the main carriage for the import organization	1500	None	None
Freight settlement document for freight order	None	$400 + 50 = 450$	None
Freight settlement document for freight booking	None	1200	None
Total	2050	1650	400



Confirmation and Completion of a Forwarding Order

After you have created and edited a forwarding order in SAP Transportation Management (SAP TM), you can confirm the data to the ordering party. You can execute the confirmation based on the following data:

- Data communicated by the ordering party
- Data entered manually or edited
- Data planned by the system

Prerequisites

See [Creation of a Forwarding Order \[Page 304\]](#).

In particular, you have defined the default confirmation type in Customizing for the document type, in other words, you have defined which data the confirmation to the customer is to be based upon. You have also defined whether the confirmation is to occur automatically upon saving. For more information, see *Customizing for Transportation Management* under *Forwarding Order Management* *Forwarding Order* *Define Forwarding Order Types* .

Process

The following section contains a description of an example process for forwarding order confirmation:

1. Manual Confirmation

If the confirmation was not already sent to the ordering party automatically upon saving the forwarding order as according to the Customizing settings, you confirm the order manually. You have the following options:

- If you have specified in Customizing that the confirmation is to occur based on the ordering party data or the planning data, choose *Confirm* and have the system enter the dates/times and quantities in the confirmation fields of the forwarding order according to the Customizing settings. You can also enter the dates manually and overwrite the Customizing settings.
- If you have specified in Customizing that the confirmation is to take place based on the manually entered data, enter the dates/times and quantities in the fields for confirmation of the forwarding order and choose *Confirm*.

Note

If you have configured Customizing so that the confirmation occurs based on the planning data, a confirmation is only possible if complete planning data is available for the forwarding order. This means that the planning status of the forwarding order must be *Planned*.

End of the note.

2. Sending and Printing the Confirmation

The system automatically sends the confirmation to the ordering party. The sending type (for example, fax, e-mail) depends on your Customizing settings. You can also print out

the forwarding order confirmation as a document. In the output history, you can display which confirmation documents were already printed or sent.

3. *Changes After the Confirmation*

You can still make changes to the forwarding order even if you have already sent a confirmation to the ordering party. The status of the order changes back to *Not Confirmed*, and you have to repeat the confirmation.

For more information about the effects of changes to the forwarding order on subsequent planning processes, see [Processing of Changes and Deletion of Forwarding Orders \[Page 390\]](#).

4. *Completing the Forwarding Order*

The system only assigns the status *Completed* to the forwarding order if the associated freight orders have been executed. If you have allowed the invoicing of the forwarding order in Customizing, the invoicing must also have been completed.

5. *Archiving the Forwarding Order*

Once the forwarding order has been closed or canceled, you can archive this business document. For more information, see [Archiving Business Documents for Forwarding Order Management \(TM-FWM\)](#).

More Information

[Confirmation of Forwarding Orders](#)



Creation of a Forwarding Order for Rail Transportation

SAP Transportation Management (SAP TM) supports processes in which goods are transported by rail from a shipper to a consignee. The goods can be shipped from a source rail station, through intermediate rail stations, to a destination rail station (and can also be combined with pre-carriage and on-carriage stages by road). Different carriers can be responsible for execution and settlement on the different stages of the transportation process. The system therefore supports the transportation of full carloads and unit trains, as well as individual cargo items.

As a rail company or rail carrier transporting goods for your customers by rail, you can use forwarding order management in SAP TM to create a forwarding order for rail transportation. In the process description below, which shows how to create and edit a rail forwarding order, rail companies and rail carriers are both referred to as *carriers*.

Prerequisites

You have configured the general settings for a forwarding order. For more information, see [Settings for the Forwarding Order \[Page 301\]](#).

You have also configured the following settings that are particular to the rail transportation process:

- You have defined the shipping type in Customizing. The following shipping types are available for rail transportation:
 - *Carload*: The shipper transfers an entire railcar to the carrier.
 - *Intermodal Rail*: The shipper transfers individual cargo items to the carrier, for example, containers, products, and trailers.
 - *Unit Train*: The shipper transfers an entire train to the carrier.

You assign the shipping type to the transportation mode *Rail*. You can also specify that a cargo item in the item hierarchy is always to be assigned to a railcar.

For more information, see Customizing for *Transportation Management* under *Forwarding Order Management* *Define Shipping Types* .

- You have defined an item type in Customizing. You assign the item category *Passive Vehicle Resource* and the resource class *Railcar* or *Trailer* to this item type.

For more information, see Customizing for *Transportation Management* under *Forwarding Order Management* *Define Item Types for Forwarding Order Management* .

- If you want to use vehicle groups and vehicle types, you have defined them in Customizing and assigned them to your item type. You can define your vehicle resources such as railcars and trailers in the master data as resources with the necessary details. Alternatively, you can also define a vehicle group and type for railcars and trailers that contains only general information about these vehicles.

For more information, see Customizing for *Transportation Management* under *Master Data* *Resources* *Define Equipment Groups and Equipment Types* .

- If you want to use a default route, you have defined it in SAP NetWeaver Business Client under **Master Data** **Transportation Network** **Default Route** **Create Default Route**. For more information, see [Default Route \[Page 103\]](#).
- If you want the system to create railcar units automatically, you have defined a transportation unit type in Customizing and assigned it to your freight unit building rule. For more information, see Customizing for *Transportation Management* under **Planning** **Transportation Unit** **Define Transportation Unit Types** and under [Freight Unit Building Rule](#).

Process

The following section describes the special aspects of creating and editing a rail forwarding order. For more information about the standard process, see [Creation of a Forwarding Order \[Page 304\]](#) and [Editing of a Forwarding Order \[Page 322\]](#).

1. Entering the Data on the Initial Screen

On the initial screen of the forwarding order, you enter the basic data for the forwarding order. You enter *Rail* as the transportation mode and define a rail-specific means shipping type such as *Carload*. The user interface for the forwarding order dynamically adjusts to meet the requirements of a rail forwarding order based on the transportation mode.

You can also enter a default route at this stage that you have defined in the master data. If you want to create the forwarding order with a reference to the item of a forwarding agreement (FWA), you can select a default route that was defined for the FWA item. The system then takes into account the default route when it creates the transportation stages for the required route. The carrier data is also copied to the required route.

If you enter an FWA item as a reference, the system uses it to determine the agreed services and charges.

2. Entering General Forwarding Order Data, Locations, and Dates

You enter the data that you have received from the ordering party using the standard process. As the locations, you enter the source and destination rail stations.

3. Creating the Order Items

Depending on your Customizing settings, you can create a hierarchy consisting of railcar items and cargo items in the item table of the forwarding order. By combining the shipping type and the item types of the individual items in the forwarding order, you can specify that the railcar must be at the top level of the item hierarchy (shipping type *Carload*) or that the cargo items have to be on the top level (*Intermodal Transport*).

Your Customizing settings also determine the options that you have for entering information about your vehicles such as railcars:

- If you have defined a vehicle resource in the master data, the detail data for the resource is displayed in the item details of the forwarding order.
- If you have defined a vehicle group and type in Customizing and assigned them to the item type, this data is displayed in the details for the items created with the corresponding item type.

- You can enter the vehicle group and type directly in the item details of the forwarding order.
4. *Determination of the Route*
- If you have entered a default route, the required route is displayed in the stage table. Otherwise, you can enter the stages of the route with the source and destination rail stations. If the stages are to be executed or settled by different carriers, you can enter the executing carrier and the invoicing carrier in each case. You can also enter the external forwarding agreement for the invoicing carrier.
5. *Creation of Railcar Units*
- If you have defined a transportation unit type in your freight unit building rule, the system creates railcar units instead of freight units. For more information, see [Creation and Editing of Freight Units](#) and [Railcar Unit \[Page 571\]](#).
6. *Manual Transportation Planning*
- You plan the transportation as described in the standard process.
7. *Exchange of Information Regarding Processing Progress*
- If other carriers are involved in the transportation process, you inform them of the transportation services that you are to provide. You can also inform each other about the processing progress.
8. *Creation of a Forwarding Settlement Document*

According to the process that you have agreed with the ordering party and any other carriers involved, you have the following settlement options:

- All of the carriers involved in the transportation process invoice their transportation stages separately to the ordering party (for example, the rule 11 scenario in North America).
- You carry out the settlement process with the ordering party for the entire route. If necessary, the other carriers settle their stages with you. The system creates a forwarding settlement document for the entire forwarding order.
- Some stages of the route are invoiced to the ordering party by the executing carrier, while other stages are invoiced to the ordering party by one of the carriers on behalf of several executing carriers. This is a mixed settlement scenario.

For more information see [Forwarding Settlement](#).

More Information

For more information about a typical rail transportation process from the perspective of the shipper, see [Rail Transportation \[Page 487\]](#).



Direct Creation of Freight Documents and Selection of Schedules

When creating a forwarding order in SAP Transportation Management (SAP TM), you can already create freight documents, such as freight orders or freight bookings, for the transportation stages defined in this document. You can also select existing freight bookings and schedules (departures).

You can only use these functions for stages of the actual route, that is, not for stages of the ordered route.

Prerequisites

- You have defined default freight document types for stages in Customizing. This means that you have specified which type of freight documents are to be created when you create freight documents directly from the stage view of the forwarding order.

In this Customizing activity, you can also restrict which activities are to be possible from the user interface of the forwarding order (for example, selection of schedules).

For more information, see Customizing for Transportation Management under
▶ *Forwarding Order Management* ▶ *Forwarding Order* ▶ *Define Default Freight Document Types for Stages* ▷

- If you want default routes and schedules to be considered during the creation of freight documents, you have specified this in advance. For more information, see [Schedule \[Page 87\]](#).

Features

Creation and Selection of Freight Documents

On the *Stages* tab of a forwarding order, you can create freight orders or freight bookings for the stages defined for the route, depending on the transportation mode. You can also select and assign a freight booking or freight order that already exists.

If a default route already exists for a stage, a freight document cannot be created directly. In this case, you can select schedules for the stages of the default route. You can then create freight documents for the stages of the actual route that were created based on the default route.

Once you have created the freight document, the document ID is displayed as a link. You can then navigate to the document.

Creation of a Freight Document for Several Stages

You can also create a freight document for several consecutive stages. The system first determines the freight document type from your Customizing settings. The system then creates a freight order or a freight booking with this document type, depending on the transportation mode. The following prerequisites apply:

- A freight document type must be defined for each stage selected.
- If you are creating freight orders, all selected stages must have the same freight order type.

- If you are creating freight bookings, all selected main carriages must have the same freight booking type and the same transportation mode.
- The following relevant data for the stage must be the same (or may not be defined):
 - Carrier
 - Voyage
 - Name of vessel
- The status of the stages must be *Unplanned*.

If you create a freight booking for several stages, you can change the freight document type that has been determined and, for example, choose document types with corresponding service levels at the port of loading and port of discharge.

Selection of a Schedule

You can select schedules that already exist for the stages of a forwarding order. If a default route exists, only the schedules that are available for the stages of this route are displayed. If fixed schedules are assigned to the default route, only the options for these schedules are displayed.

Once you have selected a schedule option, the data of the schedule is copied to your actual route. If the default route contains additional stages, they are also copied to the actual route.

If you have entered locations for transportation zones in the master data and use these zones in the default route instead of locations, the system takes them into account when it calculates the default route for the forwarding order.

Remove Assignment of a Freight Document

You can also remove a freight document that you have created for one or several stages or assigned to the stage. In this case you unassign it. The link to the freight document is removed from the stage view.

If so defined in Customizing for the freight order type or the freight booking type, the freight document is canceled or deleted from the system once it has been unassigned.

Activities

- In SAP NetWeaver Business Client, choose the *Stages* tab of a forwarding order.
- Depending on the function you require, you select one or more stages and choose *Freight Document* *Create* or *Freight Document* *Select Freight Booking* .

The system creates a freight document of the type that you specified in Customizing. For example, if you have defined that a freight booking is created for a transportation stage of the type *main carriage* with the transportation mode *sea*, the system takes this into account.

If you want to select a schedule or remove the assignment, select the stage and choose the corresponding pushbutton. You can also remove the assignment of several stages to a freight document by selecting one or more of the assigned stages and choosing *Freight Document* *Unassign* .

If you have only selected one of the stages, the system will ask if you want to remove the assignment of all stages. Only this variant is possible.

More Information

[Direct Creation of Freight Orders \[Page 480\]](#) (detailed information specific to freight orders)

[Determination of the Route \[Page 357\]](#)



Forwarding Quotation

Quotation from a carrier or logistics service provider to an ordering party with respect to the transportation of goods, which contains information about the price and further conditions regarding the transportation services.

In SAP Transportation Management (SAP TM), the business document of the forwarding quotation serves to help the ordering party send the data of a potential forwarding order with the quotation price. When the ordering party places the order, you can then create a forwarding order in relation to the quotation.

Based on the forwarding quotation, you can have the system determine and define the route and calculate the transportation charges.

Structure

The forwarding quotation has a similar structure as the forwarding order, since it is the basis for the eventual forwarding order (see [Forwarding Order \[Page 294\]](#)). In addition, you can enter the following data:

- Validity Scope for the Quotation

When creating the forwarding order based on this quotation, the system checks whether the quotation is still valid.

- Quotation Price

Here you can enter a total price for the quotation, without specifying the transportation charges in detail. If you specify transportation charges, the system displays the total here in addition. You should note that the display of the quotation price is determined according to the calculation level that you have defined in the calculation profile. The quotation price is not displayed if you have defined a calculation at stage level in the calculation profile.

Status of the Forwarding Quotation

The statuses of the forwarding quotation represent for the most part those of the forwarding order (see [Status of a Forwarding Order \[Page 297\]](#)). Only the values of the life cycle status that are described below differ from those of the forwarding order. Some statuses for the forwarding quotation, which refer to planning and execution, have been removed.

Life Cycle Status

Status	Description
New	The forwarding quotation was newly created and not yet sent.
Not Transferred	The forwarding quotation that was already sent to the ordering party was changed. The changes were not yet sent.
Transferred	The forwarding quotation was sent to the ordering party.
Canceled	The forwarding quotation was canceled.

Locking the Forwarding Quotation

In addition to the forwarding order statuses described above, the system displays the locking status for this quotation. You can set the lock manually or have the system set it automatically. The system sets automatic locks when executing the approval workflow or during the dangerous goods check, for example. The reason for the lock is also displayed for the lock status. If you set the lock manually, you can use the value help to select the reason for the lock.

Integration

The business document for the forwarding quotation is integrated with the following business document in SAP TM:

- [Forwarding Order \[Page 294\]](#)

You can convert a forwarding quotation that you had sent to an ordering party and which was accepted by this ordering party into a forwarding order, in other words, you create a forwarding order with reference to this quotation.

More Information

[Creation and Editing of a Forwarding Quotation \[Page 340\]](#)



Creation and Editing of a Forwarding Quotation

You can use a forwarding quotation (see [Forwarding Quotation \[Page 338\]](#)) in SAP Transportation Management (SAP TM) to send an offer to your ordering party. You can have the system determine possible routes and calculate the transportation charges based on the selected route. You can send the quotation containing the transportation charge information to your ordering party via e-mail or fax, for example.

After the ordering party has accepted the quotation, you can create a forwarding order based on it. You can also subsequently assign a forwarding quotation to a forwarding order. However, this is subject to certain prerequisites such as corresponding data. For more information, see [Subsequent Assignment of Forwarding Quotations \[Page 343\]](#).

You can create the forwarding quotation manually. If you receive a forwarding request for quotation electronically (for example, within the tendering process), you can have the system create the forwarding quotation automatically based on the request for quotation. For more information about the tendering process, see [Freight Tendering \[Page 635\]](#).

Prerequisites

The same prerequisites apply for creating a forwarding quotation as for creating a forwarding order, especially if you later want to create a forwarding order based on the forwarding quotation. For more information, see [Settings for the Forwarding Order \[Page 301\]](#).

Alternatively or in addition to the forwarding order type, you must also define the *forwarding quotation type* in Customizing. You use this document type to determine a series of characteristics for the forwarding quotation and can make certain default settings. For example, you can predefine the sales organization or determine how many forwarding orders are allowed to be created based on a forwarding quotation of this type. Moreover, you can specify whether the forwarding quotation of this type is based on a forwarding request for quotation (quotation mode).

For more information, see Customizing for *Transportation Management* under ► *Forwarding Order Management* ► *Forwarding Quotation* ► *Define Forwarding Quotation Types* ▶.



Note

If you later want to create a forwarding order based on a forwarding quotation and predefine the shipping type and the transportation mode in Customizing for the forwarding quotation type, these settings must be the same as those in the forwarding order type.

End of the note.

If you want to specify reasons for the rejection or cancellation of a forwarding quotation, you have defined them in Customizing. For more information, see Customizing for *Transportation Management* under the following Customizing activities:

- ► *Basic Functions* ► *General Settings* ► *Define Rejection Reason Codes* ▶
- ► *Forwarding Order Management* ► *Define Cancellation Reason Codes* ▶

Process

1. *Entering the Data on the Initial Screen, the General Data, and the Quotation Items*

Since the forwarding quotation can be the basis for a forwarding order, the data structure and user interface for creating the quotation data is similar to that of the forwarding order. In addition, you can determine the validity scope of the quotation.

For more information, see [Creation of a Forwarding Order \[Page 304\]](#) and [Creation of Forwarding Order Items or Forwarding Quotation Items \[Page 346\]](#).

If you have received a forwarding request for quotation from your ordering party, the forwarding quotation is automatically created based on this request and the data it contains. It is displayed in your personal object worklist (POWL), from where you can access and edit it.

2. Saving the Forwarding Quotation

If the forwarding quotation was not created automatically, save it. The system now assigns the document an ID from the number range for this document type. In addition, the system checks the data that has been entered for completeness and consistency. The system displays the results of these checks in the form of error messages and as a completeness status.

If so defined in Customizing for the forwarding quotation type, the system automatically determines the transportation charges after saving.

3. Determining the Route

If you have already received information about the ordered route from the ordering party, you can create the stages of the route. For more information, see [Determination of the Route \[Page 357\]](#).

4. Calculating Transportation Charges

If this has not occurred automatically after saving, you can have the system calculate the transportation charges or you can enter them manually. The sum of transportation charges is displayed as quotation price. Instead of entering the transportation charges, you can also specify only the sum of the charges as the quotation price. For more information, see [Charge Calculation \[Page 227\]](#).

If you quickly want to estimate the transportation charges based on a minimum of data, you can use the *Estimate Forwarding Charges* function to do so. For more information, see [Charge Estimation \[Page 262\]](#).

5. Sending the Quotation to the Ordering Party and Printing the Document

You can send the forwarding quotation to your ordering party and print out the document immediately or after previewing it. The sending type (for example, fax, e-mail) depends on your Customizing settings. If you have created the quotation based on a request from your ordering party, you can dispense with this step.

The history of sending and printing quotation documents is displayed in the forwarding quotation on the *Output Management* tab. For more information, see [Output Management](#).

6. Accepting or Rejecting a Quotation

If your ordering party has already informed you whether he agrees with the quotation, or if the quotation is based on a forwarding request for quotation from your ordering party, you can accept or reject the forwarding quotation. If you reject it, you can also specify a rejection reason code. The quotation is then automatically cancelled.

The corresponding response code and if necessary reason rejection code is displayed in the *General Data* area of the forwarding quotation.

7. *Creating the Forwarding Order Based on the Quotation, or Canceling the Quotation*

Depending on whether your ordering party has accepted or rejected the quotation, or whether you accept the conditions of your ordering party contained in the forwarding request for quotation, you can proceed as follows:

- You create a forwarding order based on the forwarding quotation, in other words, you create a forwarding order based on the data in the quotation. When you do so, the system also copies the route data and the price calculation from the quotation. The system also checks whether the quotation is still valid. For more information, see [Creation of a Forwarding Order \[Page 304\]](#).

You can also receive a forwarding order based on a forwarding quotation electronically (EDI).

- You cancel the quotation. The life cycle status changes to *Canceled*. Depending on your Customizing settings, you can enter a cancellation reason that is displayed in the *General Data* area of the forwarding quotation.

Note that the cancellation is irreversible.

If you have specified in Customizing for the document type how many forwarding orders are allowed to be created from this forwarding quotation, the system checks this when you create a forwarding order.

8. *Archiving the Forwarding Quotation*

After the forwarding order has been canceled or if it is no longer valid, you can archive the business document. For more information, see [Archiving Business Documents for Forwarding Order Management \(TM-FWM\)](#).



Subsequent Assignment of Forwarding Quotations

If you follow the standard process in SAP Transportation Management (SAP TM), you create a forwarding order with reference to an existing forwarding quotation (FWQ). However, you can also assign forwarding quotations to a forwarding order later. For example, you can create a forwarding order even if the corresponding forwarding quotation does not exist at that time.

The transportation charges entered in the forwarding quotation can be copied automatically to the forwarding order. Transportation charges that already exist in the forwarding order can be overwritten by the system.

Prerequisites

If you want to assign a forwarding quotation to a forwarding order subsequently, certain prerequisites must be fulfilled, which are checked by the system. When doing this, the system differentiates between hard and soft constraints. If these constraints are not fulfilled, the system proceeds as follows:

- Hard Constraints

The forwarding quotation cannot be assigned. These constraints are implemented as standard in SAP TM. They cannot be changed.

- Soft constraints

The forwarding quotation can be assigned, but the system does not copy the transportation charges to the forwarding order.

You can use a Business Add-In (BAdI) to enhance these constraints. You can also replace the soft constraints with other constraints. For more information, see *Customizing for Transportation Management* under *Business Add-Ins (BAdIs) for Transportation Management* *Forwarding Order Management* *Assignment of Forwarding Quotation to Forwarding Order* .

Features

Hard Constraints

The system checks the following constraints:

- *Forwarding order:*

- No forwarding settlement document has been assigned to the forwarding order as yet.

- *Forwarding quotation:*

- The forwarding quotation is valid and has been submitted (in other words it has the status *Submitted*).
 - The forwarding quotation is not subject to a quotation block.
 - The forwarding quotation can be assigned to another forwarding order.

This constraint relates to a Customizing setting with which you can restrict the number of forwarding orders that can be created based on one forwarding quotation. For more information, see *Customizing for Transportation*

- *Matching data:*

The following data in the forwarding quotation and the forwarding order must match:

- Forwarding agreement
- Traffic direction
- Air waybill type (AWB type)
- Shipper and consignee
- Source location and destination location

Soft Constraints

The system checks whether the following data matches in the forwarding quotation and the forwarding order:

- Sales organization and ordering party
- Additional forwarding agreement (import or export forwarding agreement)
- Incoterm data (Incoterm and free text for Incoterm location)
- Service level, transportation mode, shipping type, and movement type
- Amounts and quantities in the header data, for example *high-value cargo*
- Pick-up and delivery date in the header data
- Dangerous goods indicator

In addition, certain items or stages in the forwarding quotation for which transportation charges have already been calculated must exist in the forwarding order. Otherwise the system cannot copy the transportation charges from the forwarding quotation to the forwarding order.

Messages, Status Updates, and Options

The system displays the check results as system messages. In addition, it displays the status of the assignment on the *Status* tab of the forwarding order as follows:

Status	Name
No FWQ Assigned	No forwarding quotations have been assigned to the forwarding order; this is the initial status.
FWQ Subsequently Assigned	A forwarding quotation was assigned to the forwarding order subsequently, in other words after the forwarding order was created; the hard checks were successful; existing transportation charges from the forwarding quotation have been copied to the forwarding order.
FWQ Subsequently Assigned; Soft Check	A forwarding quotation was assigned to the forwarding order subsequently; the soft checks were unsuccessful; any existing transportation charges

Status	Name
Failed	were not copied to the forwarding order.
FWO Created from FWQ	The forwarding order was created based on a forwarding quotation, either manually or using EDI.

If the soft check fails, you have the following options:

- You can change the data of the forwarding quotation or forwarding order in such a way that the prerequisites are fulfilled. Then you can run another check. This does not change the status.
- You can copy the transportation charges from the forwarding quotation to the forwarding order. The status then changes to *FWQ Subsequently Assigned*.

Activities

You can subsequently assign a forwarding quotation to a forwarding order as follows:

- From the user interface of the forwarding order, by choosing *Forwarding Quotation* *Assign FWQ*.
- From your personal worklist (POWL) (same navigation path)

In the POWL you can also find forwarding orders with assigned forwarding quotation based on their status.

If you want to recheck the prerequisites or subsequently copy the transportation charges, choose *Recheck Constraints*, or *Copy Transportation Charges*.

If you want to replace an assigned forwarding quotation by another one, you can assign the new forwarding quotation as described above, by choosing *Forwarding Quotation* *Assign FWQ*.

Note

- If transportation charges already exist in the forwarding order, the system asks if you want to overwrite them. The forwarding quotation is only assigned to the forwarding order if you agree to this.
- The transportation charges copied to the forwarding order are fixed.

End of the note.

More Information

[Creation and Editing of a Forwarding Quotation \[Page 340\]](#)

[Creation of a Forwarding Order \[Page 304\]](#)



Creation of Forwarding Order Items or Forwarding Quotation Items

When you create a forwarding order or a forwarding quotation in SAP Transportation Management (SAP TM), you can enter the items of this business document in an item hierarchy. The hierarchy can contain the following levels:

- Railcar
- Trailer
- Container
- Package
- Product
- Service

The planning always occurs on the highest level, for example, on the level of the container or package. Information about the packages in a container or the products contained in a package is additional information for the planner, and does not play an essential role in the planning by the system. This information does, however, have an impact on a potential transportation charge calculation. This is also valid for service items.

Prerequisites

- If you want to provide information about railcars, trailers, or containers when creating the order items, you have defined *equipment groups and types* as well as ventilation settings in Customizing. You can define transportation mode-specific equipment groups and equipment types, for example, for sea freight containers and unit load devices (ULDs). You can also enter information about packages by defining package types.

This data serves as additional information for the planner and is not relevant for the planning by the system. For more information, see Customizing for *Transportation Management* under the following Customizing activities:

- ► *Master Data* ► *Resources* ► *Define Equipment Groups and Equipment Types* ▶
- ► *Forwarding Order Management* ► *Define Package Type Codes* ▶
- ► *General Settings for Order Management* ► *Define Ventilation Settings* ▶
- In Customizing, you have specified *item types* and assigned them to document types. You can use the item type to predefine various parameters for an item, such as the item category, equipment group and equipment type, as well as default units of measure. Additionally, you can already assign a dangerous goods UI profile, with which you can make settings for the display of dangerous goods information for items.

Assigning item types to document types allows you to specify which item types are allowed for a document type. You can also specify a default item type for items with a certain item category that are created for a document with a certain document type.

The default item type is used when forwarding orders and forwarding quotations are received electronically. If you create items manually and have only defined one default

item type for a combination of the item category and document type, the system enters the item type automatically.

You can also define that the system automatically creates initial items using specified item types when you manually create a forwarding order or forwarding quotation.

For more information, see Customizing for *Transportation Management* under the following Customizing activities:

- ► *Forwarding Order Management* ► *Define Item Types* ▶
- ► *Forwarding Order Management* ► *Forwarding Order* ► *Assign Item Types to Forwarding Order Types* ▶
- ► *Forwarding Order Management* ► *Forwarding Quotation* ► *Assign Item Types to Forwarding Quotation Types* ▶

If you want to use railcars or trailers in your item hierarchy, you have assigned the item category *Passive Vehicle Resource* to your item type along with resource class *Railcar* or *Trailer*.

If you have defined the item type for the *Service* item category, and you want to assign service types to the service items, you have defined service types in Customizing. For more information, see Customizing for *Transportation Management* under ► *Basic Functions* ► *General Settings* ► *Define Service Types* ▶.

- You have defined *shipping types* in Customizing. For the shipping type, you have specified whether cargo items such as containers, packages, and products can or must be assigned to equipment items such as railcars. For more information, see Customizing for *Transportation Management* under ► *Forwarding Order Management* ► *Define Shipping Types* ▶.
- If you want to use *commodity codes* to classify goods, you have defined commodity codes and commodity code types in Customizing. For more information, see Customizing for *Transportation Management* under ► *Master Data* ► *Classification of Goods* ► *Define Commodity Codes* ▶.
- If you want to define that you can specify *locations and business partners* for an item that differ from the header data in the forwarding order, you have defined this accordingly in Customizing for the forwarding order type or the forwarding quotation type. The default setting is that you cannot specify locations and business partners that differ from the header data. For more information, see the Customizing activities mentioned above.

Features

You can create items in the forwarding order and forwarding quotation business documents as follows:

- *Item Hierarchy*

You can create the items individually or as a hierarchy consisting of the levels railcar, trailer, container, package, product, and service. The sequence of the levels is predefined, in other words, you cannot define a product as highest level with a lower-level package.

Depending on the Customizing settings for your shipping type that you enter in the forwarding order or forwarding quotation, you can or must assign cargo items such as

containers, packages, and products to equipment items such as railcars. In this way you can define, for example, that if the shipping type is *Carload*, the railcar must be at the highest level in the item hierarchy.

- *Item Type*

You must enter an item type for each item. If you leave this field empty, a unique default item type for the combination of the item type (for example, product) and the document type must be defined in Customizing (see above under *Prerequisites*). In this case, the system determines the default value from the Customizing settings.

Once you have specified an item type for an item, it cannot be changed.

- *Service Items*

You can define the services in a service product catalog and include the service products in the forwarding agreements. The service items are then available in a forwarding order or forwarding quotation that was created on the basis of the forwarding agreement. If you have defined an item type for the *Service* item category in Customizing, you can create service items in your forwarding order or forwarding quotation.

In the detail data for the item, you can also specify a service type, for example, cleaning and fumigating a container. For example, the service type can be assigned to an instruction set that contains the step-by-step instructions for fumigating a container.

Service items are used mainly for charge calculation and settlement. However, they are not carried over to follow-up documents or included in scheduling. On the *Charges* tab page, you can enter the quantity for a service item below the main item. The system uses the logistics data of the service item to calculate the charges. If you do not enter the quantity for the service item, the system calculates the charges based on the quantity that you entered for the higher-level logistics item.

For more information, see [Service Product Catalogs \[Page 174\]](#) and [Management of Instructions](#).

- *Equipment Type*

If you have made the corresponding settings in Customizing, you can assign equipment types (for example, freezer containers and 20-foot containers) as well as package types (for example, pallets) to the items. The following also applies:

- If you have assigned an equipment group to the item type in Customizing, it is entered automatically for an item with this item type and equipment types of this group are displayed for selection. You can, however, overwrite the equipment group.
- If you have specified a default package type and a default equipment type in Customizing for the item type, this is displayed automatically.

For containers, you can enter data in the detail data, for example, about temperature control. If you have defined temperature data for this container type in Customizing for the equipment type, the system checks your entries based on the Customizing data. You can also select ventilation settings that you have predefined in Customizing. This data is information for the planner.

Furthermore, you can already enter data about seals for the container. This data is then automatically copied to the successor freight booking or the freight order. For more information, see [Use of Seals \[Page 604\]](#).

- *Commodity Codes*

If you have defined these in Customizing, you can assign commodity codes to the items of an air forwarding order or forwarding quotation. You use these codes to classify and evaluate your goods to be transported (commodities) according to characteristics of your choice. When classifying goods, you can take into account transportation-relevant product characteristics, such as weight, density, loading properties, and handling (of dangerous goods, for example). You can use this information, which is also transferred to follow-on documents such as freight orders or freight bookings, as an additional description or a basis for decisions about packaging and so on.

For more information, see [Classification of Goods \[Page 112\]](#).

- *Quantities, Weights, and Volumes*

You can enter quantity, weight and volume data for the items you entered (except for service items for which you can enter only quantity data). These are partly aggregated across the different levels of an item hierarchy automatically. In addition, any discrepancies between the required quantities and actual quantities are displayed. For more information, see [Creation of Quantity, Weight and Volume Data of an Item \[Page 351\]](#).

- *Automatic Checks*

In Customizing, you can specify that the system is to automatically check whether a product entered exists, as well as whether a package exceeds certain dimensions. If necessary, you can check the dimensions of the package manually. Additionally, a container number that has been entered is checked to see if it meets international standards.

- *Copy and Move*

You can copy existing items and move items via drag and drop to another position in the item hierarchy.

If you create a forwarding order based on a forwarding quotation, the item types that have been defined are copied to the forwarding order.

- *Splitting Items*

You can also split items into several items. The number of the split items depends on the number of pieces contained in the item. A new item is created for each piece. The quantities are also split.

An item can only be split if it meets the following prerequisites:

- It has not yet been planned.
- It contains more than one piece.
- It does not have any subitems.
- It is not a service item.

- *Locations and Business Partners*

If you have not specified otherwise in Customizing, you can define your own source and target locations, pick-up and delivery dates as well as business partners in the detail data

of items or subitems in a forwarding order or forwarding quotation. The following business scenarios can provide a reason for doing so:

- You want to pick up the goods for a forwarding order from different locations or different shippers and transport them together in a main carriage.
- You want to deliver the goods from one forwarding order that you have transported in a main carriage to different locations or recipients.

A combination of these two scenarios is also possible. Moreover, for business partners, you can enter one-time locations and one-time addresses that differ from those in the header data in a forwarding order or quotation.

 Note

- If you have specified different shippers or consignees for multiple forwarding order items, an automatic settlement is performed only for those shippers or consignees that you have specified in the header data of the forwarding order (or for the corresponding prepaid agreement parties and collect agreement parties from the header data).
- You can perform the settlement for the different business partners by creating forwarding settlement documents manually.

End of the note.

More Information

[Example for the Creation of Items \[Page 354\]](#)



Creation of Quantity, Weight and Volume Data of an Item

When you create a forwarding order or forwarding quotation in SAP Transportation Management (TM), you can create quantity, weight and volume data for the order items, and have the system calculate the data automatically. The following is a description of the special features that apply to this.

For more information, see [Creation of Forwarding Order Items or Forwarding Quotation Items \[Page 346\]](#).

Prerequisites

- If required, you have assigned a *default unit of measure* for weight, volume, and quantity in Customizing for the business document type that you created for the forwarding order or forwarding quotation. The system uses this unit of measure if the following applies:
 - You have not entered a unit of measure for the item on the user interface
 - You have not defined a unit of measure in the item type
 - The system calculates the total quantity of the planning-relevant order items

For more information, see Customizing for *Transportation Management* under the following Customizing activities:

- ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Forwarding Order Types* ▶
- ► *Forwarding Order Management* ► *Forwarding Quotation* ► *Define Forwarding Quotation Types* ▶
- If you want the system to automatically total the *gross volume* of an item from lower item levels, you can define this in Customizing. For more information, see Customizing for *Transportation Management* under ► *Forwarding Order Management* ► *Define Item Types for Forwarding Order Management* ▶.

Features

Aggregation of the Data and Automatic Calculations

- The quantities, weights and volumes of the planning-relevant items (in other words, the items on the highest level of an item hierarchy) are totaled by the system and displayed in the base unit of measure in the header data of the document. However, the totaling is only possible if the units of the items can be converted to the required unit. If this is not the case, the total stays empty. All other items are additional information and can be included for instance on the print documents as well.
- The quantities and weights of the lower-level items in an item hierarchy are aggregated by the system to the next-higher level of the hierarchy. In a three-level hierarchy consisting of container, package, and product levels, the system aggregates the data as follows:

1. If you specify the gross weight on the product level, the system aggregates the data to the net weight of the next-higher levels, for example of the package level. The net weight is no longer changeable.
 2. If you specify on package level the weight of the packaging (tare weight) in addition to the net weight, the system adds the data to the gross weight of the package.
 3. The gross weight of the package is aggregated by the system to the net weight (loading capacity) of the container and is then no longer changeable. If you additionally specify the tare weight of the container, the system totals the net weight (loading capacity) and the tare weight to the gross weight (total weight) of the container. The total weight is likewise no longer changeable. It is also displayed in the document header.
- If you have activated this in Customizing of the forwarding order type (see below), the gross volume data of the lower-level items in an item hierarchy is aggregated by the system to the next-higher level of the hierarchy. Once the value of an item from lower item levels has been totaled, it can no longer be changed. You can only process the value at higher items levels if the item does not have any subitems with volume data.

The value in the *gross volume* field of an item represents either the external volume or the volume of the contents, depending on the item type. It can be interpreted as follows:

- Container or ULD: Gross volume of the contents of a container or ULD
- Package: Gross volume of the package that, for example, is defined by the external dimensions of the package (length, width and height)
- Product: Gross volume of the product
- After you have entered the equipment group, the equipment type and the number of containers, the system calculates the tare weight and the capacity of the container in TEU based on the Customizing settings.
- If you do not specify a unit of measure, the system determines the default unit of measure from the item type or, if not available, from the document type (if defined in Customizing).
- If you enter the length, height, and width of a package item, the system calculates the gross volume automatically. However, this is only possible if no volume data from lower item levels has been totaled. In addition, the *gross volume* field must either be empty before the calculation, or the value entered in the field must correspond to the product regarding length, height and width (meaning it has probably already been calculated).
- If you enter only the gross weight, the system calculates the net weight and the empty weight. It does so as follows:
 - Containers and railcars: The system assumes that the gross weight is the same as the empty weight and that the net weight is 0.
 - Packages and products: The system assumes that the gross weight is the same as the net weight and that the empty weight is 0.

Actual Quantities and Discrepancies

- If the actual received quantities for an item have already been entered in the freight document, the cargo receipt status of the freight document (for example, *Delivered*) is displayed in the item table. The detailed data for the item then displays the quantities requested by the ordering party as well as the confirmed actual quantities of the freight document.
- If there are discrepancies between the requested and actual quantities, or other discrepancies, this is displayed with a status in the item table as well as on a separate tab in detail. You can then clarify the discrepancies and set them to solved for subsequent planning. For more information, see [Handling Discrepancies \[Page 355\]](#).



Example for the Creation of Items

The following describes an example of how you can create a hierarchy of items of a forwarding order or forwarding quotation in SAP Transportation Management (SAP TM). For more information, see [Creation of Forwarding Order Items or Forwarding Quotation Items \[Page 346\]](#).

Example

Item Level 1	Item Level 2	Item Level 3	Item Description	Item Type	Package Type	Container	Gross Weight	UoM	Net Weight	UoM	Tare Weight	UoM
Container				CN		HJCU4572305	5,900.00	KG	3,900.00	KG	2,000.00	KG
	Package			PKG	Europallet		3,900.00	KG	3,650.00	KG	250.00	KG
		Product	Spare Part	PRD			3,650.00	KG				
Container				CN		MWCU6059784	9,800.00	KG	7,800.00	KG	2,000.00	KG
	Package			PKG	Europallet		3,900.00	KG	3,650.00	KG	250.00	KG
		Product	Spare Part	PRD			3,650.00	KG				
	Package			PKG	Europallet		3,900.00	KG	3,650.00	KG	250.00	KG
		Product	Spare Part	PRD			3,650.00	KG				

As the table shows, you create two items for containers on the highest hierarchy level. The first container HJCU4572305 has a subitem on the second hierarchy level with a package of package type *Europallet* and a subitem on the third hierarchy level with a product of the description *Spare Parts*. The second container MWCU6059784 has two subitems on the second level, each with a package of package type *Europallet*. Each package has one additional subitem with a product of the description *Spare Parts*.

For the container MWCU6059784, the system aggregates the weight data as follows:

- The container has a gross weight of 9,800 KG. Each package has a gross weight of 3,900 KG. The products each have a gross weight of 3,650 KG.
- The gross weight of the package of 3,900 KG is the sum of the net weight of 3,650 KG aggregated from the product and the weight of the packaging (tare weight), which is 250 KG. The gross weight of the container of 9,800 KG is the sum of the net weight of 7,800 KG that was aggregated from the packages and the tare weight of 2,000 KG of the container.

Only the two container items that were defined on the first hierarchy level are relevant for planning. Therefore, 15,700 KG is displayed in the header data of the forwarding order as the total gross weight of the order (sum of the gross weight of 9,800 KG and 5,900 KG of both containers). The subitems only serve as additional information, however, they can have an effect on the calculation of transportation charges.



Handling Discrepancies

In a forwarding order, you enter the quantities requested by the ordering party for the items to be transported. When the actual quantities are reported, there can be discrepancies between them and the requested quantities. You can enter these quantity discrepancies in the freight document, just as you enter other discrepancies, such as packaging damage or missing documents. These discrepancies are then also displayed in the forwarding order.

Using the displayed data, you can check discrepancies and, for example, clarify after discussion with the ordering party whether the discrepancies are acceptable. Then, for further planning, you can set discrepancies to resolved, or block stages of the forwarding order that were not yet executed.

In addition, you can search for forwarding orders that contain discrepancies.

Process

The following example illustrates the process for handling quantity discrepancies and other discrepancies.

1. The employee, who receives the goods, discovers a quantity discrepancy or other discrepancy for an item. This person enters the discrepancy in the freight order or in the freight booking. For more information see [Discrepancies and Events \[Page 592\]](#).
2. In the forwarding order, the discrepancy is shown by a status in the table of order items (*Discrepancy Exists*).
3. You display the detail data for the item. If there is a quantity discrepancy, you can check the actual quantities against the requested quantities. The actual quantities are for display only. They cannot be changed.
4. On the *Discrepancies* tab page of the detail data, you check the details of the various discrepancies. It is possible that the type of discrepancy and other additional information was entered in the freight document.
5. After consulting with the ordering party, you set the discrepancy to resolved, or set an execution block for stages of the forwarding order that were not yet executed. If you set the discrepancy to resolved, you indicate to the subsequent planning stages that no further action is required (for example, if the discrepancy was accepted by the ordering party). This does not mean that the discrepancy was corrected. Quantity discrepancies can no longer be corrected after the actual quantities are reported.

After you have set the status *Discrepancy Resolved*, you can also enter a note for it.

6. The status *Discrepancy Resolved* that is set in the forwarding order and any additional information you may enter are displayed in the freight document. The reverse is also true - the forwarding order shows when a discrepancy was already set to resolved in the freight document.

Search for Forwarding Orders with Discrepancies

If you want to directly process discrepancies in forwarding orders, you can search for forwarding orders with discrepancies in your personal worklist as an additional process step. That is, you define a query for forwarding orders that have the status *Discrepancy Exists*. A forwarding order receives the overall status *Discrepancy Exists*, if there is a discrepancy for at least one item of the

order. A forwarding order does not receive the status *Discrepancy Resolved* until all discrepancies that existed are resolved.



Determination of the Route

When you create a forwarding order or a forwarding quotation in SAP Transportation Management (SAP TM), you can already specify the route requested by the ordering party. You can also define the route in more detail manually, as well as edit the requested route.

To do this, you can enter the individual stages of the route in the forwarding order or the forwarding quotation. The system then considers the route during further transportation planning and settlement. If necessary, you can also have the system determine the route and then copy the result to your order or quotation. The result of transportation planning done at a later time is also displayed in the forwarding order.

Prerequisites

Along with the general settings for a forwarding order or a forwarding quotation, you have made the following settings in Customizing:

- You have defined *stage types*. In doing so, you define whether a stage is a pre-carriage, main carriage, or on-carriage. This categorization is required for the processes that follow, such as charge calculation, settlement, and the creation of freight documents.

You can also define an instruction set in the stage type that contains work instructions for a stage (see [Management of Instructions](#)).

- You may have additionally specified which *transportation modes are permitted for certain stage types*. You can also define a default transportation mode for a stage type.
- You have defined *movement types*. In doing so, you specify the stages for which the logistics service provider is responsible as well as which stage types are permitted for a forwarding order or a forwarding quotation.
- If required, you have defined how the system determines *stages in forwarding orders or forwarding quotations*. You have the following options:

- Determination of stages based on a stage profile

In a stage profile, you define which stage types are permitted and which are required in a forwarding order or a forwarding quotation, which sequence is to apply to which stage types, and the properties of the stages. This allows you to define a rule to determine the stages that are relevant for planning, for example.

You can assign the stage profile directly to the forwarding order or forwarding quotation type in Customizing. Alternatively, you can first create a condition and then assign the stage profile to the condition (condition type *Stage Profile*, /SCMTMS/TRQ_STG_PRF). With the condition, you can configure the settings for determining the stages to allow a flexible combination of movement type, transportation mode, and traffic direction.

- Determination of stages based on the movement type

You define which stage types are permitted and which are required for a specific movement type. As in the stage profile, you also define the sequence for the stage types and specific properties of the stages. However, in contrast to the stage profile, the settings only apply to a specific movement type.

For more information, see Customizing for *Transportation Management* under *Forwarding Order Management* and the following Customizing activities:

- Define Stage Types
- Define Allowed Transportation Mode for Stage Types
- Define Movement Types
- Define Stage Type Sequence for Movement Types
- Define Stage Profiles

In Customizing you have also defined *default agreement party types* for a combination of the stage type and Incoterm. The system uses this information to automatically determine agreement parties for stages. For more information, see Customizing for *Transportation Management* under ► *Forwarding Order Management* ► *Define Default Agreement Party Types for Stages*.

If you want to work with *Standard Carrier Alpha Codes* (SCACs) or *Airline Codes* for carriers and airlines, you have defined this in the business partner master data (see [Definition of Business Partners \[Page 28\]](#)). You can also specify SCACs and airline codes in Customizing for the display in the input help. For more information, see Customizing for *Transportation Management* under ► *Master Data* ► *Business Partners* ► *Define Standard Carrier Alpha Codes* and *Define IATA Airline Codes*.

If required, you have defined a *default route* in the master data. For more information, see [Default Route \[Page 103\]](#).

Features

Ordered Route

On the tab or in the assignment block for *stages* of the forwarding order or forwarding quotation, you can enter stages of the route requested by the ordering party under *Ordered Route*. If you have already entered the source and destination locations on the *Locations and Dates/Times* tab, this is displayed as a *Complete Carriage*. If you enter a default route on the initial screen of the forwarding order or forwarding quotation, or if you select a default route based on a forwarding agreement item, the system displays the stages from this route.

Otherwise you enter the source and destination locations on the *Complete Carriage* line of your route. The system then automatically transfers this data to the general data on the *Locations and Dates/Times* tab. To create additional transportation stages for the ordered route, you have the following options:

- As intermediate stages of the complete carriage

If the route only consists up to now of a source location and a destination location and you would like to add an intermediate location, select the *Complete Carriage* line and choose *Insert*. The system inserts two additional lines with stages in the table. The system copies the data for the source location and the dates of the complete carriage for the first transportation stage, and it leaves the destination location data empty. For the second transportation stage, the system copies the data of the destination location and leaves the source location data empty.

You can enter the new source location data and the destination location data in the empty fields. If the complete carriage previously went from location A to location C, you now have, for example, one transportation stage from A to B and another from B to C.

- As additional stages for existing stages

You select the line of an existing stage and choose *Insert*. The system divides this line into two lines and proceeds as described above.

You can also hide the ordered route on the user interface.

Actual Route

Manual entry of the actual route

You can also enter the actual route separately from or in addition to the route requested by the ordering party,. You can also have the system determine the actual route with *Define Route* and have it copied to the table of the stages. If you copy only the route proposed by the system, you can still make changes later. For you to create the actual route, it is not necessary for the items and freight units to already exist in your forwarding order or forwarding quotation.

Depending on your Customizing settings as well as the entries made in the header data of the forwarding order or forwarding quotation, specific data for your stages is already displayed as follows:

- Movement type, traffic direction, and stage profile

You enter the movement type and traffic direction in the header data for the whole business document. You may also have defined a stage profile with the document type. Depending on your settings for the movement type or in the stage profile, certain stages of the actual route are determined automatically. Additionally, the stage types that you can enter may be restricted. Along with the traffic direction (export or import), the movement type also determines the transportation stages for which you, as the logistics service provider or document processor, are responsible. This is displayed with the *Stage Status*.

- Transportation mode

You enter the transportation mode in the header data for the whole business document. However, it only refers to the main carriage (or the main carriage stages) of the route. If you enter the transportation mode manually for a stage or if you have defined it for the stage type in Customizing, the system considers the entries in the following sequence:

1. Manual entry for the stage
 2. Customizing settings for the stage type
 3. Transportation mode in the header data
- Agreement party and agreement type

The system uses the stage type and the Incoterms entered in the header data to automatically determine the agreement party and the agreement party type, determining who is responsible for settlement.

- SCAC or airline code

If you enter an SCAC and no carrier, the carrier is determined in the subsequent planning processes. If you enter a carrier directly, the system automatically determines the related SCAC and enters the value in the corresponding field of the stage. For more information, see [Carrier Categorization \[Page 600\]](#).

In Customizing and in the master data, you can define airline codes for air cargo carriers, and you can specify whether the carrier is a member of the International Air Transport Association (IATA). When you create an air forwarding order or quotation, you can enter these codes. The system then automatically determines the related prefix for the master air waybill (MAWB).

If the transportation stage is checked by the planning and execution organization, the system determines the organization interaction status (for example, from the default route). For more information, see [Interaction Between Organizational Units \[Page 372\]](#).

You can also determine the detailed route data by selecting a schedule and copying it to your actual route data. For more information, see [Direct Creation of Freight Documents and Selection of Schedules \[Page 335\]](#).

Actual route resulting from transportation planning

If you have performed transportation planning based on the forwarding order (see [Editing of a Forwarding Order \[Page 322\]](#)), the actual route is displayed under *Actual Route* and can no longer be changed..

As an alternative to transportation planning, you can create freight orders and freight bookings directly from the forwarding order for the stages of the route. The freight document ID as well as other related data, such as information about ship connections, are displayed for each stage. For more information, see [Direct Creation of Freight Documents and Selection of Schedules \[Page 335\]](#).

Copying the actual route to the ordered route

The ordered route is not updated automatically by the data of the actual route. If you would like this to happen because you want print documents to be up-to-date, you can choose ► *Actual Route* ➤ *Copy Actual Route* ➤ to copy the data to the route ordered by the ordering party. However, note that the ordered route is no longer visible.

Detail Data

You can enter and display detail data, such as delivery dates and address data, for a specific transportation stage. If the system has already determined the address data from the master data of the location, you can overwrite this data for the complete carriage of the ordered route.

In the *Document* field, a link to the subcontracting document related to the transportation stage (for example, the freight order or freight booking) may be displayed. You can then navigate to this document directly.

The pick-up date and delivery date entered in the stage table is more exactly defined in the detail data. The following date details are displayed for the transportation stages and can be entered there:

- Requested pick-up date and delivery date (valid for ordered route)
The pick-up date and delivery date requested by the ordering party and specified in the ordered route.
- Planned pick-up date and delivery date (valid for actual route)
The pick-up date and delivery date entered manually in the actual route or by the system after transportation planning. If planning has not yet been performed, the planned pick-up date and delivery date correspond to the requested date.

If a freight document has not been created and transportation planning has not been performed, you can still change the dates.

- Actual pick-up date and delivery date (valid for actual route)

The actual pick-up date and delivery date (including the time) entered manually in the freight document or reported by SAP Event Management.

- Confirmed pick-up date and delivery date (valid for complete carriage of the ordered route)

The pick-up date and delivery date confirmed to the ordering party.

- Cut-off dates

Cut-off dates are read from the freight document and indicate the latest time by which goods or specific documents must be available. The document cut-off date, for example, indicates the date by which all freight-relevant documents must be made available to ensure that transportation can be prepared and goods can be loaded on time.

Stage View and Item View

For the stage table display, you can switch between the stage view and the item view. These views have the following characteristics and advantages:

- Stage view

In this view, the stages are displayed at the top level of a hierarchy and the items belonging to a stage are displayed below. This has the advantage that you can, for example, easily perform the following for a stage:

- Create a new stage for several items
- Edit the data of a stage for several items
- Create or select freight documents for a stage, as well as select schedules

If not all of the freight units contain the same data, the sequence of the stages is determined based on the following criteria:

4. The sequence specified for the movement type in Customizing
5. Item number
6. ID of the freight unit

- Item view

In this view, the items are displayed at the top level of the hierarchy and the related stages are displayed below. If your forwarding order or forwarding quotation contains several freight units, you can see a list of the items with the corresponding freight units. The list contains an entry for each item that is assigned to a freight unit. You can also make changes to an item that apply for all related stages.

For individual items, you can also define source and target locations as well as business partners that differ from the locations in the header data and the complete carriage. For example, you can define that the items that are transported together in the main carriage are picked up from or delivered to different locations.

 Note

In certain cases, you can also define different source and target locations as well as business partners for *subitems*. This is valid for the buyer's consolidation (BCO) and shipper's consolidation (SCO) processes. The following options are available:

- If you enter the value `SCO` in the *Buyer's or Shipper's Consolidation* field for a forwarding order and have defined `Export` as the traffic direction, you can define an alternate destination location for a subitem in a container. The system automatically creates the corresponding stage for the subitem in the ordered route. You can then still change the stage manually in the stage table.

When you create freight units for a forwarding order, the system copies the stages for the subitems to the actual route. If you then change the stages in the ordered route, the changes are not copied to the actual route. However, you can change the stages separately in the actual route.

- In the BCO process, an import forwarding order is created automatically from an export forwarding order. For this import forwarding order, the system defines the value `BCO` in the *Buyer's or Shipper's Consolidation* field and `Import` as the traffic direction. If the source location of the subitem in the forwarding order differs from the higher-level container item, then the stage for the subitem is automatically created in the ordered route and the actual route. You can no longer change the stage manually in the stage table.

As described above under *Prerequisites*, the system determines the stage types of the automatically created pre-carriage and on-carriage stages from the movement type or stage profile that was assigned to the forwarding order type.

For more information, see [Buyer's Consolidation \(BCO\) in Export/Import \[Page 554\]](#) and [Shipper's Consolidation \(SCO\) in Export/Import \[Page 558\]](#).

End of the note.

Copying the route data

If you copy a forwarding order or use a forwarding quotation as a template for creating a forwarding order, the route data (both the requested route and the actual route) is also copied. The following data is also copied:

- Source location and destination location
- Stage types
- Transportation mode

All other route data, for example, dates and information about ship connections, are not copied, otherwise they would mean a restriction for later transportation planning. Therefore, you are still able to replan.



Air Freight-Specific Consolidation Processes

You can use Forwarding Order Management in SAP Transportation Management (SAP TM) to consolidate goods from several forwarding orders or house air waybills (HAWBs) in a single air freight booking or a master air waybill (MAWB). A capacity manager at the gateway can for example combine several forwarding orders for an air freight booking (gateway consolidation). You can also create multiple air freight booking for a forwarding order.

However, it can also be necessary to restrict the consolidation options, because for example consolidation is not admissible in a country. Therefore, SAP TM also supports the following air freight-specific processes in which goods cannot be consolidated in the main carriage:

- Back-to-Back Process
- Direct Shipment
- Internal Co-Load

Prerequisites

In Customizing for the forwarding order type or forwarding quotation type, you have optionally defined the air waybill type (AWB type). For more information, see Customizing for *Transportation Management* under the following Customizing activities:

- ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Forwarding Order Types* ▶
- ► *Forwarding Order Management* ► *Forwarding Quotation* ► *Define Forwarding Quotation Types* ▶

If you want to define which AWB types are allowed for particular countries, you have assigned ABW types to individual countries in Customizing. For more information, see Customizing for *Transportation Management* under ► *Forwarding Order Management* ► *Define Allowed AWB Types for Country* ▶.

Features

You control air freight-specific consolidation processes by assigning the AWB type attribute to the forwarding order or forwarding quotation. You can predefine this attribute in Customizing for the forwarding order type or forwarding quotation type; or you can define it directly in the forwarding order or quotation.

This attribute for example controls how many forwarding orders or house bills of lading can be assigned to an air freight booking or master air waybill. This means you can only assign a forwarding order that is defined as *Back-to-Back* or a house bill of lading to an air freight booking or a master air waybill.

The attribute also has the following features:

- You define the air waybill type in a forwarding order or a forwarding quotation. The system transfers this to the air freight booking where it is read-only. This means you cannot modify the AWB type in a booking.
- If you have predefined a value in Customizing, the system displays this value in the business document but you cannot change it there. Otherwise, the field in the business document is empty and you can enter a value.

- If the AWB type for a forwarding order or forwarding quotation is not predefined in Customizing, you can also change this subsequently yourself, directly in the document. This changes the consolidation options accordingly. If for example you change a forwarding order that is defined as *Back-to-Back* to a forwarding order with *Standard Consolidation*, you can assign any number of additional forwarding orders to the air freight booking associated with this forwarding order.
- If you define or change an AWB type in a forwarding order, or enter or change the destination location of a main carriage, the system checks whether the AWB type is allowed for the country in which the destination location is found.
- You can search for (air) forwarding orders, forwarding quotations and air freight bookings with this attribute in your personal worklist (POWL).

More Information

[Back-to-Back Process \[Page 365\]](#)

[Direct Shipment \[Page 367\]](#)

[Internal Co-Load \[Page 370\]](#)



Back-to-Back Process

You use a back-to-back process to negotiate with the ordering party that consolidation cannot be performed for the main carriage of the route. This can have the following reasons:

- Legal reasons (consolidation is not admissible in some countries)
- Special features of the goods involved (such as for dangerous goods)
- Customer request
- Customs declaration

In this case, you can only assign a back-to-back house air waybill (HAWB) to a master air waybill (MAWB). In SAP Transportation Management (SAP TM), you can specify accordingly that an air freight booking can only be assigned to a forwarding order that is defined as a *back-to-back* order.

Prerequisites

You have assigned number ranges for house air waybills to your sales organization and ordering party involved in the SAP TM master data. For more information, see [Waybill Stock Definition \[Page 291\]](#).

Process

To define and execute a back-to-back process, proceed as follows: This process description only covers the special features of the back-to-back process. For more information about creating forwarding orders and quotations, see [Creation of a Forwarding Order \[Page 304\]](#) and [Creation and Editing of a Forwarding Quotation \[Page 340\]](#).

1. You create an (air) forwarding order and define the *Back-to-Back* air waybill type (AWB type). If you have predefined the air waybill type in Customizing for the forwarding order type, the system displays this as the default value.
If you first want to create a quotation for your ordering party, you can also create a forwarding quotation with the AWB type *Back-to-Back*.
2. You assign a house air waybill number to the forwarding order or assign a number from the corresponding number range.
3. Define the stages of the route and create an air freight booking for the main carriage of your route. Alternatively, you can assign an existing air freight booking to the main carriage.
4. The system transfers the data in the forwarding order to the booking. This includes the AWB type *Back-to-Back*. The system also determines business partners in the booking automatically on the basis of the business partner in the forwarding order.
5. You can then add to and change the data in the booking. However, the AWB type is read-only in the booking and can no longer be changed. If you want to subsequently change the AWB type, you should change this in the forwarding order.

Result

- You cannot assign an additional forwarding order to a booking to which a back-to-back forwarding order has already been assigned.
- You can print the house air waybill from the *Output Management* tab. The transportation charges are also included. For more information, see [Printing](#).



Direct Shipment

In a direct shipment process, the transportation process is performed by the shipper and the carrier. Goods can for example be transported to the airport directly by the shipper. This means that a house air waybill (HAWB) is not required and transportation activities are performed on the basis of the master air waybill (MAWB) for the airline. Goods are not consolidated in the main carriage.

In SAP Transportation Management (SAP TM), you can mark a forwarding order for the direct shipment process using the air waybill type. When you create an air freight booking for this forwarding order, the data in the order is transferred automatically to the booking and you cannot assign any other forwarding orders to the booking. The system does not create a house air waybill, but instead creates an air waybill (AWB) that is based on the master air waybill.

There is also a special user interface for the direct shipment process. When you create a forwarding order with the AWB type *Direct Shipment*, a corresponding air freight booking is created automatically for the forwarding order. You can enter the data on a consolidated screen for the forwarding order and freight booking, and start follow-on processes such as calculation of costs for both documents. The following process description applies when you create a forwarding order with the AWB type *Direct Shipment* for the direct shipment process.

Prerequisites

- In Customizing, you have defined a forwarding order type with the following settings:
 - *Same Locations and BPs* checkbox is selected
 - *Automatic Freight Unit Building* checkbox is selected
 - Freight unit building rule (FUB rule) that does not permit freight units to be split
The system supports just one freight unit per direct shipment.
 - Transportation mode *Air* (optional)
 - AWB type *Direct Shipment* (optional)

For more information, see Customizing for *Transportation Management* under *Forwarding Order Management* *Forwarding Order* *Define Forwarding Order Types* .

- You have specified in the stage profile or for the movement type that the forwarding order must contain a main carriage stage. For more information, see Customizing for *Transportation Management* under *Forwarding Order Management* *Define Stage Profiles* or under *Forwarding Order Management* *Define Stage Type Sequence for Movement Types* . You have then specified in the Customizing settings for the forwarding order type how the stages are to be determined, that is, using the stage profile or the movement type.
- You have defined a freight booking type in Customizing and indicated in the *Service Definition* area that consolidation is not to take place for the source and destination location of the main carriage. For more information, see Customizing for *Transportation Management* under *Freight Order Management* *Freight Booking* *Define Freight Booking Types* .

- In Customizing, you have defined the freight booking type that you created as the default freight document type. You have defined this default freight document type for the forwarding order type that you defined for the direct shipment. You have also selected *Main Carriage* at the stage type. For more information, see Customizing for *Transportation Management* under ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Default Freight Document Types for Stages*.

Process

To define and execute a direct shipment process, proceed as follows: This process description only covers the special features of the direct shipment process. For more information about creating forwarding orders and quotations, see [Creation of a Forwarding Order \[Page 304\]](#):

1. On the initial screen for the forwarding order, use the input help to select a forwarding order type that is suitable for the direct shipment process. If this has not already been predefined in Customizing, choose the transportation mode *Air* and the AWB type *Direct Shipment*.

2. When you have specified in the Customizing settings for the forwarding order type that the stages are to be determined based on the movement type, you select the relevant movement type using the input help.

3. The system creates an air forwarding order and the corresponding air freight booking. The system determines the freight booking type based on your Customizing settings for the default freight document type.

The forwarding order and freight booking data that you predefined in Customizing are displayed on the user interface for the forwarding order with the AWB type *Direct Shipment*. The freight booking is also displayed in the stage view of the forwarding order for the main carriage stage.

4. You enter the airport data for the freight booking. You can then save the forwarding order.

5. You specify additional data for the forwarding order and freight booking depending on your requirements. Note the following:

- The general data as well as the business partner, stage, and item data relate to the forwarding order.
- The location data for the transportation stages in the section view are determined by the system based on the booking data. You can change this data only on the tab page or in the assignment block *Booking Data*.
- The handling codes also relate to the forwarding order and are not copied to the booking.
- If you copy an existing forwarding order with AWB type *Direct Shipment*, only the forwarding order data is copied.

You can also copy a forwarding order with the AWB type *Direct Shipment* to a forwarding order with AWB type *Normal Consolidation* or vice versa. However, freight bookings assigned are not also copied.

6. You can draw an MAWB number from the waybill stock for the creation of an air waybill. If there is a carrier change, you can return the number to stock and specify a new carrier.

7. You can calculate the costs for the forwarding order and freight booking separately or together for both documents. Both the forwarding charges and the freight costs are displayed.
8. If you want to use additional input and editing options, you can open the forwarding order or the air freight booking separately from the user interface for the forwarding order with the AWB type *Direct Shipment*.

Result

- You cannot assign any other forwarding orders to the air freight booking that is indicated as *Direct Shipment*.
- If you cancel a forwarding order that is indicated as a *Direct Shipment*, the system also automatically cancels the associated booking. The MAWB number is returned to the waybill stock automatically.
- You can search for forwarding orders with the AWB type *Direct Shipment* in your personal object worklist.



Internal Co-Load

In this process, you can make cargo capacity that you have already booked available to another organizational unit in your company. This business unit can also be a legally independent unit.

As a consolidating business unit (consolidator), you are responsible for the freight booking and the master air waybill (MAWB). You can calculate the internal freight costs and perform an internal settlement with the other business unit (coloader). As a coloader, you conduct the negotiations with the customer and are responsible for executing the forwarding order to the customer and for the house air waybill (HAWB). You also perform the settlement with the customer.

Prerequisites

- You have created a suitable organizational structure in Customizing. You must assign your organizational unit to a company organization so that the system can, for example, determine whether your sales and purchasing organizations belong to the same company code.

For more information, see *Customizing for Transportation Management* under ► *Master Data* ► *Organizational Management* ► *Organizational Model* ► *Create Organizational Model*.

- You have configured the necessary settings for the external and internal charge calculation and settlement. In particular, you have activated the internal charge calculation in Customizing for the forwarding order type and the charge calculation in Customizing for the freight booking type. For more information, see *Customizing for Transportation Management* under ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Forwarding Order Types* □ and under ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types* □. For further information, see also [Charge Management and Service Product Catalogs \[Page 166\]](#).
- There is an internal agreement between the two organizational units between which you want to perform the co-load process. There is also an external agreement with the customer of the coloader. For more information, see [Agreement](#).

Process

1. As a *consolidator*, you create an air freight booking and therefore reserve capacity for a particular flight. You define the consolidating business unit as a purchasing organization. For more information, see [Freight Booking \[Page 506\]](#).
2. As a *coloader*, you create a forwarding order. You define the co-loading business unit as a sales organization.
3. You define the stages of the route in the forwarding order. For the main carriage, you specify the source and destination locations as well as the pick-up dates/times and delivery dates/times according to the freight booking already created whose capacity you want to use. You also define the consolidating business unit as a planning and execution organization.
4. You assign the freight booking whose capacity you want to use to the main carriage of the forwarding order.

5. From the forwarding order, you calculate the charges that the customer must pay to the co-loading business unit based on the agreement reached between the two parties. For more information, see [Charge Calculation \[Page 227\]](#).
6. You calculate the internal charges that the co-loading business unit must pay to the consolidating business unit.
7. You create a settlement document for the settlement between the co-loader and their customer from the forwarding order. For more information, see [Forwarding Settlement](#).
8. As a *consolidator*, you create an internal settlement document for the settlement with the coloader from the overview of the settlement documents. For more information, see [Internal Settlement Management](#).



Interaction Between Organizational Units

You can use this function to model how organizational units interact with each other, for example, how a sales organization interacts with a planning and execution organization. This interaction is especially important if you have to transport certain goods in a specific transportation stage, for example, dangerous goods.

Features

The sales organization is responsible for entering the order, for example, but is not allowed to create freight bookings for specific transportation stages or send them to a carrier. It can therefore propose how to transport the goods (by specifying a route and a schedule, and assigning a freight order or a freight booking) and sets the organization interaction status to transfer the affected stages to the planning and execution organization to be checked. The planning and execution organization checks the proposal and the transportation stage details in the transportation cockpit. It can then confirm the data exactly as proposed in the forwarding order, change data such as the departure and then confirm the proposal, or reject the proposal outright. The status for the stage in the forwarding order then changes to *Confirmed*, *Confirmed with Deviations*, or *Rejected* respectively.

Note

The functions for confirming or rejecting proposals are not displayed as standard, and so the planning and execution organization must first select an appropriate layout set in the transportation cockpit. For more information, see [Use of Profile and Layout Sets](#).

End of the note.

The planning and execution organization can also create a freight booking or a freight order for the transportation stage in the transportation cockpit, or assign the transportation stage to a document that already exists. In this case, the system sets the organization interaction status automatically from *To Be Checked* to *Confirmed*. The sales organization can then confirm the transportation stages with the ordering party.

Furthermore, the planning and execution organization can select an existing freight booking in addition to the route and schedule and confirm the details for the carrier.

Even if a stage has already been confirmed, the sales organization can still make changes to the order. In this case, the system sets the status of the stage to *Changed After Confirmation*.

If the planning and execution organization rejects a stage, the sales organization can submit a new proposal by changing the status of the stage back to *To Be Checked*.

Note

If the planning and execution organization rejects unconfirmed stages that are assigned to a freight booking via an auto-confirmation profile these unconfirmed stages are automatically unplanned.

End of the note.

If the sales organization wants to cancel a stage, this must also be approved by the planning and execution organization. The sales organization therefore sets the status of the relevant stage in the forwarding order to *Cancellation Requested*. In the transportation cockpit, the planning and execution organization chooses *Confirm* for the stage and the status in the forwarding order subsequently changes to *Cancellation Approved*.

The sales organization can also remove the default route from a stage in the forwarding order by selecting the stage and choosing ► *Schedule* ► *Unassign* ▶.

If the sales organization wants to delete the stages of the default route from the actual route, it can do so by selecting one of the relevant stages and choosing *Delete Stage*. The system then replaces the stages containing the default route by the original stages.

Automatically Setting the Organization Interaction Status

The sales organization can set the organization interaction status manually from *Confirmed* or *Rejected* to *To Be Checked*, *Not Yet Requested*, or *Cancellation Requested*.

You define criteria for automatic confirmation in a profile, which the system determines based on the freight booking type. These criteria can include, for example, the security status, volume, or weight. If a transportation stage meets the criteria defined in the profile, the stage can be confirmed automatically (for example, if the volume and weight defined in the profile are less than the volume and weight defined in the transportation stage).

You can use the Business Add-In *BAdI: Change Organization Interaction Status* (/SCMTMS/TOR_ORG_INT_STATUS) to control the following cases:

- A transportation stage can be confirmed automatically (that is, the organization interaction status is set automatically from *To Be Checked* to *Confirmed*), such as when the forwarding order does not contain any dangerous goods.
- A confirmed transportation stage must be rechecked (that is, the organization interaction status is set automatically from *Confirmed* or *Rejected* to *To Be Checked*), for example, when quantities are changed.

Aggregated Organization Interaction Status

The *Statuses* tab page of the forwarding order shows the aggregated organization interaction status of the forwarding order. This is an overall status that is based on the statuses of the individual stages.

If all of the stages have the same status, this status is shown as the aggregated organization interaction status (unless all stages have the status *Confirmed with Deviations*, in which case the aggregated organization interaction status is set to *Confirmed*). If all of the stages have a status that is either *To Be Checked* or *Changed After Confirmation*, the aggregated organization interaction status is set to *Changed After Confirmation*.

In cases where the status of one stage differs from all of the others, the system sets the aggregated organization interaction status based on the following rules, which it applies in the sequence specified:

Sequence	Status of at Least One Stage	Aggregated Status
1	Cancellation Approved	Cancellation Partially Approved
2	Cancellation Requested	Cancellation Partially Requested
3	Rejected	Partially Rejected
4	Confirmed	Partially Confirmed
5	Confirmed with Deviations	Partially Confirmed

Sequence	Status of at Least One Stage	Aggregated Status
6	Changed After Confirmation	Changed After Confirmation
7	To Be Checked	To Be Checked
8	Not Yet Requested	Not Yet Requested

More Information

[Auto-Confirmation Profile \[Page 375\]](#)

[Coordination Between Customer Service Agent and Gateway Agent \[Page 376\]](#)



Auto-Confirmation Profile

A user-specific grouping of parameters that are taken into account in the interaction between organizational units (in particular, between customer service agents and gateway). The profile is only relevant for freight units for which interaction between organizational units is mandatory. You define whether interaction between organizational units is mandatory in the default route or in Customizing under ► *Transportation Management* ► *Freight Order Management* ► *Define Freight Booking Types*.

The settings that you configure in the auto-confirmation profile are checked by the system when the freight booking is assigned to the freight unit stage. If all criteria are fulfilled, the assignment of the freight booking is confirmed automatically.

You define auto-confirmation profiles in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *General Settings* ► *Organization Interaction* ► *Auto-Confirmation Profiles*.

Structure

In the auto-confirmation profile, you define the following, for example:

- General data

Here, you specify a technical name and description for the profile that you want to create. In addition, you can configure whether automatic confirmation for this profile is to be activated and can choose a transportation mode. If automatic confirmation is activated, the criteria for capacity and utilization limits and excluded security statuses must be met so that the freight unit stages are confirmed automatically.

- Capacity limits

Here you define hard capacity limits that the system takes into account for automatic confirmation. You can define a maximum gross weight and a maximum gross volume for the freight unit. You can also define a maximum weight capacity and a maximum volume capacity for the freight booking as percentage values. The utilization of the freight booking after the freight units have been assigned must not exceed the limits defined in the profile.

- Excluded security statuses

Freight units for which at least one of the excluded security statuses is specified are not confirmed automatically. The security status is only relevant for the *Air* transportation mode.

If all parameters are observed, the assignment of the freight unit stage to the freight booking is confirmed automatically.

Administrative data is also displayed.



Coordination Between Customer Service and Gateway Agent

If you are a customer service agent and receive a forwarding order, you can assign it to a freight booking. A gateway agent can then check this assignment (in other words, confirm or reject it).

Prerequisites

- You have defined auto-confirmation profiles in SAP NetWeaver Business Client under **Application Administration** **General Settings** **Organization Interaction** **Auto-Confirmation Profile**.
- You have defined rejection reason codes. For more information, see Customizing for *Transportation Management* under **Basic Functions** **General Settings** **Define Rejection Reason Codes**.
- You have defined freight booking types. For more information, see Customizing for *Transportation Management* under **Freight Order Management** **Freight Booking** **Define Freight Booking Types**.

Process

1. *Creating the forwarding order*

As a customer service agent, you create a forwarding order and enter information about the business partners and locations involved and the items to be transported.

2. *Creating the transportation stages (optional)*

You create the transportation stages and select a predefined schedule.

3. *Defining the planning and execution organization*

You define the planning and execution organizations that are responsible for the transportation stages on the actual route. You also have the option of assigning a transportation stage to a freight booking.

4. *Starting the organization interaction process automatically*

- If you have executed step 2, you proceed as follows: If the organization interaction is activated for some stages on the actual route and you have finished working on the stages, you change the organization interaction status from *Not Yet Requested* to *To Be Checked*.
- If you have *not* executed step 2, you proceed as follows: If you have assigned a stage to a booking for which the organization interaction is activated, the system automatically sets the status to *To Be Checked*.

5. *Starting the organization interaction process manually*

You can also start the organization interaction by manually setting the status to *To Be Checked*.

6. *Changing the organization interaction status to Confirmed*

If a booking is assigned to a stage for which an auto-confirmation profile exists, the system checks the rules that are defined in this profile. If the rules defined in the profile have been fulfilled, the system automatically sets the organization interaction status to *Confirmed*.

7. *Gateway Agent Check*

If the freight unit stages are not confirmed automatically, the gateway agent of the planning and execution organization must do this. As a gateway agent, if you accept the proposals provided by the customer service agent without changes, the system sets the status to *Confirmed*. If you change the data, for example, dates/times or quantities, the system sets the status to *Confirmed with Deviations*.

If the customer service agent has not made an assignment to a freight booking, you, as the gateway agent, must do this.

If you reject the proposals provided by the customer service agent, the system sets the status to *Rejected*. You can enter a reason for the rejection.

8. *Monitoring of the organization interaction status by the customer service agent*

As a customer service agent, you can check whether the gateway agent has accepted or rejected your proposals and can clarify any necessary changes with your customer.

More Information

[Auto-Confirmation Profile \[Page 375\]](#)

[Interaction Between Organizational Units \[Page 372\]](#)



Building and Printing of House Bills of Lading and House Air Waybills

You can use this function to create and print house bills of lading (HBLs) and house air waybills (HAWBs) for the following business documents:

Document	Supported business documents
House bill of lading	Ocean and land forwarding orders Freight orders Ocean freight bookings Freight units
House air waybill	Air forwarding orders Air freight bookings Freight units

Prerequisites

Building of House Bills of Lading and House Air Waybills

- In Customizing, you have specified a *process controller strategy* for your forwarding order type, freight order type or freight booking type for the building of house bills of lading and house air waybills. For more information, see *Customizing for Transportation Management* under:
 - ▶ *Forwarding Order Management* ▶ *Forwarding Order* ▶ *Define Forwarding Order Types* ▶
 - ▶ *Freight Order Management* ▶ *Freight Order* ▶ *Define Freight Order Types* ▶
 - ▶ *Freight Order Management* ▶ *Freight Booking* ▶ *Define Freight Booking Types* ▶

Which strategy is used depends on the business document from which you build the house bill of lading or house air waybill. If you do not define a strategy in Customizing, the system uses the relevant standard strategy for forwarding orders or freight documents (see below).

- You have defined a *waybill stock*. For more information, see [Waybill Stock Definition \[Page 291\]](#).
- You have activated the *use of waybill stocks* in forwarding order type Customizing (see below). If you deactivate this function, you can only enter waybill numbers in the forwarding order manually, and the system does not check waybill numbers entered against the waybill stock.

Printing of House Bills of Lading and House Air Waybills

- You have made the *general settings* for printing documents. For more information, see [Output Management](#) and [Printing](#).

- In Customizing for the freight unit type, which you use for freight unit building, you have defined the *output profile* / SCMTMS/TOR_PRINT_AIR_FU. If you do not specify a freight unit building rule in Customizing of your forwarding order type, and consequently do not define a special freight unit type, the system uses the standard freight unit type. For more information, see Customizing for *Transportation Management* under ► *Planning* ► *Freight Unit* ► *Define Freight Unit Types* ▶.
- You have made the basic settings for the *charge calculation* that you need for your business process. For more information, see [Charge Management and Service Product Catalogs \[Page 166\]](#). You have made the following particular settings for printing the house bills of lading and house air waybills:

- In Customizing you have defined and appropriately classified *charge types* for weight-dependent charges, for other charges and for evaluation charges. This classification is necessary as the charge types appearing in the printing of a house bill of lading or house air waybill are detailed separately. Note that the charge types classified as *other charges* must contain the two digit code for IATA other charges and also entries for the charge due (carrier or agent).

For more information, see Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings for Charge Calculation* ► *Define Charge Types* ▶, and also under [Charge Calculation \[Page 223\]](#).

- You have created a *calculation profile* in Customizing. You should note in this connection that the system for printing a house bill of lading or a house air waybill supports both the calculation of charges at stage level and the calculation at item level. If you use an Incoterm in the forwarding order, the system switches to a calculation of charges at stage level irrespective of the setting in the calculation profile.

For more information, see Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings for Charge Calculation* ► *Define Calculation Profile* ▶, and also under [Calculation Profiles \[Page 240\]](#).

- You have created a *calculation sheet*. To do this, in SAP NetWeaver Business Client choose ► *Master Data* ► *Charge Management* ► *Calculation Sheets* ► *Create Calculation Sheet* ▶. If you want to print house bills of lading or house air waybills, you must have entered one of the following values as the calculation resolution base for weight-dependent charge items:

- PRODUCT (Product)
- MAIN_ITEM (Main item of the document)
- PACKAGE (Package)
- CONTAINER (Container)

The weight charges for products, packages or containers are listed depending on the calculation resolution basis that you have defined. The calculation resolution basis should be the same for all charge items, as otherwise you may experience a mixture of package and product items, and the totals formation is rendered incorrect.

For more information, see [Calculation Sheet \[Page 182\]](#).

Features

Building of House Bills of Lading and House Air Waybills

The system automatically groups all items that do not already belong to a fixed house bill of lading or house air waybill in accordance with the process controller strategy you chose.

SAP provides the following strategies as part of the standard delivery.

- *Build House Bill of Lading or House Air Waybill by Shipper/Consignee (HBL_SHPCNS)*

With this strategy, the system groups together all items that have the same shipper and consignee.

This is the standard strategy that the system uses for freight documents if you do not specify a strategy in Customizing of the freight order type or the freight booking type. The system also uses this strategy if you build house bills of lading or house air waybills for freight units or items.

- *Build House Bill of Lading or House Air Waybill by Forwarding Order (HBL_TRQID)*

With this strategy, the system groups together all items that belong to the same forwarding order.

This is the standard strategy that the system uses for forwarding orders if you do not specify a strategy in forwarding order type Customizing.

- *Build House Bill of Lading or House Air Waybill by Shipper/Consignee/Container (HBL_SCCONT)*

With this strategy, the system groups together all items that have the same shipper and consignee, and are to be transported in the same container.

- *Build House Bill of Lading or House Air Waybill by Freight Documents (HBL_FDOC)*

With this strategy, the system groups together all items that have the same freight documents in the main carriage.

Printing of House Bills of Lading and House Air Waybills

You can print or dispatch the house bills of lading or house air waybills you have built from the *Output Management* tab. For more information, see [Output Management](#).

The printout also contains information about the transport charges. You can define in an air forwarding order on the *Charges* tab that the transportation charges as agreed or the other charges and their totals are to be printed. If the transportation charges as agreed are printed, then all weight-dependent charges, charges, evaluation charges and rates as agreed between the business partners are printed (meaning not their currency amounts).

Activities

You create house bills of lading or house air waybills as follows:

- Forwarding orders

You can create house bills of lading or house air waybills by entering the waybill number manually or with ► *HFB* ► *Draw HFB Number* or ► *HAWB* ► *Draw HAWB Number* from

the waybill stock. You can only draw a house bill of lading or house air waybill number from the waybill stock if this involves an internal number range and you have activated waybill stocks in Customizing (see under *Prerequisites*).

You can display data for bills of lading on the *HBL or HAWB* tab, and make individual allocations of waybill numbers to freight units or items or remove the allocations again.

- Freight orders

You create house bills of lading by choosing ► *Follow-up Actions* ► *Build House Bill of Lading*. You display house bills of lading on the *Items* tab page by choosing *Bill of Lading* as the hierarchy type.

 Note

The *Items* tab page replaces the *Cargo* tab page. You can personalize your user interface in such a way that the system displays the old *Cargo* tab page.

End of the note.

Ocean freight bookings

You create house bills of lading by choosing ► *Follow-up Actions* ► *Build House Bill of Lading*. You display house bills of lading on the *Cargo Management* tab page by choosing *Bill of Lading* as the hierarchy type.

- Air freight bookings

You create house air waybills by choosing ► *Follow-up Actions* ► *Build House Bill of Lading*. You display house air waybills on the *Capacity and Cargo* tab page by choosing *Bill of Lading* as the hierarchy type.

- Freight units

You create house bills of lading or house air waybills by choosing ► *Follow-up Actions* ► *Build HBL or HAWB*. The information for the house bill of lading or house air waybill is displayed at header level. A house bill of lading or house air waybill can have one or more freight units.

For more information about hierarchy types, see [Use of Hierarchical Views in FOM \[Page 605\]](#).

More Information

[Process Controller Configuration](#)



Nature of Goods

The nature of goods is a short and meaningful description of the cargo to be transported. Although you can enter the nature of goods only in business documents that are relevant for air transportation, the information is used along the entire transportation chain. The business documents (for example, air forwarding orders and air bookings) and the corresponding print documents (that is, air waybills and manifests) can contain the same nature of goods information or different information, according to your requirements.

You enter the nature of goods as free text within the allowed space on the UI, which reflects the requirements for the number of lines and characters. You can also define standard texts for nature of goods information that you use on a regular basis.

In SAP Transportation Management (SAP TM), there are two types of nature of goods:

- Nature and quantity of goods

This information can be entered in air forwarding orders and air bookings. You enter it on header level on the *Nature of Goods* tab page in the air forwarding order and on the *Operations* tab page in the air booking. You can enter 12 lines with a maximum of 20 characters per line.

The nature and quantity of goods specified on the *Nature of Goods* tab page in the air forwarding order and *Operations* tab page in the air booking are synchronized with the *Air Waybill View* on the *Charges* tab page. When you modify the nature and quantity of goods information on one of the UIs, the system automatically updates the other UI. The system not only updates the UIs, but also centrally updates the nature of goods data of the air forwarding order or air booking.

The nature and quantity of goods is printed in the house air waybill (HAWB), master air waybill (MAWB), and air waybill for a direct shipment. It is used to provide additional information about the weight-based charge items in air waybills.

- Nature of goods for manifest

This information can be entered in air forwarding orders, freight units, air bookings, and freight orders that cover pre-carriage or on-carriage for the air booking. You can enter 9 lines with a maximum of 65 characters per line. In the air forwarding order, you enter this information on header level on the *Nature of Goods* tab page. In the air booking, you enter it on item level on the *Capacity and Cargo* tab page, and in the freight order, on item level on the *Items* tab page (*Generic Item View hierarchy type*).

The nature of goods for manifest is printed in the security manifest and cargo manifests, which you print from the air booking.

Note that you can also enter the nature of goods on the *Notes* tab page of the air forwarding order or air booking. However, we recommend that you use the dedicated screen areas for nature of goods (for example, the *Nature of Goods* tab page in the air forwarding order).

Prerequisites

To use standard texts, you have done the following:

- Assigned the text schema `FWOAIRHDR` to the relevant forwarding order types (*Text Schema* field)

- Assigned the text schema CBAIR to the relevant booking types (*Text Schema* field)
- Defined standard texts in transaction SO10 using text type ST

For information about defining your own text types for the nature of goods, see SAP Note [2006789](#). This SAP Note also contains information about enhancing the pushbuttons for copying the nature of goods in air forwarding orders and air bookings.

Process

- You enter the nature and quantity of goods as well as the nature of goods for manifest on the *Nature of Goods* tab page in your air forwarding order.

You can copy the nature of goods for manifest from the nature and quantity of goods. When you do this, the system concatenates the text, but you can then adjust it as required.

The nature and quantity of goods is printed in the house air waybill (HAWB), which you print from the air forwarding order. After you have calculated the charges, you can use the *Air Waybill View* on the *Charges* tab page to align the nature and quantity of goods text so that it appears next to the correct weight-based charge items in the HAWB printout.

The nature of goods for manifest is not used to print documents from the air forwarding order, but is transferred automatically to the follow-on documents.

- You create freight units (FUs).

The nature of goods for manifest from the air forwarding order is displayed in the corresponding freight units. If required, you can edit the text to create FU-specific information.

- You create an air booking and you create a freight order for pre-carriage and on-carriage.

The nature of goods information is created as follows:

- Nature and quantity of goods (air booking only)

You enter this information on the *Operations* tab page. If required, you can copy it from the air forwarding order to the air booking (*Copy from Requirement Documents*). If more than one air forwarding order is assigned to the air booking, the system copies the first 2 lines of text from the first 6 air forwarding orders. The text on the *Operations* tab page is then also displayed on the *Charges* tab page.

- Nature of goods for manifest (air booking and freight order)

This information is copied automatically to the air booking and freight order from the freight unit. It is displayed in the details area of a freight unit that you have selected on the *Cargo and Capacity* tab page in the air booking or on the *Items* tab page in the freight order (*Generic Item View* hierarchy type).

For both types of nature of goods, you can change the copied text. For example, you can replace the text with something that is specific to a certain stage or country, or you can write the text in another language. You can also insert a standard text that you have defined beforehand.

4. You print the air waybill (master air waybill or air waybill for a direct shipment) or manifest (security manifest or cargo manifest) from your air booking.

Similar to the air forwarding order, you can use the *Air Waybill View* on the *Charges* tab page to align the nature and quantity of goods text so that it appears next to the correct weight-based charge items in the air waybill printout.

Note that when you print an air waybill or manifest from the air booking, the system uses the following logic to derive the nature of goods:

1. It checks the air booking.
2. If the air booking does not contain any nature of goods information, it checks the freight units.
3. If the freight units do not contain any nature of goods information, it checks the air forwarding order.

The HAWB always contains the nature and quantity of goods from the air forwarding order.

 Note

- You can specify the nature and quantity of goods only for weight-based charge lines under charge items with the transportation mode *Air*.
- If there are two stages with the transportation mode *Air*, then there can be two charge lines in the air waybill view for the same logistical item. In order to avoid printing the duplicate charge line in the master air waybill or house air waybill, you must mark one of these charge lines as inactive in the *Grouped View* or *Ungrouped View* and adjust the amount in the other charge line manually, so that the overall charges remain the same.
- The order of charge lines in the *Grouped View* or *Ungrouped View* and the *Air Waybill View* are not the same. In the *Air Waybill View*, the charge lines are sorted by the position numbers and the nature of goods lines remain as defined in the data of the air forwarding order or air booking. In the *Grouped View* or *Ungrouped View*, charge lines are sorted based on the charge line numbers and the nature of goods lines align with the air waybill view.

End of the note.

More Information

[Printing](#)



Empty Provisioning and Empty Return

As a logistics service provider, you may be requested by your ordering party to provide the requisite empty equipment (empties), such as containers or railcars, in addition to transporting goods. This means that you may be requested to provide more or fewer empties than you actually needed to transport the goods. The ordering party can also request that you provide empties independent of a transportation.

SAP Transportation Management (SAP TM) supports these different requests. The system also supports the return of empties as well as different variants of these business processes. For example, you can specify that the ordering party organizes the pick-up and delivery of the empties themselves.

The following describes how you can map your requests for the provisioning and return of empties in forwarding order management.

Process

Provisioning and Return of Empties with Reference to a Goods Transportation

If your ordering party has requested that you also provide the *required number* of empties in addition to transporting goods, you can map this as follows in forwarding order management from SAP TM:

1. Create a forwarding order with the corresponding container items or railcar items for the transportation of goods. For more information about creating forwarding orders, see [Creation of a Forwarding Order \[Page 304\]](#).
2. In the *Empty Provisioning* field, select the option *Requested (X)* for your cargo item. This indicates that your ordering party requests the provisioning of the same number of empties as you have defined as the item quantity.
3. If your ordering party also requests the return of the provided empties, select *Requested (X)* in the *Empty Return* field. Otherwise, select the default value *Not Requested (empty)*.
4. The system displays information about the provisioning and return of empties in the item details on the *Details of Empty Provisioning* and *Details of Empty Return* tab pages.

The system enters automatically the source location of the item as the destination location of the provisioning information and the destination location of the item as the source location of the return information. You can also enter a source location for the provisioning of empties and a destination location for their return. You can even leave this information open in the forwarding order and add it at a later date. Furthermore, you can change the pick-up and delivery dates for the provisioning and return of empties to meet your individual requirements.

Information about empty provisioning and empty return is also displayed in the stage tables of the ordered route and the actual route.

5. The system creates separate freight units and transportation units (such as container units and railcar units) for the transportation of goods and the provisioning or return of empties.

Provisioning and Return of Empties Without Reference to a Goods

Transportation

If your ordering party has requested that you provide or return *empties only* without transporting goods, you can map this as follows. You can also use this to map scenarios in which your ordering party requests that you provide or return more or fewer empties than are actually needed for the transportation of goods:

1. Create a main item for the provisioning or return of empties. Create a container item or railcar item for this main item, for example, and enter the required quantity.
2. Select the option *Provisioning Only* or *Return Only* in the *Empty Provisioning* or *Empty Return* field of this item.
3. The system displays information about the provisioning and return of empties in the item details on the *Details of Empty Provisioning* and *Details of Empty Return* tab pages. Here you can enter the source and destination locations for the provisioning or return of empties as well as the corresponding pick-up and delivery dates.

Information is also displayed in the stage tables of the ordered route and the actual route.

4. The system creates transportation units for the provisioning and return of empties.

Pick-Up and Delivery of Empties by Ordering Party

If your ordering party wants to organize the pick-up and delivery of empties themselves, you can also specify this in the forwarding order. This means that as the logistics service provider you are only responsible for providing the empties. You are not responsible for their pick-up or delivery.

1. Specify the provisioning or return of empties for cargo items or separately as described above.
2. In the detailed data about the provisioning or return of empties select the *Organized by Ordering Party* checkbox.
3. The system marks the corresponding stages of the pick-up and delivery route for empties as not relevant for planning (planning block).

More Information

[Empty Provisioning and Return in Export/Import Processing \[Page 387\]](#)



Empty Provisioning and Return in Export/Import Processing

Empty provisioning and return can be planned and executed as part of export/import processing. In this case, the following applies:

- The export organization is responsible for planning and executing empty provisioning (because the empty containers or railcars are required before transportation starts), but the import organization may be responsible for the transportation charges.
- The import organization is responsible for planning and executing empty returns (because the empty containers or railcars are returned after transportation has taken place), but the export organization may be responsible for the transportation charges.

Process

Empty provisioning and return *with reference to the transportation of goods* is handled as follows in export/import processing:

1. The export organization creates the export forwarding order and requests empty provisioning and empty returns for the cargo items.
2. The system does the following:
 - Creates transportation units for the empty provisioning items so that the export organization can plan and execute empty provisioning
 - Copies information about the requested empty returns to the item details of the main cargo item
If required, the export organization can then calculate the charges for the empty return items.
3. The system creates the import forwarding order. It does the following for empty provisioning and empty returns:
 - Copies information about the requested empty provisioning to the item details of the main cargo item
If required, the import organization can then calculate the charges for the empty provisioning items.
 - Creates transportation units for the empty return items so that the import organization can plan and execute empty returns

For empty provisioning and return *without reference to the transportation of goods*, the following applies:

- Since the export organization is responsible for planning and executing empty provisioning, you can request empty provisioning without reference to a main cargo item only in the export forwarding order.
- Since the import organization is responsible for planning and executing empty returns, you can request empty returns without reference to a main cargo item only in the import forwarding order.

More Information

[Export/Import Processing \[Page 542\]](#)



Change Tracking in Forwarding Order Management

You can use this function to display which data was changed, how it was changed, when it was changed, and from whom it was changed, for the following business documents in forwarding order management:

- Forwarding order
- Forwarding quotation

Prerequisites

- In Customizing, you have activated change tracking for each of the business document types. For more information, see Customizing for *Transportation Management* under:
 - ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Forwarding Order Type* ▶
 - ► *Forwarding Order Management* ► *Forwarding Quotation* ► *Define Forwarding Quotation Type* ▶

Features

The changes are displayed on the user interfaces of the business documents. The assignment block for the change documents is not shown by default. However, you can display it with the pushbutton for personalizing your user interface.



Processing of Changes and Deletion of Forwarding Orders

The forwarding order data received from your ordering party can change during the process. The change controller in SAP Transportation Management (SAP TM) checks whether forwarding orders or forwarding quotations have changed and propagates the changes to the freight unit. You can specify how the change controller is to carry out the changes. The following options are available:

- Synchronous
- Asynchronous
- Synchronous with fallback to asynchronous

Prerequisites

- You have defined the way the system propagates the changes to successor documents in Customizing for SAP Transportation Management under
 - ▶ *Transportation Management* ▶ *Forwarding Order Management* ▶ *Forwarding Order*
 - ▶ *Define Forwarding Order Types* ▶
- You have implemented the batch report *Background Job to Process Triggers Periodically* (/SCMTMS/PROCESS_TRIGGER_BGD), in case you process the changes asynchronous.
- You have created the necessary change controller strategies and change controller conditions in Customizing for SAP Transportation Management under ▶ *SCM Basis* ▶ *Process Controller* ▶ *Define Strategy* ▶.
- You have specified whether freight units can be deleted or canceled in Customizing for SAP Transportation Management under ▶ *Transportation Management* ▶ *Planning* ▶ *Freight Unit* ▶ *Define Freight Unit Types* ▶.

Features

Changed Forwarding Order or Forwarding Quotation Data

Depending on the extent to which the forwarding order or forwarding quotation has been processed, you can still change data such as dates, quantities, and locations as well as add or delete items. You can change the data even if freight units have already been built and planning has been completed. For example, you can change quantities up to the point at which the forwarding order is assigned the status *Completed*. The system updates the freight units when saving the data. Follow-on documents such as freight orders and freight bookings are also adjusted.

However, if quantity data has already been transferred to the freight unit from the execution process and the status of the freight unit has been changed to *Available*, for example, the system no longer adjusts the follow-on documents automatically. In this case, the system prompts you to change the data manually.

The system implements the changes synchronously or asynchronously as follows depending on your Customizing settings:

- Asynchronous changes

The system can change the freight unit even if it is blocked by another process. It updates the freight unit as soon as the freight unit is unlocked.

The system processes the changes in the background using the Report *Background Job to Process Triggers Periodically* (/SCMTMS/PROCESS_TRIGGER_BGD). You can check in the application log if the system correctly propagated asynchronous processed changes. To do so from the SAP Easy Access menu, choose ► *SAP Transportation Management* ► *Transportation Management* ► *Administration* ► *Display Application Log Entries* ▶.

- Synchronous changes

The system informs you immediately if a freight unit is blocked. You cannot propagate the changes.

In case the forwarding order or forwarding quotation has the approval status *Approval Needed* and with your change the approval becomes redundant, the system deletes the workitem from the workflow.

Canceled Forwarding Orders or Forwarding Quotations

You can cancel forwarding orders and forwarding quotations. The system either deletes or cancels the freight unit. If you have specified, that the system can only cancel freight units, the freight unit remains with the status *Canceled*. Otherwise, the system deletes the freight unit. If the execution has already started for an assigned freight order or freight booking, you cannot cancel the forwarding order.

In case the forwarding order or the forwarding quotation has the approval status *Approval Needed*, the system deletes the workitem from the workflow.

More Information

For more information about changes to freight document data, see [Change Controller](#).

For more information about changes within the integrated ERP process, see [Integration of Changed and Deleted ERP Orders and Deliveries \[Page 436\]](#).



ERP Logistics Integration

You use integration of SAP ERP orders and deliveries to facilitate transportation planning and execution in SAP Transportation Management (SAP TM) based on orders and deliveries that are created in an SAP ERP system. The orders and deliveries are represented by transportation requirements in SAP TM. The integration allows you to continuously react to changes to orders and deliveries that occur in the SAP ERP system. In particular, integration with SAP ERP enables you to:

- Collectively plan transportation for all orders, across order types.
- Perform transportation planning in SAP TM based on SAP ERP orders, prior to delivery creation, thus enabling you to get an earlier forecast of future transportation and resource demands.
- Perform tendering, subcontracting, and execution in SAP TM based on SAP ERP orders prior to delivery creation.
- Propose and create deliveries based on dates and quantities according to transportation planning results, taking into account transportation constraints such as resource availability and transportation durations.

Integration

The SAP TM component *ERP Logistics Integration* is integrated with the following SAP TM components:

Component	Type of Integration
Planning	Transportation requirements can form the basis for transportation planning and execution.
Master Data [Page 24]	As a prerequisite for creating transportation requirements, the necessary master data must have been created.

Features

Order Integration

Orders that are created in SAP ERP can be transferred to SAP TM, where they are stored as order-based transportation requirements. The following types of order in SAP ERP are supported by integration with SAP TM:

- Sales order
- Customer returns
- Purchase order
- Stock transport order
- Returns purchase order
- Returns stock transport order

Delivery Proposals

SAP TM can generate a proposal for a delivery to be created in SAP ERP based on the order-based transportation requirement. For more information, see [Creation of ERP Deliveries from SAP TM \[Page 418\]](#).

Delivery Integration

Outbound deliveries and inbound deliveries that are created in SAP ERP can be transferred to SAP TM, where they are stored as delivery-based transportation requirements. Deliveries can be transferred to SAP TM regardless of whether the delivery creation was triggered by SAP TM or not. Deliveries can also be transferred to SAP TM even if an order that relates to the delivery has not been sent to SAP TM.

Order Scheduling

While creating sales orders in SAP ERP, transportation scheduling can be done synchronously in SAP TM. For more information, see [Scheduling of SAP ERP Sales Orders in SAP TM \[Page 399\]](#).

SAP ERP Shipment Integration

Outbound integration of ERP shipments enables you to carry out transportation execution in SAP ERP for freight orders or freight bookings created in SAP TM. Inbound integration of ERP shipments enables you to carry out tendering in SAP TM for shipments created in SAP ERP. For more information, see [Integration with SAP ERP Shipment Processing \[Page 448\]](#).

SAP EWM Integration

SAP TM can be integrated with the SAP Extended Warehouse Management application via SAP ERP. This enables you to integrate transportation planning in SAP TM with delivery and shipment processing in SAP ERP and warehouse planning and execution in SAP EWM. For more information, see [Integration with SAP Extended Warehouse Management \[Page 462\]](#).

Dangerous Goods

If a product contained in an order or delivery is classified as [dangerous goods](#), SAP TM considers this information to ensure a safe and compliant transportation of the product. For more information, see [Dangerous Goods Checks with ERP Logistics Integration](#).

ERP-TM Communication

Order and delivery data can be transferred between SAP TM and SAP ERP using enterprise services. This communication can be realized either via SAP NetWeaver Process Integration or using point-to-point communication (Web Services Reliable Messaging).



Configuring Integration of Orders and Deliveries

This section describes the additional settings that you need to make in SAP Transportation Management (SAP TM) and in SAP ERP to integrate orders and deliveries.



Caution

The use of order and delivery integration in conjunction with inbound integration of ERP shipments is not supported. The system allows you to transfer shipments and their related deliveries from SAP ERP to SAP TM even if you have already transferred these deliveries (and their related orders) using the order and delivery integration functions. If you intend to use order and delivery integration in conjunction with inbound integration of shipments in the same SAP ERP client, you must make the required configuration and organizational settings that ensure that the SAP TM system cannot create duplicate transportation requirements.

End of the caution.

Prerequisites

- You have activated the *ERP-TMS: Order Integration* (`LOG_TM_ORD_INT`) business function in SAP ERP (available as of SAP enhancement package 5 for SAP ERP 6.0). The *SCM, Customer and Vendor Master Data Integration into BP* (`LOG_SCM_CUSTVEND_INT`) business function is also recommended (available as of SAP enhancement package 4 for SAP ERP 6.0 support package 9).



Note

The *ERP-TMS: Order Integration* (`LOG_TM_ORD_INT`) business function provides sales order scheduling functions. If you do not use sales order scheduling, you can activate the *ERP-TMS: Basic Order Integration* (`LOG_TM_ORD_INT_TRQ`) business function instead (available as of SAP enhancement package 4 for SAP ERP 6.0 support package 9). It provides exactly the same functions, but without sales order scheduling.

End of the note.

- You have activated the *Operations, Enterprise Services 2* (`LOG_ESOA_OPS_2`) business function in SAP ERP, which enables you to transfer purchase orders and stock transport orders to SAP TM (available as of SAP enhancement package 3 for SAP ERP 6.0). The following business functions are also recommended:
 - *Advanced Returns Management* (`OPS_ADVRETURNS_1`) for transferring returns orders to SAP TM (available as of SAP ERP 6.0 enhancement package 4)
 - *Logistics S&D Simplification* (`SD_01`) or *Operations, Enterprise Services* (`ESOA_OPS01`) for transferring sales orders to SAP TM (available as of SAP enhancement package 2 for SAP ERP 6.0)

For more information, see SAP Note [1530240](#).

- You have set up connections between SAP ERP and SAP TM and configured SAP ERP for order creation and delivery creation.
- You have created master data in SAP ERP and SAP TM.

For more information about master data in SAP TM, see [Master Data \[Page 24\]](#). For more information about using the Core Interface (CIF) to transfer master data from SAP ERP to SAP TM, see [Integration via Core Interface \(CIF\)](#).

 Note

If you transfer master data from SAP ERP to SAP TM using CIF, and you want SAP TM to create business partners for the locations automatically when plants and shipping points are transferred, you must implement business add-ins (BAdIs) as described in the following SAP Notes:

- SAP Note [1410353](#)

This SAP Note contains information relevant when transferring plants and shipping points.

- SAP Note [1355784](#)

This SAP Note contains information relevant if the plant and the shipping point in SAP ERP have the same name.

For more information, see also SAP Note [1353566](#).

End of the note.

Activities

Integration of ERP Orders and Deliveries

Settings in SAP TM

To set up integration of orders and deliveries in SAP TM, you must complete the following activities:

- In Customizing for *Transportation Management*, choose  *Integration*  *ERP Logistics Integration*  *Order-Based Transportation Requirement*  *Define Order-Based Transportation Requirement Types* 

In this activity the following fields are of particular relevance:

- *Plan on Req/Cnf Qty*
- *Automatic Freight Unit Building*
- *Freight Unit Building Rule*
- *FU Building Rule Condition*
- In Customizing for *Transportation Management*, choose  *Integration*  *ERP Logistics Integration*  *Delivery-Based Transportation Requirement*  *Define Delivery-Based Transportation Requirement Types* 
- If you have specified a freight unit building rule in Customizing for an order-based transportation requirement type, you must have defined this freight unit building rule in SAP NetWeaver Business Client (NWBC) by choosing  *Application Administration*  *Planning*  *General Settings*  *Freight Unit Building Rule*  *Create Freight Unit Building Rule* 

- Define conditions for determining the corresponding order-based transportation requirement type to be used for orders. You do this by creating a condition of type /SCMTMS/OTR_TYPE in SAP NetWeaver Business Client (NWBC) by choosing ► *Application Administration* ► *General Settings* ► *Conditions* ► *Create Condition* ▶.
 - Define conditions for determining the corresponding delivery-based transportation requirement type to be used for deliveries. You do this by creating a condition of type /SCMTMS/DTR_TYPE in SAP NetWeaver Business Client (NWBC) by choosing ► *Application Administration* ► *General Settings* ► *Conditions* ► *Create Condition* ▶.
- For more information about conditions, see [Condition \[Page 176\]](#).
- Define a delivery profile for creating deliveries in SAP ERP. You do this in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *Planning* ► *General Settings* ► *Delivery Profile* ▶.
- For more information, see [Delivery Profile \[Page 398\]](#).

You must make specific settings for the change controller to handle changed and deleted orders and deliveries. For more information, see the prerequisites section in [Integration of Changed and Deleted ERP Orders and Deliveries \[Page 436\]](#).

Settings in SAP ERP

In SAP ERP, you can display available control keys for document transfer, which you need to use for the following Customizing activities in SAP ERP. For more information about the control keys delivered by SAP, see Customizing for *Integration with Other SAP Components*, under ► *Transportation Management* ► *Order Integration* ► *Define Control Keys for Document Transfer* ▶.

You must complete the activities in Customizing for *Integration with Other SAP Components* under ► *Transportation Management* ► *Order Integration* ▶ as follows:

1. To integrate sales orders, customer returns, and their corresponding deliveries, in the *Activate Transfer of Sales Documents* activity, assign a control key to your sales order document types. The control key that you assign should have the *SO to TM* checkbox and the *Outbd Del.* checkbox selected.
2. To integrate purchase orders, stock transport orders, return purchase orders, return stock transport orders, and their corresponding deliveries, in the *Activate Transfer of Purchase Orders* activity, assign a control key to your purchasing document types. The control key that you assign should have the *PO to TM* checkbox and the *Inbd Del.* checkbox selected.

For more information about the necessary message control settings in SAP ERP, see SAP Help Portal at <http://help.sap.com/erp> under SAP Central Component. Select an SAP enhancement package for SAP ERP 6.0. In SAP Library, choose ► *SAP ERP Central Component* ► *Logistics* ► *Logistics - General (LO)* ► *Integration of SAP ERP with SAP Transportation Management* ► *Integration: Order and Delivery Processing - SAP TM* ► *Prerequisites for Order and Delivery Integration* ▶.

Integration of ERP Orders Without Sending Deliveries to SAP TM

To configure this variant of integration, in your SAP ERP system, you make settings for orders such that corresponding deliveries are not sent to SAP TM. You make these settings as follows in the SAP ERP system:

In Customizing for *Integration with Other SAP Components*, under ► *Transportation Management* ► *Order Integration* ► *Activate Transfer of Sales Documents* □ and *Activate Transfer of Purchase Orders*, assign a control key to the sales document type and the purchasing document type respectively. The control keys that you assign should *not* have the delivery checkboxes selected.

Integration of ERP Deliveries Without Sending Orders to SAP TM

To configure this variant of integration, in your SAP ERP system, you make settings for deliveries such that the preceding order documents are not sent to SAP TM. You make these settings as follows in the SAP ERP system:

In Customizing for *Integration with Other SAP Components*, under ► *Transportation Management* ► *Order Integration* ► *Activate Transfer of Delivery Documents* □, assign your control key to the delivery types. The control keys that you assign should *not* have the *SO to TM* checkbox or the *PO to TM* checkbox selected.

Integration of SAP ERP Sales Orders (Scheduling)

To configure this variant of integration, in your SAP ERP system, you make settings for orders such that transportation scheduling is done in SAP TM. For more information about the prerequisites, see [Scheduling of SAP ERP Sales Orders in SAP TM \[Page 399\]](#).

More Information

For information about the business functions mentioned above, see SAP Help Portal at <http://help.sap.com/erp> under SAP Central Component. Select an SAP enhancement package for SAP ERP 6.0. In SAP Library, choose ► *Business Functions (<relevant enhancement package>)* ► *Business Functions in SAP ERP* ► *Enterprise Business Functions* ► *Logistics* □.



Delivery Profile

A group of user-specific settings that the system takes into account during delivery creation.

Structure

A delivery profile enables you to make the following settings:

- You can define that during delivery creation the system fixes the planning results for freight units, freight orders, or freight bookings that have already been planned.
- You can define how the system creates deliveries when a user triggers delivery creation in ERP for freight units that have not been planned (for example, one delivery per item in an order-based transportation requirement).
- You can specify incompatibility settings. In the incompatibility settings, you can define attributes that prevent freight units from being combined into one delivery, for example. For more information about incompatibilities, see [Incompatibilities](#).

For more information about these settings, see the corresponding field help.



Note

You define delivery profiles in SAP NetWeaver Business Client by choosing Application Administration Planning General Settings Delivery Profile.

End of the note.



Scheduling of SAP ERP Sales Orders in SAP TM

You can use the scheduling service of SAP Transportation Management (SAP TM) while creating, changing, or rescheduling sales orders in SAP ERP.

During order processing in SAP ERP, the transportation situation reflected in SAP TM is taken into account for calculating feasible dates and quantities for order items. This ensures that the sales order situation and the ATP situation are synchronized with the current situation in transportation. The resulting dates and quantities are a sound basis for subsequent activities, like material requirements planning (MRP).

The benefits of sales order scheduling are:

- Real-time (synchronous) integration of SAP TM constraints

You can make better and more profitable decisions. During order entry, you see accurate dates and times in the schedule lines. You can negotiate with the customer on the phone. Based on real knowledge, you can reduce time buffers and safety buffers.
- In case of critical ATP situations, you are able to better use the resources, and you need less buffer.
- You can serve more customers and increase delivery reliability.

Restrictions:

- SAP TM does not support integration with ATP in SAP Supply Chain Management (including GATP (Global Available-to-Promise)).
- Scheduling for sales order items using product selection is not supported in SAP TM.

Prerequisites

The following settings in SAP TM are possible, which can be sales-order-scheduling-specific:

- Determination of transportation requirement type

There are two possibilities to determine the transportation requirement type:

- As default value specified in Customizing for *Transportation Management* under *Integration* > *ERP Logistics Integration* > *Order-Based Transportation Requirement* > *Define Order-Based Transportation Requirement Types*
 - By changing the /SCMTMS/OTR_TYPE condition in SAP NetWeaver Business Client under *Application Administration* > *General Settings* > *Conditions* > *Edit Condition* .
- Determination of freight unit building rule

There are two possibilities to determine the freight unit building rule:

- You can specify the freight unit building rule in the transportation requirement type.

- You can specify a condition in the transportation requirement type. You can create this condition in SAP NetWeaver Business Client under ► *Application Administration* > *General Settings* > *Conditions* > *Create Condition*.
- Determination of planning profile

There are two possibilities to determine the planning profile:

- You can specify the planning profile in the transportation requirement type.
- You can change the /SCMTMS/TOR_PLN_PROF condition in SAP NetWeaver Business Client under ► *Application Administration* > *General Settings* > *Conditions* > *Edit Condition*.

In the SAP ERP system, you have made the following settings:

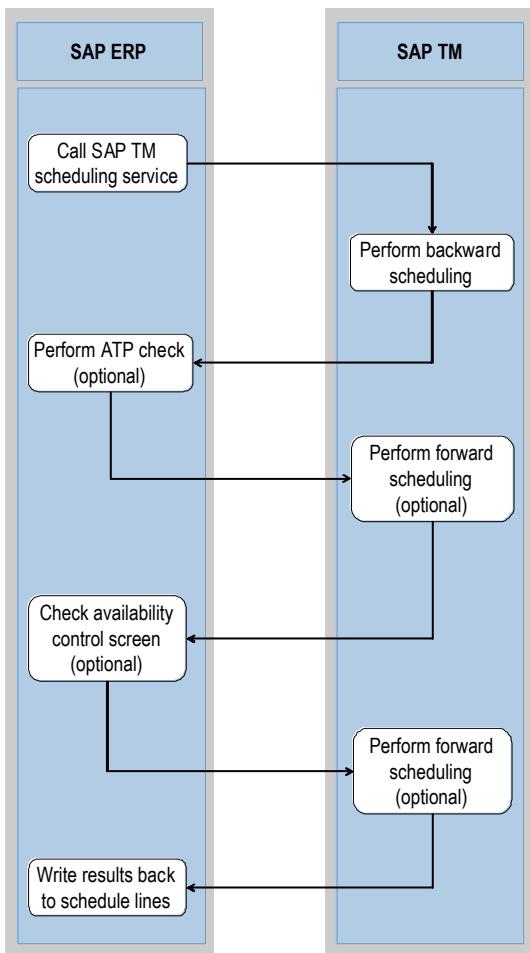
- You have carried out all required steps for asynchronous integration of SAP TM order integration. For more information, see [Configuring Integration of Orders and Deliveries \[Page 394\]](#).
- You have activated the delivery and transport scheduling in Customizing for SAP ERP under ► *Sales and Distribution* > *Basic Functions* > *Delivery Scheduling and Transportation Scheduling* > *Define Scheduling by Sales Document Type*.
- If you require an ATP check, you have maintained the standard ATP Customizing in SAP ERP under ► *Sales and Distribution* > *Basic Functions* > *Availability Check and Transfer of Requirements*.
- In Customizing for *Integration with Other SAP Components*, under ► *Transportation Management* > *Order Integration* > *Activate Transfer of Sales Documents*, you have done the following: For a combination of sales order type, shipping condition and sales area, you have chosen an SAP TM control key where the *Sales Order Scheduling in SAP TM* checkbox is selected.

Process

During sales order processing, sales order scheduling is triggered by choosing the (Availability Check for Entire Document) pushbutton or the (Check Group Availability) pushbutton, or by saving the document. In contrast to standard sales order processing, no scheduling and no ATP check are triggered after choosing the *Enter* pushbutton. Schedule lines that were generated by a previous ATP check are removed.

The SAP TM scheduling service either schedules the material availability date backwards based on a given requested delivery date, or it schedules the delivery date forwards based on a given material availability date.

The following figure shows the standard process for scheduling sales orders in SAP ERP with transportation planning in SAP TM, and is followed by a description of the process. How this scheduling process can be used in ERP-TM order integration is described in subsequent sections.



Scheduling of SAP ERP Sales Orders in SAP TM

1. Call SAP TM scheduling service (SAP ERP)

SAP ERP sends the requested delivery dates and quantities to SAP TM.

2. Perform backward scheduling (SAP TM)

During backward scheduling, SAP TM performs transportation planning by temporarily creating a transportation requirement and freight units to schedule material availability dates.

The corresponding material availability dates are sent to SAP ERP, and the schedule lines can be split due to a freight unit split, for example.

In the case of a changed sales order, the result from an already existing transportation plan is read from the updated freight orders (if possible), or a new transportation planning is triggered.

3. Perform ATP check (SAP ERP, optional)

If ATP check is enabled, SAP ERP performs the availability checks and calls the SAP TM scheduling service again with new material availability dates and confirmed quantities.

4. Perform forward scheduling (SAP TM, optional)

During forward scheduling, SAP TM performs transportation planning by temporarily creating a transportation requirement and freight units to schedule delivery dates.

The corresponding delivery dates are sent to SAP ERP.

In the case of a changed sales order, the result from an already existing transportation plan is read from the updated freight orders (if possible), or a new transportation planning is triggered.

5. Check availability control screen (SAP ERP, optional)

This screen is shown depending on the Customizing settings in SAP ERP and the availability situation.

If you manually change delivery dates, SAP TM forward scheduling is called again.

6. Perform forward scheduling (SAP TM, optional)

This step is only performed if you made manual changes.

The procedure itself is the same as in step 4.

7. Write results back to schedule lines (SAP ERP)

 Note

In addition to the material availability date and delivery date, SAP TM also determines the loading date, goods issue date, and transportation planning date.

End of the note.

More Information

For more information about sales order scheduling in SAP ERP, see SAP Help Portal at <http://help.sap.com/erp> under SAP Central Component. Select an enhancement package for SAP ERP 6.0. In SAP Library, choose  SAP ERP Central Component  Logistics  Logistics – General (LO)  Integration of SAP ERP with SAP Transportation Management (SAP TM)  Integration: Order and Delivery Processing – SAP TM  Scheduling of Sales Orders (LO-TM).



Sample Process: Creating a Sales Order

This sample process is designed to illustrate the process of creating a sales order in more detail.

If you create a sales order in SAP ERP and you are performing an availability check, the system synchronously calls the scheduling service in SAP Transportation Management (SAP TM).

If you want short response times in SAP ERP, you should do your planning with a restricted number of resources and not use the capacity check in the optimizer. For more information about planning, see [VSR Optimization](#).

Subsequent planning is done in a manner such that the result is not too different from the dates determined in the synchronous sales order scheduling, for example, by using the same planning profile.

When you use the ATP check, you have to ensure that the scheduled material staging date is not earlier than the actual material availability date given by the ATP check in SAP ERP. You can do this by selecting the settings for the pick-up and delivery window in the freight unit type accordingly. You can also use the pick-up and delivery window settings to prevent a calculated delivery date that is earlier than the requested delivery date. For more information about freight unit creation, see [Creation and Editing of Freight Units](#).

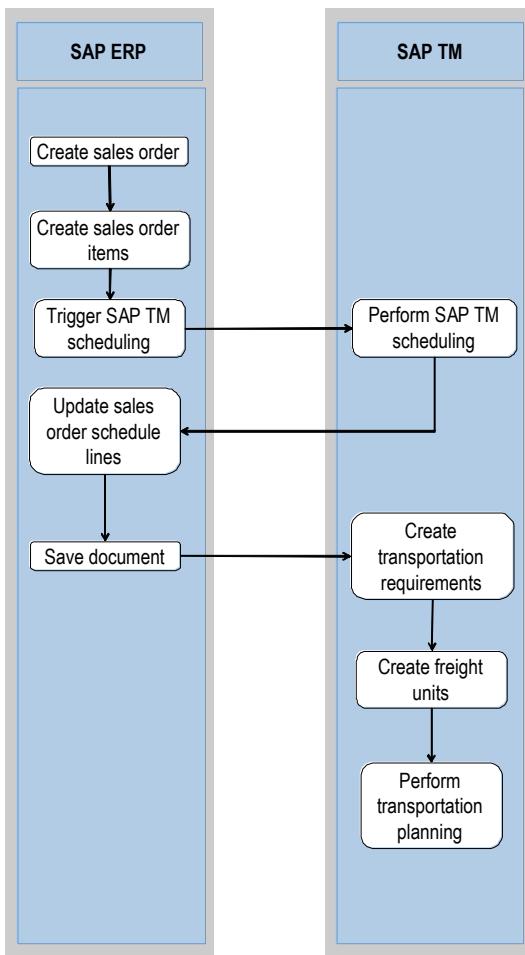
The difference between the calculated and the requested delivery date and also between the material staging date and the material availability date depends on the planning costs settings of the planning profile you have selected. For more information about planning profiles, see [Planning Profile](#).

Prerequisites

The same prerequisites apply as specified in [Scheduling of SAP ERP Sales Orders in SAP TM](#) [Page 399].

Process

The following figure shows a sample process for creating a sales order:



Sample Process: Creating a Sales Order

1. Create sales order (SAP ERP)
2. Create sales order items (SAP ERP)
3. Trigger SAP TM scheduling (SAP ERP)

You can do this by choosing the (Availability Check for Entire Document) pushbutton.

4. Perform SAP TM scheduling (SAP TM)

The system temporarily creates a transportation requirement and performs transportation scheduling.

5. Update sales order schedule lines (SAP ERP)

The system updates the schedule lines in the sales order according to the planning results.

6. Save document (SAP ERP)

After you have saved the document in SAP ERP, the document is transferred asynchronously to SAP TM.

7. Create transportation requirements (SAP TM)

The system creates transportation requirements.

8. Create freight units (SAP TM)

If selected in the Customizing of the transportation requirement type, SAP TM creates freight units immediately after creating transportation requirements.

9. Perform transportation planning (SAP TM, optional)

You can perform subsequent process steps with the created freight units, for example, you can perform transportation planning to create freight orders or freight bookings.



Sample Process: Changing a Sales Order

When a new scheduling in SAP Transportation Management (SAP TM) is triggered for the sales order (either with or without changing transportation-relevant data), SAP TM checks whether the existing transportation plan can still be used, or if it has to be invalidated.

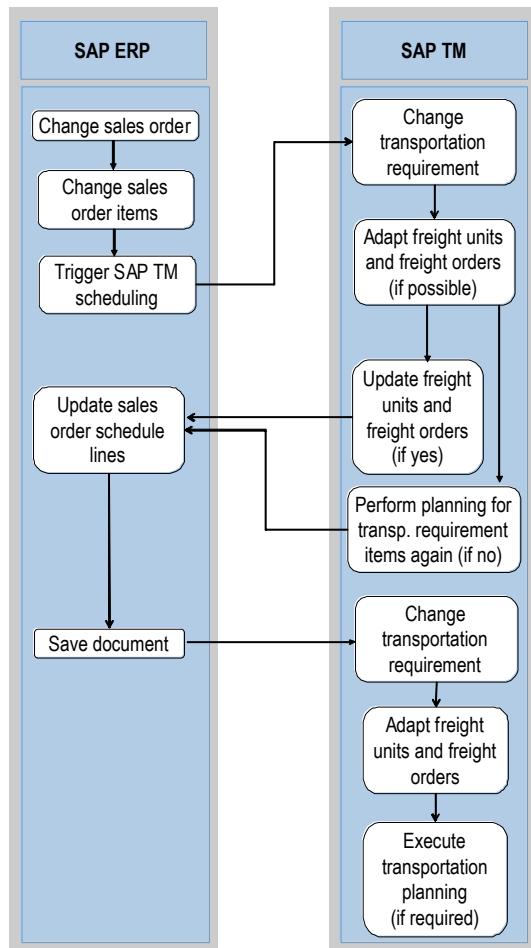
After saving the sales order, the system adapts the freight units and the freight orders or freight bookings, if possible. If necessary, transportation planning can be repeated for freight units for which the transportation plan has been invalidated.

Prerequisites

The same prerequisites apply as specified in [Scheduling of SAP ERP Sales Orders in SAP TM \[Page 399\]](#)

Process

The following figure shows a sample process for changing a sales order:



Sample Process: Changing a Sales Order

1. Change sales order (SAP ERP)

2. Change sales order items (SAP ERP)

3. Trigger SAP TM scheduling (SAP ERP)

You can do this by choosing the  (*Availability Check for Entire Document*) pushbutton.

4. Change transportation requirement (SAP TM)

The system temporarily changes the already existing transportation requirement.

5. Adapt freight units and freight orders or freight bookings (if possible) (SAP TM)

For more information, see [Processing of Changes and Deletion of Forwarding Orders \[Page 390\]](#).

6. Update freight units and freight order or freight booking (if yes) (SAP TM)

7. Perform planning for transp. requirement items again (if no) (SAP TM)

If necessary, the system performs planning again. For example, when the system has created new freight units, these are planned in the same way as described in the [Sample Process: Creating a Sales Order \[Page 403\]](#).

8. Update sales order schedule lines (SAP ERP)

The system updates the schedule lines in the sales order according to the planning results.

9. Save document (SAP ERP)

After you have saved the document in SAP ERP, the document is transferred asynchronously to SAP TM.

10. Change transportation requirement (SAP TM)

The system changes the transportation requirement.

11. Adapt freight units and freight orders or freight bookings (SAP TM)

For more information, see [Integration of Changed and Deleted ERP Orders and Deliveries \[Page 436\]](#).

12. Execute transportation planning (if required) (SAP TM)



Sample Process: Rescheduling

During rescheduling, the system redistributes the available quantity according to the selection in the entry screen (transaction V_V2). For each sales order that is relevant for SAP TM, the system calls the SAP TM scheduling service within an ATP check.

Note

Scheduling of SAP ERP stock transport orders is not supported in SAP TM.

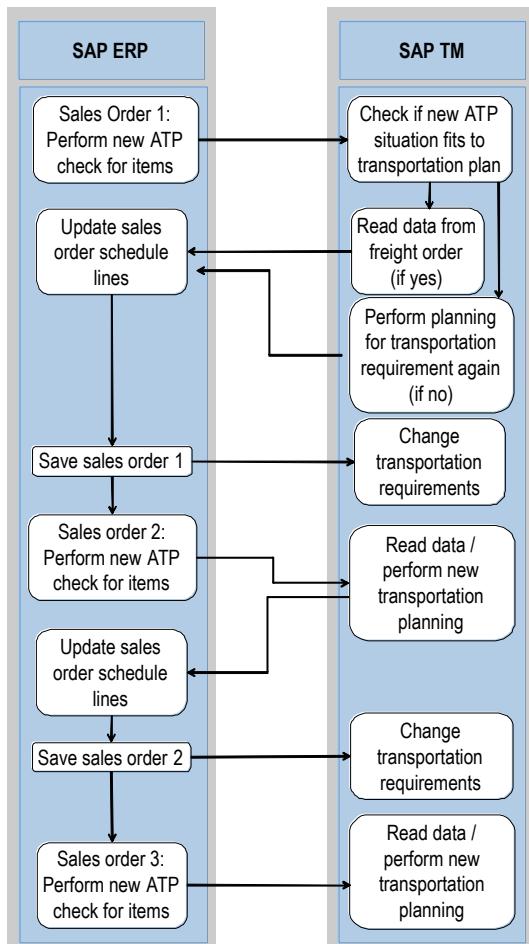
End of the note.

Prerequisites

The same prerequisites apply as specified in [Scheduling of SAP ERP Sales Orders in SAP TM \[Page 399\]](#).

Process

The following figure shows a sample process for rescheduling:



Sample Process: Rescheduling

1. Sales order 1: Perform new ATP check for items (SAP ERP)

If sales order 1 is relevant for SAP TM, the system calls the SAP TM scheduling service for all sales order items. To ensure a meaningful scheduling, pay special attention to the selection of sales order items and the sequence in which they are processed. Sales order items of a sales order that are processed one after the other in the rescheduling run are sent together in one call to SAP TM to do the rescheduling there. This ensures that transportation interdependencies can be considered in scheduling in SAP TM.

2. Check if new ATP situation complies with transportation plan (SAP TM)
3. Read data from freight order or freight booking (if YES) (SAP TM)

For more information, see steps four to six of the process for changing a sales order (see [Sample Process: Changing a Sales Order \[Page 406\]](#)).

4. Perform new planning for transportation requirement (if NO) (SAP TM)

If necessary, the system performs a new planning. For example, when the system has created new freight units, these are planned in the same way as described in the sample process for creating a sales order (see [Sample Process: Creating a Sales Order \[Page 403\]](#)).

 Note

SAP TM Planning in sales order scheduling takes into account only those sales order items that are currently being planned. It does not process other objects in the optimization run, for example transportation requirements, that are linked to other sales orders.

End of the note.

5. Update sales order schedule lines (SAP ERP)

The system updates the schedule lines in the sales order according to the planning results.

6. Save sales order 1 (SAP ERP)

The system saves the sales order in SAP ERP and transfers it asynchronously to SAP TM.

7. Change transportation requirements (SAP TM)

The system changes the transportation requirements.

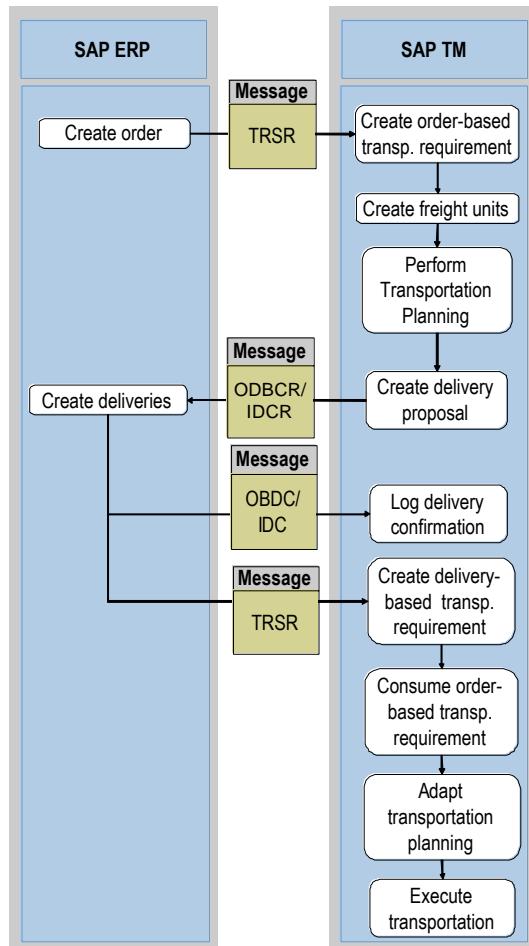
8. The system repeats these steps for sales order 2, sales order 3, and so on.

 Integration of ERP Orders and Deliveries in Transp. Planning

You can integrate orders and deliveries from SAP ERP with SAP Transportation Management (SAP TM).

Process

The following graphic shows the standard process for integrating orders and deliveries from SAP ERP with transportation planning in SAP TM, and is followed by a description of the process. Variants of this process are possible, and are described in subsequent sections.



Integration of ERP Orders and Deliveries with SAP TM

The following abbreviations are used for message types in the above figure:

- **TRSR:** TransportationRequestSUITERequest
 - **ODBCR:** Outbound Delivery Bulk Create Request
 - **IDCR:** InboundDeliveryCreateRequest
 - **ODBC:** Outbound Delivery Bulk Confirmation

- IDC: InboundDeliveryConfirmation_V1

The process runs as follows:

1. Create order (SAP ERP)

An order is created in SAP ERP containing items and schedule lines. When the order has been created, SAP ERP sends the order to SAP TM. For more information, see [Integration of ERP Orders \[Page 413\]](#).

2. Create order-based transportation requirement (SAP TM)

When SAP TM receives an order from SAP ERP, SAP TM creates an order-based transportation requirement. For more information about order-based transportation requirements, see [Order-Based Transportation Requirement \[Page 415\]](#).

3. Create freight units (SAP TM)

Before transportation planning can take place, SAP TM builds freight units (FUs) based on the order-based transportation requirement. SAP TM considers items and schedule line items when creating freight units. For more information about creating freight units, see [Creation and Editing of Freight Units](#).

4. Perform transportation planning (SAP TM)

SAP TM performs transportation planning based on the freight units. The planning results include pickup dates and delivery dates, resource assignments, and routes. For more information about transportation planning, see [Planning](#).

5. Create delivery proposal (SAP TM)

SAP TM creates delivery proposals based on the transportation planning results. SAP TM sends these proposals to SAP ERP to create a delivery. It is also possible to create delivery proposals based on freight units, if transportation planning has not been performed. For more information, see [Creation of Delivery Proposals \[Page 420\]](#).

6. Create deliveries (SAP ERP)

When SAP ERP receives the request to create a delivery, SAP ERP creates the delivery. This can be an inbound delivery or an outbound delivery. For more information about the process of creating deliveries in SAP ERP based on delivery proposals from SAP TM, see [Creation of ERP Deliveries from SAP TM \[Page 418\]](#). It is also possible to create deliveries in SAP ERP without having sent a proposal from SAP TM. For more information, see [Integration of ERP Deliveries \[Page 427\]](#).

7. Log delivery confirmation (SAP TM)

When SAP TM receives a confirmation of the deliveries that have been created in SAP ERP, SAP TM writes this information to the application log. If errors occurred during delivery creation an alert is generated in SAP TM.

For more information about monitoring the delivery creation process, see [Monitoring of Delivery Creation \[Page 425\]](#).

8. Create delivery-based transportation requirement (SAP TM)

When SAP TM receives a delivery from SAP ERP, SAP TM creates a delivery-based transportation requirement. For more information about delivery-based transportation requirements, see [Delivery-Based Transportation Requirement \[Page 430\]](#).

9. Consume order-based transportation requirement

When SAP TM creates the delivery-based transportation requirement, the delivery-based transportation requirement consumes the transportation demand of the corresponding order-based transportation requirement or requirements. That is, SAP TM determines the corresponding order-based transportation requirement items and reassigns the freight units to the delivery-based transportation requirement.

For more information, see [Consumption of Order-Based Transportation Requirements \[Page 433\]](#).

10. Adapt transportation planning

If necessary, SAP TM can re-plan the transportation demands of the delivery-based transportation requirement and its freight units.

11. Execute transportation

Transportation is executed based on the planning results.



Note

The TM document flow for a specific ERP order or delivery can be displayed in the SAP ERP system (available as of SAP enhancement package 6 for SAP ERP 6.0 support package 4). SAP TM provides SAP ERP with information about the documents created for an order or delivery (for example, freight units, freight orders, and freight settlement documents) and the status of the documents (for example, life cycle status and execution status). This gives the user an overview of the entire ERP-TM process for an individual ERP document and enables the user to track the status of document processing in SAP TM from the SAP ERP system.

End of the note.



Integration of ERP Orders

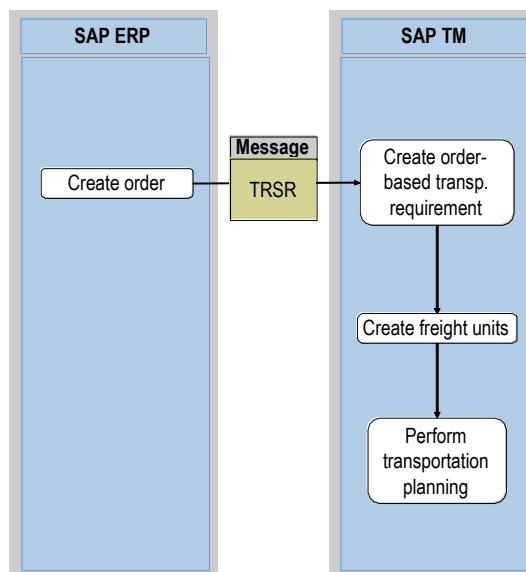
In this process, a customer bases their transportation processes on an order created in SAP ERP.

Prerequisites

For information about setting up SAP ERP and SAP TM for order integration, see [Configuring Integration of Orders and Deliveries \[Page 394\]](#).

Process

The following figure shows the process for transportation planning based on an SAP ERP order, and is followed by a description of the process:



Transportation Planning Based on SAP ERP Order

In the above figure, the abbreviation TRSR means `TransportationRequestSUITERequest`.

The process runs as follows:

1. Create order (SAP ERP)

An order is created in SAP ERP containing items and schedule lines. The item contains information regarding the material and the requested quantity, for example. The quantity of an item can be subdivided into multiple schedule lines, which, for example, can have different delivery dates. When the order has been created, SAP ERP sends the order to SAP TM.

2. Create order-based transportation requirement (SAP TM)

The order number and order item numbers from SAP ERP are stored as references in the order-based transportation requirement (on header level or item level respectively). In SAP TM, the schedule lines from the SAP ERP order are stored as items of the type *Schedule Line* in the order-based transportation requirement

3. Create freight units (SAP TM)

SAP TM creates freight units containing items that correspond to the schedule line items of order-based transportation requirements. Depending on your settings in Customizing for the order-based transportation requirement type, SAP TM can build freight units automatically when the order-based transportation requirement is created, or the user can trigger the creation manually. SAP TM can use either the requested quantities or the confirmed quantities in an order-based transportation requirement when creating freight units. Which quantity is used, depends on your settings in Customizing for the order-based transportation requirement type.

SAP TM only creates freight units for transportation-relevant items. For example, if an order-based transportation requirement contains an item for a bill of material, SAP TM creates a freight unit (or units) for either the header item only or for the component items only. This is dependent on the Customizing settings for the material in SAP ERP that determine which items are relevant for goods movement.

SAP TM can consolidate the transportation demand of an order-based transportation requirement with the demand of another order-based transportation requirement into the same freight unit. However, particular attributes can prevent SAP TM from consolidating order-based transportation requirements into the same freight unit, for example if order combination is not allowed for an order-based transportation requirement. If complete delivery is specified for an order, or items belong to the same delivery group, SAP TM consolidates the demand into a single freight unit. For more information about consolidation and incompatibilities that are considered when creating freight units, see [Freight Unit Building Rule](#) and [Incompatibilities](#).

4. Perform transportation planning (SAP TM)

SAP TM can consolidate FUs from multiple order-based transportation requirements, even if the base documents in SAP ERP have different order types. For example, the transportation demands of purchase orders and sales orders can be consolidated during transportation planning. Furthermore, planning can be carried out either using own resources or by tendering and subcontracting.

Result

After transportation planning, SAP TM can either execute transportation or trigger the creation of deliveries in SAP ERP. For more information, see [Creation of ERP Deliveries from SAP TM \[Page 418\]](#).

You can display individual overviews of order-based freight orders, order-based air freight bookings, and order-based ocean freight bookings in SAP NetWeaver Business Client by choosing *ERP Logistics Integration* > *Worklist* > *Overview Freight Orders and Freight Bookings*.



Order-Based Transportation Requirement

Represents a transportation demand based on an order that was created in an SAP ERP system. The order-based transportation requirement can be used as a basis for transportation planning.

The order-based transportation requirement corresponds to a single order in SAP ERP and cannot be edited in SAP Transportation Management (SAP TM).

Structure

The transportation requirement has the following structure:

- Tabs for general data, terms and conditions, business partners, location and dates/times, notes, and administrative data.

Contains information that is relevant for all items of an order-based transportation requirement.

- Document flow

Shows a list of preceding and subsequent documents that are related to the order-based transportation requirement.

- Items

This table provides a hierarchical view of the product items, schedule lines, service items, and text items. In the order-based transportation requirement, the product items correspond to items in the ERP order. For each item, you can display more detailed information on a number of tab pages.

Statuses in the Order-Based Transportation Requirement

The following statuses are available in the order-based transportation requirement:

- *Lifecycle Status*

Status	Description
New	The order-based transportation requirement has been created. No freight units have been created for the order-based transportation requirement yet.
In Planning	The order-based transportation requirement is in the planning process and at least one freight unit has been created for the transportation requirement.
Planned	All the freight units that are assigned to the order-based transportation requirement have been planned.
In Execution	The order-based transportation requirement is in the execution process. At least one follow-on document (not necessarily a freight unit) is in execution. For more information about the execution of a transportation requirement, see the execution status of the transportation requirement or of the follow-on documents.
Completed	Processing of the order-based transportation requirement has been completed. Execution has finished.

Status	Description
	This status is also set when the freight units that were assigned to the order-based transportation requirement have been consumed by a delivery-based transportation requirement.
Canceled	The order-based transportation requirement has been canceled.

- Execution Status

Status	Description
Execution Not Started	The execution of the order-based transportation requirement has not yet started.
In Execution	The order-based transportation requirement is currently being executed. At least one of the planning documents assigned to the order-based transportation requirement is in the execution process.
Executed	The execution of the order-based transportation requirement has been completed. The execution of all planning documents assigned to the order-based transportation requirement has been completed.

- Consumption Status

Status	Description
Not Consumed	No freight units have been consumed by a delivery-based transportation requirement.
Consumed Partially	Some of the freight units that were assigned to the order-based transportation requirement have been consumed or partially consumed by a delivery-based transportation requirement.
Consumed Completely	All of the freight units that were assigned to the order-based transportation requirement have been consumed by a delivery-based transportation requirement.

Blocks

An order-based transportation requirement can contain the following blocks:

- Planning block
- Execution block
- Delivery block

You can configure the way in which SAP TM responds to delivery block reasons from SAP ERP. You can specify whether the SAP TM system should create a planning block or an execution block or both, according to the defined SAP ERP block reason.

For more information on this see Customizing for Transportation management under
Integration > ERP Logistics Integration > Define Enhanced Blocking of Transportation Requirements > Define Blocks Based on ERP Delivery Block

Credit Check

You can set up credit control for sales orders in ERP. A sales order has a credit status that reflects the outcome of the credit limit check on that document. If the credit status of the document is not “approved” SAP TM receives a delivery block with blocking reason 01 (“Credit Limit”) for the document.

Handover Location

In SAP ERP you can define a handover location (HoL) and date for an external purchase order. This specifies the time and place at which responsibility for goods passes from the vendor to the customer. The term “Handover Location”, as used in SAP ERP, has the same meaning as the term “Incoterm Location” used in SAP TM.

When the TM system receives handover locations from an ERP order, the TM system decides whether to build one or two stages and whether to designate a stage as “statistical”. If two stages are built and neither is statistical, then the logic of delivery creation is the same as that for a scenario without handover location. That means the original source and destination locations from the SAP ERP order are relevant for transportation planning and for the date-time fields in the delivery proposal.

If two stages are built and one is designated as “statistical”, or only one stage is built, then the handover location becomes relevant for transportation planning and delivery proposal.

Integration

The order-based transportation requirement is integrated with the following objects in SAP TM:

- Freight unit
 - You can create freight units based on an order-based transportation requirement.
- Delivery-based transportation requirement
 - One or more delivery-based transportation requirements can consume the transportation demand of one or more order-based transportation requirements.

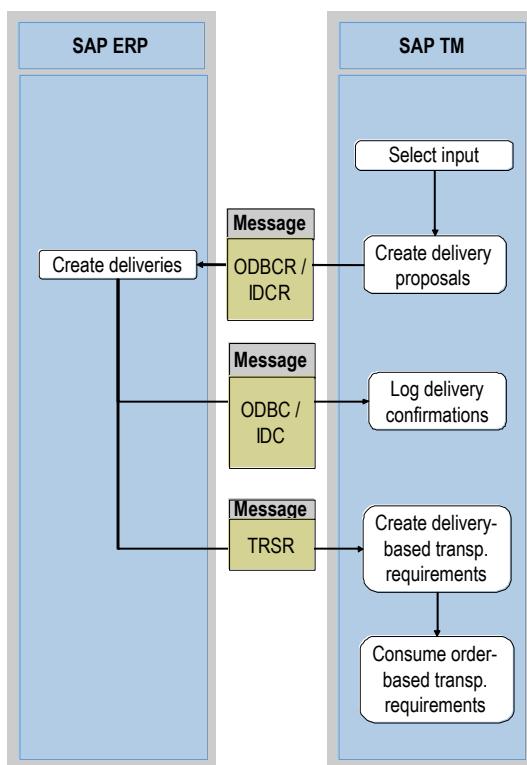


Creation of ERP Deliveries from SAP TM

You use this process if you want to create a delivery proposal in SAP Transportation Management (SAP TM) and send the proposal to SAP ERP where the delivery is created. The delivery proposal is based on the results of transportation planning such as consolidation and dates, taking into account transportation-planning-relevant information such as resource availability and transportation durations. SAP TM can also trigger the creation of deliveries prior to transportation planning.

Process

The following figure shows the process for creating delivery proposals in SAP TM and the subsequent creation of deliveries in SAP ERP and is followed by a description of the process:



Creation of ERP Deliveries from SAP TM

The following abbreviations are used for message types in the above figure:

- **ODBCR:** Outbound Delivery Bulk Create Request
- **IDCR:** InboundDeliveryCreateRequest
- **ODBC:** Outbound Delivery Bulk Confirmation
- **IDC:** InboundDeliveryConfirmation_V1
- **TRSR:** TransportationRequestSUITERequest

The process runs as follows:

1. Select input (SAP TM)

The user can start delivery creation by using a background report or interactively. For more information, see [Creation of Delivery Proposals \[Page 420\]](#).

SAP TM considers data for delivery creation from the order-based transportation requirements and from the assigned freight units, freight orders, and freight bookings.

2. Generate delivery proposals (SAP TM)

Based on the chosen input, SAP TM creates delivery proposals. A proposal consists of groups of freight units that can be delivered together. Depending on the input method used, SAP TM either sends the proposals automatically to SAP ERP to create deliveries, or the user can check the proposals and then send them to SAP ERP.

If the user specified a delivery profile that requires the planning results to be fixed for planned freight units, freight orders, or freight bookings, the system fixes the planning results during delivery proposal creation. Otherwise, the system does not fix the planning results.

After the delivery proposals have been created and sent to SAP ERP, the system creates an entry in the application log. The application log entry includes the delivery proposals that were sent to SAP ERP. Furthermore, the freight units for which a delivery proposal is sent to SAP ERP are marked with a send timestamp.

3. Create deliveries (SAP ERP)

When SAP ERP receives the request to create deliveries, SAP ERP creates the deliveries. These can be inbound or outbound deliveries. SAP ERP might split the proposed deliveries further, for example, based on additional split criteria. However, SAP ERP will not change the dates that were proposed by SAP TM nor consolidate proposed deliveries. When SAP ERP creates the deliveries, SAP ERP sends a confirmation of delivery creation to SAP TM, and a request to create a delivery-based transportation requirement in SAP TM.

4. Log delivery confirmations (SAP TM)

SAP TM creates an entry in the application log. The application log entry includes the system messages that were created in SAP ERP during delivery creation as well as the number and document IDs of deliveries created in SAP ERP. If an error occurred during delivery creation in SAP ERP, then SAP TM generates an alert.

When a confirmation is received, SAP TM sets a confirmation timestamp in the relevant freight units. The timestamp is used to monitor whether SAP ERP has responded. For more information about monitoring the delivery creation process, see [Monitoring of Delivery Creation \[Page 425\]](#).

5. Create delivery-based transportation requirements (SAP TM)

For more information, see [Integration of ERP Deliveries \[Page 427\]](#).

6. Consume order-based transportation requirements (SAP TM)

For more information, see [Consumption of Order-Based Transportation Requirements \[Page 433\]](#).



Creation of Delivery Proposals

SAP Transportation Management (SAP TM) can propose inbound deliveries and outbound deliveries and send these proposals to SAP ERP to trigger the creation of deliveries.

Prerequisites

- An order-based transportation requirement exists.
- Freight units exist for the order-based transportation requirement.
- The order-based transportation requirement is not blocked for delivery.
- A delivery is expected for the order in the ERP system. This can be determined, for example, by the order type or shipping conditions.
- If you want to use a selection profile to select the relevant input for the delivery proposal, you have defined a selection profile (see [Selection Profile](#)).
- If you want to use a delivery profile during delivery creation, you have defined a delivery profile (see [Delivery Profile \[Page 398\]](#)).
- If you want to send delivery proposals to SAP ERP from the freight order UI, you have assigned a delivery profile to the relevant freight order types. You do this in Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶.

When using the background report, a delivery proposal must not have already been made for the freight units. This includes freight units for which a delivery failed to be created.

Features

Background Report

The user can create delivery proposals for order-based transportation requirements by using a background function (program /SCMTMS/DLV_BATCH). The user can enter selection criteria or use selection profiles. In both cases, the user can also enter a delivery profile. The system selects the documents, creates the delivery proposals, and sends them automatically to SAP ERP.

If a freight unit has previously been used for a delivery proposal, but no delivery-based transportation requirement was ultimately created, the user cannot use the function to create a new delivery proposal for that freight unit. Instead, the user has to create the delivery proposal interactively in SAP NetWeaver Business Client.

For more information about the background function, see [Creation of Deliveries in SAP ERP](#).

Interactive Delivery Creation

The user can create deliveries interactively as follows:

- From the delivery creation UI in SAP NetWeaver Business Client under ► *ERP Logistics Integration* ► *Delivery Creation* ► *Create Deliveries in ERP* ▶.

The user specifies one or more profiles according to which the system selects and displays a list of business documents. The user then selects the relevant documents in the list and triggers delivery proposal creation. The user can review the delivery proposals before sending them to SAP ERP

- From the following overviews:
 - Overview of freight orders or freight bookings in SAP NetWeaver Business Client under *Freight Order Management*.
 - Overview of order-based transportation requirements or order-based freight units in SAP NetWeaver Business Client under ► *ERP Logistics Integration* ► *Worklist* ► *Overview Transportation Requirements* □.
 - Overview of order-based freight orders or order-based freight bookings in SAP NetWeaver Business Client under ► *ERP Logistics Integration* ► *Worklist* ► *Overview Freight Orders and Freight Bookings* □.

The user selects the relevant business documents in the overview and chooses the *Create Deliveries in ERP* pushbutton. The system displays a list of freight units related to the selected business documents. The user selects the relevant freight units and triggers delivery proposal creation. The user can review the delivery proposals before sending them to SAP ERP

- From the *Transportation Cockpit*

The user triggers delivery proposal creation for specific business documents after carrying out planning in the *Transportation Cockpit*. The user selects the business documents in the *Transportation Cockpit* and chooses the *Create Delivery Proposals* pushbutton. The system automatically creates and displays the delivery proposals. The user can review the delivery proposals before sending them to SAP ERP.

The user can also trigger the creation and sending of delivery proposals for a specific freight order by choosing ► *Follow Up* ► *Send Delivery Proposals to ERP* □ in the freight order UI. The system automatically creates the delivery proposals and sends them to SAP ERP. In this case, the user cannot review the delivery proposals before they are sent to SAP ERP. Note that the system creates the delivery proposals according to the delivery profile assigned to the freight order type.

Source of Data

SAP TM collects data from the relevant documents as follows:

- Dates
 - SAP TM uses dates from the freight order or freight booking. If the order-based transportation requirement is not planned, that is no freight order or freight booking exists, then SAP TM uses dates from the freight units.
- Quantities
 - SAP TM uses quantities from the freight units.
- ERP document references
 - SAP TM retrieves document references (such as order document number) from the order-based transportation requirement.

Consolidation

If order-based transportation requirements have been planned, and freight orders or freight bookings exist for the transportation requirements, SAP TM uses only one freight order or one freight booking for each delivery proposal. That is, only freight units that belong to the same freight order or freight booking can be consolidated into a single delivery proposal. In this way, freight units from various order-based transportation requirements can be consolidated into a single delivery proposal if they belong to the same freight order or freight booking. If, however, freight units from a single order-based transportation requirement were distributed across multiple freight orders or freight bookings, then multiple deliveries are proposed for the freight units of this one order-based transportation requirement.

If order combination is not allowed for an order-based transportation requirement, SAP TM does not group freight units from this transportation requirement together with freight units from other order-based transportation requirements. If freight units for such order-based transportation requirements have been consolidated into the same freight order or freight booking during planning, SAP TM does not include them in the same delivery proposal, but instead creates multiple delivery proposals.

In addition, freight units can only be consolidated into the same delivery proposal if the following data is the same:

- SAP ERP system from which the order was received
- Source location
- Destination location
- Incoterms
- Shipping conditions
- SAP ERP document type, such as purchase order or sales order
- Start stop (if planning has already been done)
- Destination stop (if planning has already been done)

If an order-based transportation requirement has not been planned in SAP TM, and no freight order or freight booking exists, SAP TM can also create delivery proposals for the corresponding freight units. In this case, SAP TM creates delivery proposals according to the settings in the delivery profile. For more information about the delivery profile, see [Delivery Profile \[Page 398\]](#).

Bill of Materials (BOMs)

Either a BOM header or BOM items can be goods-movement-relevant. If a BOM header is goods-movement relevant, SAP TM can, if necessary, distribute the quantity across multiple delivery proposals. If BOM items are delivery relevant, SAP TM expects a common delivery group for all items and does not distribute the items or their quantities across multiple delivery proposals.

Consumption of Schedule Lines in SAP ERP

The delivery proposal in SAP TM takes into account that SAP ERP consumes order schedule lines in chronological order. Therefore, SAP TM does not propose a delivery for a schedule line before another schedule line of the same order item that has an earlier delivery date has been used for a delivery proposal. If freight unit selection results in this situation, SAP TM excludes the affected freight units from the selection.

If an error occurs in SAP ERP when creating a delivery, then SAP ERP does not create deliveries that correspond to later schedule lines of the same order item, or the delivery is created but excludes the later schedule lines of that item.

Execution and Planning Blocks in SAP ERP

You can use the delivery profile to determine how, during delivery creation, the SAP TM system deals with objects that are blocked for planning or execution. You can choose either or both of the following options:

- Exclude freight units or freight orders that are blocked for planning
- Exclude freight units or freight orders that are blocked for execution



Previously the system excluded all objects with the status “Blocked for Execution”, from delivery creation. The option to exclude objects with the status “Blocked for Planning” was not previously available.

End of the note.

The system considers freight units and freight orders to check whether they are blocked for planning or blocked for execution. If a freight order or its assigned freight units are blocked, the system – depending on the settings you have chosen in the delivery profile and depending on how you start delivery creation – prevents the user from creating a delivery. The system runs the check based only on the object (freight orders, bookings, transportation units, freight units) that you have selected as the starting point for creation of delivery proposals.



A freight unit is assigned to a pre-carriage and a main-carriage freight order. The main-carriage freight order is blocked for execution, but the freight unit has no blocks. The delivery profile has been configured to exclude freight units or freight orders that are blocked for execution.

If you start creation of delivery proposals with the pre-carriage freight order, the system allows creation of deliveries.

If you start creation of delivery proposals with the main-carriage freight order, which is blocked for execution, the system prevents you from creating a delivery.

End of the example.

The system checks for blocks in freight orders only when you start delivery creation in a freight order context, for example, from the freight order POWL or the freight order UI or by using a freight order selection profile in the report “Create Deliveries in ERP”. Otherwise only the blocks in freight units are considered.

Delivery Proposals with Handover Locations

When the TM system receives handover locations from an ERP order, the TM system decides whether to build one or two stages and whether to designate one of them as “statistical”. If two stages are built and neither is designated “statistical”, then the logic of delivery creation is the same as that for a scenario without handover location. That means the original source and destination locations from the SAP ERP order are relevant for transportation planning and for the date-time fields in the delivery proposal. If two stages are built and one is designated as “statistical”, or only one stage is built, then the handover location becomes relevant for transportation planning and delivery proposal.



Example

For the OTRs of several purchase orders only the second stage has been built or two stages have been built and the first one is statistical. Then only the stage from handover location to the goods receiving plant is relevant for transportation planning and delivery proposal. If there are now several FUs originating from different locations but with the same handover location and destination location, and a FOR has been built for all these FUs, then a common delivery proposal may result for all these FUs.

End of the example.

Delivery Proposals with Freight Document Hierarchies

With transportation units, SAP TM provides a new three-tier hierarchy of freight documents. This can comprise a freight order on the highest level, transportation units on the middle level, and freight units on the lowest level. For two-tier hierarchies, the highest level can include freight orders, freight bookings and transportation units. On the lowest level, you can have freight units and automatically generated transportation units. In addition, automatically generated transportation units and automatically generated freight orders can represent a one level hierarchy.

You can create delivery proposals for each of these hierarchy types. If not explicitly stated, the term *freight unit* can also mean *automatically generated freight order* or *automatically generated transportation unit*, in order to represent objects on the lowest hierarchy level. In the same way the term *freight order* can also mean *freight booking* or *transportation unit* in order to represent objects on the highest hierarchy level.

More Information

For information about monitoring the delivery creation process, see [Monitoring of Delivery Creation \[Page 425\]](#).



Monitoring of Delivery Creation

When you send a delivery proposal to SAP ERP, the SAP TM system sets a send timestamp in the freight units to which the delivery proposal relates. When SAP ERP sends a confirmation of delivery creation, the SAP TM system sets a confirmation timestamp in these freight units. If delivery creation is successful, SAP ERP also sends a request to create a delivery-based transportation requirement (DTR), and the SAP TM system reassigns the freight units from the order-based transportation requirement (OTR) to the DTR.

To monitor the delivery creation process, SAP TM checks whether freight units contain a confirmation timestamp and whether they have been reassigned from an OTR to a DTR.

Note

The above process also applies to directly created freight orders, which have similar characteristics to freight units. For more information about directly created freight orders, see [Direct Creation of Freight Orders \[Page\] 480](#).

End of the note.

Features

SAP TM provides the following worklists for monitoring the delivery creation process:

- *Order-Based FUs with Incomplete Delivery Creation* (for freight units) and *Order-Based FOs with Incomplete Delivery Creation* (for directly created freight orders)

These worklists contain all freight units or directly created freight orders with the following attributes:

- They contain a send timestamp.
- They do not contain a confirmation timestamp, that is, SAP ERP has not responded yet.
- They are still related to an order-based transportation requirement.

Since SAP ERP has not responded yet, you cannot repeat the delivery proposal process for these freight units or directly created freight orders.

In this case, the messages used to exchange information between SAP TM and SAP ERP might still be in a message queue. You can use transaction `SXMB_MONI` to check the status of the messages and, if necessary, retrigger them.

- *Order-Based FUs with Failed Delivery Creation* (for freight units) and *Order-Based FOs with Failed Delivery Creation* (for directly created freight orders)

These worklists contain all freight units or directly created freight orders with the following attributes:

- They contain a send timestamp.
- They contain a confirmation timestamp, that is, SAP ERP has already responded.

- They are still related to an order-based transportation requirement, that is, the system has not reassigned the freight units or directly created freight orders from an OTR to a DTR.

In this case, SAP ERP was unable to create the deliveries and, as a result, did not request the creation of a DTR.

To find out why delivery creation failed, you can branch from the worklist to the business application log entries for a freight unit or a directly created freight order. If there were problems during delivery creation, SAP ERP sends a log item that contains the reason why particular deliveries could not be created, for example. After checking why delivery creation failed, you can repeat the delivery proposal process directly from the worklist.

Activities

To call up the worklists in SAP NetWeaver Business Client, choose ► *ERP Logistics Integration* ► *Worklist* ► *Overview Transportation Requirements (Not Finalized)* ► .



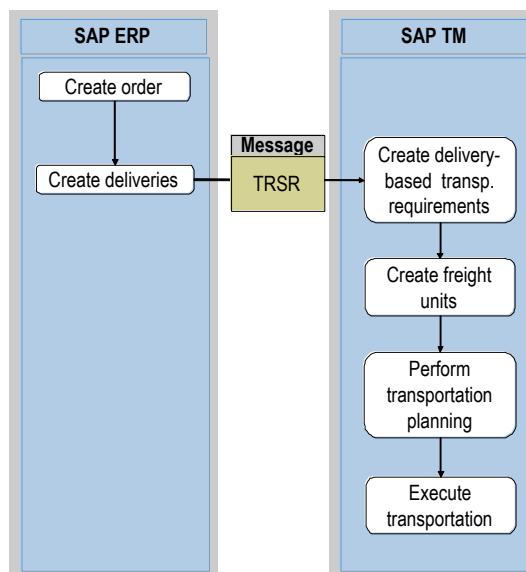
Integration of ERP Deliveries

You use this process if a customer creates a delivery in SAP ERP and sends it to SAP Transportation Management (SAP TM). In this process, a delivery-based transportation requirement is created in SAP TM based on the delivery from SAP ERP. If the corresponding order was also sent to SAP TM, the transportation demand of the order-based transportation requirements is consumed.

Process

Integration of ERP Deliveries Without Sending ERP Order to SAP TM

The following figure shows the process flow for a delivery that is created in the SAP ERP system and sent to SAP TM, where a corresponding order-based transportation requirement has *not* been created in SAP TM:



Integration of ERP Deliveries Without Sending ERP Order to SAP TM

In the above figure, the abbreviation TRSR means `TransportationRequestSUITERequest`.

The process runs as follows:

1. Create order (SAP ERP)
An order is created in SAP ERP, but is not sent to SAP TM.
2. Create deliveries (SAP ERP)
Deliveries for the order are created in SAP ERP. SAP ERP sends the deliveries to SAP TM.
3. Create delivery-based transportation requirements (SAP TM)
When SAP TM receives the deliveries, SAP TM creates delivery-based transportation requirements for these deliveries.

4. Create freight units (SAP TM)

Since no corresponding order-based transportation requirements exist for the delivery-based transportation requirement, SAP TM creates new freight units for the delivery-based transportation requirement, according to the freight unit building rule specified.

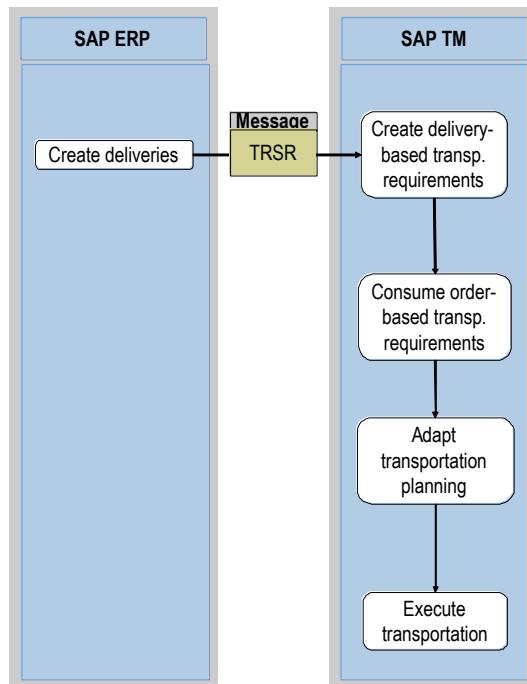
5. Perform transportation planning (SAP TM)

6. Execute transportation (SAP TM)

Integration of ERP Deliveries With Order Integration

The following figure shows the process flow for a delivery that is created in the SAP ERP system and sent to SAP TM where a corresponding order-based transportation requirement exists in SAP TM. There are two alternative processes that can precede this process:

- An order has been sent to SAP TM and SAP TM has sent a delivery proposal to SAP ERP (see [Creation of ERP Deliveries from SAP TM \[Page 418\]](#)).
- An order has been sent to SAP TM, but SAP TM has *not* sent a delivery proposal to SAP ERP.



Integration of ERP Deliveries With Order Integration

In the above figure, the abbreviation TRSR means `TransportationRequestSUITERequest`.

The process runs as follows:

1. Create deliveries (SAP ERP)

Deliveries are created in SAP ERP. SAP ERP sends the deliveries to SAP TM.

2. Create delivery-based transportation requirements (SAP TM)

When SAP TM receives the deliveries, SAP TM creates delivery-based transportation requirements for these deliveries.

3. Consume order-based transportation requirements (SAP TM)

Since one or more corresponding order-based transportation requirements exist in SAP TM, the delivery-based transportation requirements consume the transportation demand of the order-based transportation requirement.

For more information, see [Consumption of Order-Based Transportation Requirements \[Page 433\]](#).

4. Adapt transportation planning (SAP TM)

Depending on change controller setting, SAP TM can adjust the transportation planning that had previously been performed for the order-based transportation requirement. For more information about the change controller, see [Change Controller](#).

5. Execute transportation planning (SAP TM)

 Note

You can display individual overviews of delivery-based freight orders, delivery-based air freight bookings, and delivery-based ocean freight bookings in SAP NetWeaver Business Client by choosing  *ERP Logistics Integration*  *Worklist*  *Overview Freight Orders and Freight Bookings* .

End of the note.



Delivery-Based Transportation Requirement

Represents a transportation demand based on a delivery that was created in SAP ERP. The delivery-based transportation requirement in SAP Transportation Management (SAP TM) corresponds to a single delivery in SAP ERP.

Structure

The delivery-based transportation requirement has the following structure:

- Tabs for general data, terms and conditions, business partners, location and dates/times, notes, and administrative data.
 - Contains information that is relevant for all items of a delivery-based transportation requirement.
- Document flow
 - Shows a list of preceding and subsequent documents that are related to the delivery-based transportation requirement.
- Items

This table shows the product items, service items, text items, and handling units. In the delivery-based transportation requirement, handling units can contain product items and other handling units. For each item, you can display more detailed information on a number of tab pages.

Statuses in the Delivery-Based Transportation Requirement

The following statuses are available in the delivery-based transportation requirement:

- *Lifecycle Status*

Status	Description
New	The delivery-based transportation requirement has been created. No freight units have been assigned to the delivery-based transportation requirement yet.
In Planning	The delivery-based transportation requirement is in the planning process and at least one freight unit has been created for the transportation requirement.
Planned	All the freight units that are assigned to the delivery-based transportation requirement have been planned.
In Execution	The delivery-based transportation requirement is in the execution process. At least one follow-on document (not necessarily a freight unit) is in execution. For more information about the execution of a transportation requirement, see the execution status of the transportation requirement or of the follow-on documents.
Completed	Processing of the delivery-based transportation requirement has been completed. Execution has finished.
Canceled	The delivery-based transportation requirement has been canceled.

- Execution Status

Status	Description
Execution Not Started	The execution of the delivery-based transportation requirement has not yet started.
In Execution	The delivery-based transportation requirement is currently being executed. At least one of the planning documents assigned to the order-based transportation requirement is in the execution process.
Executed	The execution of the delivery-based transportation requirement has been completed. The execution of all planning documents assigned to the delivery-based transportation requirement has been completed.

Blocks

A delivery-based transportation requirement can contain the following blocks:

- Planning block
- Execution block

You can configure the way in which SAP TM responds to delivery block or shipment planning block reasons from SAP ERP. You can specify whether the SAP TM system should create a planning block or an execution block or both, according to the defined SAP ERP block reason.

For more information on this see Customizing for Transportation management under:

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Credit Check

You can set up credit control for deliveries in SAP ERP. An order or delivery has a credit status that reflects the outcome of the credit limit check on that document. If the credit status of the document is not “approved” SAP TM receives a delivery block with blocking reason 01 (“Credit Limit”) for the document.

Packaging Information

During the packing process in SAP ERP, handling units can be created to reflect items such as containers, rail cars, or pallets. In SAP TM you can now configure the system to use the appropriate item category to create the packaging information in SAP TM.

For more information on this see Customizing for Transportation management under

Handover Location

In SAP ERP you can define a handover location (HoL) and date for an inbound delivery. This specifies the time and place at which responsibility for goods passes from the vendor to the

customer. The term “Handover Location”, as used in SAP ERP, has the same meaning as the term “Incoterm Location” used in SAP TM.

When the TM system receives handover locations from an ERP inbound delivery, the TM system decides whether to build one or two stages and whether to designate one of them as “statistical”.

Integration

The delivery-based transportation requirement is integrated with the following objects in SAP TM:

- Freight units

SAP TM can create freight units based on a delivery-based transportation requirement, or consume existing freight units.

- Order-based transportation requirement

One or more delivery-based transportation requirements consume the transportation demand of one or more order-based transportation requirements.



Consumption of Order-Based Transportation Requirements

When a delivery-based transportation requirement (DTR) is created in SAP Transportation Management (SAP TM) based on a delivery that was created in SAP ERP, the DTR consumes the freight units assigned to the relevant order-based transportation requirements (OTR) if the corresponding orders were sent to SAP TM.

Features

Determination of Freight Units

SAP TM uses the ERP order (base document) item number that is referenced in the DTR item to find the corresponding OTR items (the base document number and item number is also referenced in the OTR items). In this way, the system can determine the relevant freight units, which are assigned to these OTR items.

Reassigning Freight Units to the Delivery-Based Transportation Requirement

SAP TM reassigns the freight units from the OTRs to the DTRs. If multiple freight unit items are determined, SAP TM assigns the freight unit items to the items of the DTR in chronological order (according the dates of the schedule lines that the freight unit items reference). Once a freight unit is assigned to a DTR, the freight unit cannot be assigned to another DTR.

If SAP TM does not determine any freight units, SAP TM can build new freight units for the DTR, if automatic freight unit building is allowed for the DTR type. This situation might occur for example, if deliveries are created in the ERP system without a preceding delivery proposal being sent from SAP TM.

Splitting Freight Units

If a freight unit is to be reassigned, but not all freight unit items or quantities are relevant for the DTR, SAP TM splits the freight unit. One of the resulting freight units contains only the relevant freight unit items and is assigned to the DTR. The other resulting freight unit contains the non-relevant freight unit items and is assigned to the OTR.

Furthermore, if the quantity in the DTR item is less than the quantity in the freight unit, SAP TM also splits the relevant freight unit.

If there are other differences between the freight unit or item and the DTR, SAP TM adapts the freight units accordingly so that the information in the freight unit corresponds to the transportation requirement.

Updating the Open Quantity of the Order-Based Transportation Requirement

The open quantity in an OTR represents the quantity that has not been assigned to a DTR. When freight units are reassigned to a DTR, the open quantity of the OTR is reduced accordingly.

Updating the Status of the Order-Based Transportation Requirement

Initially the OTR has the consumption status *Not Consumed*. If at least one OTR item or a part of an item has been consumed by a DTR item, the consumption status of the OTR will change to

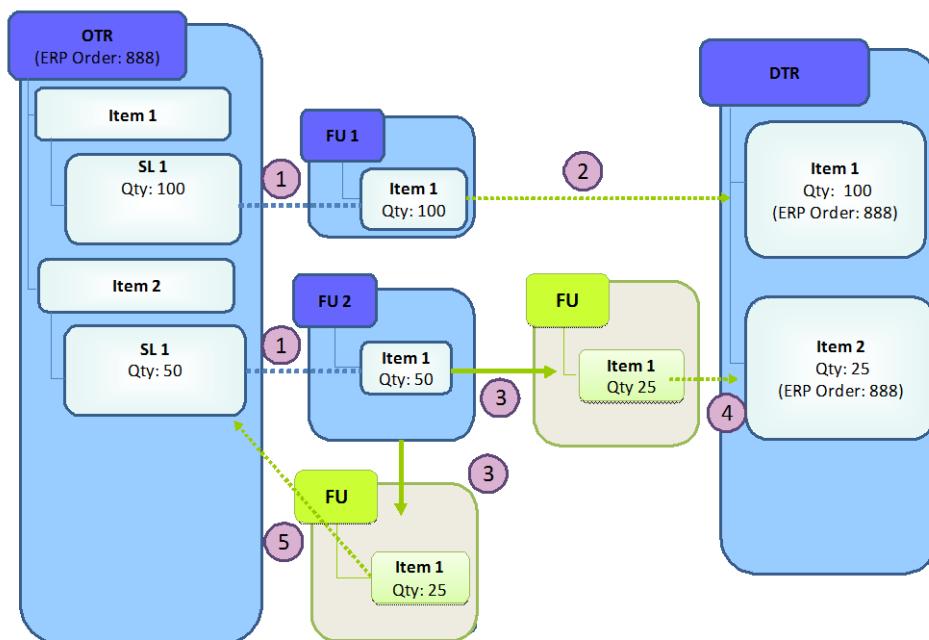
Consumed Partially. If all items in an OTR have been consumed, the system changes the consumption status to *Consumed Completely*. Once the consumption status is *Consumed Completely*, the system changes the lifecycle status to *Completed*.

Handling Units

The item structure of the DTR may differ from the structure in the OTR due to the handling unit information in the delivery received from SAP ERP. If a handling unit has been created, a handling unit is added to the DTR. This handling unit item is transportation relevant and includes the complete quantity of both the packaging and goods that are to be transported. The handling unit item can contain one or more product items or packaging items. The freight units (or parts thereof) that are determined for the items of this handling unit item are consolidated into one single freight unit item, which is assigned to the handling unit item.

Example

The following figure shows a simple example of how an OTR might be consumed by a DTR and is followed by an explanation:



OTR Consumed by DTR

- Determine freight units

The relevant freight units are determined based on the order item references that are contained in the DTR items and the OTR items.

- Reassign freight unit (FU 1)

The first DTR item fully consumes the freight unit (FU 1) assigned to OTR item 1.

The open quantity of OTR item 1 is reduced to 0

- Split freight unit (FU 2)

The quantity in FU 2 is greater than the quantity in item 2 of the DTR. The DTR item consumes the necessary quantity of the FU. Therefore, the freight unit (FU 2) is split.

4. Assign freight unit to DTR

The freight unit containing only one item with the correct quantity, is assigned to the DTR item

5. Assign freight unit to OTR

The freight unit containing the remaining quantity is assigned to OTR item 2. The open quantity of OTR item 2 is reduced to 25.



Integration of Changed and Deleted ERP Orders and Deliveries

Logistics integration with SAP ERP supports changes to and deletion of orders in SAP ERP, and changes to, deletion, and splitting of deliveries in SAP ERP. If SAP Transportation Management receives an updated order or delivery, the change controller propagates the changes to the freight units of the corresponding transportation requirement. Once freight units have been adapted, the change controller can process subsequent documents further depending on strategies. For more information, see [Change Controller](#).



Note

A user cannot change the data in an order-based transportation requirement or delivery-based transportation requirement nor cancel or delete these documents in SAP Transportation Management (SAP TM). Changes can only be made in the SAP ERP system and sent to SAP TM.

End of the note.

Prerequisites

You can define whether the change controller is to execute the changes to freight units synchronously or asynchronously in Customizing for the order-based transportation requirement type and for the delivery-based transportation requirement type.

If SAP TM is to process the changes asynchronously, you have implemented the *Background Job to Process Triggers Periodically* report (/SCMTMS/PROCESS_TRIGGER_BGD).

You have made settings for the change controller in Customizing for *SCM Basis* under *Process Controller*.

You have specified whether SAP TM deletes or cancels empty freight units. You make this setting in Customizing for *Transportation Management* under ► *Planning* ► *Freight Unit* ► *Define Freight Unit Types* ▶.

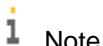
Features

For more information about how the change controller handles freight units assigned to changed or deleted transportation requirements, see the following sections:

- [Processing Changed or Deleted Orders from ERP \[Page 438\]](#)
- [Processing Changed, Deleted, or Split Deliveries from ERP \[Page 440\]](#)

Synchronous and Asynchronous Processing

When a changed order or delivery is received, the system updates the freight units of the corresponding transportation requirement automatically. If changes are asynchronous, a change is also possible if the freight unit is locked in another process. The freight unit remains unaffected while it is locked and is updated as soon as it is unlocked. The system processes the changes in the background using the *Background Job to Process Triggers Periodically* report (/SCMTMS/PROCESS_TRIGGER_BGD).



Note

You can check in the application log, whether asynchronously-processed changes have been propagated correctly. To do this, open the log in SAP NetWeaver Business Client (NWBC) by choosing *Application Administration* *General Settings* *Display Application Log*.

End of the note.

If the system performs changes synchronously, but a freight unit is locked, the system does not update the transportation requirement nor adapt the freight units. The user can process this error using forward error handling. For more information, see [Error and Conflict Handler \(CA-FS-ECH\)](#).

Deleting and Canceling Freight Units

If, based on a changed or deleted transportation requirement, a freight unit becomes empty, the system either deletes or cancels the freight unit. Whether the freight unit is deleted or canceled, depends on your settings for the freight unit type.



Processing Changed or Deleted Orders from ERP

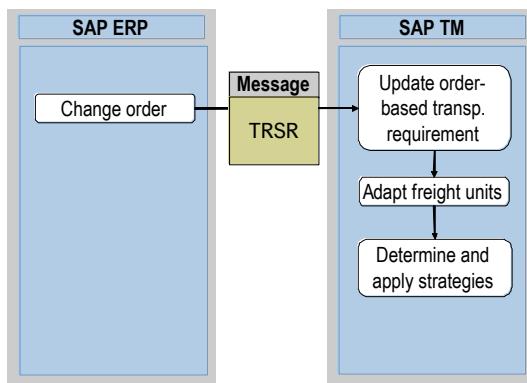
If a user changes the data in an order in SAP ERP (for example, quantities, dates and locations can be changed), SAP ERP sends these changes to SAP Transportation Management (SAP TM) and the corresponding order-based transportation requirement is updated.

If an order is deleted in SAP ERP, the corresponding order-based transportation requirement is canceled in SAP TM.

Process

Update of an Order

The following figure shows the process flow when an order is changed in SAP ERP, and is followed by a description:



Update of Order in SAP ERP

In the above figure, the abbreviation TRSR means `TransportationRequestSUITERequest`.

The process runs as follows:

1. Change order (SAP ERP)

If changes are made to an order in SAP ERP, an update is sent to SAP TM

2. Update order-based transportation requirement (SAP TM)

In SAP TM, the corresponding order-based transportation requirement is updated. If the quantity has changed, the open quantity (and, if affected by this, the consumption status) is adjusted accordingly.

3. Adapt freight units (SAP TM)

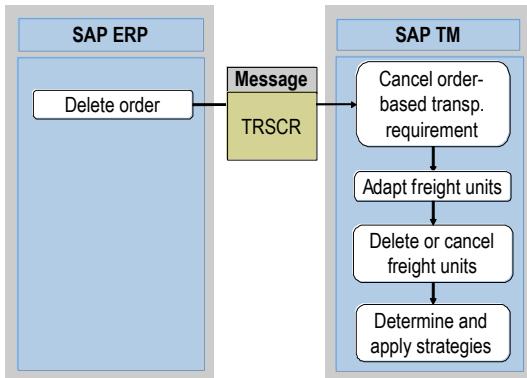
SAP TM updates the freight units according to the assigned freight unit building rule. If a delivery has already been created (and thus, the freight units have already been reassigned to the delivery-based transportation requirement), SAP TM creates new freight units in case of a quantity increase to cover the resulting open quantity of the order-based transportation requirement. Note that the delivery-based transportation requirement and its freight units are not affected by the updated order.

4. Determine and apply strategies (SAP TM)

The change controller uses strategies to adapt subsequent documents.

Deletion of an Order

The following figure shows the process flow when an order is deleted in SAP ERP, and is followed by a description:



Deletion of Order in SAP ERP

In the above figure, the abbreviation TRSCR means
TransportationRequestSUITECancellationRequest.

The process runs as follows:

1. Delete order (SAP ERP)

SAP ERP sends a request to cancel the order-based transportation requirement in SAP TM. Note that if a delivery has already been created in SAP ERP, the order cannot be deleted in SAP ERP

2. Cancel order-based transportation requirement (SAP TM)

In SAP TM, the corresponding order-based transportation requirement is canceled.

3. Adapt freight units

If the freight unit was only relevant for the canceled order-based transportation requirement, the freight unit becomes empty. If the freight unit was assigned to multiple order-based transportation requirements, the quantity in the freight unit is reduced according to the canceled order-based transportation requirement.

4. Delete or cancel freight units (SAP TM)

If the freight unit is empty, SAP TM either deletes or cancels the freight unit according to your settings for the freight unit type.

5. Determine and apply strategies (SAP TM)



Processing Changed, Deleted, or Split Deliveries from ERP

If a delivery is changed, split, or deleted in SAP ERP, this information is sent to SAP Transportation Management (SAP TM). SAP TM adjusts the corresponding delivery-based transportation requirement based on this information.

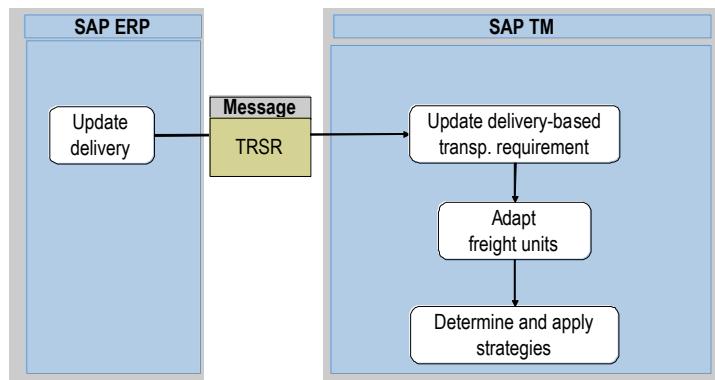
Note that changes or splits can originate in SAP ERP or in the SAP Extended Warehouse Management (SAP EWM) application. Changes or splits in SAP EWM are always transferred to SAP TM via SAP ERP.

The following sections describe how SAP TM handles these changes.

Process

Update of a Delivery

The following figure shows the process for updating a delivery in SAP ERP after delivery creation and is followed by a description.



Update of Delivery in SAP ERP

In the above figure, the abbreviation TRSR means `TransportationRequestSUITERequest`.

The process runs as follows:

1. Update delivery (SAP ERP)
ERP sends a changed delivery to SAP TM.
2. Update delivery-based transportation requirement (SAP TM)
In SAP TM, the corresponding delivery-based transportation requirement is updated.
3. Adapt freight units (SAP TM)
The change controller adjusts the freight units according to the changes in the delivery-based transportation requirement.
If the quantity of the delivery-based transportation requirement has changed *and* the delivery-based transportation requirement is assigned to freight units that were

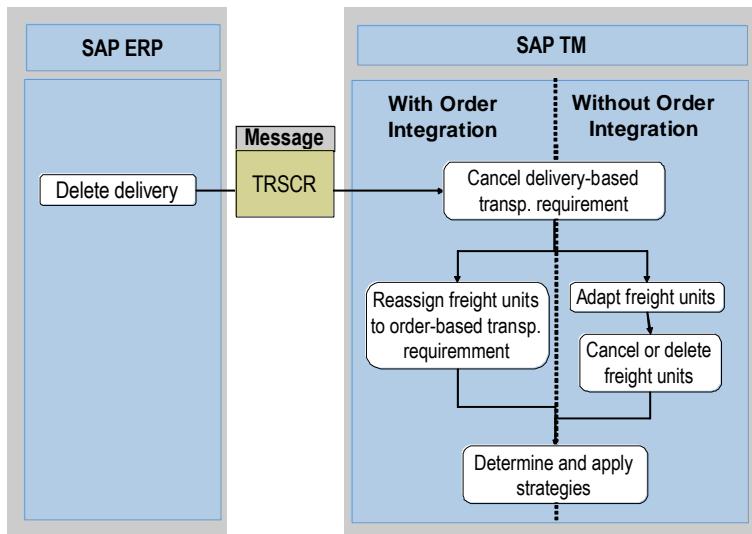
consumed from an order-based transportation requirement, the change controller processes the freight units as follows:

- If the quantity of the delivery-based transportation requirement has *decreased*, the open quantity of the corresponding order-based transportation requirements is increased accordingly; and the freight units of the delivery-based transportation requirement are split. Freight units are retained by the delivery-based transportation requirement to cover the reduced quantity of the delivery-based transportation requirement, and the remaining freight units are assigned to the corresponding order-based transportation requirement.
- If the quantity of the delivery-based transportation requirement has *increased*, and there are still open quantities in the corresponding order-based transportation requirement, the system reassigns the freight units from the order-based transportation requirement to cover this increased delivery quantity. The system then reduces the open quantity of the order-based transportation requirements.

4. Determine and apply strategies (SAP TM)

Deletion of a Delivery

The following figure shows the process for deleting a delivery in SAP ERP after delivery creation and is followed by a description:



Deletion of Delivery in SAP ERP

In the above figure, the abbreviation TRSCR means *TransportationRequestSUITECancellationRequest*.

The process runs as follows:

1. Delete delivery (SAP ERP)

ERP sends a request to cancel the delivery-based transportation requirement.

2. Cancel delivery-based transportation requirement (SAP TM)

In SAP TM, the corresponding delivery-based transportation requirement is canceled.

3. Reassign freight units to order-based transportation requirement (SAP TM)

If a corresponding order-based transportation requirement exists, the freight units are reassigned to this order-based transportation requirement.

 Note

If the process runs without order integration (that is, no order-based transportation requirement exists), the freight units are adapted and, if necessary, are canceled or deleted depending on your settings for the freight unit type.

End of the note.

4. Determine and apply strategies (SAP TM)

Split of a Delivery

For more information, see the following:

- [Delivery Splits Triggered by SAP ERP \[Page 443\]](#)
- [Delivery Splits and Updates Triggered by SAP TM \[Page 445\]](#)



Delivery Splits Triggered by SAP ERP

You can split an outbound delivery or inbound delivery in SAP ERP or in the SAP Extended Warehouse Management (SAP EWM) application and trigger the required changes in SAP TM. If SAP EWM triggers the split, the delivery split is processed in SAP ERP first and then transferred to SAP TM.

Prerequisites

- You have created a delivery-based transportation requirement (DTR) in SAP TM based on an SAP ERP delivery.
- If required, you have defined a delivery split/update type in Customizing for *Transportation Management* under *Integration* *ERP Logistics Integration* *Delivery-Based Transportation Requirement* *Define Delivery Split/Update Types*

In the delivery/split update type, you define how the system updates freight unit planning after the delivery split has been performed in SAP TM. Note, however, that the system checks this setting only if the planning changes cannot be determined based on other criteria (for example, the application that triggered the split). For more information about the criteria and the sequence in which they are checked, see the field help for the *Handle Planning Results* field in the Customizing activity *Define Delivery Split/Update Types*.

- You have assigned the delivery split/update type to the delivery-based transportation requirement type in Customizing for *Transportation Management* under *Integration* *ERP Logistics Integration* *Delivery-Based Transportation Requirement* *Define Delivery-Based Transportation Requirement Types*

Process

1. Split delivery (SAP ERP)

SAP ERP splits a delivery that has already been sent to SAP TM. SAP ERP sends the following information in separate messages:

- The new delivery that has been created for the items split from the original delivery. The data sent includes a reference to the original delivery and the triggering application SAP ERP or SAP EWM.
- The changed original delivery. The data sent includes a reference to the new delivery.

2. Create new DTR and update original DTR (SAP TM)

SAP TM creates the new DTR first by reassigning the freight units from the original DTR to the new DTR. It then updates the original DTR.

SAP TM receives a new or updated delivery using the *Maintain Transportation Request* (`IntracompanyTransportationRequestRequest_In`) enterprise service in the *Transportation Request Processing* process component.

3. Update freight unit planning (SAP TM)

The system determines the required changes to freight unit planning for the freight units assigned to the new DTR and the original DTR. For example, the system discards the

planning of the freight units assigned to the new DTR and keeps the planning of the freight units assigned to the original DTR.



Delivery Splits and Updates Triggered by SAP TM

You can split an outbound delivery in SAP ERP based on planning changes in SAP TM. You can also update the goods issue date, loading date, transportation start date, and delivery date in the outbound delivery based on changed dates in SAP TM.

When SAP ERP receives a request for a split or update, it makes the necessary changes in outbound delivery processing and sends the delivery data back to SAP TM. SAP TM can then make the required changes to the delivery-based transportation requirements (DTRs).

Note that SAP TM can trigger the split or update of outbound deliveries only. It cannot trigger the split or update of inbound deliveries.

Prerequisites

- You have created a delivery-based transportation requirement (DTR) in SAP TM based on an SAP ERP outbound delivery.
- The outbound delivery in SAP ERP does not have one of the following statuses:
 - Distribution status: *Distributed*
 - Goods movement status: *Partially Completed* or *Completed*

If the delivery has one of the above statuses, SAP TM does not request the split or update. In the delivery split/update type, you can define whether the system is to display an error or warning message if relevant changes are made when the delivery has one of the above statuses.

- You have defined a delivery split/update type in Customizing for *Transportation Management* under ► *Integration* ► *ERP Logistics Integration* ► *Delivery-Based Transportation Requirement* ► *Define Delivery Split/Update Types* ▶.

You define the following in the split/update type:

- You define whether SAP TM sends a delivery split or update to SAP ERP if relevant changes have been made in SAP TM.
- You define whether a system message is to be displayed if a delivery split or update is required in SAP ERP, but the SAP ERP delivery can no longer be changed because it has one of the statuses mentioned above. If no message or a warning message is displayed, SAP TM saves the planning changes even though they are not sent to SAP ERP. If an error message is displayed, SAP TM does not save the planning changes.
- You can enter a delivery split reason that enables SAP ERP to determine the required split profile.

For more information, see the documentation of the Customizing activity.

- You have assigned the delivery split/update type to the delivery-based transportation requirement type in Customizing for *Transportation Management* under ► *Integration* ► *ERP Logistics Integration* ► *Delivery-Based Transportation Requirement* ► *Define Delivery-Based Transportation Requirement Types* ▶.

Process

Outbound Delivery Split

1. Perform transportation planning (SAP TM)

You perform planning or change the existing planning of freight units that belong to a DTR that is based on an outbound delivery. When you save the planning results, the system determines that a delivery split is required. For example, freight units that belong to the DTR have been assigned to different freight orders, or only some of the FUs that belong to a DTR have been assigned to freight orders and the other FUs have not been assigned. Note that the split is required only if the first stage or the last stage of the transportation chain is affected.

SAP TM determines whether the SAP ERP delivery can still be changed by checking the delivery status. If the delivery can be changed, SAP TM sends the required delivery split to SAP ERP. SAP TM sends the details of the items that are to be split from the original delivery (that is, IDs of the items in the original delivery, split quantity, unit of measure, and the required dates for the new delivery).

SAP TM sends the split request using the *Request Outbound Delivery Split V1* (*OutboundDeliveryERPSplitRequest_Out_V1*) enterprise service in the *Transportation Request Processing* process component. Note that if a delivery is to be split into several deliveries, each delivery is sent to SAP ERP in a separate message.

2. Split outbound delivery (SAP ERP)

Based on a split request received from SAP TM, SAP ERP creates a new outbound delivery and changes the original outbound delivery (that is, it removes the relevant items from the original delivery and creates a new delivery for these items). If you specified a split reason in the delivery split/update type, SAP ERP splits the delivery according to the settings in the corresponding split profile.

SAP ERP informs SAP TM about whether the delivery split was successful. The confirmation is received in SAP TM by the *Change Transportation Request Based on Outbound Delivery Split Confirmation V1* (*OutboundDeliveryERPSplitConfirmation_In_V1*) enterprise service in the *Transportation Request Processing* process component.

SAP ERP sends the following information in separate messages:

- The new delivery that has been created for the items split from the original delivery. The data sent includes a reference to the original delivery and the triggering application SAP TM.
- The changed original delivery. The data sent includes a reference to the new delivery.

3. Create new DTR and update original DTR (SAP TM)

SAP TM creates the new DTR first by reassigning the freight units from the original DTR to the new DTR. It then updates the original DTR.

SAP TM receives a new or updated delivery using the *Maintain Transportation Request* (*IntracompanyTransportationRequestRequest_In*) enterprise service in the *Transportation Request Processing* process component.

Outbound Delivery Update

1. Perform transportation planning (SAP TM)

You perform planning or change the existing planning of freight units that belong to a DTR that is based on an outbound delivery. Dates are changed during planning.

Alternatively, you change the dates of the relevant freight order. When you save the planning results or the changed freight order, SAP TM determines that the dates in the freight order no longer match the dates in the DTR and the original SAP ERP delivery.

SAP TM determines whether the SAP ERP delivery can still be changed by checking the delivery status. If the delivery can be changed, SAP TM sends the changed dates to SAP ERP and requests the update of the outbound delivery.

SAP TM sends the update request using the *Request Outbound Delivery Update* (*OutboundDeliveryUpdateRequest_Out*) enterprise service in the *Transportation Request Processing* process component.

2. Update outbound delivery (SAP ERP)

Based on the request received from SAP TM, SAP ERP updates the relevant dates.

SAP ERP informs SAP TM about whether the delivery update was successful. The confirmation is received in SAP TM by the *Change Transportation Request Based on Outbound Delivery Update Confirmation* (*OutboundDeliveryConfirmation_In_V1*) enterprise service in the *Transportation Request Processing* process component.

SAP ERP sends the updated outbound delivery to SAP TM. In SAP TM, the delivery is received by the *Maintain Transportation Request* (*IntracompanyTransportationRequestRequest_In*) enterprise service in the *Transportation Request Processing* process component.

3. Update DTR (SAP TM)

Result

The planning data in SAP TM and the SAP ERP delivery data is aligned.

Note the following:

- The triggering application is included in the message sent by SAP ERP. This enables SAP TM to distinguish between a split that is triggered by SAP TM (planning is correct) and a split triggered by SAP ERP or SAP EWM (planning is no longer correct and must be updated).
- If SAP TM triggers a delivery split and a delivery update for the same delivery at the same time, the split and update is sent in the same message using the *Request Outbound Delivery Split V1* (*OutboundDeliveryERPSplitRequest_Out_V1*) enterprise service.

You can use a worklist to monitor DTRs for which a delivery split or update has not been completed yet. In SAP NetWeaver Business Client choose *ERP Logistics Integration* *Worklist* *Overview Transportation Requirements (Not Finalized)* *DTRs with Incomplete Delivery Splits/Updates* .



Integration with SAP ERP Shipment Processing

The integration of SAP Transportation Management (SAP TM) with SAP ERP shipment processing enables you to do the following:

- Carry out transportation planning and booking activities in SAP TM for deliveries created in SAP ERP. SAP TM creates delivery-based transportation requirements (DTRs) for the deliveries received from SAP ERP and uses the DTRs for planning and booking purposes.

For more information about delivery integration, see [ERP Logistics Integration \[Page 392\]](#).

- Carry out transportation execution in SAP ERP for [freight documents](#) in SAP TM. SAP ERP creates shipments based on freight documents received from SAP TM. If you integrate SAP TM with the SAP Extended Warehouse Management (SAP EWM) application via SAP ERP, you can perform warehouse planning and execution for the shipments in SAP EWM.

Note that the freight documents must be derived from delivery-based transportation requirements.

- Carry out tendering in SAP TM for shipments created in SAP ERP. SAP TM creates freight orders based on shipments received from SAP ERP. After you have carried out tendering for a shipment-based freight order, SAP TM returns the tendering result to SAP ERP. SAP ERP then updates the original shipment.
- Create freight orders in SAP TM for shipments received from SAP ERP as part of the integration with SAP EWM.

Integration

You can integrate SAP Transportation Management (SAP TM) with SAP ERP by using [intermediate documents](#) (IDocs) in SAP ERP and enterprise services in SAP TM. IDoc-based integration guarantees downward compatibility with SAP R/3 software. SAP NetWeaver® Process Integration (PI) interfaces are used to map the IDocs in SAP ERP to the enterprise services in SAP TM.

Features

You can use the following outbound integration scenarios:

- Transportation planning in SAP TM using deliveries created in SAP ERP and transferred to SAP TM, with the option of transferring freight orders to SAP ERP for transportation execution (see [Shipment Integration Based on Freight Orders \[Page 450\]](#)).
- Transportation booking in SAP TM using deliveries created in SAP ERP and transferred to SAP TM, with the option of transferring freight bookings to SAP ERP for transportation execution (see [Shipment Integration Based on Freight Bookings \[Page 454\]](#)).

The shipments created in SAP ERP based on the freight documents can be transferred to SAP EWM for warehouse execution and planning. For more information, see [TM-ERP-EWM: Transportation Planning in SAP TM \(Order-Based\) \[Page 463\]](#) and [TM-ERP-EWM: Transportation Planning in SAP TM \(Delivery-Based\) \[Page 466\]](#).

You can use the following inbound integration scenarios:

- Tendering in SAP TM using shipments created in SAP ERP and transferred to SAP TM (see [Shipment-Based Tendering \[Page 458\]](#)).
- Freight order creation in SAP TM for SAP ERP shipments that are based on warehouse execution data received from SAP EWM (see [EWM-ERP-TM: Transportation Planning in SAP EWM \[Page 469\]](#)).

More Information

For more information about the integration scenarios and mappings for outbound and inbound integration of ERP shipments, see [Enterprise Services and ESR Content](#).



Shipment Integration Based on Freight Orders

You use this process to carry out transportation planning in SAP Transportation Management (SAP TM) for transportation activities that are based on deliveries received from SAP ERP. You can then carry out transportation execution in SAP ERP for the freight orders that were created during transportation planning. If you have integrated SAP ERP with the SAP Extended Warehouse Management (SAP EWM) application, you can also carry out warehouse planning and execution in SAP EWM. For more information, see [Integration with SAP Extended Warehouse Management \[Page 462\]](#).

Note the following:

- SAP TM creates a delivery-based transportation requirement (DTR) for each delivery received from SAP ERP. There is always a one-to-one relationship between an ERP delivery and a DTR.
- SAP ERP creates an ERP shipment for each freight order received from SAP TM. There is an n-to-one relationship between DTRs and a freight order; and, therefore, between the ERP deliveries that were originally sent to SAP TM and the ERP shipment that SAP ERP creates based on a freight order.

Prerequisites

- You have set up a configuration scenario for the *TM_ERPShipmentIntegration_Out* outbound integration scenario in SAP NetWeaver Process Integration (SAP NetWeaver PI).
- You have created deliveries in SAP ERP and transferred them to SAP TM. SAP TM has created one DTR for each delivery. Each DTR contains all items from the corresponding delivery.
- You have made sure that the relationships between the relevant business documents meet the following requirements:
 - The freight order (FO) is related only to DTRs (for example, SAP TM cannot send the FO to SAP ERP if it is related to an order-based transportation requirement (OTR), or to an OTR and a DTR).
 - The FO contains all freight units (FUs) from each related DTR (that is, the FO, and therefore the ERP shipment, must contain complete deliveries). This is because we do not perform a subsequent delivery split in SAP ERP.
 - The FO must contain FUs that are derived from either exclusively inbound deliveries or exclusively outbound deliveries. The creation of combined inbound and outbound shipments from ERP deliveries is not supported.
 - The FO contains FUs that are related to deliveries from the same ERP system. SAP TM cannot send the FO to SAP ERP if the FO contains deliveries from different ERP systems.
- You have made the following settings in the relevant FO types in Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ►:
 - You have assigned an output profile to the FO types.

- You have defined that the FO types are relevant for shipment creation by selecting the required value in the *Shipment Creation Relevance* field.

If you want the shipments in SAP ERP to contain packaging information in the form of handling units, you must specify that packaging information is to be sent to SAP ERP along with the other freight order data. You do this by selecting the relevant option in the *Shipment Creation Relevance* field. You can send packaging information for the vehicle resource or containers at the highest level of the item hierarchy, or for both of these. Based on this information, SAP ERP creates handling units using container as the packaging material. You can send information only for the top level of the item hierarchy, and you cannot send information about the assignment of the delivery items to the containers or vehicles.

Note that packaging information is required if you want to send the shipments from SAP ERP to SAP EWM to carry out warehouse planning and execution.

- You have made sure that the FO is in process and does not have one of the following statuses:
 - Blocked for execution
 - Blocked for planning
 - Marked for deletion

Process

1. You send ERP deliveries to SAP TM, and the SAP TM system creates delivery-based transportation requirements (DTRs) for the deliveries.

For more information, see [ERP Logistics Integration \[Page 392\]](#).

2. You plan your transportation process in SAP TM based on the DTRs. During planning, you create freight orders.

For more information, see [Planning](#).

Note that if the ERP deliveries were originally derived from order-based transportation requirements, the system reassigns the freight units from the OTRs to the DTRs without carrying out planning again.

3. You carry out tendering for the freight orders in SAP TM (optional).

For more information, see [Freight Tendering \[Page 635\]](#).

4. You send the freight orders to SAP ERP to carry out transportation execution.

To send a freight order to ERP, choose on the freight order UI.

You also have the following options:

- You can send a freight order to SAP ERP from the overview of freight orders that are relevant for ERP shipment creation. In SAP NetWeaver Business Client, choose This worklist shows all FOs that have already been sent to SAP ERP, and all FOs that

are relevant for shipment creation in SAP ERP but have not been sent yet. In the worklist, select the freight order and choose the *Create/Update ERP Shipment* pushbutton.

- You can use background program `/SCMTMS/TOR_FO_PROC_BATCH`. For more information, see [Processing of Freight Orders](#).

After you have initially sent a freight order to SAP ERP, you can send an update that contains information about a proposed carrier. For example, if you send a freight order to SAP ERP before you have performed tendering in SAP TM, you can send an update at a later stage; or if SAP ERP rejects the proposed carrier, you can perform tendering again in SAP TM and send an update with a new proposal.

SAP TM sends a new or updated freight order to SAP ERP using the enterprise service *Request Transportation Order Execution* (`TransportationOrderSCMExecutionRequest_Out`). Note that this enterprise service and all SAP TM enterprise services mentioned below are in the *Transportation Order Processing* process component.

5. SAP ERP creates a shipment for each freight order.

The freight order ID and the TM system ID are displayed in the shipment header. In the standard system, if the execution status of the freight order is *Not Started*, the overall transportation status of the corresponding shipment is set to *Planned*. After setting this status, SAP ERP sends a status update to SAP TM. The execution status of the corresponding freight order is then changed to *In Execution*. As soon as this status is set, no further changes are allowed to the freight order in SAP TM.

If you sent packaging information to SAP ERP, SAP ERP creates the required handling units using container as the packaging material.

SAP ERP creates a shipment using IDoc `SHPMNT05`. It uses the same IDoc to send a confirmation of shipment creation and to send the status update. SAP TM receives the confirmation using the enterprise service *Change Transportation Order based on Transportation Order Execution Confirmation* (`TransportationOrderSCMExecutionConfirmation_In`). SAP TM receives the status update using the enterprise service *Change Transportation Order based on Transportation Order Execution Status Notification* (`TransportationOrderSCMExecutionStatusNotification_In`).

6. You carry out transportation execution in SAP ERP for the shipments.

If a delivery is subsequently removed from or assigned to a shipment in SAP ERP, the corresponding delivery-based transportation requirements (DTRs) and related freight units are reassigned in SAP TM, as follows:

- If a delivery is removed from a shipment, the corresponding DTRs and related freight units are removed from the freight order. The life cycle status of the DTRs and freight units changes from *Planned* back to *In Planning*.
- If a delivery is assigned to a shipment, the corresponding DTRs and related freight units are assigned to the freight order. The life cycle status of the DTRs and freight units changes from *In Planning* to *Planned*.

If SAP ERP created handling units (HUs) based on packaging information received from SAP TM, SAP ERP sends an update to SAP TM as soon as container IDs and items

have been assigned to the HUs. SAP TM can then update the freight order data accordingly by assigning the container IDs and the package items to the containers.

Note the following:

- SAP TM can receive updates only for packaging information that has already been sent to SAP ERP. For example, if SAP ERP sends an additional container to SAP TM, SAP TM cannot create a new container in the freight order.
- If you add additional packaging to the shipment, SAP TM cannot replicate this in the freight order. For example, instead of assigning boxes that contain delivery items directly to a container, you assign the boxes to a pallet first and then assign the pallet to the container. SAP TM can process additional packaging only if it is entered directly in the delivery.

SAP ERP sends information about changed delivery assignments and updated packaging information using IDoc SHPMNT05. In SAP TM, the delivery assignment information is received by the enterprise service *Change Transportation Order Based on Transportation Order Execution Delivery Assignment Changed Notification* (TransportationOrderSCMExecutionDeliveryAssignmentChangedNotification_In). The packaging information is received by the enterprise service *Change Transportation Order Based on Transportation Order Execution Packaging Assignment Changed Notification* (TransportationOrderSCMExecutionItmPckgAssgnmtChangedNotification_In).

Result

If you cancel a freight order that has already been sent to SAP ERP, SAP TM sends a cancellation request using the enterprise service *Request Transportation Order Execution Cancellation* (TransportationOrderSCMExecutionCancellationRequest_Out). The cancellation request is received by IDoc TPSSHT01 in SAP ERP.

If you cancel an ERP shipment that was created from a freight order, SAP ERP sends a cancellation request using IDoc TPSSHT01. SAP TM receives the cancellation using the enterprise service *Cancel Transportation Order* (TransportationOrderSCMCancellationRequest_In).



Shipment Integration Based on Freight Bookings

You use this process to book transportation activities in SAP Transportation Management (SAP TM) that are based on deliveries received from SAP ERP. You can then carry out transportation execution in SAP ERP for the freight bookings. If you have integrated SAP ERP with the SAP Extended Warehouse Management (SAP EWM) application, you can also carry out warehouse planning and execution in SAP EWM. For more information, see [Integration with SAP Extended Warehouse Management \[Page 462\]](#).

This process is similar to delivery-based planning (see [Shipment Integration Based on Freight Orders \[Page 450\]](#)), but it takes into consideration the booking of transportation activities, for example, with a shipping company or an airline.

Note the following:

- SAP TM creates a delivery-based transportation requirement (DTR) for each delivery received from SAP ERP. There is always a one-to-one relationship between an ERP delivery and a DTR.
- SAP ERP creates an ERP shipment for each freight booking received from SAP TM. There is an n-to-one relationship between DTRs and a freight booking; and, therefore, between the ERP deliveries that were originally sent to SAP TM and the ERP shipment that SAP ERP creates based on a freight booking.

Prerequisites

- You have set up a configuration scenario for the *TM_ERPShipmentIntegration_Out* outbound integration scenario in SAP NetWeaver Process Integration (SAP NetWeaver PI).
- You have created deliveries in SAP ERP and transferred them to SAP TM. SAP TM has created one DTR for each delivery. Each DTR contains all items from the corresponding delivery.
- You have made sure that the relationships between the relevant business documents meet the following requirements:
 - The freight booking (FB) is related only to DTRs (for example, SAP TM cannot send the FB to SAP ERP if it is related to an order-based transportation requirement (OTR), or to an OTR and a DTR).
 - The FB contains all freight units (FUs) from each related DTR (that is, the FB, and therefore the ERP shipment, must contain complete deliveries). This is because we do not perform a subsequent delivery split in SAP ERP.
 - The FB must contain FUs that are derived from either exclusively inbound deliveries or exclusively outbound deliveries. The creation of combined inbound and outbound shipments from ERP deliveries is not supported.
 - The FB contains FUs that are related to deliveries from the same ERP system. SAP TM cannot send the FB to SAP ERP if the FB contains deliveries from different ERP systems.

- You have made the following settings in the relevant FB types in Customizing for *Transportation Management* under *Freight Order Management* *Freight Booking* *Define Freight Booking Types*:

- You have assigned an output profile to the FB types.
- You have defined that the FB types are relevant for shipment creation by selecting the required value in the *Shipment Creation Relevance* field.

If you want the shipments in SAP ERP to contain packaging information in the form of handling units, you must specify that packaging information is to be sent to SAP ERP along with the other freight booking data. You do this by selecting the relevant option in the *Shipment Creation Relevance* field. You can send packaging information for the vehicle resource or containers at the highest level of the item hierarchy, or for both of these. Based on this information, SAP ERP creates handling units using container as the packaging material. You can send information only for the top level of the item hierarchy, and you cannot send information about the assignment of the delivery items to the containers or vehicles.

Note that packaging information is required if you want to send the shipments from SAP ERP to SAP EWM to carry out warehouse planning and execution.

- You have made sure that the FB is in process and does not have one of the following statuses:
 - Blocked for execution
 - Blocked for planning
 - Marked for deletion

Process

1. You send ERP deliveries to SAP TM, and the SAP TM system creates delivery-based transportation requirements (DTRs) for the deliveries.

For more information, see [ERP Logistics Integration \[Page 392\]](#).

2. You plan your transportation process in SAP TM based on the DTRs.

For more information, see [Planning](#).

Note that if the ERP deliveries were originally derived from order-based transportation requirements, the system reassigns the freight units from the OTRs to the DTRs without carrying out planning again.

3. You create a freight booking manually in SAP TM and assign the DTRs to the freight booking.

For more information, see [Creation and Editing of Freight Bookings \[Page 509\]](#).

4. You send the freight booking to the carrier, for example, a shipping company or an airline, and the carrier confirms the freight booking.

5. You send the freight booking to SAP ERP to carry out transportation execution.

To send a freight booking to ERP, choose *Follow-Up* *Create/Update ERP Shipment* on the freight booking UI.

You also have the following options:

- You can send a freight booking to SAP ERP from the overview of freight bookings that are relevant for ERP shipment creation. In SAP NetWeaver Business Client, choose *ERP Logistics Integration* *Worklist* *Overview Freight Orders and Freight Bookings* and then either *Ocean Bookings Relevant for ERP Shipment Creation* or *Air Bookings Relevant for ERP Shipment Creation*. These worklists show all FBs that have already been sent to SAP ERP, and all FBs that are relevant for shipment creation in SAP ERP but have not been sent yet. In the worklist, select the freight booking and choose the *Create/Update ERP Shipment* pushbutton.
- You can use background program `/SCMTMS/TOR_FO_PROC_BATCH`. For more information, see [Processing of Freight Bookings](#).

Note that after you have initially sent a freight booking to SAP ERP, you can send an update that contains information about a proposed carrier. For example, if you send a freight booking to SAP ERP without a carrier, you can send an update at a later stage; or if SAP ERP rejects the proposed carrier, you can perform tendering again in SAP TM and send an update with a new proposal.

SAP TM sends a new or updated freight booking to SAP ERP using the enterprise service *Request Transportation Order Execution* (`TransportationOrderSCMExecutionRequest_Out`). Note that this enterprise service and all SAP TM enterprise services mentioned below are in the *Transportation Order Processing* process component.

6. SAP ERP creates a shipment for each freight booking.

The freight booking ID and the TM system ID are displayed in the shipment header. In the standard system, if the execution status of the freight booking is *Not Started*, the overall transportation status of the corresponding shipment is set to *Planned*. After setting this status, SAP ERP sends a status update to SAP TM. The execution status of the corresponding freight booking is then changed to *In Execution*. As soon as this status is set, no further changes are allowed to the freight booking in SAP TM.

If you sent packaging information to SAP ERP, SAP ERP creates the required handling units using container as the packaging material.

SAP ERP creates a shipment using IDoc `SHPMNT05`. It uses the same IDoc to send a confirmation of shipment creation and to send the status update. SAP TM receives the confirmation using the enterprise service *Change Transportation Order based on Transportation Order Execution Confirmation* (`TransportationOrderSCMExecutionConfirmation_In`). SAP TM receives the status update using the enterprise service *Change Transportation Order based on Transportation Order Execution Status Notification* (`TransportationOrderSCMExecutionStatusNotification_In`).

7. You carry out transportation execution in SAP ERP for the shipments.

If a delivery is subsequently removed from or assigned to a shipment in SAP ERP, the corresponding delivery-based transportation requirements (DTRs) and related freight units are reassigned in SAP TM, as follows:

- If a delivery is removed from a shipment, the corresponding DTRs and related freight units are removed from the freight booking. The life cycle status of the DTRs and freight units changes from *Planned* back to *In Planning*.
- If a delivery is assigned to a shipment, the corresponding DTRs and related freight units are assigned to the freight booking. The life cycle status of the DTRs and freight units changes from *In Planning* to *Planned*.

If SAP ERP created handling units (HUs) based on packaging information received from SAP TM, SAP ERP sends an update to SAP TM as soon as container IDs and items have been assigned to the HUs. SAP TM can then update the freight booking data accordingly by assigning the container IDs and the package items to the containers.

Note the following:

- SAP TM can receive updates only for packaging information that has already been sent to SAP ERP. For example, if SAP ERP sends an additional container to SAP TM, SAP TM cannot create a new container in the freight booking.
- If you add additional packaging to the shipment, SAP TM cannot replicate this in the freight booking. For example, instead of assigning boxes that contain delivery items directly to a container, you assign the boxes to a pallet first and then assign the pallet to the container. SAP TM can process additional packaging only if it is entered directly in the delivery.

SAP ERP sends information about changed delivery assignments and updated packaging information using IDoc SHPMNT05. In SAP TM, the delivery assignment information is received by the enterprise service *Change Transportation Order Based on Transportation Order Execution Delivery Assignment Changed Notification* (TransportationOrderSCMExecutionDeliveryAssignmentChangedNotification_In). The packaging information is received by the enterprise service *Change Transportation Order Based on Transportation Order Execution Packaging Assignment Changed Notification* (TransportationOrderSCMExecutionItmPckgAssgnmtChangedNotification_In).

Result

If you cancel a freight booking that has already been sent to SAP ERP, SAP TM sends a cancellation request using the enterprise service *Request Transportation Order Execution Cancellation* (TransportationOrderSCMExecutionCancellationRequest_Out). The cancellation request is received by IDoc TPSSHT01 in SAP ERP.

If you cancel an ERP shipment that was created from a freight booking, SAP ERP sends a cancellation request using IDoc TPSSHT01. SAP TM receives the cancellation using the enterprise service *Cancel Transportation Order* (TransportationOrderSCMCancellationRequest_In).



Shipment-Based Tendering

You use this process to tender transportation activities in SAP Transportation Management (SAP TM) that are based on shipments transferred from SAP ERP. SAP TM creates freight orders based on the shipments.

Note that the inbound integration of shipments is also used to create freight orders based on SAP ERP shipments as part of the integration with the SAP Extended Warehouse Management (SAP EWM) application. For more information, see [EWM-ERP-TM: Transportation Planning in SAP EWM \[Page 469\]](#).

The settings below apply to shipment-based tendering and EWM-ERP-TM integration, unless otherwise stated.

Prerequisites

- To connect the SAP ERP system to the SAP TM system, you have set up a configuration scenario for the *TM_ERPShipmentIntegration_In* inbound integration scenario in SAP NetWeaver Process Integration (SAP NetWeaver PI).
- In the SAP TM system, you have defined which freight order types the system uses to create freight orders based on ERP shipments. You have the following options:
 - You can assign freight order types to ERP shipment types in Customizing for *Transportation Management* under ► *Integration* ► *ERP Logistics Integration* ► *Shipment Integration* ► *Assign Freight Order Types to ERP Shipment Types* □.
 - You can define a condition of the type *Determine FO Type for ERP Shipment* (/SCMTMS/FRO_TYPE_SHP). For more information about conditions, see [Condition \[Page 176\]](#).
 - You can specify a default freight order type by selecting the *Default Type for ERP Shipment Integration* checkbox in the relevant freight order type in Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* □.

To determine the required type, the system checks the settings in the above sequence.

- You have made the following settings for the relevant freight order type in the Customizing activity *Define Freight Order Types*:
 - You have assigned a suitable output profile to the freight order type. Note that this setting is only relevant for shipment-based tendering.
 - You have specified that the freight order type is relevant for subcontracting. Note that this setting is only relevant for shipment-based tendering.
 - If you want the freight order to have the same ID as the ERP shipment, you have assigned an external number range interval to the freight order type.

You define number range intervals in Customizing for *Transportation Management* under ► *Freight Order Management* ► *Define Number Range Intervals for Freight Order Management* □. To ensure that the ERP shipment ID has not already been used in SAP TM for a different freight order, the external

number range interval from SAP ERP must not fall within the internal number range interval in SAP TM.

- If you want to display texts from an ERP shipment in the corresponding freight order in SAP TM, you have assigned the relevant ERP text types to TM text types in Customizing for *Transportation Management* under *Integration* *ERP Logistics Integration* *Shipment Integration* *Assign ERP Text Types to TM Text Types for Freight Orders*. The texts are displayed on the *Notes* tab page in the freight order.
- In the SAP TM system, you have enabled PPF output agent /SCMTMS/TOR_TENDERING, which is used to send the tendering result to SAP ERP.

You do this in Customizing for *Cross-Application Components* under *Processes and Tools for Enterprise Applications* *Reusable Objects and Functions for BOPF Environment* *PPF Adapter for Output Management* *Maintain Output Management Adapter Settings*. You have to enable the following entry:

- *Output Agent*: /SCMTMS/TOR_TENDERING
- *Business Object*: /SCMTMS/TOR
- *Node*: TENDERING
- *Agent Class for BO Node*: /SCMTMS/CL_PPF_SERV_TOR_TEND

Note that this setting is only relevant for shipment-based tendering.

- In the SAP ERP system, you have done the following:
 - Set up message control for shipments and made the settings for inbound and outbound processing using IDocs
 - Made the settings and implementations in SAP ERP that are described in SAP Note [1527545](#)
 - Created shipments that contain stages and assigned deliveries to the shipments
 - Assigned all deliveries to stages

Caution

The following restrictions apply to the inbound integration of ERP shipments:

- SAP TM can create only one freight order based on an ERP shipment. SAP does not support scenarios in which more than one freight order has to be created in SAP TM to reflect an ERP shipment. As a result, when you create stages in SAP ERP, you can only use those methods that enable stages to be mapped to one freight order in SAP TM.

SAP Note [1527545](#) contains checks that prevent the creation of shipments that cannot be accepted by SAP TM.

- SAP does not support the use of order and delivery integration in conjunction with inbound integration of ERP shipments. The system allows you to transfer shipments and their related deliveries from SAP ERP to SAP TM even if you have already transferred these deliveries (and their related orders) using the order and delivery integration functions.

If you intend to use order and delivery integration in conjunction with inbound integration of shipments in the same SAP ERP client, you must make the required configuration and organizational settings that ensure that the SAP TM system cannot create duplicate transportation requirements.

- The inbound integration scenario does not support the processing of delivery item hierarchies in ERP shipments (ERP shipments can contain item hierarchies such as bills of material or item substitution). When SAP TM creates a freight order based on an ERP shipment that contains item hierarchies, the freight order does not reflect the item hierarchies.
- Deliveries can contain items that are not relevant for transportation, but that have quantities and weights (main items or subitems in item hierarchies and also other item types). As a result, SAP TM cannot always determine which items are relevant for transportation, and the freight order may contain items that are not necessarily required. You may therefore need to carry out additional filtering of the inbound message received from SAP ERP.
- In the inbound integration scenario, SAP ERP does not transfer text items to SAP TM.

End of the caution.

Process

1. You initiate tendering for a shipment in SAP ERP by setting the tendering status to *New Offer from Shipper* (for example, using transaction VT02N).

The SAP ERP system automatically sends the shipment to SAP TM using IDoc SHPMNT05.

2. The SAP TM system creates a freight order based on the shipment data received from SAP ERP.

The inbound enterprise service *Maintain Transportation Order* (TransportationOrderSCMRequest_In) in SAP TM creates the freight order based on the data sent by IDoc SHPMNT05. Note that this enterprise service and all SAP TM enterprise services mentioned below are in the *Transportation Order Processing* process component.

3. You initiate a tendering step in SAP TM for the shipment-based freight order.

For more information about tendering in SAP TM, see [Freight Tendering \[Page 635\]](#).

4. When the tendering step has been completed, you transfer the tendering result to SAP ERP.

The outbound enterprise service *Notify of Transportation Order Tendering Result* (TransportationOrderSCMTenderingResultNotification_Out) in SAP TM sends the tendering result to SAP ERP.

If you have found and accepted a carrier, the enterprise service sends the following data:

- Carrier
- Price
- Confirmed dates and times

- Tendering status

If you have not found a carrier, the enterprise service sends the corresponding tendering status.

5. SAP ERP receives the tendering result using IDoc SHPMNT05 and updates the shipment accordingly.

You can carry out further steps in SAP ERP.

Result

In SAP NetWeaver Business Client, you can display an overview of shipment-based freight orders by choosing *ERP Logistics Integration* *Worklist* *Overview Freight Orders and Freight Bookings* *All Freight Orders Created from ERP Shipments*. From the overview, you can branch to the freight order and the ERP shipment.

If you subsequently change delivery quantities, SAP ERP automatically sends the updated quantities to SAP TM using IDoc SHPMNT05. The inbound enterprise service *Maintain Transportation Order* (`TransportationOrderSCMRequest_In`) in SAP TM receives the information and updates the relevant freight order.

Freight orders are canceled based on requests from SAP ERP as follows:

- If you delete the ERP shipment, SAP ERP uses IDoc TPSSHT01 to request the cancellation of the corresponding freight order in SAP TM. To do this, you must implement SAP Note [1527545](#).
- If you cancel tendering in SAP ERP but you do not delete the ERP shipment, SAP ERP uses IDoc SHPMNT05 to request the cancellation of the freight order in SAP TM.

In both cases, the inbound enterprise service *Cancel Transportation Order* (`TransportationOrderSCMCancellationRequest_In`) in SAP TM receives the cancellation request and cancels the freight order. Depending on how you have set up the freight order type, the system either deletes the freight order or changes the freight order status to *Canceled*.



Integration with SAP Extended Warehouse Management

The integration of SAP Transportation Management (SAP TM) with the SAP Extended Warehouse Management (SAP EWM) application enables you to integrate SAP TM transportation planning with SAP ERP delivery and shipment processing and SAP EWM warehouse planning and execution. Note that SAP TM is integrated with SAP EWM via SAP ERP. Data is not sent directly between SAP TM and SAP EWM.

More Information

[TM-ERP-EWM: Transportation Planning in SAP TM \(Order-Based\) \[Page 463\]](#)

[TM-ERP-EWM: Transportation Planning in SAP TM \(Delivery-Based\) \[Page 466\]](#)

[EWM-ERP-TM: Transportation Planning in SAP EWM \[Page 469\]](#)



TM-ERP-EWM: Transportation Planning in SAP TM (Order-Based)

This process is based on SAP ERP sales orders and outbound deliveries. It involves ERP-TM order integration, delivery integration, and shipment integration, as well as ERP-EWM delivery and shipment integration. Transportation is planned in SAP TM. Warehouse activities are planned and executed in SAP EWM.

The following is an example of how you can integrate SAP TM, SAP ERP, and SAP EWM. Variants of this process are possible.

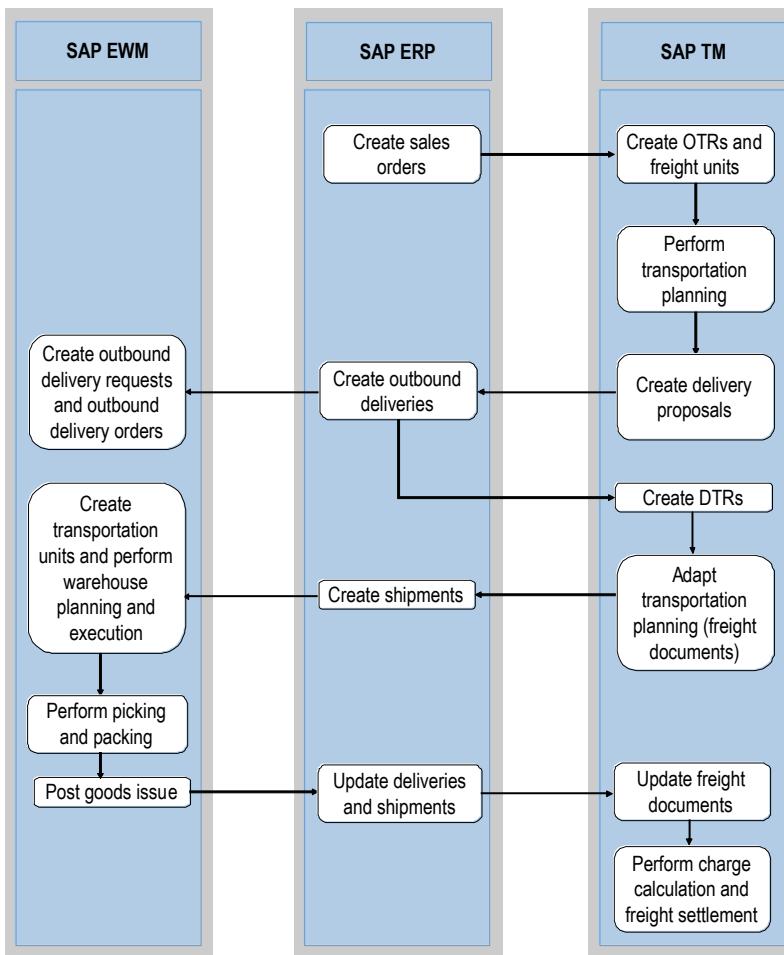
Prerequisites

You have made the required settings for the following:

- Integrating SAP ERP orders and deliveries with SAP TM. For more information, see [Configuring Integration of Orders and Deliveries \[Page 394\]](#).
- Integrating SAP ERP shipment processing with SAP TM. For more information, see [Shipment Integration Based on Freight Orders \[Page 450\]](#) and [Shipment Integration Based on Freight Bookings \[Page 454\]](#).
- Integrating SAP ERP with SAP EWM. For more information, see SAP Library for SAP EWM on SAP Help Portal at <http://help.sap.com/ewm>. In SAP Library, choose ► SAP Extended Warehouse Management (SAP EWM) ► Shipping and Receiving ► Shipping and Receiving in Inbound and Outbound Processes ► Outbound Processing: Transportation Planning in TM-ERP-EWM ▶.

Process

The figure below shows the integration of SAP ERP sales orders and outbound deliveries with SAP TM transportation planning and SAP EWM warehouse planning and execution. The figure is followed by a description of the process:



TM-ERP-EWM: Planning and Execution

1. Create sales orders (SAP ERP)

SAP ERP sends sales orders to SAP TM for transportation planning (see [Integration of ERP Orders \[Page 413\]](#)).

2. Create order-based transportation requirements and freight units (SAP TM)

SAP TM creates order-based transportation requirements (OTRs) and freight units based on the sales orders. During transportation planning, the freight units are assigned to [freight documents](#).

3. Create delivery proposals (SAP TM)

SAP TM sends delivery proposals to SAP ERP (see [Creation of ERP Deliveries from SAP TM \[Page 418\]](#)).

4. Create outbound deliveries (SAP ERP)

SAP ERP creates outbound deliveries based on the proposals. SAP ERP sends the outbound deliveries to SAP EWM for warehouse planning and execution and to SAP TM to adapt transportation planning (see [Integration of ERP Deliveries \[Page 427\]](#)).

5. Create outbound delivery requests and outbound delivery orders (SAP EWM)

SAP EWM creates outbound delivery requests and outbound delivery orders based on the SAP ERP outbound deliveries. Outbound delivery orders form the basis of warehouse activities in SAP EWM.

6. Create delivery-based transportation requirements (SAP TM)

SAP TM creates delivery-based transportation requirements (DTRs) based on the SAP ERP outbound deliveries. The freight units assigned to the OTRs are consumed by the DTRs (see [Consumption of Order-Based Transportation Requirements \[Page 433\]](#)). SAP TM adapts transportation planning and sends the corresponding freight documents to SAP ERP to create shipments (see [Shipment Integration Based on Freight Orders \[Page 450\]](#) and [Shipment Integration Based on Freight Bookings \[Page 451\]](#)).

7. Create shipments (SAP ERP)

SAP ERP assigns the outbound deliveries to the shipments and transfers the shipments to SAP EWM.

8. Create transportation units and perform warehouse planning and execution (SAP EWM)

SAP EWM creates transportation units based on the SAP ERP shipments and assigns the outbound delivery orders to the transportation units. The required warehouse activities can now be planned and executed (for example, picking, packing, staging, and loading).

If transportation is canceled during or after picking and staging in SAP EWM, the following occurs:

1. The transportation unit is canceled manually in SAP EWM.
2. The corresponding shipment is deleted automatically in SAP ERP.
3. The corresponding freight document is canceled automatically in SAP TM.

9. Post goods issue (SAP EWM)

When the goods issue is posted, SAP EWM sends confirmed execution results to SAP ERP (for example, packaging of deliveries, and actual quantities and weights).

10. Update deliveries and shipments (SAP ERP)

SAP ERP updates the corresponding deliveries and shipments. For example, SAP ERP sets the goods movement status to completed in the outbound delivery, and updates the shipment completion date and start date in the shipment. SAP ERP transfers the information to SAP TM.

11. Update freight documents (SAP TM)

SAP TM updates the freight documents (for example, the execution status).

12. Perform charge calculation and freight settlement (SAP TM)

When the transportation activities have been completed, charge calculation and freight settlement can be performed in SAP TM. Freight settlement forms the basis of invoice verification and settlement in SAP ERP. For more information, see [Charge Calculation \[Page 227\]](#) and [Freight Settlement](#).



TM-ERP-EWM: Transportation Planning in SAP TM (Delivery-Based)

This process is based on SAP ERP outbound deliveries and involves ERP-TM delivery integration and shipment integration, as well as ERP-EWM delivery and shipment integration.

The following is an example of how you can integrate SAP TM, SAP ERP, and SAP EWM. Variants of this process are possible.

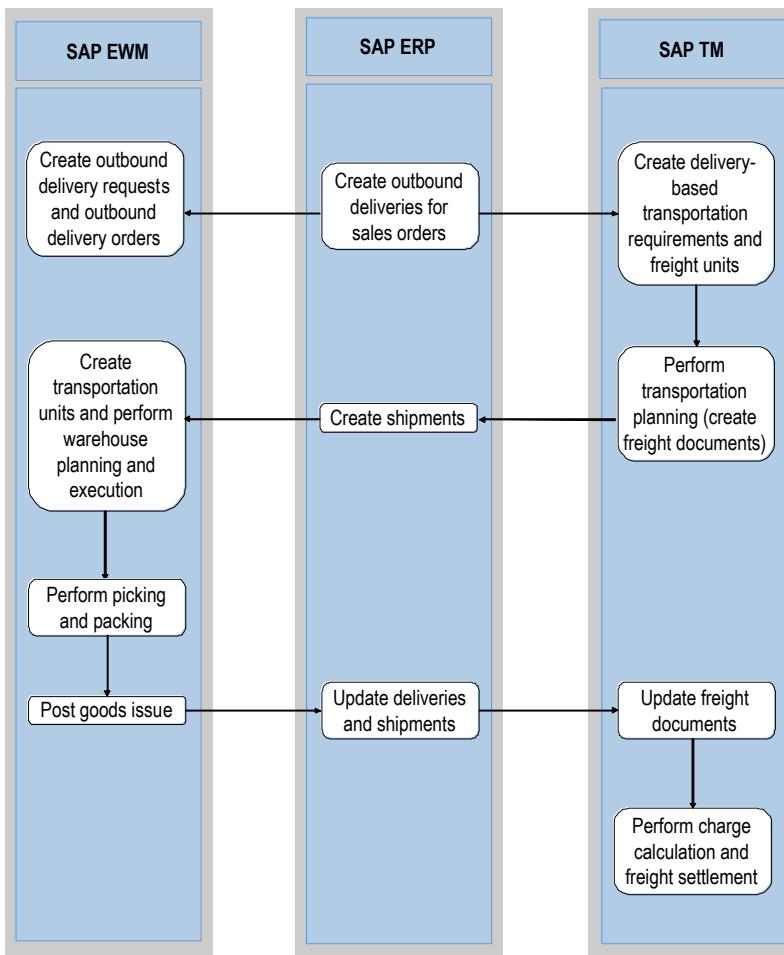
Prerequisites

You have made the required settings for the following:

- Integrating SAP ERP deliveries with SAP TM. For more information, see [Configuring Integration of Orders and Deliveries \[Page 394\]](#).
- Integrating SAP ERP shipment processing with SAP TM. For more information, see [Shipment Integration Based on Freight Orders \[Page 450\]](#) and [Shipment Integration Based on Freight Bookings \[Page 454\]](#).
- Integrating SAP ERP with SAP EWM. For more information, see SAP Library for SAP EWM on SAP Help Portal at <http://help.sap.com/ewm>. In SAP Library, choose ► SAP Extended Warehouse Management (SAP EWM) ► Shipping and Receiving ► Shipping and Receiving in Inbound and Outbound Processes ► Outbound Processing: Transportation Planning in TM-ERP-EWM

Process

The figure below shows the integration of SAP ERP outbound deliveries with SAP TM transportation planning and SAP EWM warehouse planning and execution. The figure is followed by a description of the process:



TM-ERP-EWM: Planning and Execution

1. Create outbound deliveries for sales orders (SAP ERP)

SAP ERP sends outbound deliveries to SAP EWM for warehouse planning and execution and to SAP TM for transportation planning. The outbound deliveries are based on SAP ERP sales orders and have been created without ERP-TM order and delivery integration.

2. Create outbound delivery requests and outbound delivery orders (SAP EWM)

SAP EWM creates outbound delivery requests and outbound delivery orders based on the SAP ERP outbound deliveries. Outbound delivery orders form the basis of warehouse activities in SAP EWM.

3. Create delivery-based transportation requirements and freight units (SAP TM)

SAP TM creates delivery-based transportation requirements (DTRs) and freight units based on the outbound deliveries (see [Integration of ERP Deliveries \[Page 427\]](#)).

During transportation planning, the freight units are assigned to [freight documents](#). SAP TM sends the freight documents to SAP ERP to create shipments (see [Shipment Integration Based on Freight Orders \[Page 450\]](#) and [Shipment Integration Based on Freight Bookings \[Page 454\]](#)).

4. Create shipments (SAP ERP)

SAP ERP assigns the outbound deliveries to the shipments and transfers the shipments to SAP EWM.

5. Create transportation units and perform warehouse planning and execution (SAP EWM)

SAP EWM creates transportation units based on the SAP ERP shipments and assigns the outbound delivery orders to the transportation units. The required warehouse activities can now be planned and executed (for example, picking, packing, staging, and loading).

If transportation is canceled during or after picking and staging in SAP EWM, the following occurs:

1. The transportation unit is canceled manually in SAP EWM.
2. The corresponding shipment is deleted automatically in SAP ERP.
3. The corresponding freight document is canceled automatically in SAP TM.

6. Post goods issue (SAP EWM)

When the goods issue is posted, SAP EWM sends confirmed execution results to SAP ERP (for example, packaging of deliveries, and actual quantities and weights).

7. Update deliveries and shipments (SAP ERP)

SAP ERP updates the corresponding deliveries and shipments. For example, SAP ERP sets the goods movement status to completed in the outbound delivery, and updates the shipment completion date and start date in the shipment. SAP ERP transfers this information to SAP TM.

8. Update freight documents (SAP TM)

SAP TM updates the freight documents (for example, execution status).

9. Perform charge calculation and freight settlement (SAP TM)

When the transportation activities have been completed, charge calculation and freight settlement can be performed in SAP TM. Freight settlement forms the basis of invoice verification and settlement in SAP ERP. For more information, see [Charge Calculation \[Page 227\]](#) and [Freight Settlement](#).



EWM-ERP-TM: Transportation Planning in SAP EWM

This process is based on SAP ERP sales orders and outbound deliveries. It involves transportation planning in SAP EWM followed by ERP-TM shipment integration. Shipments are transferred to SAP TM to perform charge calculation and freight settlement.

The following is an example of how you can integrate SAP TM, SAP ERP, and SAP EWM. Variants of this process are possible.

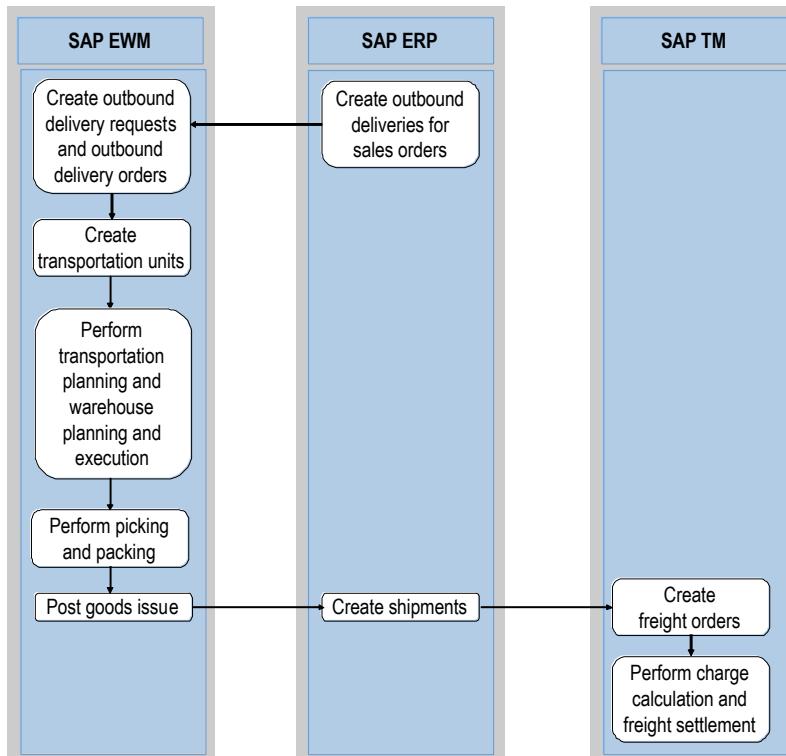
Prerequisites

You have made the required settings for the following:

- Integrating SAP ERP with SAP EWM. For more information, see SAP Library for SAP EWM on SAP Help Portal at <http://help.sap.com/ewm>. In SAP Library, choose ► SAP Extended Warehouse Management (SAP EWM) ► Shipping and Receiving ► Shipping and Receiving in Inbound and Outbound Processes ► Outbound Processing: Transportation Planning in EWM-ERP-TM ▶.
- Integrating SAP ERP shipment processing with SAP TM. For more information, see the relevant settings in [Shipment-Based Tendering \[Page 458\]](#).

Process

The figure below shows the integration of SAP ERP outbound deliveries with SAP EWM transportation planning and SAP TM charge calculation and freight settlement. The figure is followed by a description of the process:



EWM-ERP-TM: Transportation Planning in SAP EWM

1. Create outbound deliveries for sales orders (SAP ERP)

SAP ERP sends outbound deliveries to SAP EWM. The outbound deliveries are based on SAP ERP sales orders and have been created without ERP-TM order and delivery integration.

2. Create outbound delivery requests and outbound delivery orders (SAP EWM)

SAP EWM creates outbound delivery requests and outbound delivery orders based on the SAP ERP outbound deliveries. Outbound delivery orders form the basis of warehouse activities in SAP EWM.

3. Create transportation units (SAP EWM)

SAP EWM creates transportation units and assigns the outbound delivery orders to the transportation units.

4. Perform transportation planning and warehouse planning and execution (SAP EWM)

SAP EWM plans the transportation of the goods, and plans and executes the required warehouse activities (for example, picking, packing, staging, and loading).

5. Post goods issue (SAP EWM)

When the goods issue is posted, SAP EWM sends confirmed execution results to SAP ERP (for example, packaging of deliveries, and actual quantities and weights).

6. Create shipments (SAP ERP)

Based on the warehouse execution data, SAP ERP updates the outbound deliveries and creates the required shipments. SAP ERP assigns the outbound deliveries to the shipments and transfers the shipments to SAP TM.

7. Create freight orders (SAP TM)

SAP TM automatically creates freight orders based on the shipments.

8. Perform charge calculation and freight settlement (SAP TM)

When the transportation activities have been completed, charge calculation and freight settlement can be performed in SAP TM. Freight settlement forms the basis of invoice verification and settlement in SAP ERP. For more information, see [Charge Calculation \[Page 227\]](#) and [Freight Settlement](#).



Freight Order Management

You can use the Freight Order Management component in SAP Transportation Management (SAP TM) to create and edit the following business documents:

Business Document	Transportation Modes
Freight order	Road and rail
Freight booking	Air and sea
Trailer unit	Road
Railcar unit	Rail
Container unit	Independent

Integration

The SAP TM component Freight Order Management is integrated with the following other SAP TM components:

Component	Integration Type
Master Data [Page 24]	As a prerequisite for creating freight orders and freight bookings, you must have created the necessary master data.
Forwarding Order Management [Page 293]	The system either copies the values from the forwarding orders directly or from the freight units in the freight orders.
Planning	Freight orders are the result of transportation planning and serve as the basis for carrier selection. Freight bookings serve as the basis for transportation planning.
Freight Settlement	You can have the system calculate the transportation charges from your freight orders and freight bookings.
Dangerous Goods	You can perform a dangerous goods check for freight orders and freight bookings.
Global Trade	Freight orders and freight bookings form the basis for the integration with global trade.
Basic Functions	In output management you define the possible outputs for your business documents, for example, print documents.

Features

You can use the business documents in freight order management to enter all the information required for transportation planning and execution, such as source and destination locations, dates/times, product information, and resources used.

You can create freight orders directly or in transportation planning. For example, you can assign freight units to the freight orders and have the system calculate the transportation charges. You can then perform carrier selection (see [Carrier Selection](#)), assign the freight orders directly to a carrier as a suborder (see [External Communication in Overland Transport \[Page 505\]](#)) or perform tendering (see [Freight Tendering \[Page 635\]](#)).

You can use freight bookings to book freight space in advance, for example, with a shipping company. You can then perform the execution on the same documents.

You can have a shipment created in SAP ERP based on your freight orders and freight bookings (see [Integration with SAP ERP Shipment Processing \[Page 448\]](#)).

You can have deliveries created in SAP ERP for order-based transportation requirements contained in a freight order or a freight booking (see [Creation of Delivery Proposals \[Page 420\]](#)).

You can also execute delivery-based transportation planning and send your freight orders to SAP Extended Warehouse Management (SAP EWM) (see [Direct Integration with SAP Extended Warehouse Management](#)).

Freight orders and freight bookings also form the basis for tracking with SAP Event Management and Reporting (see [Integration with SAP Event Management](#)).

In addition, you can estimate the freight charges (see [Charge Estimation \[Page 262\]](#)).

You use trailer units, railcar units, and container units to carry out planning with trailers, railcars, and containers.



Freight Order

Order for which execution is planned by a carrier or the shipper. The freight 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

You use freight orders primarily for land transportation (road freight order) and rail transportation (see [Rail Freight Order \[Page 483\]](#)).

You define the most important settings for the freight order in the freight order type. For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types*.

You can create freight orders in various ways (see [Creation and Editing of Freight Orders \[Page 476\]](#)).

You can plan loads for freight orders (see [Load Planning](#)). You can also select carriers (see [Carrier Selection](#)). You can then either subcontract freight orders directly to a carrier or you can first perform tendering (see [External Communication in Overland Transportation \[Page 505\]](#) and [Freight Tendering \[Page 635\]](#)).

You can use the change controller to define how the system is to react to changes (see [Change Controller](#)).

Structure

Freight orders contain the following information:

- Planning information, for example, planned means of transport and stages ([transportation stops](#))

This comprises information about what is to be transported with the freight order as well as hierarchical dependencies (packaging information). For more information, see [Freight Document Overview](#).

You can also define appointments. For more information, see [Appointment \[Page 498\]](#).

- Business partner
- Locations and dates/times

At stage level you can enter one-time locations and additional addresses (one-time addresses). The system stores these new locations and addresses and adjusts stages in the document. It also adjusts the locations or addresses in the assigned requirements (freight units).



Note

However, you should continue to make changes to existing locations in the master data.

End of the note.

- Items

The following information is displayed here:

- Quantities and weights (see [Quantities and Capacities \[Page 587\]](#))
- Goods information (see [Goods Information \[Page 599\]](#))
- Corresponding freight orders (see [Pick-up and Delivery Freight Orders \[Page 514\]](#))
- Dangerous goods information (see [Considering Dangerous Goods](#)).
- Seal information (see [Use of Seals \[Page 604\]](#))
- Information about foreign trade (see [Integration with SAP Global Trade Services](#))
- House bill of lading (see [Building of House Bills of Lading and House Air Waybills \[Page 667\]](#))

You can use *Change Hierarchy* to decide whether all or only specific items are displayed. This includes:

- Service items (see [Service Items \[Page 492\]](#))
- Cargo items (see [Cargo Management \[Page 595\]](#))

The *Items* tab page replaces the *Cargo* tab page. You can personalize your user interface in such a way that the system displays the old *Cargo* tab page.

- Information about transportation stages, for example, durations and distances
- Diagrams

You can display the utilization of a freight order for each stage and each relevant dimension. This function is also available in the transportation cockpit.

- Subcontracting information, for example, carriers and their prices as well as tendering information

You can also enter a freight agreement, freight agreement version, and freight agreement item. The freight agreement and freight agreement version are used to calculate the charges. The freight agreement item is relevant for service items (see [Service Items \[Page 492\]](#)).

- Execution information, for example, actual departure times

Furthermore, you can directly report events.

- Transportation charges (see [Charge Calculation \[Page 223\]](#)) and cost distribution (see [Cost Distribution Management](#))
- Customs-relevant information (see [Integration with SAP Global Trade Services](#))
- Status information and blocking information (see [Statuses of Business Documents \[Page 608\]](#) and [Blocking Information \[Page 634\]](#))

- Output management, for example, print documents

As a prerequisite, you have configured the settings for output management in the freight order type (for example, output profile). For more information, see [Printing](#).

To print the parcel manifest and label, you must enter output profile /SCMTMS/TOR_LBL_PRINT in the freight order type.

- Document dependencies as well as predecessor and successor documents (document flow)
- Transportation dependencies, in other words, logistical dependencies
- Other information
 - Attachments
 - Notes
 - Document references (in other words, additional external references)
 - Administration information
 - Change documents (see [Change Tracking \[Page 679\]](#))

More Information

[Use of Seals \[Page 604\]](#)

[Freight Orders with Non-Linear Stages \[Page 503\]](#)

[Creation of Forwarding Orders from Freight Orders \[Page 482\]](#)

[Classification of Goods \[Page 112\]](#)

[Nature of Goods \[Page 671\]](#)

[Scheduling](#)

[Transportation Service Levels \[Page 494\]](#)



Creation and Editing of Freight Orders

You can use this function to create, edit, and display freight orders.

Prerequisites

You have defined freight order types in Customizing. You define the most important settings for the freight order in the freight order type. For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types*.

Features

Creation of Freight Orders

You have the following options:

- Manual Creation

For more information, see [Manually Creating Freight Orders \[Page 478\]](#).

- Creation from Transportation Planning

In interactive planning (manual planning and VSR optimization) and in planning in the background, freight orders are created as a result of transportation planning.

For more information, see [Planning](#) and [Planning Run](#).

Alternatively, you can choose *New* in the transportation cockpit to create a freight order directly. You can also create, for example, a freight order for a trailer in this way. For more information about creating freight orders for trailers, see [Use of Trailers](#).

- Direct Creation from a Business Document in Forwarding Order Management (FWM Business Documents)

For more information, see [Direct Creation of Freight Orders \[Page 480\]](#) and [Direct Creation of Freight Documents and Selection of Schedules \[Page 335\]](#).

- Creation by Copying

You can create a freight order by copying an existing one (reference document). The system copies the header data and the logistical data. However, it does not copy references to freight units and execution information.

- Creation Based on a Schedule

You can use the report `/SCMTMS/MP_SCHED_CREATE_TOR` to create a freight order based on a schedule. For more information, see the system documentation.

Editing and Displaying Freight Orders

You can edit and display freight orders on the following user interfaces:

- Freight Order Table

To do so, in SAP NetWeaver Business Client, choose:

- ► *Freight Order Management* > *Road* > *Overview Road Freight Orders* ▶
- ► *Freight Order Management* > *Rail* > *Overview Rail Freight Orders* ▶
- ► *Planning* > *Worklist* > *Overview Planning* ▶
- User Interfaces for Editing and Displaying

To do so, in SAP NetWeaver Business Client, choose:

- ► *Freight Order Management* > *Road* > *Edit Road Freight Orders* ▶
- ► *Freight Order Management* > *Road* > *Display Road Freight Orders* ▶
- ► *Freight Order Management* > *Rail* > *Edit Rail Freight Orders* ▶
- ► *Freight Order Management* > *Rail* > *Display Rail Freight Orders* ▶
- Transportation Cockpit

To do so, in SAP NetWeaver Business Client, choose ► *Planning* > *Planning* > *Transportation Cockpit* ▶.

Freight orders are only displayed in the transportation cockpit if they match the criteria of the selection profile for freight orders and freight bookings (see [Use of Profile and Layout Sets](#)).



Manually Creating Freight Orders

The following is a description of an example process for manually creating a freight order. In this example, it is assumed that you already know the most important transportation data, such as source location, destination location, and business partner, because you regularly transport goods for a certain customer using a certain carrier.

Note

You can manually create a road freight order in SAP NetWeaver Business Client by choosing **Freight Order Management > Road > Create Road Freight Order**. You can manually create a rail freight order in SAP NetWeaver Business Client by choosing **Freight Order Management > Rail > Create Rail Freight Order**.

End of the note.

Process

1. Entering the general data

You first enter the general data for your freight order, for example:

- Transportation data, such as shipper, consignee, carrier
- Used resources
- Locations and dates/times
- Schedules
 - For more information, see [Use of Schedules \[Page 602\]](#).
- Terms of payment
- Notes

2. Defining additional intermediate stops

You can optionally define additional intermediate stops. You do so on the *Overview* tab page by choosing the *Insert* pushbutton and then *Location*.

3. Defining the items

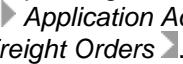
You have the following options:

- You add freight units to your freight order. You do so on the *Overview* tab page by choosing the *Insert* pushbutton and then *Freight Unit*.
- You directly enter items to be transported that are not based on a forwarding order, for example, when transporting empties. You can do so by choosing the *Insert* pushbutton under *Freight*.

4. Calculating transportation charges

Optionally, you can have the system calculate the expected transportation charges for your freight order. For more information, see [Charge Calculation \[Page 223\]](#).

 Note

You use the report *Mass Cost Calculation Report for Freight Orders* to calculate transportation cost for multiple freight orders. To access the report in SAP NetWeaver Business Client, choose  *Application Administration*  *Background Processing*  *Calculate Charges for Freight Orders*.

End of the note.

5. Checking and saving

Once you have entered all the important data, you can check the consistency of the data. You then save your freight order. In addition to the consistency check, you can also perform a capacity check and a dangerous goods check. For more information about the dangerous goods check, see [Considering Dangerous Goods](#).

6. Sending the freight order

You send the freight order to your carrier. You do so by choosing *Subcontracting* and then *Send to Carrier*. For more information, see [External Communication in Overland Transportation \[Page 505\]](#).

7. Confirming or rejecting the freight order

You confirm the freight order in the name of the carrier, or you reject it. It is also possible to confirm or reject the freight order using a message.

8. Sending loading and unloading instructions

You send loading and unloading instructions to the warehouse. For more information, see [Sending of Loading/ Unloading Instructions and Receiving of Confirmations \[Page 674\]](#).

9. Printing

Optionally, you can print the corresponding print documents. For more information, see [Printing](#).

10. Fixing the freight order

You can fix your freight order to protect it from undesirable changes arising from background processing (planning runs or carrier selection).

11. Creating a freight settlement document

After execution, you create a freight settlement document (see [Freight Settlement Document](#) und [Enablement of Freight Settlement Documents for Creation](#)). This serves as the basis for checking the invoice or issuing a voucher. If you have created additional business partners with the role *Additional Agreement Party* in your freight order, the system automatically creates freight settlement documents for this partner.

 Note

A possible variant of this process is that you simply enter the general data. You then call the transportation cockpit and assign freight units to your freight order. You subsequently perform all additional planning steps in the transportation cockpit, for example, you have the system calculate the transportation charges and you perform carrier selection or tendering.

End of the note.



Direct Creation of Freight Orders

You can use this function to create freight orders directly from a business document in forwarding order management (FWM business documents). The following describes the aspects that are specific to freight orders. For more information about the aspects that are specific to forwarding orders, see [Direct Creation of Freight Documents and Selection of Schedules \[Page 335\]](#).

Features

The system creates a freight order directly when you save an FWM business document (forwarding order, order-based or delivery-based transportation requirement) if the following requirements have been met:

- The FWM business document is subcontracted and not consolidated with other FWM business documents.
- The FWM business document can be delivered in *one* freight order, meaning there is no pre-carriage or on-carriage.
- The FWM business document only has one source location and one destination location.

The following options exist:

- FWM business document type determines the freight order creation

A freight order is to be created directly for FWM business documents of a certain FWM business document type (for example, a certain business document type for forwarding orders that are subcontracted directly or for delivery-based transportation requirements that are always delivered directly).

This is the case if a freight unit building rule is found in which you have assigned a freight order type to your FWM business documents (for example, forwarding order type).

- FWM business document attributes determine the freight order creation

Depending on the FWM business document attributes, for example, ERP document type, the system decides whether a freight order can or cannot be created.

This is the case if the condition for determining the freight order type finds a freight unit building rule in which you have defined a freight order type as a business document type. You have assigned this condition to your FWM business document type, for example, forwarding order type, for cases in which the FWM business documents, such as a forwarding order, are to be directly converted to a freight order.

- Quantity determines freight order creation

An FWM business document, for example, a forwarding order, can have a total quantity that exceeds the truck size. As a result, the system creates several freight units where the split quantity determines the number of freight units in the freight unit building rule. This can also include cases in which a freight unit is created in truck size and a freight unit is to be consolidated.

This is the case if a freight unit building rule is found in which you have assigned a condition for determining the freight order type or freight unit type to the business document type. This condition is then called for the freight units created. Based on the condition, the system decides whether to create a freight order or a freight unit. If the

condition finds a freight unit type dependent on the size of the freight unit, for example, the system converts the freight unit to a freight order.

You cannot add further freight units to such directly created freight orders.



Creation of Forwarding Orders from Freight Orders

You can use this function to create freight orders without reference to existing forwarding orders. You then create forwarding orders at a later stage on the basis of these freight orders. This is recommended in the following scenarios:

- Customer Self-Delivery

A customer truck enters the yard. It is not until the truck is unloaded, that you can identify what goods it contains. In this scenario, you do not create the freight order and enter the items until after the truck has arrived.

- Collective Goods Traffic

Your own truck travels a specific route daily and collects goods. It is not until the truck is unloaded, that you can identify what goods it contains. In this scenario, you can create the freight order with the main information before the truck arrives. However, you cannot create the items until the truck arrives.

Prerequisites

- You need to have defined a shipper and a consignee for the freight order item.
- You have assigned item types to your forwarding order type. For more information, see Customizing for Transportation Management under ► *Forwarding Order Management* ► *Forwarding Order* ► *Assign Item Types to Forwarding Order Types* ▶.

Features

You create a freight order and select the required items. You then create a forwarding order from the freight order for the selected items. Here the following applies:

- The shipping type specified in the forwarding order type must correspond to the selected items. If you have specified the shipping type *LCL*, you cannot select any container items in the freight order.
- The movement type must match the scenario. In the case of customer self-delivery, for example, the first stage type that you specify in the stage type sequence for the movement type has to be *Customer Self-Delivery*. In collective goods traffic, the stage type has to be *Pre-Carriage*.

The system creates the forwarding order as well as the freight units and the transports stages. Moreover, the system connects the first transportation stage of the freight unit with the freight order.

Activities

To create a freight order, choose the following menu path in SAP NetWeaver Business Client:

- ► *Freight Order Management* ► *Road* ► *Create Road Freight Order* ▶
- ► *Freight Order Management* ► *Rail* ► *Create Rail Freight Order* ▶

To create a forwarding order from the freight order, in the freight order, choose the *Create Forwarding Order* on the *Cargo Management* tab page.



Rail Freight Order

Rail freight orders make up the logistic processing of transports with trains.

A rail freight order can model a train with one or more locomotives and one or more railcars. You can execute rail freight orders yourself or award them as a subcontract.

A rail freight order includes the following items:

- Locomotives (vehicle resources)

If a train has several locomotives, you can model them using multi-items. Note that during planning, the system considers only the main locomotive that you have specified at header level. The other locomotives are not taken into account during scheduling or when considering incompatibilities.

- Railcars (passive vehicle resources)

Railcar items can either result from the assigned railcar units (see [Railcar Unit \[Page 571\]](#)) or be created directly in the rail freight order. The latter is true in less complex scenarios.

You can also work with multi-items in this case. For more information, see [Items \[Page 582\]](#) and [Capacities and Utilization in Rail Freight Orders \[Page 490\]](#).

- Cargo

You assign cargo items to your railcars.

In the freight order type, you configure the most important settings for the rail freight order. For more information, see Customizing for *Transportation Management* under *Freight Order Management* *Freight Order* *Define Freight Order Types* .

You can create rail freight orders in various ways (see [Creation and Editing of Freight Orders \[Page 476\]](#)).

You can select a carrier for rail freight orders (see [Carrier Selection](#)). You can then award the rail freight orders directly to a carrier as a subcontract.

You can use the change controller to define how the system is to react to changes (see [Change Controller](#)).

Rail freight orders with non-linear transportation stages are not supported.

Structure

Rail freight orders contain the same information as freight orders (see [Freight Order \[Page 473\]](#)). The following points are variances:

- *General Data*

Here, you can enter the following data:

- Source location and destination location (rail)
- Number of railcars

The actual number of railcars is displayed here. If you have agreed scale prices with your carrier, you can enter the number of railcars for the respective scale as the rating value once you have confirmed this with the carrier. The system then calculates the tariff based on this amount instead of the actual value. When doing so, it considers the calculation basis and rate table that you have defined.



Example

You have nine railcars available to you. This actual value is automatically transferred from the *Equipment* tab page. However, the tariff in the agreed scale is for ten railcars. If the carrier is in agreement, you can enter these ten railcars.

End of the example.

- Indication whether there are multiple executing carriers
- Invoicing carrier level

Here, you specify whether there are one or more invoicing carriers.

- *Items*

This area contains information about your train, locomotives, and railcars, for example:

- Position of a railcar in the train
- Equipment group and type
- Railcar details such as whether the railcar belongs to the shipper or the carrier

You can use *Change Hierarchy* to decide whether all or only specific items are displayed. This includes:

- Service items (see [Service Items \[Page 492\]](#))
- Cargo items (see [Cargo Management \[Page 595\]](#))

The *Items* tab page replaces the *Cargo* and *Equipment* tab pages. You can personalize your user interface in such a way that the system displays the old tab pages.

- *Stages*

Here, you can enter the following data:

- Invoicing carrier

The invoicing carrier is the carrier that invoices the shipper (or another designated bill-to party) for the charges calculated for the corresponding stages. This is a common situation in rail scenarios in North America, commonly referred to as "rule 11". In rule 11 scenarios, the electronic bill of lading is sent to just one carrier. This is usually the carrier responsible for the first or last main stage. In turn, this carrier sends the routing instructions to all of the invoicing carriers and executing carriers involved.

- Invoicing carrier level (at stage level)

Here, you specify whether the carrier that you entered at header level or stage level is to be used for freight settlement.

Each stage is classified as a pre-carriage, main carriage, or on-carriage stage in accordance with the stage types you have defined. For example, a switching move to the source location would be a pre-carriage stage and a switching move to the destination location would be an on-carriage stage. All of the stages in between would be considered to be main carriage stages.

- Bill-to party
- Agreement party

Assigning Carriers by Stage

You can assign different carriers at stage level and create multiple invoices for each rail freight order. This is particularly important for North America since different carriers can be responsible for the different stages. In the rule 11 scenarios mentioned above, one carrier accepts the actual order but the invoices for the individual stages are submitted by all of the carriers involved.

Applying Default Routes

You can search for possible routes in your rail freight order based on the carrier, source location, and destination location (*Routing* pushbutton). The system uses the default routes, rates, and tariffs that you have defined to identify the various routes and sorts them by price. If multiple invoicing carriers can be used for a route, the system displays them as alternatives. For more information along with an example, see [Rail Transportation \[Page 487\]](#).

Document References

You can enter document references at header level, stage level, and item level. For example, you can enter approval numbers for the use of stages or other reference numbers.

Status

On the *Items* tab page (hierarchy type *Cargo Management for All Locations* for the transportation mode *Rail*) you can set the handling execution status of your cargo and the cargo execution status of your railcars:

- Multi-item

If you set the cargo execution status for a multi-item, the system automatically adjusts the cargo execution status of all subitems (that is, railcars) as well as the handling execution status of all cargo items that are assigned to the multi-item or to the railcars.



Example

If you select *Set to “Cargo Loaded”* for the multi-item, the system automatically sets the cargo execution status of all subitems (the railcars) to *Cargo Loaded* and the handling execution status of all cargo items to *Loaded*.

End of the example.

If you set the handling execution status for a cargo item that is assigned to the multi-item or to a subitem (a railcar), the system automatically adjusts the cargo execution status of the railcar and of the multi-item.



Example

Let us assume that you have a multi-item with two subitems (two railcars), each of which is assigned a cargo item.

If you select *Set to “Loaded”* for one of the cargo items, the system automatically sets the cargo execution status of the corresponding subitem to *Cargo Loaded* and the cargo execution status of the multi-item to *Cargo Partially Loaded*.

If you select *Set to “Loaded”* for the second cargo item, the system automatically sets the cargo execution status of the corresponding subitem and of the multi-item to *Cargo Loaded*.

End of the example.



Example

Let us assume that you have a multi-item that is directly assigned a cargo item.

If you select *Set to “Loaded”* for the cargo item, the system automatically sets the cargo execution status of the multi-item to *Cargo Loaded*.

End of the example.

- Single item

If you set the handling execution status for a cargo item, the system automatically adjusts the cargo execution status of the single item (the railcar), and vice versa.



Example

If you select *Set to “Loaded”* for the cargo item, the system automatically sets the cargo execution status of the railcar to *Cargo Loaded*.

End of the example.

For more information on statuses, see [Statuses of Business Documents \[Page 608\]](#).

More Information

[Freight Settlement](#)

[Creation and Transfer of Freight Settlement Documents](#)



Rail Transportation

This example process describes a typical rail transportation process for shippers.

Prerequisites

- You have defined one or several default routes in SAP NetWeaver Business Client under *Master Data* *Transportation Network* *Default Route* *Create Default Route*. For more information, see [Default Route \[Page 103\]](#).
- You have defined transportation zones. For more information, see [Transportation Zone \[Page 73\]](#).
- You have configured the prerequisites for freight agreements (see [Agreement Maintenance](#)). Freight agreements represent the contracts you have signed with your carriers. They are equipment-based and must contain the following data:
 - Source and destination location or transportation zones that contain these locations
 - Equipment
 - External reference number
 - External item number
 - Commodity codes
- You have created a freight order type for rail and the corresponding item types in Customizing. For more information, see Customizing for *Transportation Management* under *Freight Order Management* *Freight Order* *Define Freight Order Types*.
- If you want the system to automatically create railcar units in freight unit building, you must create a transportation unit type in Customizing and assign it to your freight unit building rule. For more information about creating transportation unit types, see Customizing for *Transportation Management* under *Planning* *Transportation Unit* *Define Transportation Unit Types*. For more information about freight unit building rules, see [Freight Unit Building Rule](#).
- You have configured the prerequisites for freight settlement (see [Freight Settlement](#)).
- You have configured the prerequisites for charge management (see [Charge Management and Service Product Catalogs \[Page 166\]](#)). At a minimum, the rate tables need to have scale items including source and destination rail locations or zones. Moreover, you must have defined the charge type as the leading charge type in order for through rates to be considered.

Process

1. You define master data (equipment, for example) and create a delivery in SAP ERP and transfer them to SAP TM. Thus, the required master data and a railcar are available in SAP TM. Moreover, a delivery-based transportation requirement has been automatically created in SAP TM. For more information, see [ERP Logistics Integration \[Page 392\]](#). In freight unit building, a railcar unit has been created instead of a freight unit if you have

indicated a transportation unit type in your freight unit building rule. For more information, see [Creation and Editing of Freight Units](#).

2. You manually create a rail freight order and assign the railcar unit to it. You need to indicate at least the source and destination rail location, the carrier, and the equipment. In SAP NetWeaver Business Client choose *Freight Order Management* *Rail* *Create Rail Freight Order*. Alternatively, you can create the rail freight order in the transportation cockpit by dragging the railcar unit to a locomotive.
3. In your rail freight order, you choose *Routing* to search for possible routing options based on the source and destination rail locations. The system executes the following steps:
 1. It searches for all default routes where the first and last location (or transportation zone) of the default route matches the source and destination rail locations.
 2. For each default route found, it searches for all freight agreement items for each executing carrier defined in the default route, filtering on trade lanes and commodity codes.
 3. For each default route, it searches for rates in all of the rate tables of the selected freight agreement items for each location combination within the default route.
 4. It proposes a list of routing options for each default route and rating alternative. A rating alternative includes any combination of rates from different executing carriers that can get from the source to the destination rail location.
4. You select a routing option from the list. The system automatically generates transportation stages in the rail freight order according to the stage information in the selected routing option. This includes the stage types and executing carriers from the default route as well as the invoicing carriers and freight agreement items determined according to the rating results.
5. You send your rail freight order to your carrier.

For more information about the rail transportation process from the point of view of the carrier, see [Creation of a Forwarding Order for Rail Transportation \[Page 332\]](#).

6. You use the standard freight settlement process to settle your rail freight order.

If you have a different invoicing carrier for each transportation stage of a rail freight order, the system creates one freight settlement document for each of the different carriers in the rail freight order. For more information on freight settlement, see [Freight Settlement](#).

Example

You have created a rail freight order from source rail location A to destination rail location C with a rail junction in B. You have also defined default route 100:

Location	Executing Carrier
A	X
B	Y
C	Not applicable

Based on this default route and the rates and tariffs that you have defined, the system determines the following routing options:

Routing Option	Default Route	Transportation Stage	Executing Carrier	Invoicing Carrier
1	100	A -> B	X	X (rate for carrier X for A -> B)
1	100	B -> C	Y	Y (rate for carrier Y for B -> C)
2	100	A -> B	X	X
2	100	B -> C	Y	X (through rate for carrier X for A -> C)

You decide to select routing option 1. You send the rail freight order to carrier X. Carrier X carries out transportation for the first transportation stage itself and sends the routing instructions for the second transportation stage to carrier Y. You will receive invoices from both carriers for their respective transportation stages.

More Information

[Rail Freight Order \[Page 483\]](#)

[Railcar Unit \[Page 571\]](#)



Capacities and Utilization in Rail Freight Orders

The following describes how the system determines the capacities and utilization of rail freight orders.

Prerequisites

- In Customizing you have defined equipment types and groups as well as capacities for your locomotives and railcars. For more information, see Customizing for *Transportation Management* under ► *Master Data* ► *Resources* ► *Define Equipment Groups and Equipment Types* and see [Equipment Groups and Equipment Types \[Page 116\]](#).
- You have defined vehicle resources and adjusted the capacities where necessary. For more information, see [Vehicle Resource \[Page 124\]](#).
- In Customizing you have defined item and subitem types and assigned these to your freight order types. For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* and see [Items \[Page 582\]](#).

Features

Capacities

Whether and how the system aggregates capacities depends on how you have created your item hierarchy and, more specifically, your multi-items.

The locomotive is predefined automatically in the rail freight order if you have created the transportation mode *Rail* in your freight order type.

You then insert your railcars. You have the following options:

- Insert a railcar as an individual item

When you enter a resource the system automatically fills the equipment type and group as well as the relevant weights.

- Insert a railcar as a multi-item

When you enter the equipment type and group the system automatically fills the relevant weights. You have the following options when you create a multi-item:

- Create with expansion - this means that the individual railcars are displayed as separate subitems

You can change the equipment type and group of the individual subitems and you can enter a resource.

- Create without expansion - this means that the multi-item represents all railcars and does not have any subitems

You cannot enter a resource. However, you can expand the multi-item later.

The system aggregates the capacities as follows:

- Multi-item with expansion

The capacity is the sum of the capacities of the individual subitems. The equipment type and group displayed for the multi-item are no longer important for the calculation. The capacity displayed for the multi-item is only a subtotal.

- Multi-item without expansion

The multi-item behaves like a large railcar (a double freight car, for example). The capacity is the product of the capacity entered in the multi-item and the number of railcars.

The table below shows how the system calculates the individual weights of locomotives and railcars (classic packaging hierarchy).

Resource	Gross Weight	Net Weight	Tare Weight	Maximum Payload Weight
Locomotive	Net weight plus tare weight of locomotive	Net weight of cargo plus net weight of railcar	Tare weight of locomotive	Maximum weight that the locomotive can pull
Railcar	Net weight plus tare weight of railcar	Weight of loaded cargo	Tare weight of railcar	Maximum weight that can be loaded onto the railcar

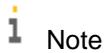
For more information about quantity totaling in the classic packaging hierarchy, see [Quantities and Capacities \[Page 587\]](#).

Utilization

The utilization of the train or locomotive is displayed under *Train Capacity*:

- Maximum utilization in percent

This is the utilization of the locomotive in terms of its trailing load. The system calculates this utilization taking into consideration the maximum trailing load that you have entered manually here.



The maximum trailing load is displayed automatically as the maximum payload weight of the locomotive on the *Equipment* tab page.

End of the note.

- Length utilization in percent

This is the utilization of the locomotive in terms of its length. The system calculates this utilization from the maximum train length that you have entered manually here and from the length of the railcar (*Cargo Information*).



Service Items

In your freight order, you can define service items to order additional services along with transportation services. Examples of additional services are fumigation of a container or insurance.

Prerequisites

- You have defined internal service types in Customizing. For more information, see *Customizing for Transportation Management* under ► *Basic Functions* ► *General Settings* ► *Define Service Types*.
- You have assigned these internal service types to your carrier's service types. You assign internal service types to your business partner in SAP NetWeaver Business Client by choosing ► *Master Data* ► *General* ► *Define Business Partner* (Carrier role, Vendor Data tab page).
- You have assigned your internal service types to an item type of category *Service* in Customizing. For more information, see *Customizing for Transportation Management* under ► *Freight Order Management* ► *Define Item Types for Freight Order Management*.
- In your freight agreement, you have defined freight agreement items and the corresponding services. If you want to make sure that a service must not be deleted, select the *Mandatory Service* checkbox for your agreement item. If you want the system to automatically display the services in your freight order when you enter the freight agreement item, select the *Flow Service* checkbox for your freight agreement item. For more information about freight agreements, see [Agreement Maintenance](#).

Features

You can define service items as subitems of a cargo item or as separate items (main items). You can enter the requested quantity for a service item.

You have the option to enter a carrier in your freight order. If you do so, the input help contains only those internal service types that you have assigned to the carrier. If you do not enter a carrier, the system offers you all internal service types.

If in addition you enter a freight agreement, freight agreement version, and freight agreement item in your freight order (*Subcontracting* tab page), the corresponding services are copied to the freight order or offered in the input help. The freight agreement and freight agreement version are also used for charge calculation.



Note

- Service items that you have defined in a related forwarding order are not taken into account or copied to the corresponding freight order.
- If you enter a freight agreement that is invalid for the freight order, the system will only detect this during charge calculation.

End of the note.

Activities

If you have selected the *Generic Item View* hierarchy type, service items are displayed on the *Items* tab page of the freight order. If you want to display service items only, select the *Service Items Only* hierarchy type in the *Change Hierarchy* field. For more information, see [Use of Hierarchical Views in FOM \[Page 605\]](#).



Transportation Service Levels

You use transportation service levels to describe the priority of transportation services. Examples are Express or Standard.

Features

A distinction must be made between the transportation service levels for the sales side and the purchasing side:

- Sales side

On the sales side, you specify transportation service levels for your customers. To do this, you define transportation service level codes in Customizing. For more information, see *Customizing for Transportation Management* under ► *Forwarding Order Management* ► *Define Transportation Service Level Codes*. If you then create one of the following documents the system offers you the transportation service level codes defined in Customizing for selection:

- Forwarding order
- Forwarding agreement (item level)
- Forwarding quotation
- Forwarding agreement quotation

If you are working with order- and delivery-based transportation requirements, you do not have to define any transportation service level codes. In this case, these are taken from the sales order (*Shipping Condition* field).

- Purchasing side

On the purchasing side, you define carrier service codes in the master data for your carriers. You do this on the *SAP Easy Access* screen under ► *Transportation Management* ► *Master Data* ► *Maintain Business Partner* (Carrier role, Vendor Data tab page). If you then create a freight document and enter one of these carriers the system offers you the corresponding values in the *Service Level* field for selection. This also applies to freight agreements (item level).



Note

If you are a logistics service provider and can commit all the carriers who work for you to the same transportation service level, we recommend you make the following settings:

- Define transportation service level codes in Customizing. For more information, see *Customizing for SCM Basis* under ► *Master Data* ► *Business Partner* ► *Define Transportation Service Level Codes*.
- Enter one of these values as the standard service level when you define your freight order type. For more information, see *Customizing for Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types*. The system then uses this value when you create a freight order.

End of the note.



Parcel Shipment

SAP Transportation Management (SAP TM) enables you to commission a carrier to transport parcels from a shipping point to several consignees. You can create parcel shipments in SAP TM based on deliveries from an ERP system. You can then select a direct shipment option for the parcel shipment and plan and execute the transportation of shipments to the consignees. The direct shipment option involves selecting a carrier with the relevant transportation services while taking into account the applicable charges.

The following section provides an example of the parcel shipment process in SAP TM.

Prerequisites

In addition to the general settings for freight order management and the determination of direct shipment options, you have configured the following settings that are particular to the parcel shipment process:

- In Customizing for the *freight unit type*, you have configured the settings for determining direct shipment options. A parcel shipment is a freight unit in SAP TM.

For the parcel shipment process, you have populated the *DSO Result Rule* field in such a way that the system assigns freight units to a freight order if it identifies direct shipment options. The system assigns the freight units to an existing freight order that meets the requirements in terms of source location, carrier, and pick-up date. If the system cannot find a suitable freight order, it creates a new one.

You can also configure the following options in the *Direct Shipment Strategy* field:

- Default strategy *DSO_RESULT*: The system determines the direct shipment options and assigns the freight units automatically to a freight order.
- Default strategy *DSO_DEF*: The system only determines the direct shipment options for the freight units, that is, no further processing takes place. You can then manually assign the freight units on the user interface or run batch report /SCMTMS/DIRECT_SHIPMENT_BATCH.

The process described below assumes that you use this setting.

For more information, see Customizing for *Transportation Management* under ► *Planning* ► *Freight Unit* ► *Define Freight Unit Types* and also [Determination of Direct Shipment Options](#).

- In Customizing for the *freight order type*, you have configured the settings required for the parcel shipment process. SAP provides the default freight order type 3000, which contains all of the settings required for the standard parcel shipment process. In particular, the following default values are provided:

- *Sequence Type of Stops: Star-Shaped Based on FU Stages*

The default setting in this field specifies that all stages for the freight order have the same start location but different end locations. This corresponds to the transportation stages in a parcel shipment process.

- *Draw Bill of Lading Number: Draw Automatically When Item Is Changed*

This default setting specifies that bill of lading numbers (that is, the shipment numbers) are automatically taken from the waybill stock.

- *HBL Building Strategy:* PRCL_SHP

This is the default strategy that the system uses to create parcel shipments.

- Web Dynpro Application Config.: /SCMTMS/FRE_ORDER_MANIFEST

If you create a freight order with this default freight order type and a Web Dynpro application configuration, the user interface for the freight order is automatically adjusted to meet the requirements of the parcel shipment process. Note that the UI elements are neutral so that the document can be used for similar processes with shipment type *LTL*.

- *Add. Output Profile:* /SCMTMS/TOR_PRINT_PARCEL_ROOT

If you use this output profile, you can print parcel manifests and labels from the *Output Management* tab page of the freight order item details.

- For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶.
- In Customizing for the *item type*, you have specified that tracking numbers are to be drawn automatically from the waybill stock for freight order management. This applies to both shipment items and package items. For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Define Item Types for Freight Order Management* ▶.
- You have defined waybill stock for bill of lading numbers and tracking numbers in the master data. For more information, see [Waybill Stock Definition \[Page 291\]](#).
- To *calculate charges* when direct shipment options are determined, you have specified the carrier prices in a rate table. The system can also calculate the charges directly based on Web service offerings from parcel service providers.

In the parcel shipment process, you can also create freight agreements with multiple agreement items, which represent carrier service products. In the agreement items, you can define attributes such as the length, height, and width on the *Package* tab page. If the system calculates charges when determining the direct shipment options, it compares these attributes with those in the delivery-based transportation requirement and selects a suitable agreement.

For more information, see [Rate Determination for Direct Shipment of Parcels \[Page 257\]](#).

Process

1. *Creation of delivery-based transportation requirements*

SAP TM creates delivery-based transportation requirements (DTRs) based on the deliveries that you have created in your ERP system. For more information, see [Integration of ERP Deliveries \[Page 427\]](#).

2. *Creation of parcel shipments*

The system creates parcel shipments based on the DTRs. For each DTR, it creates exactly one parcel shipment (that is, one freight unit).

3. Determination of direct shipment options

The system determines the direct shipment options of carriers with carrier service products that meet the requirements of the shipment (for example, the pick-up and delivery times or the service level). When doing so, it identifies the freight agreements with the carriers and the service products that are defined therein. The user interface for the parcel shipment (that is, the freight unit) displays a list of available direct shipment options. The cheapest option is displayed first by default.

You can configure the Customizing settings for the freight unit type in such a way that this step is carried out automatically. Otherwise, you can trigger the determination of direct shipment options manually on the user interface for the freight unit.

For more information, see [Determination of Direct Shipment Options](#).

4. Selection of an option and assignment to a parcel freight order

You select an option and assign the shipments to an existing parcel freight order that meets the requirements in terms of the source location, pick-up date, and carrier. If the system cannot find a suitable freight order, it creates a new one. In this case, it transfers the data from the freight unit and the direct shipment option to the new freight order.

5. Editing of the package freight order

You open the freight document. Freight orders that were created with the shipment type *Package* in addition to the relevant freight order type are displayed in your personal object worklist (POWL) for parcel freight orders (under *Overview Road Freight Orders*).

The freight order contains the parcel shipments and the corresponding packages. The shipment numbers and tracking numbers for the shipments and packages have been drawn from the waybill stock and assigned automatically in accordance with your Customizing settings.

6. Shipment of the parcel freight order

You send the freight order to your carrier.

7. Confirmation of parcel freight order

You confirm the freight order in the name of the carrier, or you reject it. It is also possible to confirm or reject the freight order using a message.

8. Document printing

You print the parcel manifest and labels from the *Output Management* tab page in the freight order item details. For more information, see [Output Management](#).

9. Execution of parcel freight order

You set the status of the parcel freight order to *Cargo Ready for Loading* and start execution and tracking. Once this status has been set, no further parcel shipments (freight units) can be assigned automatically to the parcel freight order. However, you can still assign parcel shipments manually.

The parcel freight order is processed further in the same way as a standard freight order. For more information, see [Manually Creating Freight Orders \[Page 478\]](#).



Appointment

You can also define your own appointments in the freight order. These are time windows that you use to define when the delivery or pick-up at the customer is to take place. You can define acceptable dates/times and requested dates/times.

If the carrier makes an appointment with a customer on your behalf and includes this in his or her tendering response, it is also displayed in the freight order.

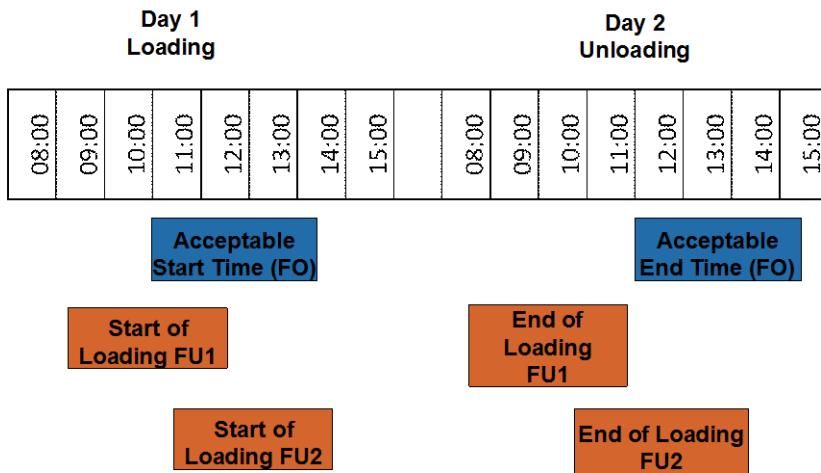
The appointment is a hard constraint for scheduling, since the system uses it to plan freight units and in doing so makes a distinction between planned times and acceptable times. If the planned delivery date for a freight unit is not the same as the appointment, and is also not found within the acceptable time, the system generates an error message.

When evaluating whether a planned delivery time is acceptable, the start time for loading and the end time for unloading is key. If these are found within the appointment, the delivery can take place as planned. If this is not the case, the system generates an error message.

Activities

You define appointments in the freight order on the *Overview* tab page. To do this, double-click a transportation stop. In this case, a tab page for dates/times is displayed in the lower section where you can define your appointments.

Example



Example of an Appointment

For day 1, you have negotiated an acceptable start time for the loading of a freight order (FO) between 10:00 and 13:30 with your customers. For day 2, you have negotiated a time between 11:00 and 14:00 to unload the same freight order.

The loading start for freight unit 1 (FU1) is earlier than the acceptable start time of the freight order, which triggers an error message. The loading end for freight unit 1 is also not found within the acceptable end time for the freight order, which also triggers an error message.

The loading start and loading end for freight unit 2 (FU2) are found within the acceptable start and end time for the freight order.



Scheduling of Freight Orders

The following process describes how you can determine dates and times in a freight order.

Note

Transportation units are scheduled together with the freight orders. In schedule-based freight bookings, the system determines the dates/times from the schedule.

End of the note.

Prerequisites

- You have entered the required master data, such as resources and transportation lanes. For more information, see [Master Data \[Page 24\]](#). You have also made the settings needed to determine the lane, distance, and duration. For more information, see [Lane, Distance, and Duration Determination \(LDDD\) \[Page 86\]](#).
- If required, you have specified in the freight unit type how you want the dates/times to be transferred (*Rule for PU/DLV Window* and *Cond. for PU/DLV Window Determ.* fields). For more information, see Customizing for *Transportation Management* under ► *Planning* ▶ *Freight Unit* ▶ *Define Freight Unit Types*.

Process

1. Create a forwarding order and enter your requested and acceptable dates/times. For more information, see [Creation of a Forwarding Order \[Page 304\]](#) and [Time Windows](#). You do not have to enter dates/times. If you do not enter any dates/times, the system determines these during scheduling.
2. Save the forwarding order. The system creates freight units automatically if you have defined this in Customizing for your forwarding order type. For more information, see [Creation of a Forwarding Order \[Page 304\]](#). According to the settings for the freight unit type, the system copies the dates/times from the forwarding order to the freight units.
3. Create a freight order in the transportation cockpit or from the forwarding order. For more information, see [Creation and Editing of Freight Orders \[Page 476\]](#). The system copies the dates/times to the freight order as planned departure and arrival dates/times.
4. You can also enter the following dates/times:
 - Cut-off dates/times (such as cargo cut-off date/time) and availability dates/times
 - Appointments (see [Appointment \[Page 498\]](#))
5. Schedule your freight order. The system adjusts the departure and arrival dates/times in the freight order and determines the loading and unloading dates/times for the related freight units. During scheduling, the system takes into account a set of constraints.

It determines the duration of transportation when it determines the distance and duration. It determines the loading and unloading durations based on the durations you entered in the planning profile or using the condition entered here. The determination of durations using the condition are based on the freight unit, the means of transport, or both.

You can use user parameter /SCMTMS/SCH_FORCE to force automatic forward scheduling after data has been changed. The system then fixes the departure date/time.

For more information, see [Scheduling](#).

The system takes into account dependencies between the dates/times of freight unit stages and the related freight orders regardless of whether you schedule a freight order. This means that it calculates the acceptable end date of a freight unit stage by considering the start date of the following stage and the goods wait time that you defined for the location. If there are conflicting dates/times, it sets the corresponding status automatically when it checks all the documents (cross-document check status). For more information, see [Explanation of Statuses of Business Documents \[Page 614\]](#).

6. If you change the requested and acceptable dates/times in the forwarding order, the system copies the changes automatically to the freight units. If your freight order is not yet in execution, the changes are also copied automatically to the freight order. If your freight order is already in execution, the system sets an execution block if there are conflicting dates/times.

If you change the planned departure and arrival dates/times in the freight order, the system adjusts automatically the loading and unloading dates/times in the freight unit.

 Note

In the change controller you specify how you want the system to react to changes to your business documents. For more information, see [Change Controller](#).

End of the note.

Example

The table below contains example dates for this process (for the sake of simplicity, only dates are used).

Business Document	Dates Entered Manually	Dates Copied by the System	Result of Scheduling	Dates Changed Manually	Dates Updated by the System
<i>Forwarding order:</i>	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Requested pick-up date	2013-10-06	Not applicable	Not applicable	2013-10-07	Not applicable
<i>Freight units:</i>	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Requested pick-up date (start)	Not applicable	2013-10-06	Not applicable	Not applicable	2013-10-07
Requested pick-up date (end)	Not applicable	2013-10-06	Not applicable	Not applicable	2013-10-07
Acceptable pick-up date (start)	Not applicable	2013-10-06	Not applicable	Not applicable	2013-10-07
Requested delivery date (end)	Not applicable	2013-10-08	Not applicable	Not applicable	2013-10-09

Business Document	Dates Entered Manually	Dates Copied by the System	Result of Scheduling	Dates Changed Manually	Dates Updated by the System
Loading date (start)	Not applicable	Not applicable	2013-10-07	Not applicable	2013-10-08
Loading date (end)	Not applicable	Not applicable	2013-10-07	Not applicable	2013-10-08
Unloading date (start)	Not applicable	Not applicable	2013-10-09	Not applicable	2013-10-09
Unloading date (end)	Not applicable	Not applicable	2013-10-09	Not applicable	2013-10-09
<i>Freight order:</i>	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Planned departure date	Not applicable	2013-10-07	2013-10-07	2013-10-08	Not applicable
Planned arrival date	Not applicable	2013-10-09	2013-10-09	2013-10-10	Not applicable



Freight Orders with Non-Linear Stages

This function allows you to describe, for example, the following scenarios:

- A less than truck load (LTL) consolidation scenario, in which the deliveries are consolidated into one container at the transshipment location (such as the port of loading). In such an LTL consolidation scenario, you can create a freight order for disconnected transportation stages in order to perform freight settlement.
- An LTL deconsolidation scenario in which the goods are deconsolidated at the transshipment location (such as the port of discharge). This transshipment location is supplies all successor stops (that is, the delivery locations) with goods.

Prerequisites

- You have defined a stop sequence type for your freight order type in Customizing. For more information, see Customizing for Transportation Management under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types*.
- You have selected the *Stage Split* checkbox in your freight settlement profile in Customizing. For more information, see Customizing for Transportation Management under ► *Settlement* ► *Define Settlement Profile*.
- In Customizing, you have also selected the *Calculation at Stage Level* option in the *Calculation Level* field of your calculation profile. For more information, see Customizing for Transportation Management under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings for Charge Calculation* ► *Define Calculation Profile*.

Features

You can only create freight orders with non-linear stages using customer-specific functions or ERP shipments. This results in the following limitations:

- You cannot create this type of freight order from a forwarding order.
- You cannot create freight units from such ERP shipments.
- You cannot carry out any planning activities.

You can create freight settlement documents for individual stages.

Note

ERP shipments can be transferred from SAP ERP to SAP Transportation Management (SAP TM), for example, for tendering. You can use the interfaces for shipment-based tendering for a scenario that, instead of consisting of tendering, consists of calculating transportation charges based on non-linear stages, as described above. For more information on these interfaces, see [Shipment-Based Tendering \[Page 458\]](#).

End of the note.

Example

For an LTL deconsolidation scenario, you have defined three locations:

- Source location A
- Destination location B
- Destination location C

The stages look as follows:

Stage	Source location	Destination location
10	A	B
20	A	C



External Communication in Overland Transportation

You can use this process to send freight orders directly to a subcontractor without first having performed tendering. The following section contains a description of an example process:

Prerequisites

- You have configured your sending system, for example, SAP Transportation Management (SAP TM).
- You have configured your receiving system, for example, SAP TM.
- You have configured your XI system, for example, SAP NetWeaver Process Integration (SAP NetWeaver PI).
- Freight orders exist.

Process

1. If, on the user interface for freight orders, you choose *Subcontract* and then *Send to Forwarding Agent*, the sending system, for example, SAP TM, sends the freight orders with the message `TransportationOrderRequest_Out` to your subcontractors.
2. The receiving system, for example, SAP TM, receives the freight orders as forwarding orders via the message `TransportationRequestRequest_In`.
3. The receiving system confirms the freight orders via the message `TransportationRequestConfirmation_Out`. By means of the confirmation, the subcontractor either accepts the freight order (possibly with changes) or rejects the freight order.
4. The sending system receives the confirmation via the message `TransportationOrderConfirmation_In`.
5. The sending system can cancel the freight order via the message `TransportationOrderCancellation_Out`.



Note

- The messages named above can also be used for direct tendering.
- You can then also send freight orders to your subcontractors directly in direct tendering. Or the system sends your freight orders resulting from a freight request-based tendering automatically to your subcontractors.

End of the note.



Freight Booking

Order for which 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.

You use a freight booking to reserve freight space on a ship or in an airplane. The freight booking is also the document for the actual execution.

You define the most important settings for the freight booking in the freight booking type. Furthermore, you specify the transportation mode, for example, air, for which a freight booking is to be used. For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types*.

For more information about creating freight bookings, see [Creation and Editing of Freight Bookings \[Page 509\]](#).

If you have entered geography and times in your sea freight booking, you can perform carrier selection (see [Carrier Selection](#)). In this case, the system looks for the most suitable carriers, taking into account transportation allocations.

You can use SAP Event Management to track and monitor freight booking events (see [Tracking of Freight Orders and Freight Bookings](#)).

You can use the change controller to define how the system is to react to changes (see [Change Controller](#)).



Note

Separate user interfaces are available for both sea freight bookings and air freight bookings. The following special user interfaces are also available:

- User interfaces for management of air freight bookings for airlines (see [Management of Air Freight Bookings for Airlines \[Page 521\]](#))
- User interface for management of loose cargo (only for ocean freight bookings; see [Creation and Editing of Freight Bookings \[Page 509\]](#))

End of the note.

Structure

Freight bookings contain the following information:

- General data
- Business partner
- Locations and dates/times

At stage level you can enter one-time locations and additional addresses (one-time addresses). The system stores these new locations and addresses and adjusts stages in the document. It also adjusts the locations or addresses in the assigned requirements (freight units).



However, you should continue to make changes to existing locations in the master data.

End of the note.

- Transportation stages

Here the system displays times, locations and their sequence, as well as transit countries, among other things. You can add transportation stages, for example, in order to add another port between New York and Amsterdam.

In addition, you can add transportation stages between the pick-up location and the port of loading or between the port of discharge and the delivery location. This means that there can be several pre-carriage transportation stages and several on-carriage transportation stages. However, you cannot use these additional transportation stages to model a multiple pick-up scenario. Instead, you can only model locations, at which additional activities (such as weighing) are to be executed. The freight unit transportation stage remains unchanged. Another option is to add locations on the *Overview* tab.

 Note

The *Stages* tab is only available for ocean freight bookings. You can find information about air freight bookings under *Carrier Routing*.

End of the note.

- Document dependencies as well as predecessor and successor documents (document flow)
- Information about transportation charges (see [Charge Calculation \[Page 223\]](#))
- Cargo Management (see [Cargo Management \[Page 595\]](#))

The following information is displayed here:

- Quantities and weights (see [Quantities and Capacities \[Page 587\]](#))
- Goods information (see [Goods Information \[Page 599\]](#))
- Corresponding freight orders (see [Pick-up and Delivery Freight Orders \[Page 514\]](#))
- Service Orders (see [Service Order \[Page 575\]](#))
- Dangerous goods information (see [Considering Dangerous Goods](#)).
- Seal information (see [Use of Seals \[Page 604\]](#))
- Information about foreign trade (see [Integration with SAP Global Trade Services](#))
- House Bill of Lading (Ocean Freight) or Air Waybill (Air Freight)

For more information, see [Building and Printing of House Bills of Lading and House Air Waybills \[Page 667\]](#).

- Capacity Requirements
- Information about output management (for example, print documents)

As a prerequisite, you have configured the settings for output management in the freight booking type (for example, output profile) For more information, see [Printing](#).

- Transportation dependencies, in other words, logistical dependencies such as related freight orders (sea freight bookings only)
- Information about the carrier ranking (sea freight bookings only)
- Status information and blocking information (see [Statuses of Business Documents \[Page 608\]](#) and [Blocking Information \[Page 634\]](#))
- Other information
 - Attachments
 - Notes
 - Document references (in other words, additional external references)
 - Change documents (see [Change Tracking \[Page 679\]](#))

More Information

[Consideration of Equipment Data During FU Creation](#)

[Buyer's Consolidation \[Page 518\]](#)

[LCL Freight Bookings \[Page 538\]](#)

[FCL Freight Bookings \[Page 539\]](#)

[Export/Import Processing \[Page 542\]](#)

[Classification of Goods \[Page 112\]](#)

[Nature of Goods \[Page 671\]](#)

[Transportation-Mode-Specific Codes \[Page 106\]](#)

[Interaction Between Organizational Units \[Page 372\]](#)

[Freight Document Overview](#)



Creation and Editing of Freight Bookings

You can use this function to create, edit, and display freight bookings.

Prerequisites

- You have defined freight booking types in Customizing. You define the most important settings for the freight booking in the freight booking type. For more information, see Customizing for Transportation Management under ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types* ▶.
- If you want to create ocean freight bookings for loose cargo, you have made the following settings in your freight booking type:
 - You have specified /SCMTMS/FRE_BOOK_OCEAN_LOOSE as the the Web Dynpro application configuration.
 - In the *Container Item Source* field, you have chosen the *Container Item is Taken from Predecessor Documents* option.

When you create ocean freight bookings with this freight booking type, you can enter a capacity on the related user interface instead of the container data, meaning a certain weight or volume (or both), and calculate the utilization.

- If you want to create ocean freight bookings for multi-pickups or multi-deliveries (for bulk material scenarios, for example), you have made the following settings in your freight booking type:
 - In the *FB for Multi-PU/DL* field, you have specified that several ports of loading and ports of discharge are allowed.
 - In the *Consolidation (Source)* and *Consolidation (Dest.)* fields, you have selected the option *Without Consolidation*.
 - As the Web Dynpro application configuration, you have entered /SCMTMS/FRE_BOOK_OCEAN_BULK. A specific user interface is then available for creating and changing these ocean freight bookings. In addition, there is a specific object type in your personal worklist for selecting these ocean freight bookings.
 - You have assigned the predefined shipping type *Bulk Material* to your ocean freight booking. You have selected the *Freight Items Must not Be Assigned to Equipment Item* option in the *Assignment to Equipment Item* field in this shipping type. This means that the *Not Relevant* option is automatically selected in the *Container Item Source* field of your freight booking type.

Features

Creation of Freight Bookings

You have the following options:

- Manual Creation

For more information, see [Manually Creating Freight Bookings \[Page 512\]](#).

- Creation from a Forwarding Order

You can create freight bookings directly when creating forwarding orders. For more information, see [Direct Creation of Freight Documents and Selection of Schedules \[Page 335\]](#).

The further steps, for example, sending the freight booking to the shipping company or the airline, are done in manual creation.

- Creation from the Transportation Cockpit

You can create a freight booking manually in the transportation cockpit. To do this, choose *New* and then the required option, depending on whether you want to create a freight booking for sea or air transportation. Enter the required data (based on the creation from a forwarding order).

For more information about the transportation cockpit, see [Interactive Planning](#).

- Creation by Copying

You can create a freight order by copying an existing one (reference document). The system copies the header data and the logistical data. However, it does not copy references to freight units and the confirmed capacity.

- Creation Based on a Schedule

You can use the report `/SCMTMS/MP_SCHED_CREATE_TOR` to create a freight booking based on a schedule. For further information, see the system documentation.

Editing and Displaying of Freight Bookings

You can edit and display freight bookings on the following user interfaces:

- Freight Booking Table

You can do this in SAP NetWeaver Business Client, for example for air freight: ► *Freight Order Management* ► *Air* ► *Overview Air Freight Bookings* □ or ► *Planning* ► *Worklist* □ *Planning Overview* □.

- User Interfaces for Editing and Displaying

For air freight, for example, go to SAP NetWeaver Business Client and choose ► *Freight Order Management* ► *Air* ► *Edit Air Freight Booking* □, or *Display Air Freight Booking*.



Note

You can display various task-specific views of the air freight booking using the *Page* function.

End of the note.

- Transportation Cockpit

You can assign freight units in the transportation cockpit of a freight booking, which you have already created manually or created from a forwarding order. You can assign the freight units either manually or automatically. In the second case, select the freight booking, the resource, and the freight units and then start VSR optimization for the selected objects.

To do this, go to SAP NetWeaver Business Client and choose  **Planning**  **Planning**
 **Transport Cockpit**.

Freight bookings are only displayed in the transportation cockpit if they match the criteria of the selection profile for freight orders and freight bookings (see [Use of Profile and Layout Sets](#)).



Manually Creating Freight Bookings

The following is a description of an example process for manually creating a sea freight booking. In this example, it is assumed that you use a certain ship every week to transport goods from a certain source location to a certain destination location.

Note

You can manually create a sea freight booking in SAP NetWeaver Business Client by choosing **► Freight Order Management > Sea > Create Sea Freight Booking**.

End of the note.

Prerequisites

You have defined freight booking types in Customizing. You define the most important settings for the freight booking in the freight booking type. For more information, see Customizing for *Transportation Management* under **► Freight Order Management > Freight Booking > Define Freight Booking Types**.

Process

1. Entering the general data

You first enter the general data for your sea freight booking, for example:

- Shipper, consignee, and carrier
- Locations, for example, port of loading and port of discharge
- Dates and times, for example, departure date and expected arrival date
- Number of containers

The containers are displayed in the item overview. You can add freight units manually by specifying a forwarding order, for example.

Note

If you specify several different types of containers, the total number of containers is displayed in the upper section. The system creates the items for the individual containers in the lower section. If you receive a confirmation in which not all items are confirmed, the system deletes the non-confirmed items.

End of the note.

- Schedule

For more information, see [Use of Schedules \[Page 602\]](#).

- Freight terms

You can control how the system creates a statement in an international transport. If you enter *prepaid*, the system creates a statement for export freight booking. If you enter *collect*, the system creates a statement for import freight booking.

2. Calculating transportation charges

Optionally, you can have the system calculate the expected transportation charges for your sea freight booking. For more information, see [Charge Calculation \[Page 223\]](#).

3. Checking and saving

Once you have finished entering all the important data, you optionally check the consistency of your data and then you save your sea freight booking.

4. Sending the sea freight booking

You send your sea freight booking to a shipping company. For more information, see [External Communication in Sea Traffic and Air Traffic \[Page 520\]](#).

5. Confirming or rejecting the sea freight booking

You confirm the sea freight booking in the name of the shipping company, or you reject it. It is also possible to confirm or reject the freight booking using a message.

6. Changing the sea freight booking (optional)

You optionally change the details of your sea freight booking, for example, the number of containers. You then repeat steps 4 and 5.

7. Sending loading and unloading instructions

You send loading and unloading instructions to the warehouse. For more information, see [Sending of Loading/ Unloading Instructions and Receipt of Confirmations \[Page 674\]](#).

8. Sending the shipping instruction

You enter additional data, for example, the amount to be insured, and then you send the shipping instruction.

9. Creating a freight settlement document

After execution, you create a freight settlement document (see [Freight Settlement Document](#) und [Enablement of Freight Settlement Documents for Creation](#)). This serves as the basis for checking the invoice or issuing a voucher. If you have created additional business partners with the role *Additional Agreement Party* in your sea freight booking, the system automatically creates freight settlement documents for this partner.

10. Printing

Optionally, you can print the corresponding print documents. For more information, see [Printing](#).

11. Canceling the sea freight booking (optional)

You can cancel your sea freight booking. For more information, see [External Communication in Sea Traffic and Air Traffic \[Page 520\]](#).



Pick-up and Delivery Freight Orders

In *sea transportation*, you use freight orders for pick-up to transport containers from the container freight station to the loading port. You use freight orders for deliveries to transport containers from the unloading port to the container freight station.

In *air transportation*, you use freight orders for pick-up to transport unit load devices or loose goods from the source gateway to the airline's delivery address. You use freight orders for delivery to transport unit load devices or loose goods from the pick-up address of the airline to the target gateway.

Prerequisites

- You have created and saved sea freight bookings.
- You have defined a standard order type for your freight orders for pick-ups and deliveries in Customizing. For more information, see Customizing for Transportation Management under ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types* ▶.

Features

You create freight orders for pick-up and delivery of one or more containers or ULDs or for loose goods (air cargo only) from your freight bookings. A container, a ULD, or loose goods can be assigned to one freight order only.

You can create several freight orders for a sea freight booking. Moreover, you can create a freight order for multiple air freight bookings. This is also possible if you use a mixed ULD for air cargo the goods of which are from different air freight bookings but for the same flight (see [Mixed Unit Load Device \[Page 598\]](#)). You can also assign additional air freight bookings or individual air freight booking items to the freight orders retroactively. Multi-pickup and multi-delivery scenarios are supported. This means that the source gateways and delivery addresses can be different for a freight order for pick-up. Similarly, the pick-up addresses and destination gateways can be different for a freight order for delivery.

The corresponding documents are displayed in the document flow of the freight order and the corresponding sea freight booking.

The corresponding freight order is also displayed in the container or unit load device details (*Cargo Management* tab page).

The system copies the seal information from the sea freight booking to the corresponding freight order. You can enter more seals in the freight order.

The system automatically copies the following changes to the sea freight bookings to the corresponding freight order:

- Item changes
- Location changes

The system copies the following changes to the corresponding freight order for the pick-up:

- Pick-up location

- Port of loading or airport of departure
- Delivery address at port of loading (ocean freight) or delivery address of carrier (air freight)

The system copies the following changes to the corresponding freight order for the delivery:

- Delivery location
- Port of discharge or airport of destination
- Pick-up address at port of discharge (ocean freight) or pick-up address of carrier (air freight)
- Changes to dates/times

The system copies changes to the pick-up date and cargo cut-off date/time to the corresponding freight order for pick-up. The system copies changes to the delivery date and port pick-up date/time (ocean freight) or availability date/time (air freight) to the corresponding freight order for delivery.

- Changes to the seals

If you change the handling execution status of your sea freight booking, the system also adjusts this status automatically in the corresponding freight order. Conversely, it adjusts the status of the corresponding transportation stop in the sea freight booking if you change this status in the freight order.

The system automatically copies the following changes to a freight order to the related freight booking:

- Change of the cargo receipt status
- Entering or solving discrepancies

In the air freight booking, you can display in the related freight or when the freight for the delivery is ready for unloading.

Activities

You create freight orders for the pick-up and delivery from the sea freight booking (*Cargo Management* tab page). In addition, you can create freight orders for pick-up and delivery for your freight bookings from your personal worklist. In the freight order for the pick-up or delivery, you can add additional freight booking retroactively.



Freight Orders for Customer Self-Delivery and Pick-Up

If your customers want to organize their own delivery or pick-up, you as a logistics service provider can create the following freight orders for the related transportation stages:

- Customer order for customer self-delivery, for example, from the customer to the container freight station (CFS)
- Customer order for customer pick-up, for example, from CFS to the customer

Prerequisites

- In Customizing, you have defined your own freight order type using the Web Dynpro application configuration /SCMTMS/FRE_ORDER_SDCP. For more information, see Customizing for Transportation Management under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types*.

The following prerequisites are valid only if you create the freight orders from forwarding orders or from your personal worklist.

- You have defined the stage types with the stage category *Customer Self-Delivery* and *Customer Pick-Up*. For more information, see Customizing for Transportation Management under ► *Forwarding Order Management* ► *Define Stage Types*.
- You have defined movement types. For more information, see Customizing for Transportation Management under ► *Forwarding Order Management* ► *Define Movement Types*.
- You have defined the stage type sequence for the movement types that you created. For more information, see Customizing for Transportation Management under ► *Forwarding Order Management* ► *Define Stage Type Sequence for Movement Types*.
- You have defined a default freight document type for stages and activated the creation of freight documents. For more information, see Customizing for Transportation Management under ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Default Freight Document Types for Stages*.
- In the freight order type, you specified that you want to use customer pick-up or self-delivery. For more information, see Customizing for Transportation Management under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types*.

Features

You have the following options for creating freight orders for customer self-delivery and pick-up:

- Creation on the user interface for creation of freight orders
- Creation from a forwarding order for sea or air transportation
- Creation from your personal worklist for forwarding orders for sea or air transportation

The system automatically includes changes to the forwarding order in the freight orders. Subcontracting und charge calculation are not supported for these freight orders.

As the customer schedules and executes the freight orders, they are not relevant for scheduling by logistics service providers.

Activities

To create a freight order directly in SAP NetWeaver Business Client, choose ► *Freight Order Management* ► *Road* ► *Create Road Freight Order* □.

To create a freight order from a forwarding order, navigate to the *Stages* tab page in your sea or air forwarding order, select a transportation stage with the *Customer Self-Delivery* or *Customer Pick-Up* stage type, and choose ► *Freight Document* ► *Create* □.

To create freight orders from your personal worklist, select one or more sea or air forwarding orders in your worklist with the relevant movement type and then choose ► *Follow-Up Actions* ► *Create Freight Order for Customer Pick-Up* □ or ► *Follow-Up Actions* ► *Freight Order for Customer Self-Delivery* □.



Buyer's Consolidation

As a carrier, you can use this function if your customers regularly buy goods in a particular country or region. You can then consolidate goods from different suppliers that are intended for one consignee before the main carriage and load them into one container. The goods are not deconsolidated after the main carriage, they remain together in the container in the on-carriage stage also. This keeps the transport costs cheaper than with the LCL scenario for example (LCL = Less Than Container Load).

You can define rates for consolidated transportation in a separate calculation sheet.

Features

You create a container in your ocean freight booking, in other words, the container does not exist in the corresponding forwarding order. You specify that you want to use the container for Buyer's Consolidation in the container details. You then create a freight order for the container for the consolidated on-carriage from the ocean freight booking. The system automatically assigns the affected freight units to this freight order and copies seal information, quantities, and references from the ocean freight booking to the freight order.



Note

If you try to plan the on-carriage stage in the transportation cockpit before creating the freight order, the system issues an error message.

End of the note.

If no ocean freight booking exists for your forwarding order, you can specify directly in the forwarding order that it should be Buyer's Consolidation (Tab *General Data*). If you create an ocean freight booking for this forwarding order later on, the system copies this information to the ocean freight booking. If an ocean freight booking exists for your forwarding order, the corresponding checkbox in the forwarding order is not ready for input.

Forwarding Settlement Documents

You can create a forwarding settlement document (FWSD) for a buyer's consolidation in your ocean freight booking. The system uses the *Consolidation Container* field for an individual line item in the *Cargo Management > Container Details* tab pages to identify buyer's consolidation cargo in the ocean freight booking. You can also create an FWSD for an unplanned party in an ocean freight booking. This enables you to invoice for any unplanned charges or services that are associated with the ocean freight booking.

To calculate the charges for the cargo items on stages that are consolidated as a buyer's consolidation in the ocean freight booking, the system uses an agreement item with the consolidation type *Buyer's Consolidation*. If you have not defined an agreement item with the consolidation type *Buyer's Consolidation*, the system uses a standard calculation sheet defined for full truck load (FTL) road transportation or full container load (FCL) sea transportation. If you have not defined a calculation sheet for FCL or FTL transportation, the system chooses an agreement with no shipping type. The system does not consider the calculation sheet for LCL or less than truck load (LTL) transportation.

The following restrictions apply to the use of the sales organization in all the forwarding orders that are linked to a cargo line item in a buyer's consolidation:

- If the sales organizations in all the forwarding orders are the same, then the system uses this sales organization in the FWSD.
- If the sales organizations are different, the system tries to use the purchasing organization in the ocean freight booking. The purchasing organization has the organizational unit function that you have defined as a forwarding house (organizational unit function – 89) in the organization set up. The system uses this organization as the sales organization for the FWSD.

If none of these options apply, the system displays an error when it attempts to create the FWSD in the ocean freight booking.

Example

As a carrier, you want to transport three different products for your customer from three different manufacturers from Asia to Germany. You organize the consolidation of the goods in Shanghai port. This means that the pallets are loaded into a container in Shanghai. The container is then transported by sea to Hamburg. In Hamburg the container is loaded onto a truck. The truck then drives with the container to the distribution center in Hanover. This is where the container is deconsolidated.

The customer is invoiced at consolidated rates if you have defined an agreement item with the consolidation type *Buyer's Consolidation*. If you have not defined an agreement item with the consolidation type *Buyer's Consolidation*, the system uses the FCL rates for the stages by sea from Shanghai to Hamburg and for the onward journey from Hamburg to Hanover. You can create these FWSDs from the ocean freight booking.



External Communication in Sea Traffic and Air Traffic

In this process, you can use a freight booking to book freight space, for example, with a shipping company or an airline. The following section contains a description of an example process:

Prerequisites

- You have configured your sending system, for example, SAP Transportation Management (SAP TM).
- Your receiving system, for example, SAP TM, can receive confirmation messages.
- You have configured your XI system, for example, SAP NetWeaver Process Integration (SAP NetWeaver PI).
- Freight bookings exist.

Process

1. The sending system, for example, SAP TM, sends freight bookings to the shipping company or airline via the message `TransportationOrderBookingRequest_Out`.
2. The sending system receives the confirmation via the message `TransportationOrderBookingConfirmation_In`.
3. If you cancel freight bookings, the sending system cancels them via the message `TransportationOrderBookingCancellation_Out`.



Management of Air Freight Bookings for Airlines

You as a logistics service provider use this function to book capacity directly with an airline and then to manage the air freight bookings. Due to the different task-specific views for air freight bookings, the function will be explained here.

Prerequisites

If you want to print a security manifest, you need to have made the country-specific settings in Customizing for *Transportation Management*. For more information, see ► *Freight Order Management* ► *Freight Booking* ► *Define Country-Specific Settings for Security Manifest*.

Features

Capacity Management

This includes the following functions:

- Use of air freight-specific codes, for example, location codes and handling codes

For more information, see [Transportation-Mode-Specific Codes \[Page 106\]](#) and [Handling Codes \[Page 534\]](#).

- Entering Capacities

You can define the mass or volume of the required capacity and display the whole utilization. In addition, you can define the ULD type of your unit load devices as well as the pivot weight. For more information, see [Rate Definition and Maintenance \[Page 199\]](#).

- Drawing MAWB Numbers

You can draw master air waybill numbers from a stock. Depending on the process, you either draw these numbers manually or the system draws them automatically:

- If you create the air freight booking by using report *Creating Schedule-Based Freight Documents* (/SCMTMS/MP_SCHED_CREATE_TOR), the MAWB number is drawn automatically. For more information, see [Schedule \[Page 87\]](#).
- If you create an air freight booking directly, you can draw the MAWB number manually (under *Follow-Up Actions*)
- When you assign a schedule to an air freight booking by specifying an air waybill stock ID, an MAWB number is drawn automatically. For more information, see [Use of Schedules \[Page 602\]](#).

You can also enter MAWB numbers manually. The system checks whether the number is valid.

If the number has been drawn from a stock, you can no longer change the following data:

- MAWB prefix
- Local carrier
- Purchasing organization

If you want to change this data, you must first return the MAWB number to the stock.

If you are dealing with a number that does not come from stock, or if you do not have any stock, the system displays a checkbox in order to permit the entry of this number. For more information about MAWB stocks, see [Waybill Stock Definition \[Page 291\]](#).

- Use of carrier categories, for example, airline codes (see [Carrier Categorization \[Page 600\]](#))
- Classifying goods, for example, with commodity item numbers (see [Classification of Goods \[Page 112\]](#))
- Printing a master air waybill or security manifest

For more information, see [Printing](#).

Operations/Operations Outbound

This includes the following functions:

- Assigning documents to unit load devices

You can assign your carrier orders and freight units to your unit load devices. Furthermore, you can also show mixed unit load devices (see [Mixed Unit Load Device \[Page 598\]](#)).

- Communicating with the warehouse

After you have received confirmation from the warehouse, you can set the appropriate status.

For more information about the air freight-specific status, see [Statuses of Business Documents \[Page 608\]](#).

- Entering discrepancies (see [Discrepancies and Events \[Page 592\]](#))
- Entering actual quantities (see [Quantities and Capacities \[Page 587\]](#))
- Creating freight orders for pick-up and delivery (see [Pick-up and Delivery Freight Orders \[Page 514\]](#))

In addition, the following functions are available for both levels:

- Functions in the area of air cargo security (see [Air Cargo Security \[Page 524\]](#))
- The system derives the IATA agent code, the agent's CASS account, and the regulated agent from the issuing carrier. For more information, see [Business Partner \[Page 25\]](#) and [Definition of Business Partners \[Page 28\]](#).

The complete overview of the booking contains all of these functions. The following functions are also available:

- [Charge Correction Advice Management](#)

More Information

[Air Freight-Specific Consolidation Processes \[Page 363\]](#)

[Co-Load \[Page 532\]](#)

[Publication and Locking of Air Freight Bookings \[Page 535\]](#)

[Nature of Goods \[Page 671\]](#)



Air Cargo Security

The air cargo security function in SAP Transportation Management (SAP TM) helps you to ensure that official security requirements for air cargo have been met prior to transportation.

Features

Air Cargo Security Check and Statuses

If you enable the air cargo security check, the air cargo security status and the country-specific security status must be specified in the relevant business documents (that is, forwarding order, freight units, and air freight booking). You also activate automatic checks that prevent further processing if data is missing or inconsistent. You enable the air cargo security check for your business document types in Customizing for *Transportation Management*. In addition, you define the required country-specific security statuses and you assign an air cargo security status to each of them. The following air cargo security statuses are available:

- *Secure for Passenger Aircraft* (SPX)
- *Secure for Cargo Aircraft* (SCO)
- *Not Secure* (NSC)

In Customizing for *Transportation Management*, you can specify that planning and execution are to be blocked if a freight unit has a specific air cargo security status. In addition, planning is automatically blocked if the air cargo security status has not been set in the freight units or the air freight booking. During planning, the system checks if the air cargo security status of the freight units and the air freight booking are compatible. If the statuses are incompatible, the system blocks planning in the case of automatic planning, or issues error or warning messages depending on the user's authorizations in the case of manual planning.

Cargo Handover Party

Information about the [cargo handover party](#) is specified in the forwarding order on the *Air Cargo Security* tab page. This data comprises the security status of the cargo handover party (for example, [known shipper](#) or [regulated agent](#)); the official code used to identify the cargo handover party (for example, known shipper code or regulated agent code); and the expiry date of the security status.

You can store this data in the master data for the pick-up location or the business partner and have the system copy the data to the forwarding order. The regulations in the countries to which you transport cargo determine whether you choose the location or business partner master data. For example, in the United States, the authorities are interested in the security status of the cargo handover party for a specific pick-up location. In other countries, the authorities are interested in the overall security status of the cargo handover party, regardless of the pick-up location.

Shipper Known Long Enough

The system can calculate automatically whether you have known a shipper long enough in order to accept cargo from the shipper as secure. For example, the relevant authority in the United States has defined that if cargo is to be transported to the United States, a logistics service provider (LSP) must have known a shipper for a minimum of 180 days on the date the cargo is picked up. If the LSP has not known the shipper long enough, the LSP must treat the cargo as non-secure, even if the shipper is registered as a known shipper in the United States.

If you have made the required settings in Customizing for *Transportation Management*, information about whether you have known a shipper long enough is automatically displayed in the forwarding order on the *Air Cargo Security* tab page. The system also checks if you have known a shipper long enough during planning, and after planning if relevant changes are made. Note that the system checks if an LSP has known a shipper long enough only if a country-specific offset has been entered for the country of the destination location, transit location, or intermediate stop.

Change the Country-Specific Air Cargo Security Status for Multiple Freight Units

Previously, the system allowed you to change the Country-Specific Air Cargo Security Status of individual freight units only – it was not possible to simultaneously change this status for multiple freight units. It is now possible to set the Country-Specific Air Cargo Security Status of two or more freight units in a single action.

Air Cargo Security Authorization Check

You can manage the group of persons authorized to manually assign unsafe items to an air freight booking. The Air Cargo Security Authorization Check works in conjunction with the Air Cargo Security (ACS) Check.

The ACS Check verifies a user's authorization according to organization unit. If you enable the Air Cargo Security Authorization Check for a freight booking type, the system instead runs an authorization check on any user working with that freight booking type, according to the user's role assignment.

More Information

[Configuration of Air Cargo Security \[Page 526\]](#)

[Air Cargo Security in Business Document Processing \[Page 528\]](#)



Configuration of Air Cargo Security

The following settings enable you to use the air cargo security function for your business documents.

Air Cargo Security Check

You have selected the *Enable Air Cargo Security Check* checkbox in Customizing for the forwarding order type and air freight booking type. You define the business document types in Customizing for *Transportation Management* as follows:

- ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Forwarding Order Types* ▶
- ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types* ▶
- ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶

Note that if you do not enable the check, the air cargo security fields are not available in the business documents.

Air Cargo Security Statuses

You have defined country-specific security statuses and assigned an air cargo security status to each of them in Customizing for *Transportation Management* under ► *Basic Functions* ► *Security* ► *Define Air Cargo Security Statuses* ▶.

For each combination of country-specific security status and air cargo security status, you can define that planning and execution are to be blocked for the relevant freight units. You can also define that the cargo has been screened by the logistics service provider (LSP). If you select this checkbox, the system does not check if you have known the shipper long enough during and after planning.

Note that the system checks if an LSP has known a shipper long enough only if a country-specific offset has been entered for the country of the destination location, transit location, or intermediate stop.

Air Cargo Security Status in Schedules

If you create air freight bookings from master flight schedules, you have specified a default air cargo security status in the master flight schedule. Note that if you change the air cargo security status in the schedule after the system has created an air freight booking, the booking is not automatically updated.

You create master flight schedules in SAP NetWeaver Business Client under ► *Master Data* ► *Transportation Network* ► *Schedule* ► *Create Schedule* ▶.

For more information about schedules, see [Creating Schedules \[Page 91\]](#).

Regulated Agent Code of LSP

If you are a [regulated agent](#) and you want the system to enter your regulated agent code automatically when you create a forwarding order, you have entered the code in the business partner master data for the sales organization.

You define business partners in SAP NetWeaver Business Client under ► *Master Data* ► *General* ► *Define Business Partner*. Using the business partner role *Organizational Unit*, you enter the regulated agent code on the *Identification* tab page.

When you create a forwarding order, the system copies the code to the *General Data* tab page under *Organizational Data*. If required, you can change this value in the forwarding order.

Cargo Handover Party

If you want the system to enter the details of the [cargo handover party](#) automatically when you create a forwarding order, you have entered the data in the master data for the pick-up location or the business partner (shipper) as follows:

- You define locations in SAP NetWeaver Business Client under ► *Master Data* ► *Transportation Network* ► *Locations* ► *Define Location*. You enter the data on the *TM* tab page.
- You define business partners in SAP NetWeaver Business Client under ► *Master Data* ► *General* ► *Define Business Partner*. Using the business partner role *Vendor*, you enter the data on the *Vendor Data* tab page.

In addition, you have defined that the air cargo security master data for the pick-up location or the business partner is to be copied to the forwarding order. You do this by selecting the *Copy Air Cargo Security Data* checkbox in Customizing for the forwarding order type.

In the business partner master data for the shipper, you can also specify the date as of which you have known the shipper. This enables the system to calculate whether you have known the shipper long enough.

Shipper Known Long Enough

To enable the system to calculate whether you have known a shipper long enough in order to accept cargo from the shipper as secure, you have made the following settings:

- In the business partner master data for the shipper, you have specified the date as of which you have known the shipper.
- In Customizing for *Transportation Management* under ► *Basic Functions* ► *Security* ► *Define Offsets for Calculating Known Shipper Status*, you have defined country-specific offsets.

The system checks if an LSP has known a shipper long enough only if a country-specific offset has been entered for the country of the destination location, transit location, or intermediate stop.

Note that these settings relate to shippers that are classified as [known shippers](#) by the relevant authority.



Air Cargo Security in Business Document Processing

If you enable the air cargo security check, the system checks that the required air cargo security data is entered during business document processing and that the air cargo security statuses of the relevant business documents are compatible.

Prerequisites

You have enabled the air cargo security check and made the required settings. For more information, see [Configuration of Air Cargo Security \[Page 526\]](#).

Process

1. You create a forwarding order with one or more freight units.

You use a forwarding order type for which the air cargo security (ACS) check is enabled and for which the master data for the pick-up location or business partner is to be copied to the forwarding order.

The system does the following in the forwarding order:

- Enters the regulated agent code for the sales organization on the *General Data* tab page under *Organizational Data*. If required, you can change this value.
- Enters the master data for the pick-up location or business partner on the *Air Cargo Security* tab page under *Cargo Handover Party*. If required, you can change these values.
- Shows whether you have known a shipper long enough in order to accept cargo from the shipper as secure. The system checks if an LSP has known a shipper long enough only if a country-specific offset has been entered for the country of the destination location, transit location, or intermediate stop.

On the *Air Cargo Security* tab page under *Known Shipper Details*, the system displays the date as of which you have known the shipper. If you have known the shipper long enough based on this date and the relevant country-specific offset defined in Customizing for *Transportation Management*, the system selects the *Known Long Enough* checkbox. If you have not known the shipper long enough or if you have not specified a country-specific offset, it does not select the checkbox.

2. You select the country-specific security status and the system determines the required air cargo security status.

You select the country-specific security status as follows:

- If the forwarding order contains only one freight unit, you select the country-specific security status in the forwarding order on the *Air Cargo Security* tab page. The freight unit inherits the country-specific security status and the air cargo security status from the forwarding order.
- If the forwarding order contains more than one freight unit, you select the country-specific security status in each individual freight unit. The forwarding order inherits the country-specific security status and the air cargo security status

from the freight units. If the freight units have different country-specific security statuses, the system displays the value *Multiple* as the country-specific security status in the forwarding order. If the freight units have different air cargo security statuses, the system displays the least secure air cargo security status in the forwarding order.

In the forwarding order, the air cargo security status is displayed on the *Air Cargo Security* tab page and on the *Statuses* tab page. In the freight unit, the country-specific security status is displayed on the *General Data* tab page, and the air cargo security status is displayed on the *Statuses* tab page. Note that prior to determining the air cargo security status, the system displays the status *Not Checked*.

If you have specified in Customizing that planning and execution are to be blocked for a specific air cargo security status, the system blocks planning and execution as soon as the relevant status is set in the freight unit.

3. You create an air freight booking.

You select the air cargo security status in the air freight booking on the *Booking* tab page. If you have created an air freight booking from a master flight schedule and you have specified an air cargo security status in the schedule, the system automatically enters this default status. You then select the corresponding country-specific security status on the *Booking* tab page.

The air cargo security status and the country-specific security status are displayed on the *Statuses* tab page in the air freight booking.

4. You carry out planning for the freight units.

Automatic planning can be performed only if the air cargo security statuses of the freight units and the air freight booking are compatible. For example, the freight unit has the status *Secure for Passenger Aircraft* (SPX) and the air freight booking has the status *Secure for Cargo Aircraft* (SCO).

If you carry out manual planning and the statuses are not compatible, the system issues either warning messages or error messages depending on your user authorizations. If you are assigned to the execution organization that is specified in the air freight booking, the system issues warnings. If the Air Cargo Security Authorization Check for a freight booking type has been enabled, the system instead runs an authorization check according to your role assignment. If you have been assigned a role that is allowed to manually assign unsafe items to an air freight booking the system issues warnings. Otherwise, the system issues errors and planning is blocked.

Note that planning is not possible if the freight unit or the air freight booking has the air cargo security status *Not Checked*.

If you have specified a country-specific offset for the country of the destination location, transit location, or intermediate stop, the system checks if you have known a shipper long enough during planning, and also after planning if you change the route or if you change the air cargo security status or country-specific security status of a business document. If you have not known the shipper long enough, the system issues an error message. The system skips this check if you have specified in Customizing for the relevant air cargo security status that the cargo has been screened by the logistics service provider.



Freight Order Security Status

This function determines whether the security status of all of the freight units assigned to a freight order is secure or not secure.

A freight order, when created, has the security status “Initial”. A user must set the freight order security status to either Secure or Not secure. Once a user sets the freight order security status the system records the identity of the user and the date and time at which the user made the assignment.

The Regulated Agent Code (RAC) of the carrier can determine the security status of a freight order. A freight order identifies the carrier and, where that carrier uses a subcontractor, the executing carrier. Depending on the laws in your country, the RAC of a carrier, executing carrier, or carrier who has signed a valid haulier agreement can be an indicator that the freight order is secure. If an executing carrier is defined for a freight order, the system determines the RAC value for that executing carrier from Master Data. Otherwise, the system uses the RAC of the carrier.

A carrier with a valid regulated agent code, is permitted to transport cargo under secure conditions and hence keep the security status of the individual cargo intact. However this has to be verified upon delivery, for example, an employee must inspect any seal change and verify that it is appropriately documented. If there are any irregularities, all cargo is considered as not secure and the business user must record this in the system.

Prerequisites

You have defined freight order types in Customizing for Transportation Management under

► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶.

Activities

Once you have created a freight order, you can either first set the freight order’s air cargo security status to Not Secure and then set its Manifest Status to Created, or alternatively, first set its Manifest Status to Created, and then set its air cargo security status to Not Secure. At all times the last user to change the Cargo Security Status is recorded.

First set the Security Status to not Secure and then set the Manifest Status to Created

1. You set the Security Status of the freight order to Not Secure.
2. The system records the assignment and records you as the user responsible for changing the freight order security status.
3. You set the Manifest Status of the freight order to Created.
4. The system asks you to confirm that you want to change the Air Cargo Security Status of assigned freight units to Not Secure. If you confirm:
 1. The system sets the Air Cargo Security Status of all assigned freight units to Not Secure.
 2. The system deletes the Country-Specific Security Status for all assigned freight units.

3. The system records you as the user responsible for changing the air cargo security status of all assigned freight units.
4. If the affected freight units are assigned to air bookings, these air bookings are blocked for execution as the freight units are now not secure.
5. Otherwise: The Manifest Status remains unchanged.

First set Manifest Status to Created and then set Security Status to Not Secure

1. You set the Manifest Status of the freight order to Created.
2. You set the Security Status of the freight order to Not Secure.
3. The system asks you to confirm that you want to change the Air Cargo Security Status of assigned freight units to Not Secure. If you confirm:
 1. The system records the assignment and records you as the user responsible for changing the security status of the freight order.
 2. The system sets the Air Cargo Security Status of all assigned freight units to Not Secure.
 3. The system deletes the Country-Specific Security Status for all assigned freight units.
 4. The system records you as the user responsible for changing the air cargo security status of all assigned freight units.
 5. If the affected freight units are assigned to air bookings, these air bookings are blocked for execution as the freight units are now not secure.
4. Otherwise: The security status of the freight order remains unchanged.



Co-Load

In this process, you as the logistics service provider can use the air waybill stock and contract of another logistics service provider who is carrying out a consolidation or making a direct shipment (consolidator). This means that you want to transport goods with a specific flight, however, you don't book directly with the carrier but instead with the consolidator.

The following restrictions apply to this process:

- You may not send the air freight booking yourself. The consolidator does this on your behalf.
- You may not draw the MAWB numbers from the stock yourself or return them to the stock.
- This process does not support any schedules.

Prerequisites

- In Customizing for the freight booking type, you have specified that this is a co-load. For more information, see *Customizing for Transportation Management* ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types*.
- You have defined a business partner with the *Carrier* role. You have also specified the IATA agent code, the regulated agent, and the agent's CASS account for the business partner. For more information, see [Definition of Business Partners \[Page 28\]](#) and [Business Partner \[Page 25\]](#).

Process

1. Creating the air freight booking

Create an air freight booking manually. Here you specify the following:

- Consolidator
- MAWB number

You get this number from the consolidator. The system checks the MAWB number for validity.

- Issuing carrier's agent

Enter the consolidator. In this scenario the the issuing carrier's agent is the consolidator. The system automatically draws the IATA agent code, the the regulated agent, and the agent's CASS account.

The airline (issuing carrier) is displayed as the communication party because the message is to be sent to the airline.

2. Scheduling the air freight booking

You schedule the air freight booking. This means that you assign freight unit stages (that is house air waybills) to the air freight booking and then distribute these to the unit load devices if necessary.

3. *Sending the message*

You send the message to the airline.



Handling Codes

You can use handling codes to model certain properties of your freight, such as whether unit load devices can only be loaded on the lower deck. Handling codes are supported for air freight bookings and freight orders only.

Note

The relevant tab page is not displayed on the user interface for freight orders until you have personalized your user interface accordingly.

End of the note.

Prerequisites

- You have defined handling codes in Customizing for *Transportation Management*. For more information, see Customizing under ► *Basic Functions* ► *General Settings* ► *Define Handling Codes* ▶. You can also specify here whether handling codes are to be used internally only or also externally. Only external handling codes are transferred when air freight bookings are sent.
- You have optionally defined a handling code constraint profile in Customizing for *Transportation Management*. For more information, see Customizing under ► *Basic Functions* ► *General Settings* ► *Define Handling Code Constraint Profiles* ▶.

Features

If your *forwarding order* contains handling codes, the system copies these to the corresponding freight units automatically. If you assign this forwarding order to a freight order or an air freight booking, the system checks the handling codes for the freight units based on the handling code constraints in the freight order or air freight booking. For more information, see [Creation of a Forwarding Order \[Page 304\]](#).

You can restrict the handling codes permitted for *freight orders* and *air freight bookings* by defining constraints. You enter handling codes and constraints either manually or copy them:

- Manual entry

You can enter handling codes and constraints manually in the freight order or air freight booking.

- Copying from the schedule (air freight booking only)

If you create an air freight booking by assigning freight units to a departure, the system copies the handling codes and constraints automatically from the flight schedule-based allocation. For more information about transportation allocations, see [Transportation Allocation](#).

- Copying from the handling code constraint profile (freight order only)

If you have defined a handling code constraint profile and assigned it to a means of transport in Customizing, the system applies the handling codes and constraints from this profile when you specify this means of transport in your freight order. If you subsequently change these handling codes, the system treats the handling codes as though they were entered manually.



Publication of Air Freight Bookings

You can make air freight bookings for particular organizational units and business partners visible, or restrict the visibility.

Prerequisites

- You have made the following settings in the freight booking type:
 - You have specified the creation strategy PUBL_CREA (only for automatic publication). This creation strategy is part of the standard system. For more information about this creation strategy, see SAP Note [1803372](#).
 - To be able to fix air freight bookings, you have selected the *Fix Document if Capacity Planning Closed* option in the *Fix Booking* field.

Note

You have *not* chosen the option *Initial Status "Unpublished" (Planning Block)* in the *Immediate Processing* field, as otherwise the air freight booking cannot be published due to the planning block.

End of the note.

For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types* ▶.

- The air freight booking must cover the following data so that you (or the system) can publish it:
 - Capacity (weight and volume)
 - Origin organization
 - Flight number and date
 - IATA location code
 - Local carrier
 - Loading type
 - Contract basis
 - Service level

For automatic publication, this data originates either from the forwarding order or the master flight schedule.

In addition, you must have defined a waybill stock so that the system can automatically draw master air waybill numbers (see [Waybill Stock Definition \[Page 291\]](#)).

- You have defined the required forwarding house both as organizational unit and business partner, and assigned them to each other. You have also selected the *Consider Organization Unit of User* field in the freight booking type. These two prerequisites are only required for automatic publication with restriction. For more information, see

Customizing for *Transportation Management* under *Master Data* *Organizational Management* *Organizational Model* *Create Organizational Model* .

- If you want to use automatic publication with report `/SCMTMS/MP_SCHED_CREATE_TOR`, you must have specified a document type in your schedule type that allows publication.

Features

Manual Publication

Whether an air freight booking has already been published or not, you can see in the *Set Status* field which publishing options are available.

If the air freight booking has not yet been published, the system sets a planning block for the air freight booking, meaning other organizational units and business partners can no longer use it as they cannot assign freight units. It also prevents you from selecting it in a forwarding order.

If you select either the option *Set to Published* or *Set to Published with Restriction* for a non-published air freight booking, the system checks whether the fields mentioned under prerequisites contain valid data. If all checks are successful, the system removes the planning block. The air freight booking is now either visible for all organizational units and business partners, or for only particular organizational units and business partners:

- Unrestricted visibility

If you have not made an entry on the *Restriction to Organizational Units* tab, the air freight booking is visible without restriction.

- Restricted visibility

If you have made at least one entry on the *Restriction to Organizational Units* tab, the air freight booking is visible for only particular organizational units and business partners.

You can enter the forwarding houses from the forwarding order. If you have specified an origin organization in the air freight booking, the system automatically copies this to the air freight booking.

If you want to reset the publication, choose *Set to Not Published*.

Once capacity planning has been completed, you can choose the *Set to Capacity Planning Finished* option. The system fixes your air freight booking. This means it is no longer available for other organizational units and business partners and you can no longer use it in planning.

Automatic Publication

You have the following options:

- Automatic publication when creating the air freight booking from the forwarding order
You create an air freight posting for the main carriage. The system publishes it automatically. However, the visibility is restricted to the forwarding house that the system has copied from the forwarding order.
- Automatic publication when creating the air freight booking using report `/SCMTMS/MP_SCHED_CREATE_TOR`
You execute the report to create air freight bookings based on a particular master flight schedule. In doing so, you specify that master air waybill numbers are to be drawn. The

system creates the air freight bookings based on your master flight schedule, and draws the master air waybill numbers. It automatically publishes the air freight bookings. However, the visibility is restricted to the forwarding house drawn. For more information about this report, see [Schedule \[Page 87\]](#).

More Information

[Interaction Between Organizational Units \[Page 372\]](#)

For more information, see also SAP Note [1806463](#).



LCL Freight Bookings

If the quantities contained in your LCL forwarding orders (LCL = Less Than Container Load) for a destination location are insufficient for processing as an FCL freight booking (FCL = Full Container Load), you can give them to another carrier. In this case you create an LCL freight booking to be able to specify or display all relevant data, for example:

- Port of loading and discharge
- Freight terms
- Port of entry and exit

The scenario described here relates to sea traffic.

Features

In this case, the subcontracted carrier consolidates the goods into one container. You receive the container ID and the name of the carrier electronically. Alternatively, you can enter this data manually in the LCL freight booking. This way you can recognize which container contains your goods and who is responsible for them.

If you set the status *Ready for Transportation Execution* manually or the system sets it automatically, the system performs a check. If the freight booking contains containers, an error message is issued.

Buyer's Consolidation is not supported for LCL freight bookings. Cargo management is not advisable for LCL freight bookings.

You can convert an LCL freight booking into a FCL freight booking by changing the shipping type of the freight booking.



FCL Freight Bookings

You can create FCL freight bookings in the following ways:

- Creating them from an FCL forwarding order (FCL = Full Container Load)
- Creating them for the consolidation of LCL forwarding orders (LCL = Less Than Container Load)

The scenario described here relates to sea traffic.

Features

Creation from an FCL Forwarding Order

In this scenario, the customer has already requested FCL, that is, the forwarding order is an FCL forwarding order that has the shipping type *FCL*. You create the FCL freight booking directly from the FCL forwarding order by creating a new freight booking for the main carriage transportation stage or by choosing an existing freight booking. The carrier confirms the FCL freight booking and may already communicate certain details, such as the container ID. In addition, the carrier informs you about changed container categories, for example. Container categories are defined by linking equipment types (such as CN) and equipment groups (such as 20G0). If you now change this data in the FCL freight booking, the system automatically adopts the data in the freight units belonging to the freight booking and in all relevant documents. The changed data is displayed in the FCL forwarding order along with the original data. If you then change the original data in the FCL forwarding order, it is no longer adopted in the follow-on documents (freight booking, freight unit, and freight order).

Creation for Consolidation of LCL Forwarding Orders

In this scenario, you consolidate multiple LCL forwarding orders (forwarding orders that have shipping type *LCL*) into one FCL freight booking. You create the FCL freight booking in one of the following ways:

- In the transportation cockpit; you also assign freight units there.
- On the user interface for creating freight bookings; you assign freight units on the *Cargo Management* tab.

Note

Another option is to assign freight units on the *Stages* tab in the LCL forwarding order by choosing *Select Freight Booking*.

End of the note.

Depending on the movement type of the FCL freight booking, you can create freight orders for pick-up and delivery (see [Pick-up and Delivery Freight Orders \[Page 514\]](#)).

If you have created the container, you can create a freight order from the sea freight booking for this container for the consolidated on-carriage (see [Buyer's Consolidation \[Page 518\]](#)).



Shipper's Declaration

The system can create a shipper's declaration for dangerous goods in a freight booking. The International Air Transport Association (IATA) requires that all shipments tendered to air carriers and air freight forwarders classified by regulation as dangerous goods are accompanied by the IATA shipper's declaration for dangerous goods. The shipper is responsible for correctly and accurately completing the form in accordance with current IATA requirements and for ensuring that all requirements have been met including packaging, labelling, and product information.

Based on the freight booking, the system looks up the relevant dangerous goods master and generates a declaration that specifies the nature and quantity of dangerous goods. The shipper's declaration also provides information about the type of packing material.

You can view this document in the *Output Management* tab of the freight order.

In endorsing this document, you declare that all applicable air transport requirements have been met.

As the IATA shipper's declaration for dangerous goods is a complex document, SAP provides a template which must be implemented and reviewed by the shipper. The shipper must adapt the form according to its own processes, with particular attention to the packing function and to country-specific deviations. For more information see: ► <http://service.sap.com/instguides> ► SAP Business Suite Applications ► SAP TM ► Solution Manager Content Documentation ► -> Using SAP TM <release> ► Integration Guides ► Output Management Configuration Guide ▶

Integration

Shipper's declaration is integrated with SAP ERP based on the sales order business object.

Prerequisites

You have completed the necessary configuration of Output Management. For more information see: ► <http://service.sap.com/instguides> ► SAP Business Suite Applications ► SAP TM ► Solution Manager Content Documentation ► -> Using SAP TM <release> ► Integration Guides ► Output Management Configuration Guide ▶

You have specified the necessary output profile for the freight booking. For more information see Customizing for Transportation Management under ► Freight Order Management ► Freight Booking ► Define Freight Booking Types ▶

You have specified the correct action definition for post processing framework (PPF) settings. For more information see Customizing for Transportation Management under ► Cross-Application Components ► Processes and Tools for Enterprise Applications ► -> Reusable Objects and Functions for BOPF Environment ► PPF Adapter for Output Management ► Maintain PPF Settings ▶

You have specified the necessary action setting and action definition (/SCMTMS/PRINT_SHPRS_DCL) for the output agents of relevant business objects, for example transportation order. For more information see Customizing for Transportation Management under ► Cross-Application Components ► Processes and Tools for Enterprise Applications ► -> Reusable Objects and Functions for BOPF Environment ► PPF Adapter for Output Management ► Maintain Output Management Adapter Settings ▶

Example

As a shipper, you create a forwarding order and assign freight units that contain dangerous goods items. You assign the forwarding order to an air freight booking. The system assesses the contents of the freight units, determines that the freight booking contains dangerous goods and generates a shipper's declaration document that includes information on the dangerous goods from the dangerous goods master. The shipper's declaration is available to the shipper.



Export/Import Processing

Logistics service providers (LSPs) who transport freight across customs borders on behalf of an ordering party have to handle the relevant export and import processes for the freight. In many cases, separate organizational units are responsible for each process, that is, there is a separate export organization and import organization. Usually, the export organization is responsible for the pre-carriage and main carriage stages, and the import organization is responsible for the on-carriage stages.

You can use export/import processing to ensure that the export organization and the import organization have the required data and business documents. The business documents created by the export organization (that is, one or more forwarding orders and a freight booking) form the basis of the business documents that are used by the import organization.

Features

Supported Scenarios

You can use export/import processing in the following scenarios:

- Full container load: The number of business documents on the export side is matched on the import side. For example, one export forwarding order (FWO) and one export freight booking (FB) results in one import FWO and one import FB.
- Less than container load: The number of business documents on the export side is matched on the import side. For example, two export FWOs and one export FB results in two import FWOs and one import FB.
- Buyer's consolidation (n shippers and one consignee/destination): Several export FWOs are consolidated into one export FB for the main carriage stage. On the import side, there is only one import FB and one import FWO.
- Transit: You create a forwarding order that contains two main stages. The system creates the standard Export/Import documentation and also creates the transit FWO and transit FB, for the additional stage. The system automatically determines the traffic direction "Transit" during the creation of import documents for this kind of forwarding order.
- Empty Provisioning and Empty Return: In addition to transporting goods, you provide your customer with empty equipment such as containers or railcars and/or facilitate their return. With empty provisioning, the export organization is responsible for planning and execution (because the empty containers or railcars are required before transportation starts), but the import organization may be responsible for the transportation charges. For empty returns, the import organization is responsible for planning and execution (because the empty containers or railcars are returned after transportation has taken place), but the export organization may be responsible for the transportation charges. For more information see: [Empty Provisioning and Return in Export/Import Processing \[Page 387\]](#).

You can also use export/import processing for forwarding orders in which different import organizations are assigned at item level. For example, if you have one shipper with several consignees and a different import organization is responsible for each consignee. In this case, there is one export FWO and one export FB. On the import side, there is one import FB, and one import FWO per import organization. The system creates the required import FWOs with the corresponding import organization entered as the sales organization at header level. If the import

organization is not entered at item level or if the same import organization is entered for each item, the system creates one import FWO.

 Note

The relationship between the business partner and the organizational unit is defined in the organizational model. The assignment of different import organizations at item level in the export FWO can be used for shipper's consolidation, for example.

End of the note.

Internal Communication

If the export organization and the import organization both use SAP Transportation Management (SAP TM), the export organization creates export forwarding orders, export freight bookings, and export freight units, and triggers the creation of the import business documents. The system creates the import freight bookings first. It then creates the import forwarding orders and freight units based on the import freight bookings. The import organization can then process the import business documents.

For more information, see [Export/Import Processing: Internal Communication \[Page 545\]](#).

 Note

The import business documents contain only the relevant execution information and are therefore not an exact copy of the export business documents. In addition, you can use different freight unit building rules and stages for the export business documents and import business documents.

End of the note.

External Communication

If either the export organization or the import organization uses an external transportation management application, enterprise services are used to transfer the required data between the external application and SAP TM as follows:

- If the import organization uses an external application, the export organization creates the export business documents in SAP TM and triggers the creation of the import business documents. SAP TM sends the export business documents to the external application. For more information, see [Export/Import Processing: External Communication \(Outbound\) \[Page 549\]](#).
- If the export organization uses an external application, SAP TM creates the import freight bookings based on data received from the external application. It then creates the required import forwarding orders and freight units based on the import freight bookings. For more information, see [Export/Import Processing: External Communication \(Inbound\) \[Page 551\]](#).

Export FWOs Created by Other Organizational Units

In some cases, users who do not belong to the export organization have to create export FWOs. For example, where a customer places orders at the import organization, a user in the import organization would create the export FWO.

A member of the import organization can create an export FWO in one of two ways:

- A member of the import organizational unit directly creates an export FWO

For this purpose, you can restrict user authorizations so that a user can create export forwarding orders with the status *Draft*, but cannot trigger any follow-on processes such as freight unit building or charge calculation. The relevant function is *Set to In Process* (DO) in authorization objects *Functions for Forwarding Order (ext. Org.ID)* (`T_TR_FWOF2`) and *Functions for Forwarding Order* (`T_TRQ_FWOF`).

A member of the import organizational unit is not authorized for the function “Set to In Process” and therefore can only create orders with status “Draft”. To activate this FWO, a member of the export organizational unit must set the order to “In Process”. This means that the export organizational unit has full control over which orders are processed.

- The import organizational unit creates the export FWO based on an import forwarding quotation (FWQ)

The import organizational unit starts the process by creating an import FWQ. The quotation is communicated to the customer and the customer accepts the quotation. In the export organizational unit you can now use this quotation to create an export FWO. During Customizing you should specify a forwarding quotation type for export. For more information see Customizing for Transportation Management under *Forwarding Order Management* *Forwarding Quotation* *Define Forwarding Quotation Types*

Using the import FWQ, the system creates an export FWO, with status “Draft”. The system transfers the header information, the item information and the stage information (if available) from the FWQ to the export FWO. If available, the system also transfers the service items from the import FWQ to the export FWO. (The customer might have contracted for services which need to be applied on the export side).

The system does not transfer charges from the import FWQ to the export FWO (Unlike the creation of an import FWO out of an import FWQ). The system transfers the import agreement from the import FWQ to the export FWO. A new agreement field is added in the FWO for this purpose.

After planning and processing on the export side the system creates the import documents, including the import FWO. When creating the import FWO, the system copies charges and service items from the referenced import FWQ. The system does not by default transfer services which are created in the export FWO from the export FWO into the import FWO.

You can define which service items in an export FWO are to be transferred to the corresponding import FWO. For more information, see Customizing for Transportation Management under *Business Add-Ins (BAdIs) for Transportation Management* *Basic Functions* *Export/Import Processing*

Manual Creation of Import Freight Bookings

You can also create import freight bookings manually. For more information, see [Manual Creation of Import Freight Bookings \[Page 553\]](#).

Customs Processing

The export organization and the import organization are responsible for the respective customs processes (for example, export, import, or transit). For more information about customs processing in SAP TM, see [Global Trade](#). In addition, SAP Note [1757454](#) provides information about the required settings for the transit process in the context of export/import processing.



Export/Import Processing: Internal Communication

If the export organization and the import organization both use SAP TM, the export organization creates export forwarding orders, export freight bookings, and export freight units, and triggers the creation of the import business documents. The system creates the import freight bookings first. It then creates the import forwarding orders and freight units based on the import freight bookings. The import organization can then process the import business documents.

Prerequisites

- If required, you have specified the business document type that the system uses to create import business documents. You have the following options:
 - You can define conditions. For the freight booking type, you use condition type /SCMTMS/FRB_TYPE_IMP. For the forwarding order type, you use condition type /SCMTMS/FWO_TYPE.
 - You can specify the required business document type in Customizing for *Transportation Management*.
 - In the forwarding order (FWO) type that you use for export FWOs, you specify the relevant import FWO type in the *Import FWO Type* field. You define FWO types in Customizing for *Transportation Management* under **Forwarding Order Management** **Forwarding Order** **Define Forwarding Order Types**.
 - In the freight booking (FB) type that you use for export FBs, you specify the relevant import FB type in the *Import Booking Type* field. You define FB types in Customizing for *Transportation Management* under **Freight Order Management** **Freight Booking** **Define Freight Booking Types**.

If you do not specify the import business document types or define conditions, the system uses standard logic to determine the required business document types.

- You have made the standard settings for forwarding orders (see [Forwarding Order \[Page 294\]](#)) and freight bookings (see [Freight Booking \[Page 506\]](#)).

Note

You can use a stage profile to define different stages for the export business documents and import business documents (see [Determination of the Route \[Page 357\]](#)). In addition, you can use different freight unit building rules for the export business documents and import business documents (see [Freight Unit Building Rule](#)).

If you want to transfer service items from the export forwarding order to the import forwarding order, you must implement the Business Add-In (BAdI) *BAdI: Service Item Processing for Import Forwarding Orders* (/SCMTMS/BADI_EXIM_SRV_PROC). For more information, see Customizing for *Transportation Management* under **Business Add-Ins (BAdIs) for Transportation Management** **Basic Functions** **Export/Import Processing** **BAdI: Service Item Processing for Import Forwarding Orders**.

End of the note.

- You have made the standard settings for the relevant customs processes. For more information, see [Global Trade](#). For information about the required settings for the transit process in the context of export/import processing, see SAP Note [1757454](#).
- You have deactivated external communication for export freight bookings.

In the standard system, both internal communication and external communication are active. Communication is controlled using the following standard PPF actions in output management:

- Internal communication: *Copy Export Freight Booking to Import Freight Booking* (/SCMTMS/COPY_EXP_BOK_IMP_BOK)
- External communication: *Send Export Freight Booking (Export/Import Scenario)* (/SCMTMS/TOR_BKBIL_NTF_EXT)

If you use internal communication, you must deactivate the PPF action for external communication in the business partner master data for the import organization on the *Output Management* tab page.

Process

1. The export organization creates one or more export forwarding orders using the standard functions for creating forwarding orders.

You can make the following optional settings:

- You set the traffic direction of the forwarding order to *Export*. This can be specified in Customizing for the forwarding order type or directly in the forwarding order.
- You assign an import organization to the export forwarding order on the *Business Partner* tab page.

In the export forwarding order, the export organization is the sales organization on the *General Data* tab page. In the corresponding import forwarding order, the import organization is the sales organization on the *General Data* tab page, and the export organization is automatically entered on the *Business Partner* tab page.

Note that the relationship between the business partner and the organizational unit is defined in the organizational model.

You can assign a different import organization to each item in the export forwarding order, if required.

2. The export organization creates a freight booking using the standard functions for creating freight bookings.

The following settings are required:

- You must set the traffic direction of the freight booking to *Export*. This can be specified in Customizing for the freight booking type or directly in the freight booking.
- You must assign an import organization to the export freight booking on the *Business Partner* tab page.

In the corresponding import freight booking, the import organization is the purchasing organization on the *General Data* tab page, and the export organization is automatically entered on the *Business Partner* tab page.

Note that the relationship between the business partner and the organizational unit is defined in the organizational model.

The export organization performs the required customs processes for the exported goods. For more information about customs processing in SAP TM, see [Global Trade](#).

3. The export organization triggers the creation of the import business documents by setting the status of the export freight booking to *Shipped on Board* (ocean freight booking) or *Uplift Confirmed* (air freight booking).

Output management is used to create the import business documents. Information about created or updated import business documents is displayed on the *Output Management* tab page in the export freight booking.

4. The system creates the import freight booking and then the import forwarding orders based on the import freight booking.

The system sets the life cycle status of the import business documents to *Draft*. In business documents with this status, you can change the purchasing organization and sales organization, but all other changes are blocked until the status is changed. The relevant block reason is displayed on the *Statuses* tab page in the business document.

The import business documents contain only the relevant execution information and are therefore not an exact copy of the export business documents. The import business documents differ from the export business documents as follows:

- The traffic direction is *Import* instead of *Export*.
- The document type is defined according to the relevant condition, the setting in Customizing for the business document type, or standard logic.
- The import business document contains only the shipper, consignee, and carrier. It does not contain any additional business partners from the export business document.
- The purchasing organization specified in the export freight booking is displayed on the *Business Partner* tab page as the export organization. The import organization specified in the export freight booking on the *Business Partner* tab page or at item level is displayed as the purchasing organization in the import freight booking.
- The sales organization specified in the export forwarding order is displayed as the export organization on the *Business Partner* tab page in the import forwarding order. The import organization specified in the export forwarding order on the *Business Partner* tab page or at item level is displayed as the sales organization in the import forwarding order.

The relevant scenario determines whether there is a 1:1 relationship between the export forwarding order and the import forwarding order. For example, in the buyer's consolidation scenario, the export forwarding orders are consolidated into one import forwarding order.

5. The system creates the import freight units.

The system creates the import freight units based on the import forwarding orders and assigns the freight units to the relevant import freight bookings.

6. The import organization processes the import forwarding orders and import freight bookings.

To process the business documents, you must remove the *Draft* status as follows:

- By choosing ► *Set Status* > *Set to In Process* in the import freight booking. The system sets the life cycle status of the freight booking to *In Process*.
- By choosing the *Set to In Process* pushbutton in the import forwarding order. The system sets the life cycle status of the forwarding order according to the status of the related business documents (for example, import freight booking).

The import organization performs the required customs processes for the imported goods. For more information about customs processing in SAP TM, see [Global Trade](#).

Result

If the export organization changes the export forwarding order, the export freight booking is automatically updated. The export freight booking can also be updated manually. When an updated export freight booking is saved, the system automatically updates the corresponding import freight booking provided the export freight booking still meets the prerequisites mentioned above (for example, the required status and traffic direction) and provided the import freight booking has the life cycle status *Draft*.

You can use the Business Add-In (BAdI) *BAdI: Update Mode for Import Business Documents* (/SCMTMS/BADI_EXIM_UPDATE_MODE) to adapt the update of import freight bookings to your own requirements. For example, you can define that the system does not update any import freight bookings even if their life cycle status is *Draft*; or you can define that the system updates certain parts of the import freight bookings regardless of their life cycle status. For more information, see Customizing for *Transportation Management* under ► *Business Add-Ins (BAdIs) for Transportation Management* > *Basic Functions* > *Export/Import Processing* > *BAdI: Update Mode for Import Business Documents*.



Export/Import Processing: External Communication (Outbound)

If the import organization uses an external application, the export organization creates the export business documents in SAP TM and triggers the creation of the import business documents. SAP TM sends the export business documents to the external application.

Prerequisites

- You have connected your SAP TM system to the external application and implemented the required enterprise services.
- You have made the standard settings for forwarding orders (see [Forwarding Order \[Page 294\]](#)) and freight bookings (see [Freight Booking \[Page 506\]](#)).

If you want to transfer service items from the export forwarding order to the import forwarding order, you must implement the Business Add-In (BAdI) *BAdI: Service Item Processing for Import Forwarding Orders* (/SCMTMS/BADI_EXIM_SRV_PROC). For more information, see Customizing for *Transportation Management* under ► *Business Add-Ins (BAdIs) for Transportation Management* ► *Basic Functions* ► *Export/Import Processing* ► *BAdI: Service Item Processing for Import Forwarding Orders*.

- You have made the standard settings for the relevant customs processes. For more information, see [Global Trade](#).
- You have deactivated internal communication for export freight bookings.

In the standard system, both internal communication and external communication are active. Communication is controlled using the following standard PPF actions in output management:

- Internal communication: *Copy Export Freight Booking to Import Freight Booking* (/SCMTMS/COPY_EXP_BOK_IMP_BOK)
- External communication: *Send Export Freight Booking (Export/Import Scenario)* (/SCMTMS/TOR_BKBIL_NTF_EXT)

If you use external communication, you must deactivate the PPF action for internal communication in the business partner master data for the import organization on the *Output Management* tab page.

Process

1. The export organization creates one or more export forwarding orders using the standard functions for creating forwarding orders.

You can make the following optional settings:

- You set the traffic direction of the forwarding order to *Export*. This can be specified in Customizing for the forwarding order type or directly in the forwarding order.
- You assign an import organization to the export forwarding order on the *Business Partner* tab page.

In the export forwarding order, the export organization is the sales organization on the *General Data* tab page.

You can assign a different import organization to each item in the export forwarding order, if required.

2. The export organization creates a freight booking using the standard functions for creating freight bookings.

The following settings are required:

- You must set the traffic direction of the freight booking to *Export*. This can be specified in Customizing for the freight booking type or directly in the freight booking.
- You must assign an import organization to the export freight booking on the *Business Partner* tab page.

The export organization performs the required customs processes for the exported goods. For more information about customs processing in SAP TM, see [Global Trade](#).

3. The export organization triggers the creation of the import business documents by setting the status of the export freight booking to *Shipped on Board* (ocean freight booking) or *Uplift Confirmed* (air freight booking).

SAP TM sends the export freight booking to the external application using the *Notify of Transportation Order Booking Waybill* (`TransportationOrderBookingWaybillNotification_Out`) outbound enterprise service in the *Transportation Order Processing* process component. The service is triggered by the corresponding PPF action in output management. Information about created or updated import business documents is displayed on the *Output Management* tab page in the export freight booking.

4. The external application creates the import business documents.

The import organization processes the import business documents.

Result

If the export organization changes the export forwarding order, the export freight booking is automatically updated. The export freight booking can also be updated manually. When an updated export freight booking is saved, the system automatically sends an update to the external application, provided the export freight booking still meets the prerequisites mentioned above (for example, the required status and traffic direction).



Export/Import Processing: External Communication (Inbound)

If the export organization uses an external application, SAP TM creates the import freight bookings based on data received from the external application. It then creates the required import forwarding orders and freight units based on the import freight bookings.

Prerequisites

- You have connected your SAP TM system to the external application and implemented the required enterprise services.
- You have made the standard settings for forwarding orders (see [Forwarding Order \[Page 294\]](#)) and freight bookings (see [Freight Booking \[Page 506\]](#)).
- You have made the standard settings for the relevant customs processes. For more information, see [Global Trade](#). For information about the required settings for the transit process in the context of export/import processing, see SAP Note [1757454](#).
- If required, you have defined conditions to enable the system to determine the required business document types for the import business documents. For the freight booking type, you use condition type /SCMTMS/FRB_TYPE_IMP. For the forwarding order type, you use condition type /SCMTMS/FWO_TYPE.

If you do not define conditions, the system uses standard logic to determine the required business document types.

Process

1. SAP TM creates an import freight booking based on data received from an external application.

SAP TM receives the data and creates the import booking using the *Maintain Transportation Order Based On Transportation Order Booking Waybill Notification* (TransportationOrderBookingWaybillNotification_In) inbound enterprise service.

2. SAP TM creates the required import forwarding orders based on the import freight booking.

The system sets the life cycle status of the import freight booking and import forwarding orders to *Draft*. In business documents with this status, you can change the purchasing organization and sales organization, but all other changes are blocked until the status is changed. The relevant block reason is displayed on the *Statuses* tab page in the business document.

The import business documents contain only the relevant execution information and are therefore not an exact copy of the export business documents. The import business documents differ from the export business documents as follows:

- The traffic direction is *Import*.
- The document type is defined according to the relevant condition or standard logic.

- The import business document contains only the shipper, consignee, and carrier. It does not contain any additional business partners from the export business document.
- The purchasing organization is displayed as the export organization on the *Business Partner* tab page in the import freight booking. The import organization is displayed as the purchasing organization in the import freight booking.
- The sales organization is displayed as the export organization on the *Business Partner* tab page in the import forwarding order. The import organization is displayed as the sales organization in the import forwarding order.

The relevant scenario determines whether there is a 1:1 relationship between the export forwarding order and the import forwarding order. For example, in the buyer's consolidation scenario, the export forwarding orders are consolidated into one import forwarding order.

3. The system creates the import freight units.

The system creates the import freight units based on the import forwarding orders and assigns the freight units to the relevant import freight bookings.

4. The import organization processes the import forwarding orders and import freight bookings.

To process the business documents, you must remove the *Draft* status as follows:

- By choosing ► *Set Status* ► *Set to In Process* ▶ in the import freight booking. The system sets the life cycle status of the freight booking to *In Process*.
- By choosing the *Set to In Process* pushbutton in the import forwarding order. The system sets the life cycle status of the forwarding order according to the status of the related business documents (for example, import freight booking).

The import organization performs the required customs processes for the imported goods. For more information about customs processing in SAP TM, see [Global Trade](#).

Result

If the export organization sends an updated export freight booking, the import business documents are updated accordingly. Note, however, that an import freight booking can be updated only if it has the life cycle status *Draft*.

You can use the Business Add-In (BAdI) *BAdI: Update Mode for Import Business Documents* (/SCMTMS/BADI_EXIM_UPDATE_MODE) to adapt the update of import freight bookings to your own requirements. For example, you can define that the system does not update any import freight bookings even if their life cycle status is *Draft*, or you can define that the system updates certain parts of the import freight bookings regardless of their life cycle status. For more information, see Customizing for *Transportation Management* under ► *Business Add-Ins (BAdIs) for Transportation Management* ► *Basic Functions* ► *Export/Import Processing* ► *BAdI: Update Mode for Import Business Documents* ▶.



Manual Creation of Import Freight Bookings

If there is no export freight booking in your system and you have received the relevant data by fax, for example, you can create the corresponding import freight booking manually.

Prerequisites

In Customizing for *Transportation Management*, you have created a freight booking type with the transport direction *Import*. For more information, see Customizing under ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types*.

Features

An import freight booking that you create manually is the same as an import freight booking that is created automatically. Unlike with import freight bookings created automatically, all fields are ready for input. You can also enter a free-of-charge storage period.

You can create one or more forwarding orders directly from the import freight booking created manually. This is assigned to the import freight booking automatically.

The following constraints apply to import freight bookings that are created manually:

- You cannot perform subcontracting.
- Import freight bookings are not relevant for planning.
- Schedules are not supported.
- You cannot draw master air waybill numbers from stock or return them to stock. You can enter MAWB numbers manually, however. The system checks the accuracy of these numbers.
- You cannot create freight orders for pick-up and can only create freight orders for delivery.
- The booking confirmation status and uplift confirmation status are not supported.

More Information

[Export/Import Processing \[Page 542\]](#)



Buyer's Consolidation in Export/Import

In Export/Import, you use Buyer's Consolidation (BCO) to amalgamate orders from different suppliers that are all destined for one consignee. You can consolidate multiple export forwarding orders into an export freight booking. At the consolidation point, the packages are loaded into a container for shipping to the consignee.

For import, the system creates one import freight booking and one import forwarding order for each consignee. The import forwarding order contains a consolidation container and the items that were consolidated within this container.

Prerequisites

You have specified an agreement item for BCO including the calculation sheet for BCO.

Features

Export Forwarding Order

Export forwarding orders destined for the same consignee are eligible for BCO.

For each forwarding order that is to be consolidated, you must set the shipping type to *Less than Container Load* (LCL).

Each export forwarding order has a number of stages defined. For BCO, the stages between the shipper and the consolidation point can differ for each export forwarding order. The stages between the consolidation point and the consignee are identical.

Export Freight Booking

In the Export booking order you can flag a container as a BCO Container. Before assigning the export freight unit/forwarding orders the system checks whether all assigned forwarding orders have the same consignee. The system can only initiate a BCO process if all assigned forwarding orders have the same consignee.

When you set the status of the export freight booking to *Shipped on Board* in an ocean scenario or to *Uplift Confirmed* in an air scenario, the system creates an import freight booking and a single consolidated import forwarding order.

Import Freight Booking

The import freight booking contains one import forwarding order for each consignee. The system sets the initial document status for the import freight booking to *Draft*.

Import Forwarding Order

The import forwarding order includes the container from the export booking and also contains sub-items from the export freight booking.

For the consolidated import forwarding order, the system sets the initial shipping type set to *Full Container Load* (FCL).

As there are multiple shippers, the system displays the business partners and locations in the item details.

Both the actual and the ordered route are copied from the export documents. Since there are different routes per consolidated item, the actual and the ordered route is shown per forwarding order item.

The system sets the initial document status to *Draft*.

Charges

The system calculates charges using the agreement item configured for BCO. If you have not configured a specific agreement item for BCO, the system uses the standard calculation sheet for full container load transportation. For more information, see [Buyer's Consolidation \[Page 518\]](#).

Settlement

For settlement, the system creates one consolidated settlement for all the forwarding orders in the container item for the main carriage on the export side. On the import side, the system uses the information in the import forwarding order to create the settlement. The system uses an agreement line item configured for BCO. If such a line item does not exist, the system tries to find an agreement line item with a shipping type of FCL.

For more information, see [Shipper's Consolidation Settlement](#)

Example

As a carrier, you want to transport products from three different manufacturers from China to Germany. There are three export forwarding orders – one for each of the three products. You create an export freight booking and specify that it is to be handled in BCO mode. At Shanghai port, the pallets are loaded into one container. The container is then transported by sea to Hamburg. The system creates a single import freight booking for the container and a single import forwarding order. The import forwarding order contains an item for the container and sub items for each of the three export forwarding orders. In Hamburg the container is loaded onto a truck. The truck delivers the container to the consignee in Hanover.

More Information

[Consolidating Orders Using Buyer's Consolidation \[Page 556\]](#)



Consolidating Orders Using Buyer's Consolidation

In Export/Import, you can use buyer's consolidation (BCO) to amalgamate orders from different suppliers that are all destined for one consignee.

Prerequisites

You have defined freight booking types in Customizing. You define the most important settings for the freight booking in the freight booking type. For more information, see Customizing for Transportation Management under ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types*

You have made the settings required for the forwarding order. For more information, see [Settings for the Forwarding Order \[Page 301\]](#)

Process

1. Create a freight booking

You first enter the general data for your freight booking, for example:

- Shipper, consignee, and carrier
- Locations, for example, port of loading and port of discharge
- Dates and times, for example, departure date and expected arrival date
- Number of containers

You must specify an Import Organization.

For more information see [Creation and Editing of Freight Bookings \[Page 509\]](#)

2. Create a forwarding order for each shipper.

For each forwarding order:

- You specify the forwarding order type and transportation mode.
- From the *Buyer's or Shipper's Consolidation* dropdown, you choose *BC*.
- You specify LCL (Less than Container Load) as the Shipping Type
- Specify intermediate stages, the port of loading and port of discharge

For more information see [Creation of a Forwarding Order \[Page 304\]](#)

3. Assign the forwarding order to the export freight booking

1. Set the status of the export freight booking to *Shipped on Board* in an ocean scenario, or to *Uplift Confirmed* in an air scenario.

Once you save the freight booking, the system creates the import documents – one import freight booking containing multiple import forwarding orders, at least one for each consignee.

More Information

[Buyer's Consolidation \(BCO\) in Export/Import \[Page 554\]](#)



Shipper's Consolidation in Export/Import

In Export/Import, you can use shipper's consolidation (SCO) to amalgamate orders that are destined for different consignees but originating from a single supplier. At the deconsolidation point, the packages are separated for shipping to the various consignees.

You can create one export forwarding order containing sub-items for each of the consignees. For import, the system creates one import freight booking containing multiple import forwarding orders – at least one for each consignee.

Prerequisites

You have specified an agreement item for shipper's consolidation including the calculation sheet for SCO.

Features

Export Forwarding Order

Export forwarding orders originating from the same shipper to different consignees are eligible for SCO.

You create a forwarding order containing a consolidation container and sub-items for each of the deliveries that are to be consolidated. You specify that the forwarding order is to be handled in SCO mode. You must set the shipping type to *Full Container Load* (FCL).

Each consignee has a number of stages defined. For SCO the stages between the shipper and the deconsolidation point are identical for each consignee sub-item. The stages following deconsolidation – between the deconsolidation point and the consignee – can differ as the items are delivered to their respective consignees.

Export Freight Booking

When you set the status of the export freight booking to *Shipped on Board* in an ocean scenario or to *Uplift Confirmed* in an air scenario, the system creates an import freight booking and multiple import forwarding orders – at least one for each consignee.

Import Freight Booking

The import freight booking contains an import forwarding order for each consignee. The document status for the import freight booking is set to *draft*.

Import Forwarding Order

The system creates an import forwarding order for each consignee of the sub-items on the export forwarding order.

For the deconsolidated import forwarding orders, the shipping type is set to *Less Than Container Load* (LCL).

Charges

The system calculates charges using the agreement item configured for SCO. If you have not configured a specific agreement item for SCO, the system uses the standard calculation sheet for FCL transportation.

Settlement

For settlement, the system creates the settlement document for the pre-paid agreement party based on the export forwarding order on the export side. For a forwarding order with incoterms such as DDP, the system creates the settlement items for the pre-paid agreement party and for the delivery legs – one each per destination location or one per delivery date in a case where the delivery location is the same for multiple items. The system creates a settlement for each import forwarding order on the import side. The system uses an agreement line item configured for SCO for pre-carriage and main carriage. If such a line item does not exist, the system tries to find an agreement line item with a shipping type of Forwarding Order, for example, FCL on the Export side, and LCL on the import side).

Example

As a carrier, you want to transport three products from the same manufacturer in China to separate consignees in Germany. There is one export forwarding order with three sub-items – one for each of the three products. You create an export freight booking and specify that it is to be handled in SCO mode. At the factory, the pallets are loaded into a single container. From there the container is moved to the port at Shanghai, and then transported by sea to Hamburg. The system creates a single import freight booking for the container and three import forwarding orders – one for each of the consignee sub-items. In Hamburg the container is deconsolidated. The three individual pallets are loaded onto different trucks then delivered to their respective consignees.

More Information

[Consolidating Orders Using Shipper's Consolidation \[Page 560\]](#)



Consolidating Orders Using Shipper's Consolidation

In Export/Import, you can use shipper's consolidation (SCO) to amalgamate orders originating from a single supplier that are destined for different consignees.

Prerequisites

You have defined freight booking types in Customizing. You define the most important settings for the freight booking in the freight booking type. For more information, see Customizing for Transportation Management under ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types*

You have made the settings required for the forwarding order. For more information, see [Settings for the Forwarding Order \[Page 301\]](#)

Process

1. Create a freight booking

You first enter the general data for your freight booking, for example:

- Shipper, consignee, and carrier
- Locations, for example, port of loading and port of discharge
- Dates and times, for example, departure date and expected arrival date

You must specify an Import Organization.

For more information see [Creation and Editing of Freight Bookings \[Page 509\]](#)

2. Create a forwarding order

1. You specify the forwarding order type and transportation mode.
2. From the *Buyer's or Shipper's Consolidation* dropdown, you choose SC.
3. You specify FCL (Full Container Load) as the shipping type.
4. You specify *Door to Door* as the movement type.
5. You create a container – this has no consignee as it will be deconsolidated prior to any deliveries.
6. You create package items in the container – one for each consignee. On package level define business partner and consignee.

For more information see [Creation of a Forwarding Order \[Page 304\]](#)

3. Assign the forwarding order to the export freight booking

0. Set the status of the export freight booking to *Shipped on Board* in an ocean scenario, or to *Uplift Confirmed* in an air scenario.

Once you save the freight booking, the system creates the import documents – one import freight booking containing multiple import forwarding orders, at least one for each consignee.

More Information

[Shipper's Consolidation \(SCO\) in Export/Import \[Page 558\]](#)



Transportation Unit

With this business document you can depict transport requirements or capacity, for example:

- A trailer and its load
- The capacity of a railcar or several railcars that are transported together
- A container and its load

You use the transportation unit to consolidate freight units. You can then plan the transportation unit as a unit for several transportation stages, in other words you can assign it to one or more freight orders.

Within the transportation unit type, you configure the most important settings for the transportation unit. For example, you use the transportation unit category to indicate whether you want to create the transportation unit type for a trailer, a railcar, or a container. When you then create the related business document (for example, a trailer unit), the system offers you only the relevant transportation units. For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Transportation Unit* ► *Define Transportation Unit Types* ▶.

More Information

[Trailer Unit \[Page 563\]](#)

[Railcar Unit \[Page 571\]](#)

[Container Unit \[Page 573\]](#)



Trailer Unit

Trailer units make up the logistic processing of transports with trailers.

You need a trailer unit if a trailer is moved by more than one tractor.

You configure the most important settings for the trailer units in the transportation unit type. For more information, see ► *Freight Order Management* ► *Transportation Unit* ► *Define Transportation Unit Types*.

You cannot perform subcontracting for trailer units.

Structure

Trailer units contain the following information:

- General data such as locations and dates

You can enter one-time locations at stage level. The system stores these new locations and adjusts stages in the document. It also adjusts the locations in the assigned execution documents.



Note

However, you should continue to make changes to existing locations in the master data.

End of the note.

- Transportation stages

On the *Stages* tab, you see the following information:

- Assignment of the trailer to one or more tractors
- Route the trailer will take
- Transportation stage types

You can also apply a standard route (see [Standard Route \[Page 103\]](#)) and perform a simple scheduling.

- Freight

On the *Freight* tab page, the following information is displayed:

- Quantities and weights (see [Quantities and Capacities \[Page 587\]](#))
- Goods information (see [Goods Information \[Page 599\]](#))
- Dangerous goods information (see [Considering Dangerous Goods](#)).
- Seal information (see [Use of Seals \[Page 604\]](#))
- Information about foreign trade (see [Integration with SAP Global Trade Services](#))

For more information, see [Cargo Management \[Page 595\]](#).

- Overview

The *Overview* tab is an integrated view of the *Stages* and *Freight* tabs. It contains the following information:

- Assignment of the trailer to one or more tractors
- Route the trailer will take
- The maximum utilization as well as planned departure and arrival times
- Execution information, for example, actual departure times

Furthermore, you can directly report events.

- Document dependencies as well as predecessor and successor documents (document flow)
- Status information and blocking information (see [Statuses of Business Documents \[Page 608\]](#) and [Blocking Information \[Page 634\]](#))

More Information

[Creation and Editing of Trailer Units \[Page 565\]](#)

[Trailer Handling During Trailer Swap \[Page 567\]](#)

[Internal Settlement for Resources](#)



Creation and Editing of Trailer Units

You can create, change, and display trailer units.

Prerequisites

You have defined the transportation unit types in Customizing. Within the transportation unit type, you configure the most important settings for the trailer unit. For more information, see [Customizing for Transportation Management](#) under ► *Freight Order Management* ► *Transportation Unit* ► *Define Transportation Unit Types*.

Features

Creating Trailer Units

You have the following options:

- Manual creation in the transportation cockpit

You create a trailer unit by assigning existing transportation stages (that is, freight units) to a trailer. For more information, see [Use of Trailers](#).

- Manual creation on the user interface for creating trailer units

You create the trailer unit and enter the items. To do so, open SAP NetWeaver Business Client and choose ► *Freight Order Management* ► *Road* ► *Trailer Unit* ► *Create Trailer Unit*.

If necessary, create a forwarding order and freight units from the trailer unit. For more information, see [Creation of Forwarding Orders from Freight Orders \[Page 482\]](#).

- Automatic creation from a forwarding order

If, instead of creating freight units, you want to create trailer units automatically from your forwarding order, enter a transportation unit type in the freight unit building rule. This function is also available for order-based and delivery-based transportation requirements. For more information, see [Creation and Editing of Freight Units](#).

Defining Logistical Processing

After you have created the trailer unit, enter the following information:

- Route

You can either enter a route manually or apply a standard route (see [Default Route \[Page 103\]](#)).

- Assignment to a tractor

You define at which locations coupling or uncoupling takes place. You also define to or from which tractor the trailer is coupled or uncoupled. You make these assignments in the transportation cockpit. For more information, see [Use of Trailers](#).

More Information

[Trailer Handling During Trailer Swap \[Page 567\]](#)



Trailer Handling During Trailer Swap

You can determine the ideal location in your transportation chain at which to swap trailers.

Prerequisites

- In your master data, you have created transportation zones that contain the source location and target location for the transport. You define transportation zones in SAP NetWeaver Business Client by choosing ► *Master Data* ► *Transportation Network* ► *Transportation Zones* ► *Define Transportation Zones* ▶.
- You have defined a strategy for trailer handling for the locations within these transportation zones. You define strategies for trailer handling at a specific location by choosing ► *Master Data* ► *Transportation Network* ► *Locations* ► *Define Location* ▶ in SAP NetWeaver Business Client and selecting a strategy for trailer handling on the *TM* tab page.

Features

The system checks each location to determine whether trailers can be swapped and if so, under which conditions. It does so for each location in the transportation zone containing the source location, and for each location in the transportation zone containing the destination location, by using the trailer handling strategy defined for each location. The following options exist for each location:

- Coupling not possible

At these locations, coupling and decoupling is not permitted. This strategy applies, for example, to customer locations.

- Coupling possible

At these locations, coupling and decoupling is generally permitted. This strategy is often used for production plants, distribution centers, and other secure locations at which a trailer can be left unguarded for a short amount of time.

- Coupling possible only during pickup or delivery

At these locations, coupling and decoupling is permitted only if a freight unit is collected from or delivered to this location at the same time. This strategy is often used at customer locations at which the trailer is parked for the duration of the pickup or delivery process.

- Only trailer swap possible

At these locations, coupling and decoupling is permitted only if the trailer is not left unguarded at any time. As soon as a trailer is decoupled from a truck, it must be coupled to another truck. This strategy is often used at insecure locations such as parking lots or service stations.

Activities

You determine the optimal coupling location for a trailer swap in interactive planning by choosing ► *Planning* ► *Planning* ► *Transportation Cockpit* ▶ in SAP NetWeaver Business Client and starting *Optimizer Planning* (see [Interactive Planning](#)).

More Information

[Example: Trailer Swap \[Page 569\]](#)



Example: Trailer Swap

The following example describes a simple trailer swap.

First, you create the following trailer units and specify the sequence of locations, that is, the route:

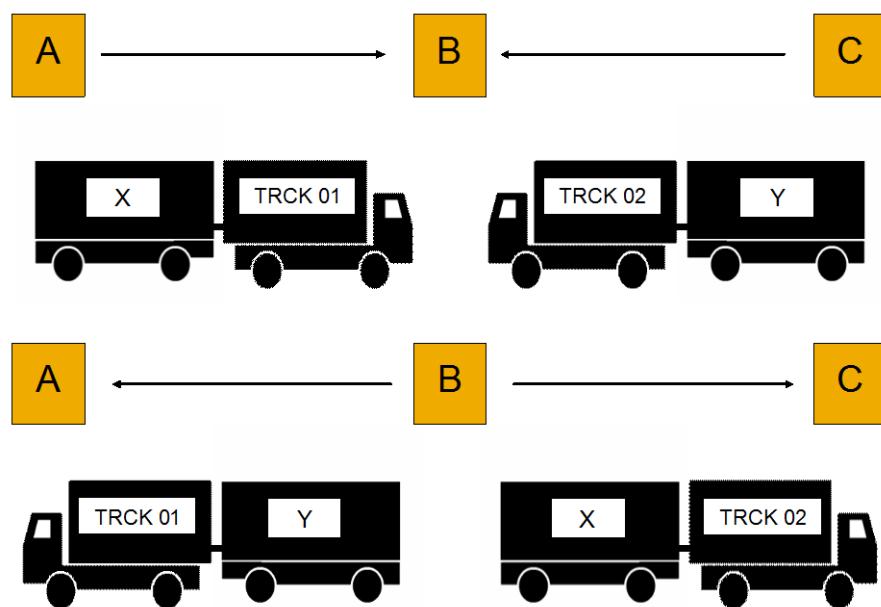
Document	Location sequence	Creation type
Trailer unit 40 (TRL40)	A-B-C	Creation in the transportation cockpit
Trailer unit 41 (TRL41)	C-B-A	Creation from the user interface for creating trailer units

In this example, truck 01 drives from A to B with trailer X. There it meets truck 02, which has driven trailer Y from C to B. The trailers are switched in B. Truck 01 then drives trailer Y from B back to A. Truck 2 drives trailer X from B back to C.

The documents and assignments look like this:

Document	Location sequence	Assigned trailer units
Freight order 20 (FO20)	C-B-C	TRL41 (C-B) TRL40 (B-C)
Freight order 21 (FO21)	A-B-A	TRL40 (A-B) TRL41 (B-A)

The following figure shows this type of trailer swap:



Trail swap illustrated in an example with two trucks with trailers



Railcar Unit

A railcar unit makes up the logistic processing of transports with railcars. It describes the assignment of cargo to a railcar.

A railcar unit can comprise one or more railcars. If a customer orders a full carload and you have already defined the railcar items in the forwarding order, the system can create a railcar unit instead of a freight unit during freight unit building. The relevant item in the forwarding order must be of type *Passive Vehicle Resource* and you must have entered a transportation unit in the freight unit building rule.

If you have not already created the railcar items in the forwarding order, you can use the railcar unit as a consolidation document. This means that the freight unit is created based on a product item, for example. You then assign this product freight unit to the railcar unit. Alternatively, you can assign the freight unit directly to a railcar that you have created in the rail freight order.

You can define several main items for railcar units. You can also work with multi-items (see [Items \[Page 582\]](#)).

A railcar unit must be assigned to a rail freight order (see [Rail Freight Order \[Page 483\]](#)) before you can carry out the follow-on processes. You can assign the individual stages for the railcar unit to one or more rail freight orders. You cannot subcontract railcar units. The railcar unit is used only for logistical purposes and for the assignment of different subcontracting documents.

Within the transportation unit type, you configure the most important settings for the railcar unit. For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Transportation Unit* ► *Define Transportation Unit Types* ▶.

Structure

Railcar units contain the same information as trailer units (see [Trailer Unit \[Page 563\]](#)). The following points are variances:

- *General Data*

Here, you can enter the following data:

- Source location and destination location (rail)
- Number of railcars
- Number of assigned rail freight orders

- *Resources/Equipment*

Information about your railcar is displayed here:

- Position of a railcar in the train
- Equipment group and type
- Railcar details such as whether the railcar belongs to the shipper or the carrier
- Information about seals

The handling execution status and the cargo execution status behave in the same way as for rail freight orders. For more information, see [Rail Freight Order \[Page 483\]](#).

Applying Default Routes

You can search for possible routes in your railcar unit based on the source location and destination location (*Routing* pushbutton). The system uses the default routes to identify various routes, from which you can choose one.



Container Unit

A container unit models the logistical handling of the transportation of one or several containers. Each of these containers can contain several freight units.

If a customer orders a full container and you have already defined the container items in the forwarding order, the system can create a container unit instead of a freight unit during freight unit building. The relevant item in the forwarding order must be of type *Passive Vehicle Resource* and you must have entered a transportation unit in the freight unit building rule.

If you have not already created the container items in the forwarding order, you can use the container unit as a consolidation document. This means that a freight unit is created based on a product item, for example. You then assign this product freight unit to the container unit. Alternatively, you can assign the freight unit directly to a container that you have created in the freight document.

You can define several main items for container units. You can also work with multi-items (see [Items \[Page 582\]](#)).

A container unit must be assigned to a freight document before you can carry out the follow-on processes. You can assign the individual stages for the container unit to one or more freight documents. You cannot subcontract container units. The container unit is used only for logistical purposes and for the assignment of different subcontracting documents.

Within the transportation unit type, you configure the most important settings for the container unit. For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Transportation Unit* ► *Define Transportation Unit Types* ▶.

Structure

Container units contain the same information as trailer units (see [Trailer Unit \[Page 563\]](#)). The following are only special features:

- *General Data*

Here, you can enter the following data:

- Source location and destination location
- Number of containers
- Number of assigned freight documents
- Information about whether container provisioning and return is required

- *Freight*

- *Container Details*

- *Transportation unit resource*

If you have defined your container as a transportation unit resource in the master data you can jump directly to the master data here.

- *Equipment group and equipment type*

- Information about whether the container is owned by the shipper

 Note

If you have created a container as a multi-item, the system displays fewer details because the container is simply a "grouping".

End of the note.

- *Equipment*

- Seal information
- Document references



Service Order

An order that provides details of tasks that are to be carried out for individual items in a business document (for example, cleaning and fumigating containers) or for the entire business document (for example, customs clearance for a freight booking).

A service order enables you to do the following:

- Enter information about services that are to be carried out for a freight booking or items in a freight booking
- Calculate charges for the services
- Create settlement documents for the services after they have been executed

You can create service orders in two ways:

- Create service orders from freight bookings, freight orders, freight booking items, or freight order items. With such a service order you can:
 - Enter service items related to the freight booking, freight order, freight booking item, or freight order item.
 - Add service items that are not related to the freight booking, freight order, freight booking item, or freight order item. You can do this using the “Add Service” action without marking another item.
- Create stand-alone service orders without reference to any freight booking, freight order, freight booking item, or freight order item. You can use the “Create Service Order” function to create a service order by entering the service order type.

You make the required settings for service orders in Customizing for *Transportation Management* under:

- ► *Freight Order Management* ► *Define Item Types for Freight Order Management* ▶
- ► *Freight Order Management* ► *Service Order* ► *Define Service Order Types* ▶
- ► *Basic Functions* ► *General Settings* ► *Define Service Types* ▶

You can use the change controller to define how the system reacts to changes (see [Change Controller](#)).

Structure

A service order contains the following information:

- General data including the service provider, service order type, and status of the service order (see [Statuses of Business Documents \[Page 608\]](#))
- Item overview that contains the following information:
 - Link to the freight booking or freight order for which the service order was created. (Applies only for service orders created from freight bookings, freight orders, freight booking items, or freight order items).

- IDs of the original freight booking items or freight order items for which services are to be carried out, for example, containers or products. (Applies only for service orders created from freight bookings, freight orders, freight booking items, or freight order items).
- Services to be carried out
- Location and time at which the services are to be executed
- Transportation charges (see [Charge Calculation \[Page 227\]](#))
- Document dependencies as well as predecessor and successor documents (document flow)
- Other information such as the following:
 - Notes
 - Attachments
 - Change documents (see [Change Tracking \[Page 679\]](#))
 - Administrative data
 - Output management information

Service Order Types, Service Item Types, and Service Types

In Customizing, when defining service order types, you can specify the allowed service item types (these must be item types of category Service). You make the required settings for service order types in Customizing for Transportation Management under ► *Freight Order Management* ➤ *Service Order* ➤ *Define Service Order Types*.

For each service item type you can specify the allowed service types. For more information, see Customizing for Transportation Management under ► *Freight Order Management* ➤ *Define Item Types for Freight Order Management*.

Then, you can use the service order type you defined to create a service order. You can specify one of the allowed item types for the order and the system proposes the default service type for that item type. You can specify a different service type. If you change this service type to a type that you have not specified in Customizing as allowed for this item type, the system returns a warning message.

More Information

[Service Items \[Page 492\]](#)



Creation and Editing of Service Orders

You can use this function to create, edit, and display service orders.

Prerequisites

You have defined service types (for example, customs clearance, container cleaning, or checking container seals) in Customizing for *Transportation Management* under ► *Basic Functions* ▶ *General Settings* ▶ *Define Service Types* □.

You have made the following settings in Customizing for *Transportation Management* under ► *Freight Order Management* ▶ *Service Order* □:

- You have defined service order types and specified a default type that the system uses for all service orders. Note that you can also:
 - assign a default type to a freight booking type in Customizing for *Transportation Management* under ► *Freight Order Management* ▶ *Freight Booking* ▶ *Define Freight Booking Types* □.
 - assign a default type to a freight order type in Customizing for *Transportation Management* under ► *Freight Order Management* ▶ *Freight Booking* ▶ *Define Freight Order Types* □.
- You have defined which services can be carried out for a freight booking or freight order and for individual freight booking or freight order items such as containers or products.

Features

Creation of Service Orders

You can create service orders in two ways:

- You can create a service order from the freight booking or freight order user interface.
- You can create stand-alone service orders without reference to any freight booking, freight order, freight booking item, or freight order item. You can do this in SAP NetWeaver Business Client using ► *Freight Order Management* ▶ *Service Order* ▶ *Create Service Order* □.

You create a service order from the freight booking or freight order user interface.

For more information, see [Creating Service Orders \[Page 579\]](#).

Editing and Displaying of Service Orders

On the *Service Orders* tab page in the freight booking or freight order, you can display an overview of service orders created for the freight booking or freight order and for all freight booking or freight order items. A *Service Orders* tab page is also available in the *Details* area of the *Cargo Management* tab page. This provides an overview of all service orders created for a specific item that you have selected on the *Cargo Management* tab page.

You can also edit and display service orders in SAP NetWeaver Business Client as follows:

- ► *Freight Order Management* ▶ *Service Order* ▶ *Overview Service Orders* □

- ► *Freight Order Management* ► *Service Order* ► *Edit Service Order* ▾
- ► *Freight Order Management* ► *Service Order* ► *Display Service Order* ▾



Creating Service Orders

The following is an example process for manually creating a service order.

Prerequisites

- You have made the required Customizing settings.

For more information, see [Creation and Editing of Service Orders \[Page 577\]](#).

- You have created a freight booking.

For more information, see [Freight Booking \[Page 506\]](#).

Process

1. You create a service order in one of the following ways:

- You create a service order from a freight booking.

To create a service order for the entire freight booking, choose the *Create Service Order* button at the top of the freight booking UI. To create a service order for individual items in the freight booking, select the items on the *Cargo Management* tab page and choose the *Create Service Order* button on this tab page. Note that you cannot create a combined service order for a freight booking and items in a freight booking.

- You create a standalone service order

In SAP NetWeaver Business Client choose ► *Freight Order Management* > *Service Order* > *Create Service Order* ▶

2. The system displays the service order creation screen. The system automatically enters the following data, according to your Customizing settings:

- Service order type
- Purchasing organization and type
- Service order number

If you are creating a service order from a freight booking, in the *Services* screen area, the system automatically creates an empty service item for the freight booking or for each freight booking item.

3. You enter the service provider and the services.

If you are creating a service order from a freight booking, you can assign one or more services to the freight booking or to each freight booking item. The available services depend on which service types you have assigned to the freight booking or item categories in Customizing for service orders.

You also enter the location and time at which each service is to be carried out. If required, you can enter a service item description.

4. You calculate the charges.

For more information, see [Charge Calculation \[Page 227\]](#).

5. You check the service order and save it.
6. You inform the service provider about the required services.

You can use the generic output management framework to communicate with the service provider.

7. If you are creating a service order from a freight booking, you create a freight settlement document.

When the service provider has executed the services, you can create a freight settlement document (see [Freight Settlement Document](#)). This serves as the basis for checking the invoice received from the service provider.

8. You cancel the service order (optional if you are creating a service order from a freight booking).

Note that if you cancel a freight booking, the system automatically cancels all related service orders.



Additional Business Document Attributes in FOM

Features

The following documents list additional attributes and functions that are available in the business documents of freight order management:

- [Items \[Page 582\]](#)
- [Transportation Stops \[Page 585\]](#)
- [Quantities and Capacities \[Page 587\]](#)
- [Cargo Management \[Page 595\]](#)
- [Goods Information \[Page 599\]](#)
- [Carrier Categorization \[Page 600\]](#)
- [Use of Schedules \[Page 602\]](#)
- [Use of Seals \[Page 604\]](#)
- [Use of Hierarchical Views in FOM \[Page 605\]](#)
- [Use of Customer Numbers \[Page 607\]](#)
- [Statuses of Business Documents \[Page 608\]](#)
- [Blocking Information \[Page 634\]](#)

 **Items**

In freight order management, you can enter items in your business documents.

 Note

You cannot change items that are transferred from business documents in forwarding order management. For more information about creating items in forwarding order management, see [Creation of Forwarding Order Items or Forwarding Quotation Items \[Page 346\]](#).

End of the note.

Features

With the exception of containers, items represent either capacity or demand.

- Capacity
 - Vehicle resource

You can enter the vehicle ID, the country of registration, and the registration number.
 - Passive vehicle resource (for example, trailer or railcar)

For trailers, you can enter the trailer ID, the country of registration, and the registration number.
 - Container

You can enter the number of containers, the capacity, and the equipment group and type.
- Demand
 - Container

You can enter the container ID and seal, as well as information about the container such as the ventilation or humidity.
 - Package (for example, pallet)

You can enter the package ID. You can also specify whether the transport involves overdimensional cargo or non-stackable packages.
 - Product

You can enter the product ID, the product freight group, and the transportation group.

You can enter the following information for all demand items:

- Content identification
- Quantities
- Customs and dangerous goods information

- Document references and notes
- Commodity codes
- Discrepancies

Each business document can contain only one main item but any number of subitems. Railcar units and container units are an exception. They can have several main items. The item hierarchy determines which item can be loaded into which other item. For example, you cannot load a trailer unit or railcar unit into a package.

Items are displayed on the user interface in the following locations:

- *Cargo and Cargo Management*
Demand items are displayed here.
- *Equipment*
Capacity items are displayed here.
- *Overview*
All items are displayed here.
- *Stages*
The locations in which items are loaded and unloaded are displayed here.

For more information about weights and quantities, see [Quantities and Capacities \[Page 587\]](#).

For more information about transportation stops, see [Transportation Stops \[Page 585\]](#).

Item Types

You can define item types in Customizing. The item type enables you to predefine various parameters for an item, for example, whether the item is a multi-item. For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Define Item Types for Freight Order Management* ▶.

By assigning an item type to a document type (such as a freight order type), you can specify which item types are valid for the document type. You can also define a default item type.

For more information, see Customizing for *Transportation Management* under:

- ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶
- ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types* ▶
- ► *Planning* ► *Freight Unit* ► *Define Freight Unit Types* ▶
- ► *Freight Order Management* ► *Transportation Unit* ► *Define Transportation Unit Types* ▶

Multi-Items

You can define multi-items for rail freight orders and railcar units. You use multi-items to model the following objects:

- Multiple railcars of the same category

In this case, you define the main item as a multi-item in your railcar unit. This enables you to define the railcars and the freight item assignment approximately. (Alternatively, you can assign the freight items to the individual railcars.) You can then assign passive vehicle resources to the multi-item as subitems. These represent the individual railcars and can be used, for example, to assign a seal.

- Multiple locomotives in a train

In this case, you define the main item as a multi-item in your rail freight order. You can then assign the vehicle positions to the multi-item as subitems that represent the individual locomotives. Note that during planning, the system considers only the main locomotive that you have specified at header level. The other locomotives are not taken into account during scheduling or when considering incompatibilities.

You specify whether an item is to be a multi-item in Customizing when you define the item type. You can also specify whether subitems are to be generated automatically (or expanded) as soon as you enter a multi-item in a business document. You can select the items types from Customizing on the user interface. For more information, see *Customizing for Transportation Management* under ► *Freight Order Management* ► *Define Item Types for Freight Order Management* ▶.

For more information about creating multi-items in rail freight orders, see [Scheduling of Freight Orders \[Page 500\]](#).



Transportation Stops

For a business document in freight order management (in other words freight order, freight booking, freight unit, trailer unit, or railcar unit), a transportation stop describes the following:

- An action that is performed at a particular location
- The time at which this action is performed

Each business document includes at least two transportation stops.

The sequence of transportation stops is defined solely using the stop successor.

- The stop successor is a subnode of a transportation stop.
- The stop successor can be viewed as a transportation stage.

Current Transportation Stop

The current transportation stop is the stop where you are working at a particular time. In freight order management, the concept of the current transportation stop supports multi-pickup and multi-delivery scenarios.



Example

You have created a freight order for a multi-pickup going from A to B to C. Goods are to be loaded at A and B. Goods are to be unloaded at B and C.

In the course of transportation planning, the system views A, B, and then C as the current transportation stop:

- First, A is the current transportation stop.
- After you have reported that the truck has left A, the system views the inbound stop at B as the current transportation stop, as the unloading at B will be the next activity.
- After you have reported the end of unloading, the outbound stop at B becomes the current transportation stop.
- After you have reported that the truck has left B, the system views the inbound stop at C as the current stop.
- If there were additional transportation stops, the system would view them one after the other as the current transportation stop.

End of the example.

The concept of the current transportation stop has the following consequences:

- *Cargo Management* or *Cargo* tab page

On these tab pages, the current transportation stop is displayed. In the *Change Hierarchy* field, you can choose between the following views:

- Display cargo that is only relevant for the current transportation stop
- Display cargo that is relevant for all transportation stops

- Execution activities

If, for example, you set a freight order to *Departed* at header level, the system automatically triggers the departure event for the current transportation stop.

Structure

The transportation stop comprises the following data:

- Stop ID
- Stop type
 - Each intermediate stop has an inbound and an outbound stop.
- Stop role, for example standard stop or freight unit stop
- Fixing
- Information about whether the stop can be used as capacity
- Location data, in other words logistical location and address
- Times, for example pickup and delivery times, planned transportation times, appointments
- Assignment to capacity

For freight units, trailer units, and railcar units, the assignment to resources and freight documents is displayed in the transportation stop.



Quantities and Capacities

The following describes how quantities and capacities are used in freight orders and freight bookings. Quantities include weights.

Features

Quantities

The system copies planned quantities from the predecessor document, forwarding order for example, to your freight orders and freight bookings.

You can enter actual quantities manually in your freight orders and freight bookings. In the following cases, the system adds the actual quantities automatically:

- If you set a business document item to *Quantity Received as Planned*
- Direct integration with SAP Extended Warehouse Management (see [Direct Integration with SAP Extended Warehouse Management](#))
- Integration with SAP Event Management

The table below illustrates how the system totals the quantities:

Level	Gross Weight	Gross Volume	Net Weight	Number of Pieces	Tare Weight
Booking (Header)	N/A	N/A	Weight of all containers, products and packages	Total number of containers	N/A
Container	Weight of all packages and products in this container plus the weight of the container	Volume of container	Weight of all packages and products in this container	Number of containers	Weight of container
Package	Weight of all packages and products in this package plus the weight of the package	Volume of package	Weight of all products and packages in this package	N/A	Weight of package
Product	Weight of product	Volume of product	N/A	Number of products	N/A

The gross weight is made up of the net weight and the tare weight. The net weight corresponds to the gross weight of the underlying item.

Note

For air freight bookings, the system does not take into account the tare weight when calculating the gross weight.

End of the note.

The total number of TEUs is displayed in the header level of the posting.

The totaling takes place from item level to header level. For more information about totaling, see [Example of Quantity Totaling \[Page 590\]](#).

You can enter discrepancies (see [Discrepancies and Events \[Page 592\]](#)).

You can enter [shipper's load and count](#) (SLAC) for freight bookings. For freight bookings with reference to a forwarding order, the system copies SLAC from the forwarding order. SLAC denotes the total number of pieces of the smallest packaging unit in a container. The system also displays SLAC at container level. The system automatically calculates the total number of pieces of the largest packaging unit in a container (packages contained).



Example

A forwarding order comprises 3 pallets, each with 25 boxes. Each box contains 12 plates.

Packages contained: 3 (pallets)

SLAC: 75 (3 x 25 boxes)

End of the example.

Capacities

For freight orders, the system copies over the capacities from the vehicle resource that you enter in the freight order (also applies to passive vehicle resources).

You have the following options for freight postings:

- You enter the equipment group and the equipment type. The system uses the corresponding capacities that you defined in Customizing (see [Consideration of Equipment Data During FU Creation](#)).
- You specify the number of TEUs.

Utilization

To calculate the utilization of a freight order, the system compares the planned quantities and actual quantities. The relevant utilization is displayed at stage level. The maximum utilization of the most critical quantity of the most critical stage is displayed at header level. If confirmed quantities exist for an item, the system uses these to calculate the utilization.

You can display the utilization of a freight order for each stage and each relevant dimension in the form of a diagram. This function is also available in the transportation cockpit.

The utilization of a freight posting refers to the number of containers used. A container is classed as used in the following cases:

- You have loaded it with goods. It does not matter if the container is full or not.
- It is a FCL container (FCL = Full Container Load). This means the customer has already included the container as a FCL container in the forwarding order.



Example

A freight posting is made up of five containers. You load three containers with goods. This means the utilization of the freight posting is 60%.

End of the example.

On header level, the system displays the utilization of all loaded forwarding orders (that is, freight units) with regards to the total booked capacity for air freight bookings.

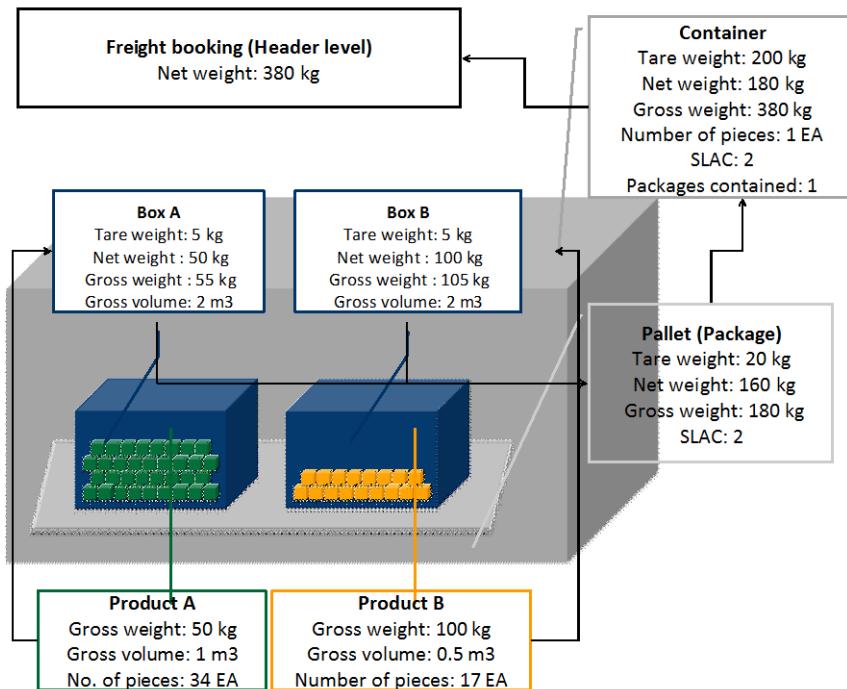
More Information

[Capacities and Utilization in Rail Freight Orders \[Page 490\]](#)



Example of Quantity Totaling

The following figure shows an example of the totaling of quantities in freight orders and sea freight bookings.



Quantity totaling

The net weight of the freight booking (380 kg) corresponds with the gross weight of the container (380 kg).

The gross weight of the container (380 kg) is made up of the gross weight of the pallet (180 kg) and the tare weight of the container (200 kg).

The net weight of the pallet (160 kg) is made up of the gross weight of box A (55 kg) and box B (105 kg).

The net weight of box A (50 kg) is the gross weight of product A (50 kg). Accordingly, the net weight of box B (100 kg) is the gross weight of product B (100 kg).

The following table gives an overview of the different values:

Level	Gross Weight	Gross Volume	Net Weight	Number of Pieces	Tare Weight
Booking (Header)	N/A	N/A	380 kg	N/A	N/A
Container	380 kg	N/A	180 kg	1 EA	200 kg
Pallet	180 kg	N/A	160 kg	N/A	20 kg

Level	Gross Weight	Gross Volume	Net Weight	Number of Pieces	Tare Weight
Box A	55 kg	2 m3	50 kg	N/A	5 kg
Box B	105 kg	2 m3	100 kg	N/A	5 kg
Product A	50 kg	1 m3	N/A	34 EA	N/A
Product B	100 kg	0.5 m3	N/A	17 EA	N/A

The total of the packages (pallets) in the container is 1. [Shipper's Load and Count](#) (SLAC) is for both the container and pallet 2.

 Note

For air freight bookings, the system does not take into account the tare weight of the unit load device when totaling the quantities. If, for example, a unit load device has a tare weight of 100 kg, and you have loaded it with 1 ton, only one ton is taken into account for totaling the quantities.

End of the note.



Discrepancies and Events

You can enter the following discrepancies in your business documents in freight order management (freight order, freight booking, trailer unit, and railcar unit):

- Quantity discrepancies (see [Quantity Discrepancies \[Page 593\]](#))
- Other discrepancies (see [Other Discrepancies \[Page 594\]](#))
- Unplanned events such as delays

Prerequisites

You have defined discrepancy types in Customizing for Transportation Management. For more information, see Customizing under ► *Freight Order Management* ► *Define Discrepancy Types*.

Features

When you enter discrepancies for a transportation stage, the system automatically adjusts the actual quantities in the documents of following transportation stages. However, the cargo receipt status for these transportation stages is not displayed, because they are still not in execution. In addition, the system adjusts the related freight units and displays information about discrepancies in these freight units.

If there are unresolved discrepancies, the system automatically sets a planning and execution block for the following transportation stages. In Customizing (*Define Discrepancy Types*) as well as in your freight order, freight booking, trailer unit, or railcar unit, you can select a checkbox to prevent the block from being set:

- Execution block or invoicing block for the freight order, freight booking, trailer unit, or railcar unit
- Planning and execution block for freight units

Note

You can search for forwarding orders that have discrepancies.

End of the note.

If there are any unsolved discrepancies in a document, you cannot set the freight execution status to *Cargo Ready for Unloading*. If there is a block on an unsolved discrepancy, no goods receipt may take place, this means that you cannot set the cargo receipt status.

If you remove a freight unit with a discrepancy from a business document, in other words, if you remove the assignment, the discrepancy and the block still remain in the freight unit. In contrast, the discrepancy and the block remain in the business document.

More Information

[Handling Discrepancies \[Page 355\]](#)



Quantity Discrepancies

You can enter quantity discrepancies in the business documents in freight order management.

Prerequisites

If you want to work with tolerances, you have defined a tolerance range in Customizing. For more information, see Customizing for Transportation Management under ► *Freight Order Management* ► *Define Discrepancy Types* ▶.

Features

If you have received the planned quantity, you set the corresponding business document item to *Quantity Received as Planned*. The system adds the actual quantity to the business document item automatically and changes the cargo receipt status to *On Hand*.

If there is a quantity discrepancy, however, you enter the actual quantity for the relevant business document item. The system automatically performs the following steps:

- It automatically changes the cargo receipt status to *On Hand*.
- It adjusts the actual quantities in the related freight units.

You can deselect this checkbox if the discrepancy has been resolved.

You can also observe tolerances in your quantity discrepancies. If the quantity discrepancy entered is found within the tolerance range defined in Customizing, the system does not set a lock for this quantity discrepancy.

Activities

You enter quantity discrepancies on the *Quantities* tab page of the respective business document item.



Other Discrepancies

You can enter discrepancies in the following situations, for example:

- Documents are missing for an item.
- There is a dangerous goods item you have not designated as such.
- Packaging of an item is damaged.

Features

You enter a discrepancy by making entries including the following:

- Discrepancy type
- Discrepancy date
- Notes and attachments (optional)

Or you can enter a discrepancy by selecting the item and choosing *Report Discrepancies*. The system creates a discrepancy with the standard discrepancy type that you specified in Customizing.

You can enter more than one discrepancy for an item. The discrepancies are displayed in the discrepancy log of the item.

If the same discrepancy occurs for several items, you can enter this discrepancy for all of the items at the same time. Select the items and choose *Report Discrepancies*. The system creates the discrepancies with the standard discrepancy type that you specified in Customizing.

When you have resolved the discrepancy, select the item and choose *Set Discrepancies to "Resolved"*. The item is displayed as resolved in the discrepancy log, but it remains visible for follow-up purposes. Once you have set all discrepancies for an item to *Resolved*, the system automatically sets the item to *Resolved*.

If you have entered a discrepancy by mistake, choose *Reset Discrepancies*.

Activities

You enter discrepancies on the *Discrepancies* tab page of the respective business document item.



Cargo Management

This function enables the following features:

- Distributing Freight Units

You can distribute a freight unit that is to be transported with the same freight order or the same freight booking over several containers (sea freight booking), unit load devices (air freight booking), or compartments (freight order). This means that you can use this function to distribute a business document (for example, a forwarding order) over two containers of the same freight booking. Here is a description of the function for containers; the same also applies for compartments and unit load devices.

- Splitting Partial Quantities

You can split partial quantities of freight units that are to be transported with the same freight booking and distribute them over multiple unit load devices (ULDs). In other words, you can use this function to distribute partial quantities of items in a business document (for example, a forwarding order) over multiple ULDs of the same freight booking.

This function is available only for air freight bookings.

- Deleting Items

You can delete items from freight orders and freight bookings.

Features

Distributing Freight Units

To distribute a freight unit over two containers for example, you move the items you want from one container to the other by using drag and drop in the sea freight booking. A symbol shows that the forwarding order is distributed across several containers or sea freight bookings. This function is available for packages, product and container items, however not for container items that already exist in the forwarding order.

You can use this function if you get a message from the warehouse saying that a freight unit was loaded into two containers. However, this is advisable only for LCL orders (LCL = Less Than Container Load) with FCL freight bookings, that is when you have defined your containers in your sea freight booking. If the system has copied the container from the preceding document, such as a forwarding order, it is not advisable to use this function. This is the case when the shipper has made a fixed order for a container in an FCL scenario (FCL = Full Container Load).

If you add a new package or product item to a forwarding order, the system assigns these automatically to the main container in the sea freight booking. The main container is the container to which the freight unit was originally assigned. If you move the entire content of the main container to a different container in the sea freight booking, then this automatically becomes the main container. If a container comprises a package item at top-level and a lower-level product item, you can only move the package item. If the container only comprises a product item at top level, you can move this.

Splitting Partial Quantities

If you get a message from the warehouse saying that a freight unit did not fit into a unit load device during loading and a partial quantity was loaded to another ULD, you can enter this information into the air freight booking manually. To do so, change the amount of the relevant item and then move the item to the desired ULD using Drag&Drop. A symbol shows that the item is distributed across multiple unit load devices. The system does not copy amounts and weights automatically. You need to adjust them manually.

When you enter the actual amounts in a freight order or freight posting, the system updates the actual amounts in the item of the related freight unit only when you have entered all items in the freight order or freight booking.

After a split, the system does not copy changes to the business document (for example, the forwarding order) to the related air freight bookings.

You can undo the split by moving the split item back to its original position by using Drag&Drop. In this case, the changes to the business document are copied back to the air freight booking automatically.

You cannot delete a split item. In this case, the system splits the related freight unit. The freight unit for the split quantity automatically receives the status *Unplanned*.

Delete Items

If one or more items (container, package or product item) cannot be transported with a freight order or freight booking, you can delete these items from the freight order or freight booking. This makes sense when a pallet remains in the container freight station because the container is full. Here the following situations can arise:

- Items do not belong to a freight unit

In this case, the system deletes the item, all lower-level items and the requirement.

- Items belong to a freight unit

If you delete the highest item, the system deletes the corresponding stage that is assigned to the freight order or the freight booking.

- Delete individual items of a freight unit

If you do not want to delete all items of a freight unit, the system splits off the items to be deleted and consolidates them in a new freight unit. The system creates this new freight unit as a copy of the existing freight unit. This means you must reschedule the new freight unit except for the stage that is assigned to the previous freight order or previous freight booking.

Constraints:

- You are only allowed to delete items of freight units from the top level. If you try to delete a lower-level item, the system issues an error message.
- You can only delete items from freight units that are assigned directly to a freight order or a freight booking. If you plan a truck with a trailer, you cannot delete any items from the freight order of the truck if these belong to one freight unit that will be transported on the trailer.

If you delete a container that you have created directly in the freight booking, in other words, the container is not an item in the corresponding forwarding orders, the system moves the items in the container up a level into the freight booking. To be able to execute the freight booking, you must reassign these items to a container.

The corresponding forwarding order is displayed at item level.

Activities

A tab for cargo management is available in the freight booking and in the transportation cockpit. In the air freight booking, the freight management functions are integrated with several task-specific views on the *Capacity and Freight* tab page. The *Freight* tab page is available in the freight order.

More Information

[Mixed Unit Load Device \[Page 598\]](#)



Mixed Unit Load Device

In certain situations, it may be necessary to load goods from various air freight bookings for the same flight in a unit load device. You can use this function to represent this in the air freight booking.

Features

In the air freight booking, you can define a unit load device as a mixed unit device on the *Freight Management* tab. On the lower-level tab page *Mixed Unit Load Device*, the system displays all air freight bookings that belong to this mixed unit load device. You can for example check which quantities from the other air freight bookings were loaded to this unit load device.

During capacity planning, you can also directly specify that a unit load device is to be used as a mixed unit load device (tab page *Capacity Requirements*).

If you enter the weight of a unit load device for an associated air freight booking, the system also displays this weight in the other associated air freight bookings.

You can also create a freight order for pick-up and delivery for all associated air freight bookings (see [Pick-up and Delivery Freight Orders \[Page 514\]](#)). In this freight order, the checkbox field *Mixed Usage* indicates that this type of scenario is involved.



Goods Information

Goods information includes the following:

- Goods value
- Insurable value
- Goods value for customs

The system copies goods information to the freight booking or freight order from the predecessor document, for example, the forwarding order. You cannot change goods information in the freight booking or in the freight order.

Prerequisites

- You have defined goods information in the predecessor document.
- If the system is to convert currencies, you have defined exchange rates in charge management.

Features

The system totals goods information from item level to header level, just as it does for quantities (see [Quantities and Capacities \[Page 587\]](#)).

If the checkbox for high-value goods is set for an item, this information is also displayed for the item above it and at header level.

For different currencies, the system proceeds as follows:

- If there is a document currency from charge management, the system converts other currencies to the document currency.
- If there is no document currency, the system converts the other currencies to one of the currencies used in the document.



Carrier Categorization

Using this function, you can differentiate between carrier categories and business partners in freight order management.

Prerequisites

- You have defined the following for your business partner:
 - Relationships
 - Standard Carrier Alpha Codes (SCACs) (for freight orders and sea freight bookings only)
 - Airline codes and MAWB prefixes (for air freight bookings only)

You can do so in SAP NetWeaver Business Client by choosing ► *Master Data* ► *General* ► *Define Business Partners* ▶.

For more information, see [Definition of Business Partners \[Page 28\]](#).

- In Customizing, you have defined airline codes and assigned MAWB prefixes. For more information, see Customizing for Transportation Management under ► *Master Data* ► *Business Partners* ► *Define IATA Airline Codes* ▶.

Features

The following functions are available:

- SCAC (for freight orders and sea freight bookings only)

If you enter an SCAC in your freight order or your sea freight booking, the system automatically determines the related carrier and vice versa. You can assign an SCAC to several carriers that are related to each other.



Example

Carrier A (carrier category *Carrier*) has two subsidiaries (carrier category *Subsidiary*):

- A_US
- A_EU

Moreover, carrier A has an agent AG (carrier category *Agent*). Carrier A, subsidiaries A_US and A_EU, and agent AG are related via the following relationships:

- *Has Subsidiaries/Agents*
- *Is Subsidiary/Agent Of*

Due to these assignments, the two subsidiaries and the agent have the same SCAC as carrier A. Agent AG is also assigned to carrier B. Due to this assignment, agent AG has two SCACs, that is, the SCAC of carrier A and the SCAC of carrier B.

End of the example.

For more information about using the SCAC in forwarding order management, see [Determination of the Route \[Page 357\]](#).

- Airline code (for air freight bookings only)

If you enter an airline code in your air freight booking, the system automatically determines the related carrier and vice versa. You can assign an airline code to multiple carriers that are related to each other (see the example under SCAC).

The MAWB prefix is a result of the airline code.

- Communication Party

If you enter a communication party in your freight order or freight booking and choose *Send to Carrier* (freight order) or *Send Booking* (freight booking), the system sends messages to this communication party instead of to the carrier. In tendering, if you have assigned a communication party to a carrier in the business partner master data, the system sends messages (for example, B2B messages, e-mails, or text messages) to the contact person of the communication party and not the contact person of the carrier.

- Executing carrier (for freight orders and sea freight bookings only)

You can enter an executing carrier in your freight order or sea freight booking for information purposes. For example, you can let your NVOCC (non-vessel operating common carrier) know that you want the goods to be transported by a special carrier.

- First carrier (for air freight bookings only)

You can enter a first carrier in your air freight booking for information purposes. The first carrier is the carrier who carries out the first stage of the main carriage. In the case of an import freight booking, you can enter the last carrier, that is, the carrier responsible for the last stage of the main carriage. For more information, see [Manual Creation of Import Freight Bookings \[Page 553\]](#).

 Note

You use Business Add-In (BAdI) /SCMTMS/TOR_ASSIGN_SCAC to bypass or enhance the standard logic for the determination of carriers from the SCACs, airline codes, and MAWB prefix.

End of the note.

 Note

By using a block, you can prevent the system from assigning a business partner to a freight booking or to a freight order as the carrier. You can do so in SAP NetWeaver Business Client by choosing    Display the business partner in the *Carrier* role and then select the *Central Posting Block* checkbox on the *Vendor Company Org. Data* tab.

End of the note.



Use of Schedules

You can assign schedules to your freight orders and freight bookings (see [Schedule \[Page 87\]](#)).

Prerequisites

- You have defined schedules and schedule types. For more information, see [Schedule Creation \[Page 91\]](#).
- You have assigned the same transportation mode to the schedule and the freight booking or freight order.

Features

The system copies the relevant data (for example, locations and times/dates as well as the carrier) to the freight booking or the freight order. If you have defined capacities in the schedule, these are also copied automatically to the freight booking or freight posting.

If you have not created the schedule as a template and you change data in the schedule, the system does not automatically update the freight booking or the freight order. As there is a connection between the schedule and your freight booking or freight order, you cannot change the relevant data in the freight booking or freight order manually. However, it is displayed in the document when an assigned schedule or a departure has changed (*Schedule Data Status*). You can display whether data has changed and, if so, which data that was. To do so, click the status in the *Schedule Data Status* field or click the traffic light. You can update the data in the document using *Update from Schedule*. For more information, see [Schedule \[Page 87\]](#).

Note

If you require an automatic update, you can create your own strategy and then specify this in your schedule type (CC strategy).

End of the note.

If you have created the schedule as a template, the system does not update the freight booking or freight order. In this case, there is no connection to a schedule so you can change the relevant data in the freight booking or in the freight order.

When you assign a schedule to an air freight booking, a master-air-waybill number is drawn automatically. The prerequisite is that you have entered an air waybill stock ID.

Assignment of schedules at transportation stage level

You can assign a carrier schedule to one or more transportation stages of a freight booking. The system copies all carrier information and the planned dates/times into the freight booking. If the freight booking contains several transportation stages, you only have to select the first and last transportation stage. Depending on which carrier schedule you assign, the system adjusts the transportation stages of the freight booking automatically. This function is only supported for schedules without gateways. For more information, see [Schedule \[Page 87\]](#).

Activities

You assign schedules on the following user interfaces:

- User interfaces for creating freight orders and freight postings

To do so, choose one of the following paths in SAP NetWeaver Business Client:

- ► *Freight Order Management* > *Road* > *Create Road Freight Orders* ▶
- ► *Freight Order Management* > *Rail* > *Create Rail Freight Orders* ▶
- ► *Freight Order Management* > *Air* > *Create Air Freight Booking* ▶
- ► *Freight Order Management* > *Ocean* > *Create Ocean Freight Booking* ▶
- Transportation Cockpit

For more information, see [Creation of Freight Documents from Resources](#).



Use of Seals

You use seals in order to protect containers or unit load devices from unauthorized access during transportation. The number of seals used depends on the type of container. A container with three doors, for example, has three seals. They also depend on the partners used, as the seals can be put on by different partners.

- Shipper
- Carrier
- Customs

Which partner puts on which seal depends on the scenario. In sea transportation, the following partners are for example involved:

- In the case of FCL (full container load), the shipper puts on the seal. The carrier only puts on another seal if the first seal is damaged.
- In the case of LCL (less than container load), the carrier consolidates the goods in the container freight station and puts on a seal. Customs also puts on a seal if the goods are relevant for customs.

Features

You can enter the following seal information for your business documents:

- Seal numbers
 - The seal numbers are displayed on the corresponding house bills of lading, master bills of lading and export declarations.
- Date, time and time zone of the sealing and unsealing
- The partner who seals and unseals

You can enter more than one seal per container or unit load device.

If your forwarding order already contains seals, they are copied automatically to the corresponding business documents (for example, the freight booking or freight order).

Activities

In your business document, select a container item or unit load device item and enter the seal information.



Use of Hierarchical Views in FOM

Creating hierarchical views for freight order management (FOM) allows you to organize the view for freight orders and freight bookings as well as for trailer units, railcar units, and container units.

Prerequisites

You have configured the relevant Customizing settings to allow you to use hierarchies in the individual documents. The following hierarchy types are predefined by default:

- CRGAB for air waybills (air freight)
- CRGAC for cargo management (air freight)
- CRGAU for cargo management with non-confirmed items (air freight)
- CRGLA for cargo management (all locations) (land)
- CRGLC for cargo management (current locations only) (land)
- CRGOC for cargo management (ocean freight)
- CRGRC for cargo management (current locations only) (rail)
- CRGRA for cargo management (all locations) (rail)
- EQUIR for equipment (rail)
- EQUIT for equipment (independent of transportation mode)
- HBL for house bills of lading
- SERV for the service items view
- ITEM for a generic view of all items

You can also define hierarchies with separate hierarchy types and groupings. You can specify the function (consumer) that each hierarchy type can use. Furthermore, you can specify a UIBB configuration to structure your user interface to meet your requirements. For more information, see *Customizing for Transportation Management under ► Freight Order Management ► Define Hierarchical Views for Freight Documents*.

For more information about FPM BOPF Integration (FBI), see [Reusable Objects and Functions for the BOPF Environment \(CA-EPT-BRC\)](#).

Note

View switches are not relevant for freight order management.

End of the note.

Features

You can select the required hierarchy type in the individual documents. This allows you to specify how the items are to be displayed. This includes which hierarchy levels are displayed and according to which attributes items are to be grouped.

The following items and assigned documents are displayed for the hierarchy type CRGAU, for example:

- Unit load device items
- Forwarding orders
- Freight units
- Cargo items

The forwarding orders are grouped according to organization interaction status and house air waybill status.

Activities

You can change the hierarchy type by choosing *Change Hierarchy* on the following user interfaces:

- Freight order and rail freight order: *Items* tab page



Note

The *Items* tab page replaces the *Cargo* and *Equipment* tab pages. You can personalize your user interface in such a way that the system displays the old tab pages.

End of the note.

- Transportation unit (trailer unit, railcar unit, and container unit): *Cargo* tab page
- Ocean freight booking: *Cargo Management* tab page
- Air freight booking: *Capacity and Cargo* tab page

More Information

Hierarchical views are also used in planning (transportation cockpit). For more information, see [Use of Hierarchical Views](#).



Use of Account Numbers

If an executing carrier has created one or more account numbers for you, you can enter and change these on your freight documents.

Prerequisites

- (Optional) You have entered your account numbers in SAP NetWeaver Business Client (NWBC) under ► *Master Data* ► *General* ► *Define Business Partner* (in the role *Carrier*). Enter account numbers for individual purchasing organizations on the *Vendor Org. Data* tab page and account numbers for your company on the *Vendor Company Org. Data* tab page.
- If the executing carrier has created an account number for your company, you can assign the purchasing organizations to your company. For more information, see Customizing for *Transportation Management* under ► *Master Data* ► *Organizational Management* ► *Organizational Model* ► *Create Organizational Model*.

Features

You can enter account numbers manually in your freight documents (in the *Account No. with Carrier* field).

The system can also determine account numbers automatically, provided that you have configured the settings mentioned in the prerequisites above. If you enter or change the purchasing organization or carrier in your freight document (in an air freight booking, this applies to the issuing carrier or local carrier), the system uses the organizational model to determine the corresponding account number and displays it in the freight document. You can overwrite the account number. For air freight bookings, the account number is also displayed in the master air waybill.

In co-load scenarios, you must enter the account number manually.



Statuses of Business Documents

This section contains the list of statuses that the following business documents can have:

- Freight order (see [Freight Order \[Page 473\]](#))
- Freight booking (see [Freight Booking \[Page 506\]](#))
- Freight unit (see [Freight Unit](#))
- Transportation unit (trailer unit, see [Trailer Unit \[Page 563\]](#), railcar unit, see [Railcar Unit \[Page 571\]](#), and container unit, see [Container Unit \[Page 573\]](#))
- Service order (see [Service Order \[Page 575\]](#))

Features

The following table lists the statuses that business documents can have.

Status	Status Values	Business Documents That Can Have This Status
Life cycle status	<i>New</i> <i>In Process</i> <i>Completed</i> <i>Canceled</i>	Freight order Freight booking Freight unit Transportation unit Service order
Planning status	<i>Not planned</i> <i>Partially Planned</i> <i>Planned</i>	All plannable business documents, such as freight units or transportation units
Subcontracting status	<i>No Subcontracting Result</i> <i>In Tendering</i> <i>Carrier Assigned</i> <i>Sent</i>	All subcontractable business documents
Confirmation status	<i>No Confirmation Yet</i> <i>Invalid Confirmation</i> <i>Rejected</i> <i>Confirmed</i> <i>Confirmed with Changes</i> <i>Update Sent, No</i>	All subcontractable business documents

	<i>Confirmation Yet</i> <i>Document Changed After Confirmation</i>	
Tendering status	<i>Not Published</i> <i>Published</i> <i>Review Required</i> <i>Completed</i>	Freight order (not supported for rail freight order)
Booking confirmation status	<i>Not Sent to Carrier</i> <i>Sent to Carrier</i> <i>Rejected by Carrier</i> <i>Confirmed by Carrier</i> <i>Canceled by Shipper</i> <i>Partially Confirmed by Carrier</i> <i>Shipping Instruction Sent to Carrier</i>	Freight booking
Cargo receipt status	<i>Picked Up</i> <i>On Hand</i> <i>Shipped</i> <i>Delivered</i> <i>Delivery Failed</i>	Freight order Freight booking Freight unit Transportation unit
Execution status	<i>Not Relevant</i> <i>Not Started/MAWB Open (Air)</i> <i>In Execution</i> <i>Executed</i> <i>Interrupted</i> <i>Canceled</i> <i>Ready for Transportation</i> <i>Execution/MAWB Finalized (Air)</i> <i>Not Ready for Transportation</i>	Freight order Freight booking Freight unit Transportation unit

	<p><i>Execution/MAWB Not Finalized (Air)</i></p> <p><i>Loading in Process</i></p> <p><i>Capacity Planning Finished</i></p>	
Handling execution status	<p><i>Not Determined</i></p> <p><i>Arrived</i> (only on stop level)</p> <p><i>Not Unloaded</i> (only on item level)</p> <p><i>Cargo Ready for Unloading</i> (only on stop level)</p> <p><i>Partially Unloaded</i> (only on stop level)</p> <p><i>Cargo Partially Ready for Unloading</i> (only on stop level)</p> <p><i>Unloaded</i></p> <p><i>Cargo Unloaded</i> (only on stop level)</p> <p><i>Not Loaded</i></p> <p><i>Cargo Ready for Loading</i> (only on stop level)</p> <p><i>Partially Loaded</i> (only on stop level)</p> <p><i>Cargo Partially Ready for Loading</i> (only on stop level)</p> <p><i>Loaded</i></p> <p><i>Cargo Loaded</i> (only on stop level)</p> <p><i>Departed</i> (only on stop level)</p> <p><i>Load Plan Up-to-Date</i> (only for freight order)</p> <p><i>Load Plan Partially Up-to-Date</i> (only for freight)</p>	Freight order Freight booking Transportation unit

	order)	
Cargo execution status	<i>Not Determined</i> <i>Cargo Not Unloaded</i> <i>Cargo Ready for Unloading</i> <i>Cargo Partially Unloaded</i> <i>Cargo Unloaded</i> <i>Cargo Not Loaded</i> <i>Cargo Ready for Loading</i> <i>Cargo Partially Loaded</i> <i>Cargo Loaded</i>	Freight order Freight booking Transportation unit
Publishing status	<i>Published</i> <i>Not Published</i>	Freight booking (air)
Waybill/bill of lading finalized status	<i>Not Finalized</i> <i>Finalized</i> <i>Partially Finalized</i> (only for freight bookings)	Freight unit Freight booking
Shipped-on-board status	<i>Not Shipped on Board</i> <i>Shipped on Board</i>	Freight booking (ocean)
Uplift confirmation status	<i>Uplift Not Confirmed</i> <i>Uplift Confirmed</i>	Freight booking (air)
Master-bill-of-lading status	<i>Master Bill of Lading Not Received</i> <i>Master Bill of Lading Received</i>	Freight booking (ocean)
Manifest status	<i>Manifest Not Created</i> <i>Manifest Created</i>	Freight order (not supported for rail freight order) Freight booking
Delivery status	<i>Not Delivered</i> <i>Partially Delivered</i> <i>Delivered</i>	Freight unit, transportation unit, and freight order if freight order or transportation unit is automatically created instead of freight unit (see “Automatic Creation of Freight Orders” in Freight Unit Building Rule)

Customs status	N/A	For more information, see Global Trade .
Invoicing status	<i>Not Invoiced</i> <i>Partially Invoiced</i> <i>Completely Invoiced</i> <i>Over-Invoiced</i>	Freight order Freight unit Service order
Transmission-to-ERP status	<i>New — Not Yet Transmitted</i> <i>Initial Transmission Started, Not Yet Confirmed by ERP</i> <i>Transmission Successful</i> <i>Retransmitted after Changes in TM, Not Yet Confirmed by ERP</i>	Freight order Freight Booking
Schedule Data Status	<i>Data Is Up-to-Date</i> <i>Data Is Not Up-to-Date</i>	Freight order Freight booking
Document check status	<i>Last Check with Errors</i> <i>Last Check Without Errors or Warnings</i> <i>Last Check with Warnings</i> <i>Not Yet Checked</i>	Freight Order Freight Booking
Cross-document check status	<i>Last Cross-Document Check with Green Traffic Light</i> <i>Last Cross-Document Check with Yellow Traffic Light</i> <i>Not Yet Checked</i>	Freight Order Freight Booking
Archiving Status	<i>Not Archived</i> <i>Archiving in Process</i> <i>Archived</i>	Freight order Freight booking Freight unit Transportation unit

Fixing of Business Documents

- You can unfix the business document and then change it.

- The fixing only prevents the change of already existing planning results, that is, a fixed subcontractable document is allowed to be subcontracted until a carrier is assigned. If a fixed document is already assigned to a carrier, no more change is allowed in the planning results.
- In VSR optimization, a fixed freight order must not be deleted and assigned freight units must not be unassigned. However, freight units can be assigned to freight orders for schedules and to freight bookings considering the capacity.
- For manual planning, you can specify in your planning profile whether you are allowed to change a fixed freight order or not (*Consider Fixing Status*).

You can specify in Customizing for the business document type (that is, freight order type and freight booking type) that the business document is to be fixed automatically each time you save it. In case of one-step planning, the system saves the business documents only at the very end of the planning process, the fixing takes place at the very end accordingly.



Explanation of Statuses of Business Documents

This section contains an explanation about how the various statuses of business documents are set and what effects these statuses have.

Features

Life Cycle Status

This status has the following values:

- *New*

The business document has been created, but has not been considered in planning and execution yet.

- *In Process*

Planning, execution, subcontracting, or invoicing was started.

You can specify in Customizing for the business document type that the life cycle status is to be set to *In Process* immediately after creation of the business document (that is, even if none of the mentioned processes were started yet). This setting is required for business documents resulting from a planning process.

- *Complete*

The transportation execution is finished and the invoicing status is set to *Completely Invoiced* (or no invoice is expected). This status is set automatically by the system. You can set this status manually if the business document has the life cycle status *In Process*.

- *Canceled*

Planning and execution of transportation is canceled. You can set this status manually at any time in the planning process by selecting the *Cancel Document* pushbutton.

Planning Status

This status relates to the different planning states of the individual transportation stages. The planning status is set automatically by the system and is determined based on the planning status of the individual stages.

The status has the following values:

- *Not Planned*

No transportation stage is planned.

- *Partially Planned*

At least one transportation stage is planned.

- *Planned*

All transportation stages are planned.

The planning status can relate to an individual transportation stage (not only to a business document). In this case, the planning status can have the following values:

- *Unplanned*
The transportation stage has not been planned yet.
- *Planned*
The transportation stage has been planned.
- *Planned, Conflict Between FU and Freight Order/Booking Times*
The transportation stage has been planned, but there exist conflicts with time constraints regarding the predecessor or the successor transportation stage.
- *Not Ready for Planning*
The transportation stage is not ready for planning because a location is missing. The system automatically sets a planning block.

Subcontracting Status

This status is set automatically by the system and is relevant for subcontractable business documents. You define the subcontracting relevance in Customizing for the business document type.

The status has the following values:

- *No Subcontracting Result*
The carrier has not been determined for the business document.
- *In Tendering*
Carrier has not been determined, but a tendering process is already in process.
- *Carrier Assigned*
Carrier was assigned.
- *Sent*
The business document was sent to the assigned carrier.
The value *Carrier Assigned* is a prerequisite for this value.

Confirmation Status

This status is either set automatically by the system or manually by the user and is relevant for subcontractable business documents. You define the subcontracting relevance in Customizing for the business document type.

The prerequisite for this status is that the subcontracting status has the value *Sent*.

The status has the following values:

- *No Confirmation Yet*

The carrier has not sent a confirmation yet.

- *Invalid Confirmation Received*

The confirmation sent by the carrier cannot be interpreted.

- *Rejected*

The carrier rejected the business document.

- *Confirmed*

The carrier confirmed the business document.

- *Confirmed with Changes*

The carrier confirmed the business document with some changes.

- *Document Changed After Confirmation*

The business document was changed after having been sent to and confirmed by the carrier.

Tendering Status

This status is set automatically by the system and is relevant for subcontractable business documents that are tendered, that is, the subcontracting status has the value *In Tendering*. You define the tendering relevance in Customizing for the business document type.

The status has the following values:

- *Not Published*

The user or the system has started tendering for a freight order, but no requests for quotation to carriers have been published yet.

- *Published*

The user or the system has started tendering for a freight order, and has published one or several requests for quotation to carriers.

- *Review Required*

Review is required by tendering manager.

- *Completed*

Tendering is completed.

There are also the following statuses:

- Freight Request for Quotation: Life Cycle Status

- *Not Sent*

The freight request for quotation has been created in the tendering plan, but it has not been published yet.

- *Open*

The freight request for quotation has been published and sent to a carrier. Freight quotations can be submitted for this freight request for quotation.

- *Closed*

The freight request for quotation has been published and sent to a carrier, but no more freight quotations can be submitted for it.

- *Omitted*

The tendering process was completed before the freight request for quotation was sent. In other words, an omitted freight request for quotation has never been published.

- Freight Quotation: Life Cycle Status

- *Draft*

The freight quotation has been created in the tendering worklist for carriers, but it has not been submitted. It is not considered in the corresponding tendering process.

- *Sent*

The freight quotation has been created and submitted for a freight request for quotation. It is considered in the corresponding tendering process and the evaluation of submitted freight quotations.

- Tendering Step: Life Cycle Status

- *Not Started*

The tendering step has been created in a tendering plan, but not started yet. All freight requests for quotations assigned to this step are in status *Not Sent*.

- *In Process*

At least one freight request for quotation assigned to this step has been published and is in status *Open*.

- *Completed*

At least one freight request for quotation assigned to this step had been sent to a carrier. No more freight quotations can be submitted to the assigned freight requests for quotations.

- *Omitted*

The tendering process was completed before the tendering step started.

Booking Confirmation Status

This status is either set automatically by the system or manually by the user.

The status has the following values:

- *Not Sent to Carrier*

The freight booking has not been sent to the carrier.

- *Sent to Carrier*
The freight booking has been sent to the carrier.
- *Rejected by Carrier*
The freight booking has been rejected by the carrier.
- *Confirmed by Carrier*
The freight booking has been confirmed by the carrier.
- *Canceled by Shipper*
The freight booking has been canceled by the shipper.
- *Partially Confirmed by Carrier*
The freight booking has been confirmed by the carrier with quantity changes.
- *Shipping Instruction Sent to Carrier*
A shipping instruction has been sent to the carrier for the freight booking.

Cargo Receipt Status

This status is set automatically by the system or manually by the user.

The status has the following values:

- *Picked Up*
The cargo has been picked-up and is now in transit.
- *On Hand*
The cargo has been received. After this status has been set, only the actual quantities in the freight order or freight booking are taken into account. You can change these quantities in the freight order or freight booking. If changes are subsequently made in the forwarding order, they are not copied to the freight order, freight booking, or freight unit.
- *Shipped*
The cargo has been shipped. This status value is used in the direct integration of SAP Transportation Management and SAP Extended Warehouse Management. For more information, see [Direct Integration with SAP Extended Warehouse Management](#).
- *Delivered*
The cargo has been delivered. If you have set the status manually, you can enter additional information (the recipient, for example) and the delivery date.
- *Delivery Failed*
The cargo item could not be delivered.

After you remove a freight unit from a freight order, the system allows you to keep the items without reference to the predecessor document in the freight order if the cargo

receipt status of the items is at least *On Hand*. In this case, the cargo receipt status is set to *Delivery Failed* for these items. As a prerequisite, you must have selected the *Severe Execution Check* checkbox in the Customizing activity for defining freight order types.



Example

You have planned a freight unit on the freight order and execution of the freight order has started. During execution, not all cargo could be delivered to the consignee, for example. Therefore, you have removed the freight unit from the freight order. If you have selected this checkbox, the cargo items without reference to the freight unit will remain in the freight order and the cargo receipt status of the items is set to *Delivery Failed*. If you have not selected the *Severe Execution Check* checkbox in the Customizing activity for defining freight order types, such cargo items are removed from the freight order.

End of the example.

Execution Status

This status is set automatically by the system for business documents that are subject to tracking. You can specify the tracking relevance in Customizing for the business document type.

In SAP NetWeaver Business Client, you can also set this status manually.

The status has the following values:

- *Not Started/MAWB Open (Air)*
Execution has not started yet.
- *Capacity Planning Finished*
Capacity planning was finished.
- *Loading in Process*
Loading was started.
- *Ready for Transportation Execution/MAWB Finalized (Air)*
Transportation execution can be started, that is, loading was finished or a carrier accepted an order.

Note

A business document with status *MAWB Finalized* can no longer be planned manually or automatically.

End of the note.

- *Not Ready for Transportation Execution/MAWB Not Finalized (Air)*
Transportation execution cannot be started yet because either the check for readiness of execution failed or you set the status manually to this value.
- *In Execution*
Execution was started.

You can specify in Customizing for the business document type that the business document is set immediately to *In Execution* after creation.

- *Executed*

Execution has finished.

If execution is tracked with SAP Event Management, a last expected event can be specified. If this event is reported, the execution status is set automatically to *Executed*.

- *Interrupted*

Execution has been interrupted.

- *Canceled*

Execution was canceled.

- *Not Relevant*

You can specify in Customizing for the business document type that the business document is not relevant for execution tracking. The system automatically sets this status. The status does not change anymore.

Handling Execution Status

This status is either set automatically by the system or manually by the user.

You can set the handling execution status on the following levels:

- On item level for cargo items at the current stop



Note

A cargo item can be a product, a package, or a container.

End of the note.

For example, this status can indicate that a package has been loaded into a container.

- On stop level

On this level, this status indicates the progress of the execution activities at a stop. It refers to a container (capacity item or cargo item) or a cargo item.

The handling execution status is related to the cargo execution status. If all cargo items have been loaded into the container, for example, the system automatically sets the cargo execution status of the container to *Cargo Loaded*. Moreover, the handling execution status on item level and the handling execution status on stop level are related to each other.

For air freight bookings, the handling execution status is also displayed on the *Operations* tab page and indicates the logistical execution status. It contains the following:

- Location ID (location code)
- Status at last location at which freight units were picked up or delivered
- Date/time when the status was set

For ocean freight bookings and freight orders, this information is displayed on the *Statuses* tab page.

For example, if a freight order for pick-up is assigned to the air freight booking and you change the status of this freight order from *Arrived* to *Unloaded*, the logistical execution status of the air freight booking will indicate *Unloaded*.

The handling execution status *on item level* has the following values:

- *Not Determined*

The system sets this initial status value after you have created the business document. It indicates that no execution activities are to be performed for the cargo item at the current stop.

- *Not Unloaded*

The cargo item has not been unloaded at the current stop.

- *Unloaded*

The cargo item has been unloaded at the current stop.

- *Not Loaded*

The cargo item has not been loaded at the current stop.

- *Loaded*

The cargo item has been loaded at the current stop.

- *Load Plan Up-to-Date*

A load plan has been created and the item can be planned. Note that this status value is only supported for freight orders. For more information, see [Load Planning](#).

The handling execution status *on stop level* has the following values:

- *Not Determined*

The system sets this initial status value after you have created the business document. It indicates that no execution activities have been performed for the containers at a stop.

Moreover, the system sets this status value, if you change the status *Arrived* by selecting *Set to Not Arrived*.

- *Departed*

This status value indicates that the containers have departed.

If you set the source stop of the main carriage to *Departed*, the vessel is loaded and has departed (*Shipped on Board*).

If execution is tracked with SAP Event Management, the *Departure* event is sent automatically to all assigned freight units and the business document. Similarly, if you report a *Departure* event, the system automatically sets the handling execution status on stop level to *Departed*.

- *Arrived*

The goods have arrived.

If execution is tracked with SAP Event Management, the *Arrival at Destination* event is sent automatically to all assigned freight units and the business document.

- *Cargo Ready for Unloading*

The containers are ready for unloading.

- *Partially Unloaded*

The cargo items have been partially unloaded.

- *Cargo Partially Ready for Unloading*

Some of the containers are ready for unloading, but some are not.

- *Unloaded*

The cargo items have been unloaded.

- *Not Loaded*

The cargo items have not been loaded.

- *Cargo Unloaded*

All goods have been unloaded from the containers.

- *Cargo Ready for Loading*

The containers are ready for loading.

- *Partially Loaded*

The cargo items have been partially loaded.

- *Cargo Partially Ready for Loading*

Some of the containers are ready for loading, but some are not.

- *Loaded*

The cargo items have been loaded.

- *Cargo Loaded*

All goods have been loaded into the containers.

- *Load Plan Up-to-Date*

A load plan has been created. Note that this status value is only supported for freight orders. For more information, see [Load Planning](#).

- *Load Plan Partially Up-to-Date*

A load plan has been created but some items cannot be planned due to capacity reasons. Note that this status value is only supported for freight orders. For more information, see [Load Planning](#).

For more information about the handling execution status in rail freight orders, railcar units, and container units, see [Rail Freight Order \[Page 483\]](#).

Cargo Execution Status

This status is either set automatically by the system or manually by the user. It indicates the execution status of a container (capacity item or cargo item) at the current stop, for example a container has been fully loaded at the source stop of the main carriage.

The status has the following values:

- *Not Determined*

The system sets this initial status value after you have created the business document. It indicates that no execution activities are to be performed for the container at the current stop.

- *Cargo Not Unloaded*

The container has not been unloaded at the current stop.

- *Cargo Ready for Unloading*

The container is ready for unloading.

- *Cargo Partially Unloaded*

The container has been partially unloaded at the current stop.

- *Cargo Unloaded*

The container has been unloaded at the current stop.

- *Cargo Not Loaded*

The container has not been loaded at the current stop.

- *Cargo Ready for Loading*

The container is ready for loading.

- *Cargo Partially Loaded*

The container has been partially loaded at the current stop.

- *Cargo Loaded*

The container has been loaded at the current stop.

For more information about the cargo execution status in rail freight orders, railcar units, and container units, see [Rail Freight Order \[Page 483\]](#).

Publishing Status

This status controls whether a business document can be used by other users, for example, other organizational units.

The status has the following values:

- *Not Published*
The business document has not yet been published and cannot be used by other users.
- *Published*
The business document has been published and can be used by other users.

Waybill/Bill of Lading Finalized Status

You set this status for freight units via your air forwarding orders.

This status has the following values:

- *Not Finalized*
The waybill or bill of lading has not yet been finalized.
- *Finalized*
The waybill or bill of lading has been finalized.
- *Partially Finalized* (only for freight bookings)
This status is set for a freight booking if its freight units have different waybill or bill of lading statuses, for example, if one freight unit is finalized and another freight unit is not finalized.

Shipped-on-Board Status

You set this status manually after the vessel has departed the source stop of the main carriage. The shipped-on-board date must not lie in the future.

As a prerequisite, the execution status is to be set to *Ready for Transportation Execution*.

The status has the following values:

- *Not Shipped on Board*
The vessel has not departed yet.
- *Shipped on Board*
The vessel has departed.
The system automatically sets the handling execution status of the source stop of the main carriage and all previous outbound stops to *Departed*.

Uplift Confirmation Status

You set this status manually after the aircraft has departed the source stop of the main carriage. The uplift date must not be in the future.

As a prerequisite, the execution status is to be set to *MAWB Closed*.

The status has the following values:

- *Uplift Not Confirmed*

The aircraft has not departed yet.

- *Uplift Confirmed*

The aircraft has departed.

The system automatically sets the handling execution status of the source stop of the main carriage and all previous outbound stops to *Departed*.

Master-Bill-of-Lading Status

You set this status manually after a master bill of lading has been created for an ocean freight booking. If you want to change the master bill of lading number after having set this status, you first have to reset this status.

The status has the following values:

- *Master Bill of Lading Not Received*

No master bill of lading has been received yet.

- *Master Bill of Lading Received*

A master bill of lading has been received.

Manifest Status

You set this status manually after loading has been finished.

The status has the following values:

- *Manifest Not Created*

No manifest has been created yet.

- *Manifest Created*

A manifest has been created.

Delivery Status

This status is set automatically by the system. It is derived from the cargo receipt status on item level:

- If you set the first item to *Delivered*, the system automatically sets the delivery status of the freight unit to *Partially Delivered*.

- If you set the last item to *Delivered*, the system automatically sets the delivery status of the freight unit to *Delivered*.

The status is also automatically set to *Delivered*, if the *Proof of Delivery* event is reported.

The status has the following values:

- *Not Delivered*
The freight unit has not been delivered.
- *Partially Delivered*
The freight unit has been partially delivered.
- *Delivered*
The freight unit has been delivered.

Transmission-to-ERP Status

This status is only relevant if you use transportation data from an ERP system and if you want to create ERP shipments based on the planned freight order.

The transmission-to-ERP status is set automatically by the system when the data exchange is processed.

As a prerequisite, you have set the shipment creation relevance in Customizing to *Shipment Creation in SAP ERP* for the business document type (freight order type and freight booking type).

The status has the following values:

- *New - Not Yet Transmitted*
Business document is new, and no data was transmitted to the ERP system yet.
- *Initial Transmission Started, Not Yet Confirmed by ERP*
Initial transmission of business document information to the ERP system has been started, but no confirmation has been received yet from the ERP system.
- *Transmission Successful*
Business document information was successfully transmitted to the ERP system.
- *Retransmitted after Changes in TM, Not Yet Confirmed by ERP*
Retransmission of business document information to the ERP system has been started after business document has been changed. New confirmation has not been received yet from the ERP system.

Invoicing Status

This status is only relevant if an invoice is expected from the carrier for a subcontractable business document.

The status is set automatically by the system once a cost calculation has been performed.

The status has the following values:

- *Not Invoiced*
No invoicing request was created.
- *Partially Invoiced*
Partial invoicing request was created.
- *Completely Invoiced*
Invoicing request was created for the total costs.
- *Over-Invoiced*
Invoicing request was created for additional costs.

Once a freight settlement document is created either manually or in background processing, the invoicing status can change to *Partially Invoiced*, *Completely Invoiced*, or *Over-Invoiced*. The system determines the invoicing status based on the calculated costs in the order and the invoiced values in the freight settlement document. An invoice is completed if the invoiced values equal the calculated costs. An order is partially invoiced if the invoiced values are less than the calculated costs. An invoice is over-invoiced if the invoiced values are more than the calculated costs.

Schedule Data Status

This status is set automatically if a referenced schedule has been changed. For more information, see [Use of Schedules \[Page 602\]](#).

The status has the following values:

- *Data Is Up-to-Date*
The referenced data is up-to-date.
- *Data Is Not Up-to-Date*
A referenced schedule has been changed and the referenced data is not up-to-date.

Document Check Status

This status is set automatically, If you start the check manually and save the business document. The status has the following values:

- *Last Check with Errors*
The last check was performed with errors.
- *Last Check Without Errors or Warnings*
The last check was performed without errors or warnings.
- *Last Check with Warnings*
The last check was performed with warnings.

- *Not Yet Checked*

The check has not been performed yet.

Cross-Document Check Status

The system checks if there are time conflicts between a business document and its predecessor or successor business documents. This check is performed automatically and the status set automatically when you save a business document. You can also start the check manually. In this case, the status is also set automatically.

Examples:

- A freight booking arrives too late for the subsequent freight order.
- Availability times are violated.

The status has the following values:

- *Last Cross-Document Check with Green Traffic Light*

The check was performed without errors.

- *Last Cross-Document Check with Yellow Traffic Light*

The check was performed with warnings.

- *Not Yet Checked*

The check has not been performed yet.

Archiving Status

The status has the following values:

- *Not Archived*

The business document has not yet been archived.

- *Archiving in Process*

The business document has been selected for archiving and processed by the archiving pre-processing.

- *Archived*

The business document has been written to the archive. It can still be accessed in display mode.

For more information about archiving, see [Archiving in SAP Transportation Management \(SAP TM\)](#)



Automatic Status Updates (Simple Scenario)

When you set a status for a freight document with two transportation stops, the system automatically updates related statuses based on the status that you set. The sections below explain how the various statuses are updated.

Features

Handling Execution Status and Cargo Receipt Status

- When you set the handling execution status of the outbound stop to *Departed*, the system automatically sets the cargo receipt status of the items assigned to this stop to *Picked Up*.
- When you set the cargo receipt status of the items assigned to the outbound stop to *Picked Up*, the system automatically sets the handling execution status of the corresponding items to *Loaded* and vice versa.
- When you set the items assigned to the inbound stop to *Delivered* or *On Hand* or you select *Set to Quantity Received as Planned*, the system automatically sets the handling execution status of the corresponding items to *Unloaded*.
- When you set at least one cargo item to *Delivered* or *On Hand* or you select *Set to Quantity Received as Planned* for the first (outbound) stop, the system automatically considers the current stop to be the destination (inbound) stop of the item and sets the handling execution status of the previous stops to *Departed*.
- When you set all items assigned to the inbound stop to *Delivered* or *On Hand* or you select *Set to Quantity Received as Planned*, the system automatically sets the handling execution status of the inbound stop to *Unloaded*.
- When you set the handling execution status of the inbound stop to *Unloaded*, the system automatically sets the cargo receipt status of the items assigned to the stop to *Delivered*.
- When you reset the handling execution status of the outbound stop to *Not Loaded*, the system automatically resets the cargo receipt status as well.
- When you reset the handling execution status of the inbound stop to *Not Unloaded*, the system automatically resets the cargo receipt status to *Picked Up*.

Handling Execution Status on Stop Level and Item Level

- When you set the handling execution status on item level to *Loaded*, the system automatically sets the handling execution status on stop level to one of the following values:

- *Loaded*

This status value is set if all items are loaded.

- *Partially Loaded*

This status value is set if only some items are loaded.

- When you set the handling execution status on item level to *Unloaded*, the system automatically sets the handling execution status on stop level to one of the following values:
 - Unloaded*
This status value is set if all items are unloaded.
 - Partially Unloaded*
This status value is set if only some items are unloaded.
- When you set the handling execution status on stop level to *Loaded*, the system automatically sets the handling execution status on item level to *Loaded* for all items.
- When you set the handling execution status on stop level to *Unloaded*, the system automatically sets the handling execution status on item level to *Unloaded* for all items.

Cargo Execution Status on Item Level and Handling Execution Status on Item Level

- When you set the handling execution status on item level to *Loaded*, the system automatically sets the cargo execution status on item level to one of the following values:
 - Cargo Loaded*
This status value is set if all items of the container are loaded.
 - Cargo Partially Loaded*
This status value is set if only some items of the container are loaded.
- When you set the handling execution status on item level to *Unloaded*, the system automatically sets the cargo execution status on item level to one of the following values:
 - Cargo Unloaded*
This status value is set if all items of the container are unloaded.
 - Cargo Partially Unloaded*
This status value is set if only some items of the container are unloaded.
- When you set the cargo execution status on container level to *Cargo Loaded*, the system automatically sets the handling execution status on item level to *Loaded* for all items of the container.
- When you set the handling execution status on container level to *Cargo Unloaded*, the system automatically sets the handling execution status on item level to *Unloaded* for all items of the container.

Cargo Execution Status on Item Level and Handling Execution Status on Stop Level

- When you set the cargo execution status to *Cargo Ready for Loading*, the system automatically sets the handling execution status on stop level to one of the following values:

- *Cargo Ready for Loading*
This status value is set if all containers are ready for loading.
- *Cargo Partially Ready for Loading*
This status value is set if only some containers are ready for loading.
- When you set the cargo execution status to *Cargo Ready for Unloading*, the system automatically sets the handling execution status on stop level to one of the following values:
 - *Cargo Ready for Unloading*
This status value is set if all containers are ready for unloading.
 - *Cargo Partially Ready for Unloading*
This status value is set if only some containers are ready for unloading.
- When you set the handling execution status on stop level to *Cargo Ready for Loading*, the system automatically sets the cargo execution status on container level to *Cargo Ready for Loading* for all items.
- When you set the handling execution status on stop level to *Cargo Ready for Unloading*, the system automatically sets the cargo execution status on container level to *Cargo Ready for Unloading* for all items.

Handling Execution Status on Stop Level and Execution Status on Document Header Level

- When the system sets the handling execution status on stop level to *Loaded* or *Partially Loaded*, the execution status on header level is automatically set to *Loading in Process*.
- When you set the handling execution status on stop level to *Departed*, the system automatically sets the execution status on header level to *In Execution*.

More Information

[Transportation Stops \[Page 585\]](#)



Automatic Status Updates (Multi-Pickup and Multi-Drop Scenario)

When you set a status for a freight order with more than two transportation stops, the system automatically updates related statuses based on the status that you set.

The system provides additional logic compared to that described for the simple scenario (see [Automatic Status Updates \(Simple Scenario\) \[Page 629\]](#)). This logic is described below by using the following example.

You have three full container load (FCL) freight units with two transportation stages, which are all planned on one freight order:

- Freight unit 1 contains two stages: A -> BB' -> C
- Freight unit 2 contains one stage: B' -> C
- Freight unit 3 contains one stage: A -> B
- The freight order contains two stages: A -> BB' -> C

Note

In this example, B is the inbound stop at which unloading takes place, whereas B' is the outbound stop at which loading takes place.

End of the note.

Features

Handling Execution Status and Cargo Receipt Status

- When you set the handling execution status of the outbound stop to *Departed*, the system automatically sets the cargo receipt status of the items to *Picked Up* if it has not been set already.

In the example, when you set the handling execution status of outbound stop A to *Departed*, the system automatically sets the cargo receipt status of the items of freight unit 1 and freight unit 3 to *Picked Up*.

- When you set the handling execution status of any outbound stop to *Departed*, the system automatically sets the handling execution status of the previous outbound stops to *Departed* if any previous stops exist. If there are items for which the destination stops match the previous stops, the cargo receipt status for these items is automatically set to *Delivered*. If there are items for which the source stop matches the previous stops, the cargo receipt status is automatically set to *Picked Up*.

In the example, when you set the handling execution status of outbound stop B' to *Departed*, the system automatically sets the handling execution status and the cargo receipt status of the items of freight unit 2 to *Picked Up* and all items assigned to freight unit 3 to *Delivered*. The handling execution status of outbound stop A is automatically set to *Departed*.

- When you set all items to *Picked Up* on document header level, the system automatically considers the current stop to be the outbound stop corresponding to the last location at which freight units are picked up (in this example, the outbound stop B').
- When you set all items to *Delivered* or *On Hand* or you select *Set to Quantity Received as Planned* on document header level, the system automatically considers the current stop to be the inbound stop corresponding to the last location at which freight units are delivered (in this example the inbound stop C). The handling execution status of the items assigned to the current inbound stop is automatically set to *Unloaded* and the handling execution status of the stop is automatically set to *Unloaded*. All previous outbound stops are automatically set to *Departed* and the corresponding items (in this example, the items assigned to freight unit 3) are automatically set to *Delivered*.

More Information

[Transportation Stops \[Page 585\]](#)



Blocking Information

Features

You can set a planning block, an execution block, and an invoicing block for the business document.

The planning block and execution block can be set as follows:

- Automatically by the system, for example, if a dangerous goods check discovers an error
- Manually
- Is copied by the system from a predecessor document, that is, from the forwarding order

For freight orders and freight bookings, only the execution block is copied from the freight unit.

The invoicing block is set automatically or manually. It cannot be copied from a predecessor document.



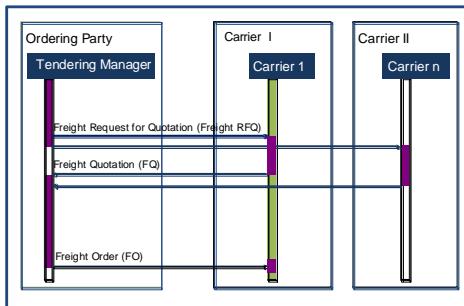
Freight Tendering

You can use this component to tender a road freight order (road FO) to one or more carriers. You can use a tendering process based on a freight request for quotation (freight RFQ), or a direct tendering process.

You can execute a freight RFQ-based process manually or automatically. In this process, the tendering manager sends out a freight RFQ to one or more carriers to tender an FO. The carrier either accepts or rejects the freight RFQ. If the carrier accepts, he or she sends back a freight quotation (FQ). You can either award or reject the FQ in the evaluation process. If you award the FQ, the system sends the updated FO to the awarded carrier.

You can use the direct tendering process to send a road freight order (road FO) directly to a specified carrier without creating a freight RFQ. Carriers can confirm or reject the FOs. Unlike the freight RFQ process, the system generally awards a carrier if he or she does not reject the FO within a given time limit.

The tendering process described above is depicted in the following figure:



Tendering process

Features

The freight tendering component has the following features:

- Multi-step tendering in a tendering plan
- Mix tendering types

For example, you can first use peer-to-peer tendering, and if this is unsuccessful you can use broadcast tendering.

- Web user interface (UI), e-mail, short message service (SMS), and business-to-business (B2B) communication channels for carriers
- Tendering to one or more carriers
- Manual and automatic tendering with carrier selection
- Background execution of tendering
- Direct sending of FOs to preferred carriers

This can reduce messages between ordering parties and carriers.

- Flexible use of freight agreements (FA) to calculate price limits
- Automatic reaction to changes in the FO

For example, you can stop tendering when changes are made to the FO.

To create freight RFQs, you must define the following master data:

- Business partner to which the *Carrier* role is assigned
- Business partner in which the *Contact Person* role is assigned to a carrier
- Transportation lane to which a carrier is assigned
- Charge Management to calculate price limits

For more information, see [Charge Management and Service Product Catalogs \[Page 166\]](#).

- Carrier selection settings
- Freight agreements

For more information, see [Agreement](#).



Basic Settings for Tendering

Before you can start tendering, you must have specified the following items:

- Customizing settings for tendering
- A tendering plan

Prerequisites

You have defined the freight order types that are relevant for subcontracting.

For more information, see *Customizing for Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types*.

Process

You specify the following Customizing settings:

- Visibility settings
- Rejection reason codes
- Notification e-mail settings
- Process settings
- Communication settings
- Carrier-specific communication settings
- Default settings

For more information about tendering settings, see *Customizing for Transportation Management* under ► *Freight Order Management* ► *Tendering* ► *Define General Settings for Tendering*.

You can also specify freight order type settings for tendering. You must have specified the process settings and communication settings for tendering before you can specify the freight order type settings.

If you want the system to use the default settings to determine the Customizing settings, select the *Use Default* checkbox.

If you want the system to use conditions to determine the Customizing settings, select the *Use Condition for Sett. Determ.* checkbox.

If you want the system to use the freight order type to determine the Customizing settings, select the *Use Type-Specific Settings* checkbox. You must create a condition definition for the /SCMTMS/TEND condition type. This definition includes the following details:

- The condition definition itself
- The following details in the condition table:
 - The value of the attribute you have defined with the data access definition

- The two result columns for tendering process settings and communication settings, which contain the names of the settings you have created in Customizing for tendering.

The system determines the tendering settings according to the type of freight order.

If you want to use tendering in the background, separately from carrier selection, you can use the /SCMTMS/TOR_TENDERING_BATCH program. For more information, see [Tendering](#).



Tendering Profile

Can be used to define a tendering plan. It contains basic tendering data and is a prerequisite for automatic tendering. You can use a tendering profile when you manually create a tendering plan.

You can use an existing tendering plan to create a new tendering profile. You can also create a new tendering profile without reference to an existing tendering plan.

To use an existing plan to create a new profile, in SAP NetWeaver Business Client (NWBC), on the *Tendering Overview* screen, open the required road freight order (road FO). On the *Tendering Execution* area of the *Edit* screen, choose the existing tendering plan. On the *Tendering Plan* area of the *Edit* screen, choose the *Tendering Profile* pushbutton, and select *Save as Tendering Profile*.

To create a new tendering profile without reference to an existing plan, in the administration of the tendering profile, choose ► *Application Administration* ► *Tendering* ► *Tendering Template* ► *Create Tendering Profile* ▶.

You can manually load a tendering profile to a tendering plan, or you can enable the system to load a profile automatically. The system loads a profile according to the freight order type you have defined, or the settings you have defined in Customizing for tendering.

To manually load a profile, in NWBC, choose *Load*. To enable the system to load a profile, choose *Load and Determine*.

Structure

The following are the main parts of a tendering profile:

- Tendering step
 - You can specify one or more tendering steps.
- Tendering type

The following are the tendering types:

- *Peer-to-Peer Tendering — Response Required*
- *Peer-to-Peer Tendering — No Response Required*
- *Broadcast Tendering — Best Offer*
- *Broadcast Tendering — First Acceptable Offer*

- Tendering process mode

The following are the tendering process modes:

- *Freight RFQ Based, Award Manually*
- *Freight RFQ Based, Award Automatically*
- *Direct Tendering, Send Freight Order Directly*

- Carrier

The assignment of a carrier is optional in a tendering profile. When you use a profile to create a new tendering plan, the system can retrieve a carrier according to the carrier assignment strategy.

The following are the standard carrier assignment strategies:

- *Get Carriers from Ranking List*
- *Get Carriers from the Transportation Lane Master Data*
- *Get Assigned Carrier from Freight Order*
- *Assign Carriers Manually*

- Relative price limit

You can set a relative price limit for each tendering step.

- Maximum response duration

This is the longest period of time within which a carrier must respond.

- Manual evaluation

This requires the tendering manager to manually evaluate each freight quotation (FQ).

- Carrier-specific freight agreement (FA)

For more information, see [Agreement Maintenance](#).

- Visibility settings

For more information, see [Visibility Settings \[Page 655\]](#).



Communication Channels in Tendering

This function enables you to use the following communication channels in your tendering process:

- Communication using Web user interface (Web UI)

If a carrier does not have an SAP Transportation Management (SAP TM) system, he or she can log on to the SAP TM system of the ordering party.

The carrier can view his or her freight request for quotations (freight RFQs), and submit freight quotations (FQs) through a Web UI.

If external users do not have access to the tendering functions in the SAP TM collaboration portal, but via the *Overview Tendering for Carriers* application, we strongly recommend that you adjust the results of the standard authorization checks using *BAdI: Additional Authorization Check for Carrier Web UI* (/SCMTMS/TEND_CARRIER_AUTH_CHK).

- Communication using the SAP TM collaboration portal

If a carrier does not have an SAP TM system, he or she can log on to the SAP TM collaboration portal.

The SAP TM collaboration portal is the recommended communication channel rather than the Web UI.

For more information, see the administrator's guide for SAP Transportation Management collaboration portal on SAP Service Marketplace at ► <http://service.sap.com/instguides> ► SAP Business Suite Applications ► SAP TM ▶.

- Communication using the SAP Transport Tendering mobile app for iPhone

If a carrier does not have an SAP TM system, he or she can use the SAP Transport Tendering mobile app for iPhone (sold as a separate add-on for SAP TM).

For more information, see the administrator's guide for SAP Transport Tendering on SAP Service Marketplace at ► <http://service.sap.com/instguides> ► SAP Components ► SAP Mobile Applications ► SAP Business Suite ► SAP TM ▶.

- Communication using e-mail

The system supports e-mail communication. You must define the following criteria:

- Assign a contact person to the business partner that you have defined with the role *Carrier*
- Enter a valid e-mail address for the contact person

For more information about creating and managing business partners, see [Business Partner \[Page 25\]](#).

For more information about using e-mails in tendering, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Tendering* ► *Define General Settings for Tendering*. ▶.

- Communication using B2B messages

The SAP TM system of a carrier receives a freight RFQ as a forwarding quotation (FWQ). The carrier sends the FWQ back to the ordering party. The SAP TM system of the ordering party receives the FWQ as an FQ.



Transportation Lanes in Tendering

You can use this function to enable the system to automatically assign carriers to tendering steps.

Prerequisites

You have specified the following master data settings in NetWeaver Business Client (NWBC):

- Means of transport
- Carriers
 - You specify business partners with the *Carrier* role.
- Locations
- At least one transportation lane with carrier assignment
- Carrier selection settings

Features

You can enable the system to automatically assign carriers to peer-to-peer tendering steps and broadcast tendering steps. You can use a Business Add-In (BAdI) to specify priorities.

More Information

For more information about BAdIs, see Customizing for *Transportation Management* under
► *Business Add-Ins (BAdIs) for Transportation Management* ► *Freight Order Management*
► *Tendering* □.



Change Controller in Tendering

The change controller is a tool in SAP Transportation Management (SAP TM) that reacts dynamically to changes in your documents.

You can use this feature to manage your tendering process if you need to make changes to road freight orders (road FOs). The following are the change controller strategies available for the freight order type in Customizing:

- Stop tendering and cancel the road freight order
- Stop tendering and reset the planning
- Restart current tendering
- Stop current tendering

For more information about the features of the change controller, see [Change Controller](#).

For more information about change controller strategies, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶.



Calculation of Price Limits

This function enables the system to propose price limits for your tendering process. The system uses the features of transportation charge management (TCM) to propose the price limit.

The system estimates price limits for a freight request for quotation (freight RFQ) according to the following criteria:

- An individual freight agreement with a particular carrier
- The default freight agreement

To determine the default freight agreement, the system uses the purchasing organization assigned to the road freight order. In the tendering plan, you can decide whether to use individual freight agreements or default freight agreements.

Prerequisites

You have defined the TCM features. For more information, see [Charge Management and Service Product Catalogs \[Page 166\]](#).

Activities

For an automatic tendering process, the system always proposes the price limit.

For a manual tendering process, to enable the system to automatically propose a price limit, in NetWeaver Business Client (NWBC) choose ► *Propose Price Limit*. ▶

To set the price manually, in the tendering plan, enter a price in the *Absolute Price* field.



E-mail Processing for Tendering

This function allows you to manage the communication between a tendering manager and a carrier in a freight request for quotation (freight RFQ) tendering process, exclusively by e-mail. This means that the system sends a freight RFQ to a carrier by e-mail. The carrier responds to the e-mail using a regular e-mail client. The system treats the response to a freight RFQ e-mail as a freight quotation (FQ).

Note

The system does not support freight RFQ e-mails in a direct tendering process.

End of the note.

When tendering by e-mail, a carrier can perform the following tasks:

- Accept or reject a freight RFQ
- Enter a rejection reason if he or she rejects a freight RFQ
- Propose a price, if allowed by the visibility settings of the tendering process

A carrier must follow certain rules when responding to a freight RFQ by e-mail. He or she must use predefined keywords in the response that are used by the SAP Transportation Management (SAP TM) system.

Note

Freight RFQ e-mails are different from notification e-mails. A carrier can respond to a freight RFQ e-mail, but cannot respond to a notification e-mail. For more information, see [Carrier Notification Process Management \[Page 648\]](#).

End of the note.

Prerequisites

You have enabled your system to send and receive e-mails. You have enabled SAPconnect to facilitate this.

You have specified the following requirements:

- Text content for e-mails
 - You can specify these texts as general text documents in transaction SE61.
- Keywords to enable the system to process FQs received by e-mail
 - For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Tendering* ► *Define Settings for Tendering by E-mail* □.

You have specified the following settings in Customizing for *Transportation Management* under ► *Freight Order Management* ► *Tendering* ► *Define General Settings for Tendering* □:

- Text documents that the system uses to e-mail carriers at particular events in the tendering process

- Additional default settings for communication under *03 – E-mail and SMS Content*
 You can define the target URL with the worklist of freight RFQs that the tendering manager sends to the carrier in an e-mail. By default, the target URL is set to *Collaboration Portal*. If you give external users access to the tendering functions of the SAP TM system using the external facing Web Dynpro application *Overview Tendering for Carriers*, you must set the value of the target URL to *Overview Tendering for Carriers*.
- Communication settings for your tendering process, so that the system creates e-mails for freight RFQs, under *05 – Communication Settings*
- Business Workplace inbox for a system user to receive FQ e-mails from carriers
 You can specify the e-mail address of the system user under *03 – E-mail and SMS Content*.

Features

The system sends a freight RFQ e-mail to a carrier when it publishes the associated freight RFQ. If the carrier responds to the freight RFQ e-mail, he or she sends the response back to the SAP TM system. The system uses the *Process Tendering Inbound E-mails* background report to convert the e-mail into an FQ. The system can then use the *Process Freight Quotations and Overdue Freight RFQs* background report.

If your system supports sending secure e-mails, you can apply encryption or digital signatures to all freight RFQ e-mails. You can do this by selecting the *Encrypt E-Mails* and *Sign E-mails* checkboxes in Customizing for *Transportation Management* under ► *Freight Order Management* ▶ *Tendering* ▶ *Define General Settings for Tendering*.



These flags only add tags to the subject fields of the relevant e-mails. The encryption or digital signatures are applied by an external secure e-mail proxy, if one is connected to your system.

End of the note.

More Information

[Communication Channels in Tendering \[Page 641\]](#)

[Carrier Notification Process Management \[Page 648\]](#)

For more information about using e-mail exchange between the SAP system and any SMTP mail server, see ► *SAP NetWeaver Library* ▶ *SAP NetWeaver by Key Capability* ▶ *Application Platform by Key Capability* ▶ *Platform-Wide Services* ▶ *Connectivity* ▶ *Communication Interfaces for Mail and Telephony* ▶ *SAPconnect (BC-SRV-COM)* ▶ *SMTP Configuration Guide*.

For more information about secure e-mail proxies, see ► *SAP NetWeaver Library* ▶ *SAP NetWeaver by Key Capability* ▶ *Application Platform by Key Capability* ▶ *Platform-Wide Services* ▶ *Connectivity* ▶ *Communication Interfaces for Mail and Telephony* ▶ *SAPconnect (BC-SRV-COM)* ▶ *Administration* ▶ *Secure E-Mail*.



Carrier Notification Process Management

You can use this function to manage the process of notifying a carrier about particular events in the tendering process. The system notifies a carrier by e-mail or short message service (SMS) message. Notification events include publishing freight requests for quotation (freight RFQs), cancelling a tendering process, and awarding or rejecting a freight quotation (FQ).

Prerequisites

You have enabled your system to send and receive e-mails. You have enabled SAPconnect to facilitate this.

You have specified the text content for e-mails as general text documents in transaction SE61.

You have specified the following prerequisites in Customizing for *Transportation Management* under ► *Freight Order Management* ► *Tendering* ► *Define General Settings for Tendering* ▶:

- Text documents that the system uses to e-mail carriers at particular events in the tendering process
- Additional default settings for communication under *03 – E-mail and SMS Content*
You can define the target URL with the worklist of freight RFQs that the tendering manager sends to the carrier in an e-mail. By default, the target URL is set to *Collaboration Portal*. If you give external users access to the tendering functions of the SAP TM system using the external facing Web Dynpro application *Overview Tendering for Carriers*, you must set the value of the target URL to *Overview Tendering for Carriers*.
- Communication settings for your tendering process under *05 – Communication Settings*
This enables the system to create notification e-mails and SMS messages when particular events occur.

Features

When a notification event occurs, the system creates a notification e-mail or SMS message. You can specify the notification events in Customizing for *Transportation Management* under ► *Freight Order Management* ► *Tendering* ► *Define General Settings for Tendering* ► *05 – Communication Settings* ▶.

If you select the *No Bundling of E-Mails* checkbox in the Customizing settings for *03 - E-Mail and SMS Content*, the system sends an e-mail immediately after a specified notification event occurs. Similarly, if you select the *No Bundling of SMS* checkbox, the system sends an SMS message immediately. If you do not make a selection, the system processes the e-mail or SMS message when it runs the *Tendering E-mail and SMS Message Processing* report. The system collects the triggers for the same event for each recipient and creates one summary e-mail or SMS message. For example, this enables you to send a summary e-mail that contains information on a number of freight RFQs to a carrier.

If your system supports sending secure e-mails, you can apply encryption or digital signatures to all freight RFQ e-mails. You can do this by selecting the *Encrypt E-Mails* and *Sign E-mails* checkboxes in Customizing for *Transportation Management* under ► *Freight Order Management* ► *Tendering* ► *Define General Settings for Tendering* ▶.

 Note

These flags only add tags to the subject fields of the relevant e-mails. The encryption or digital signatures are applied by an external secure e-mail proxy, if one is connected to your system.

End of the note.

More Information

[Communication Channels in Tendering \[Page 641\]](#)

For more information about using e-mail exchange between the SAP system and any SMTP mail server, see ► *SAP NetWeaver Library* ► *SAP NetWeaver by Key Capability* ► *Application Platform by Key Capability* ► *Platform-Wide Services* ► *Connectivity* ► *Communication Interfaces for Mail and Telephony* ► *SAPconnect (BC-SRV-COM)* ► *SMTP Configuration Guide* ▶.

For more information about secure e-mail proxies, see ► *SAP NetWeaver Library* ► *SAP NetWeaver by Key Capability* ► *Application Platform by Key Capability* ► *Platform-Wide Services* ► *Connectivity* ► *Communication Interfaces for Mail and Telephony* ► *SAPconnect (BC-SRV-COM)* ► *Administration* ► *Secure E-Mail* ▶.



Creation of a Tendering Plan

This process enables you to create a tendering plan, so that you can send out freight requests for quotation (freight RFQs) to carriers. You can create a plan manually, or enable the system to create a plan automatically.

You can run automatic tendering in the background. After you start an automatic tendering process, the system determines a tendering profile automatically. Depending on your settings, the system can propose the price limit and a carrier.

You can also create the tendering plan manually. You can use the steps and carriers of a previously used tendering profile in the plan.

Prerequisites

To determine a profile automatically, you have defined one of the following Customizing activities:

- Process settings in the Customizing activity *Define General Settings for Tendering*.
The system uses these as the default settings.
- Freight order type settings in the Customizing activity *Define Freight Order Types*.
These settings use the process settings to determine the profile for a freight order type.

Process

To *manually* create a tendering plan in NetWeaver Business Client (NWBC), you need a road freight order for which you have started tendering but which you have not yet published. Use the following steps:

1. Choose *Tendering Overview*.
2. Set the *Tendering Process Mode*.
3. Create a tendering plan by defining the individual tendering steps.

If you select a profile, you can define the steps and carriers that the system automatically copies from the profile.

4. Specify the attributes of each tendering step.

For example, when you add a carrier, define carrier attributes such as maximum response duration and price limit.

For *automatic* tendering, the system loads a defined tendering profile, carriers, and price limits when you start the tendering process.

Result

You have set up a tendering plan. When you publish the tendering plan, the system sends the first freight RFQs. You can save the tendering plan as a new tendering profile.

More Information

For more information about tendering settings, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Tendering* ► *Define General Settings for Tendering* ▶.

For more information about freight order settings, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶.

For more information about master data in SAP Transportation Management (SAP TM), see [Master Data \[Page 24\]](#).



Tendering Step

You can use this function to structure a tendering plan. A tendering plan can contain one or more tendering steps. The system executes the steps in sequence. However, it only starts a new step if the previous step has not led to an acceptable freight quotation (FQ). A tendering step is always related to a specific tendering type.

Example

The tendering manager enters a road freight order (road FO) with two tendering steps. He or she specifies the following structure:

1. In the first step, he or she specifies a peer-to-peer tendering type and adds the 3 best carriers.
2. In the second step, he or she defines a broadcast tendering type and assigns 5 carriers.

The first acceptable quotation is awarded the road FO.



Broadcast Tendering

Simultaneous tendering to preselected carriers.

Carriers must respond to the freight request for quotation (freight RFQ) within the maximum response time defined by the tendering manager.

Depending on the tendering type, the system performs one of the following tasks:

- Use one of the freight RFQs to award the first acceptable freight quotation (FQ).
- Evaluate the acceptable FQs and select the carrier that has submitted the lowest price, after the maximum response time has elapsed

If a tendering step ends with no acceptable FQ, the system continues with the next tendering step that you have configured.



Peer-to-Peer Tendering

Sequential tendering to preselected carriers.

Peer-to-peer tendering involves the sequential sending of freight requests for quotation (freight RFQs) to each proposed carrier. The system waits until the carrier sends a freight quotation (FQ) or until the maximum response time has passed.

The system evaluates the FQs according to the criteria you have defined in your tendering plan. The evaluation leads to one of the following outcomes:

- If you selected the tendering type *Peer-to-Peer Tendering - Response Required* and if you do not receive an acceptable FQ, the tendering process continues and the system sends out of a new freight RFQ.
- If you selected the tendering type *Peer-to-Peer Tendering - No Response Required* and if you receive an unacceptable FQ or a rejected freight RFQ within the maximum response time, the tendering process continues and the system sends out a new freight RFQ.
- If the evaluation returns a *Quotation Review Required* result, you review the FQ. The tendering process continues.
- If there is at least one FQ with a *Quotation Acceptable* evaluation result, the system preselects the FQ of the awarded carrier. The tendering process ends successfully.



Visibility Settings

The settings that control the information from a freight request for quotation (freight RFQ) that is visible to a carrier, and that can be edited by a carrier.

By default, carriers can view the price limit, and can submit a new price, and earliest and latest stop date times.



Example

The tendering manager can use the following visibility settings, to match his or her business needs:

- Disclose the price limit to carriers A and B.
- Do not disclose the price limit to carrier C.
- Do not allow any carrier to quote a different price.

End of the example.

If you are using the SAP Transportation Management collaboration portal for broadcast tendering, you can enable your carriers to view the lowest price proposal that was submitted by another carrier.



Freight Request for Quotation

A request containing information that is sent to a specific carrier to quote the quantities of a road freight order he or she can transport and the delivery dates to which he or she is capable of adhering. In addition, it can be used to request pricing information from the carrier.

Depending on whether you choose broadcast or peer-to-peer tendering, you can send out one or multiple freight requests for quotation (freight RFQs) at the same time.

To send multiple freight RFQs that relate to different road freight orders (road FOs), open the tendering overview worklist in NetWeaver Business Client, and select multiple FOs. You can then start the tendering process.

Tendering

You can use this process to send out freight requests for quotation (freight RFQs) to one or more carriers, according to a tendering plan.

You can use a freight RFQ tendering process to send out one or more freight RFQs. You can send the freight RFQs manually, or enable the system to send them out automatically.

You can also use a direct tendering process to send a road freight order (road FO) directly to a specified carrier without creating a freight RFQ. Carriers can confirm or reject the road FOs. Unlike the freight RFQ process, the system generally awards a carrier if he or she does not reject the road FO within a given time limit.

Direct tendering can be created and started manually by the user, or automatically by the system.

 Note

The related subcontracting process must not be in *In Tendering* status.

For more information on statuses, see [Statuses of Business Documents \[Page 608\]](#).

End of the note.

Prerequisites

- You have defined the specific settings for freight order type and tendering in the Customizing for SAP Transportation Management (SAP TM).
- You have set up a consistent tendering plan.

Process

1. To plan and publish a new automatic tendering process, in SAP NetWeaver Business Client (NWBC), on the *Edit* screen of an FO, choose the *Subcontracting* pushbutton, and select *Automatic Tendering*.

 Note

When you start the tendering process, the subcontracting process is at *In Tendering* status.

End of the note.

2. If you want to start the process manually, you must perform the following tasks:
 1. Identify the FO that you want to tender.
 2. Enter the name of the tendering manager.
 3. If you select a tendering profile on the popup screen, the system uses it directly in the tendering plan.
3. Set up one or more tendering steps in the tendering plan. You can define attributes in each tendering step, including the following attributes:
 - Tendering type

- You want the carrier to formally respond
 - Response time
 - Absolute price limit
 - Visibility settings
 - One or more carriers
4. You can enable the system to propose suitable carriers, a price limit, and visibility settings. For more information, see [Creation of a Tendering Plan \[Page 650\]](#).
 5. You can save the tendering plan as a tendering profile that you can use for tendering processes in the future.
 6. Publish the first freight RFQ or all freight RFQs, depending on the tendering type you have selected for your tendering step.
 7. The tendering process runs automatically if you have performed the following tasks:
 - Set up the system and Customizing settings for automatic processing
The system determines a tendering profile automatically, according to your Customizing settings.
 - Scheduled the `/SCMTMS/TEND_CONT_PROCESS` report to run regularly



Documents and Notifications

This function enables you to send out documents or notifications to communicate with your business partners.

Features

The table explains how you can use the following communication channels:

Tendering Activity	Communication Channel
Tendering manager publishes a freight request for quotation (freight RFQ)	<ul style="list-style-type: none">Freight RFQ by e-mailNotification e-mailNotification short message service (SMS) messageFreight RFQ by business-to-business (B2B) message
Tendering manager stops a tendering process	<ul style="list-style-type: none">Notification e-mailNotification SMS messageFreight RFQ cancellation by B2B message
Tendering manager awards a carrier	<ul style="list-style-type: none">Notification e-mailNotification SMS messageRoad freight order (road FO) by B2B message
Carrier accepts or rejects a freight quotation (FQ)	<ul style="list-style-type: none">Web user interface (UI)Tendering workset in the SAP TM collaboration portalSAP Transport Tendering mobile app for iPhone (sold as a separate add-on for SAP TM)FQ by e-mailFQ by B2B message



Tendering Alerts

You can use this function to subscribe to *Alerts for Tendering Managers* using transaction ALRTCATDEF.

In the communication settings in Customizing, you can enable the system to send alerts to the relevant tendering managers, even if the managers do not subscribe to the alert categories.

For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Tendering* ► *Define General Settings for Tendering* ▶.



Change Handling

You can use this process to make changes to a road freight order or tendering plan, while you are running a tendering process.

Prerequisites

You have defined conditions in the application administration planning data in NetWeaver Business Client (NWBC).

Process

You change a road freight order. This triggers the change controller to take a particular course of action. For example, it can stop the tendering process.

1. If you change some information in a road freight order while you are running a tendering process, the system chooses follow-on processes according to the strategy you have selected for the change controller.



Example

The Trans company accepts changes of 1% to the quantity in a road freight order, without impacting the tendering process. However, if the quantity in a road freight order changes by more than 2%, the system stops the tendering process. A new process must be set up.

End of the example.

For more information on change controller settings, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types*.

2. If you need to change your tendering process, take the following steps:

1. Stop the tendering process by choosing the *Stop Tendering* pushbutton.
2. Start the tendering process again and make the changes.



Acceptance or Rejection of a Freight Request for Quotation

A carrier must respond to the ordering party within the time limit given in the freight request for quotation (freight RFQ). The carrier must accept or reject the freight RFQ before the response time ends.

Depending on the visibility settings defined in Customizing for tendering, the carrier can propose a different price or change stop dates. The carrier can select one of the defined rejection reason codes to document a reason for rejecting a freight RFQ.

Prerequisites

You have performed the following tasks:

- Created business partners in transaction BP with the roles of *Contact Person* and *Carrier*. You have assigned internet users and e-mail addresses to these business partners.

This enables your carrier to log on to your SAP Transportation Management (SAP TM) system over the Internet using the external facing Web Dynpro application *Overview Tendering for Carriers*, and enables you to communicate with your carrier by e-mail. Alternatively, your carrier can also use the tendering workset in the SAP TM collaboration portal, which is the preferred communication channel.

- Defined the visibility settings in Customizing for tendering to allow a carrier make changes to attributes such as price or stop dates.
- Defined rejection reason codes in Customizing for tendering.

Features

The carrier can access the worklist containing the relevant freight RFQs in the following ways:

- Use their own installation of SAP TM
- Use the link to the worklist supplied in the notification e-mail

The carrier can also perform the following tasks:

- Accept or reject freight RFQs
- Review previously submitted freight quotations (FQs)

Note

A carrier can create more than one FQ for the same freight RFQ. The system considers only the last FQ that the carrier submits within the given time limit.

End of the note.

If the carrier accepts a freight RFQ, the system creates and submits an FQ. The system automatically copies attributes such as stop dates and price to the FQ.

If the carrier wants to make a change, for example to the stop dates, and accept the freight RFQ, he or she must follow the following procedure:

- Open the FQ.
- Create a new FQ with different stop dates.
- Send the FQ.

If the carrier rejects the freight RFQ, the system creates a new FQ. The FQ contains one of the reason codes that have been defined in Customizing. The system includes the reason code with the new FQ.

More Information

For more information about visibility settings and rejection reason codes, see *Customizing for Transportation Management* under ► *Freight Order Management* ► *Tendering* ► *Define General Settings for Tendering*. ▶



Evaluation of Freight Quotations

You can use this process to enable the system to preselect freight quotations (FQs) according to the evaluation criteria you have defined. The process ends when you award a carrier with a road freight order (road FO). You have the following options:

- You can evaluate freight quotations immediately after they have been submitted.
- You can use the /SCMTMS/TEND_CONT_PROCESS program to evaluate FQs and to detect that the maximum response time for a freight request for quotation (freight RFQ) is over. Moreover, you can evaluate freight quotations that could not be evaluated immediately due to a lock or other technical issues. For more information, see [Processing of FQs and Overdue RFQs](#)

You can use the following as evaluation criteria:

- Lowest price
- Carrier who commits to stop date
- Fastest carrier

Prerequisites

To evaluate freight quotations immediately, the system administrator must have entered a system user name in the *Quotation Evaluation User* field in Customizing. For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Tendering* ► *Define General Settings for Tendering* ► 07 - *Default Settings*. Make sure that the quote evaluation user has sufficient authorizations. In addition to the authorizations that are specific to SAP Transportation Management, the quote evaluation user needs the following authorizations:

Authorization Object	Authorization Value
S_BTCH_JOB	Release
S_BTCH_NAM	Quote evaluation user name

Process

1. The system evaluates the FQs according to the criteria you have defined.
2. The system preselects the most suitable carrier.
3. You either accept the preselected carrier or you award a different carrier with the FO.

Note

If you set up the tendering process mode as *Freight RFQ Based, Award Manually* or *Direct Tendering, Send Freight Order Directly*, the system performs this step automatically.

End of the note.



Update of a Freight Order

This function updates a road freight order (road FO) immediately after you award a freight quotation (FQ).

The system copies the new information from the awarded FQ to the road FO, including updates to the following information:

- Selected carrier
- Submitted price
- Confirmed stop dates and times



Tendering Execution

The tendering manager can view all freight requests for quotation (freight RFQs) and freight quotations (FQs) that were sent to, or received by, a carrier. He or she can use queries to search for and open freight RFQs and FQs.

You can tender a road freight order (road FO) more than once. This means that you can execute more than one tendering process in sequence for a road freight order.

You may need to tender an road FO more than once in the following circumstances:

- If a tendering process did not determine a suitable carrier
- If changes are made to an road FO when a tendering process is running

Process

In SAP NetWeaver Business Client, navigate to the tendering overview worklist in freight order management, and perform the necessary tasks.



Building and Printing of House Bills of Lading and House Air Waybills

You can use this function to create and print house bills of lading (HBLs) and house air waybills (HAWBs) for the following business documents:

Document	Supported business documents
House bill of lading	Ocean and land forwarding orders Freight orders Ocean freight bookings Freight units
House air waybill	Air forwarding orders Air freight bookings Freight units

Prerequisites

Building of House Bills of Lading and House Air Waybills

- In Customizing, you have specified a *process controller strategy* for your forwarding order type, freight order type or freight booking type for the building of house bills of lading and house air waybills. For more information, see *Customizing for Transportation Management* under:
 - ▶ *Forwarding Order Management* ▶ *Forwarding Order* ▶ *Define Forwarding Order Types* ▶
 - ▶ *Freight Order Management* ▶ *Freight Order* ▶ *Define Freight Order Types* ▶
 - ▶ *Freight Order Management* ▶ *Freight Booking* ▶ *Define Freight Booking Types* ▶

Which strategy is used depends on the business document from which you build the house bill of lading or house air waybill. If you do not define a strategy in Customizing, the system uses the relevant standard strategy for forwarding orders or freight documents (see below).

- You have defined a *waybill stock*. For more information, see [Waybill Stock Definition \[Page 291\]](#).
- You have activated the *use of waybill stocks* in forwarding order type Customizing (see below). If you deactivate this function, you can only enter waybill numbers in the forwarding order manually, and the system does not check waybill numbers entered against the waybill stock.

Printing of House Bills of Lading and House Air Waybills

- You have made the *general settings* for printing documents. For more information, see [Output Management](#) and [Printing](#).

- In Customizing for the freight unit type, which you use for freight unit building, you have defined the *output profile* / SCMTMS/TOR_PRINT_AIR_FU. If you do not specify a freight unit building rule in Customizing of your forwarding order type, and consequently do not define a special freight unit type, the system uses the standard freight unit type. For more information, see Customizing for *Transportation Management* under ► *Planning* ► *Freight Unit* ► *Define Freight Unit Types* ▶.
- You have made the basic settings for the *charge calculation* that you need for your business process. For more information, see [Charge Management and Service Product Catalogs \[Page 166\]](#). You have made the following particular settings for printing the house bills of lading and house air waybills:

- In Customizing you have defined and appropriately classified *charge types* for weight-dependent charges, for other charges and for evaluation charges. This classification is necessary as the charge types appearing in the printing of a house bill of lading or house air waybill are detailed separately. Note that the charge types classified as *other charges* must contain the two digit code for IATA other charges and also entries for the charge due (carrier or agent).

For more information, see Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings for Charge Calculation* ► *Define Charge Types* ▶, and also under [Charge Calculation \[Page 223\]](#).

- You have created a *calculation profile* in Customizing. You should note in this connection that the system for printing a house bill of lading or a house air waybill supports both the calculation of charges at stage level and the calculation at item level. If you use an Incoterm in the forwarding order, the system switches to a calculation of charges at stage level irrespective of the setting in the calculation profile.

For more information, see Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings for Charge Calculation* ► *Define Calculation Profile* ▶, and also under [Calculation Profiles \[Page 240\]](#).

- You have created a *calculation sheet*. To do this, in SAP NetWeaver Business Client choose ► *Master Data* ► *Charge Management* ► *Calculation Sheets* ► *Create Calculation Sheet* ▶. If you want to print house bills of lading or house air waybills, you must have entered one of the following values as the calculation resolution base for weight-dependent charge items:

- PRODUCT (Product)
- MAIN_ITEM (Main item of the document)
- PACKAGE (Package)
- CONTAINER (Container)

The weight charges for products, packages or containers are listed depending on the calculation resolution basis that you have defined. The calculation resolution basis should be the same for all charge items, as otherwise you may experience a mixture of package and product items, and the totals formation is rendered incorrect.

For more information, see [Calculation Sheet \[Page 182\]](#).

Features

Building of House Bills of Lading and House Air Waybills

The system automatically groups all items that do not already belong to a fixed house bill of lading or house air waybill in accordance with the process controller strategy you chose.

SAP provides the following strategies as part of the standard delivery.

- *Build House Bill of Lading or House Air Waybill by Shipper/Consignee (HBL_SHPCNS)*

With this strategy, the system groups together all items that have the same shipper and consignee.

This is the standard strategy that the system uses for freight documents if you do not specify a strategy in Customizing of the freight order type or the freight booking type. The system also uses this strategy if you build house bills of lading or house air waybills for freight units or items.

- *Build House Bill of Lading or House Air Waybill by Forwarding Order (HBL_TRQID)*

With this strategy, the system groups together all items that belong to the same forwarding order.

This is the standard strategy that the system uses for forwarding orders if you do not specify a strategy in forwarding order type Customizing.

- *Build House Bill of Lading or House Air Waybill by Shipper/Consignee/Container (HBL_SCCONT)*

With this strategy, the system groups together all items that have the same shipper and consignee, and are to be transported in the same container.

- *Build House Bill of Lading or House Air Waybill by Freight Documents (HBL_FDOC)*

With this strategy, the system groups together all items that have the same freight documents in the main carriage.

Printing of House Bills of Lading and House Air Waybills

You can print or dispatch the house bills of lading or house air waybills you have built from the *Output Management* tab. For more information, see [Output Management](#).

The printout also contains information about the transport charges. You can define in an air forwarding order on the *Charges* tab that the transportation charges as agreed or the other charges and their totals are to be printed. If the transportation charges as agreed are printed, then all weight-dependent charges, charges, evaluation charges and rates as agreed between the business partners are printed (meaning not their currency amounts).

Activities

You create house bills of lading or house air waybills as follows:

- Forwarding orders

You can create house bills of lading or house air waybills by entering the waybill number manually or with ► *HFB* ► *Draw HFB Number* or ► *HAWB* ► *Draw HAWB Number* from

the waybill stock. You can only draw a house bill of lading or house air waybill number from the waybill stock if this involves an internal number range and you have activated waybill stocks in Customizing (see under *Prerequisites*).

You can display data for bills of lading on the *HBL or HAWB* tab, and make individual allocations of waybill numbers to freight units or items or remove the allocations again.

- Freight orders

You create house bills of lading by choosing ► *Follow-up Actions* ► *Build House Bill of Lading*. You display house bills of lading on the *Items* tab page by choosing *Bill of Lading* as the hierarchy type.

 Note

The *Items* tab page replaces the *Cargo* tab page. You can personalize your user interface in such a way that the system displays the old *Cargo* tab page.

End of the note.

Ocean freight bookings

You create house bills of lading by choosing ► *Follow-up Actions* ► *Build House Bill of Lading*. You display house bills of lading on the *Cargo Management* tab page by choosing *Bill of Lading* as the hierarchy type.

- Air freight bookings

You create house air waybills by choosing ► *Follow-up Actions* ► *Build House Bill of Lading*. You display house air waybills on the *Capacity and Cargo* tab page by choosing *Bill of Lading* as the hierarchy type.

- Freight units

You create house bills of lading or house air waybills by choosing ► *Follow-up Actions* ► *Build HBL or HAWB*. The information for the house bill of lading or house air waybill is displayed at header level. A house bill of lading or house air waybill can have one or more freight units.

For more information about hierarchy types, see [Use of Hierarchical Views in FOM \[Page 605\]](#).

More Information

[Process Controller Configuration](#)



Nature of Goods

The nature of goods is a short and meaningful description of the cargo to be transported. Although you can enter the nature of goods only in business documents that are relevant for air transportation, the information is used along the entire transportation chain. The business documents (for example, air forwarding orders and air bookings) and the corresponding print documents (that is, air waybills and manifests) can contain the same nature of goods information or different information, according to your requirements.

You enter the nature of goods as free text within the allowed space on the UI, which reflects the requirements for the number of lines and characters. You can also define standard texts for nature of goods information that you use on a regular basis.

In SAP Transportation Management (SAP TM), there are two types of nature of goods:

- Nature and quantity of goods

This information can be entered in air forwarding orders and air bookings. You enter it on header level on the *Nature of Goods* tab page in the air forwarding order and on the *Operations* tab page in the air booking. You can enter 12 lines with a maximum of 20 characters per line.

The nature and quantity of goods specified on the *Nature of Goods* tab page in the air forwarding order and *Operations* tab page in the air booking are synchronized with the *Air Waybill View* on the *Charges* tab page. When you modify the nature and quantity of goods information on one of the UIs, the system automatically updates the other UI. The system not only updates the UIs, but also centrally updates the nature of goods data of the air forwarding order or air booking.

The nature and quantity of goods is printed in the house air waybill (HAWB), master air waybill (MAWB), and air waybill for a direct shipment. It is used to provide additional information about the weight-based charge items in air waybills.

- Nature of goods for manifest

This information can be entered in air forwarding orders, freight units, air bookings, and freight orders that cover pre-carriage or on-carriage for the air booking. You can enter 9 lines with a maximum of 65 characters per line. In the air forwarding order, you enter this information on header level on the *Nature of Goods* tab page. In the air booking, you enter it on item level on the *Capacity and Cargo* tab page, and in the freight order, on item level on the *Items* tab page (*Generic Item View hierarchy type*).

The nature of goods for manifest is printed in the security manifest and cargo manifests, which you print from the air booking.

Note that you can also enter the nature of goods on the *Notes* tab page of the air forwarding order or air booking. However, we recommend that you use the dedicated screen areas for nature of goods (for example, the *Nature of Goods* tab page in the air forwarding order).

Prerequisites

To use standard texts, you have done the following:

- Assigned the text schema `FWOAIRHDR` to the relevant forwarding order types (*Text Schema* field)

- Assigned the text schema CBAIR to the relevant booking types (*Text Schema* field)
- Defined standard texts in transaction SO10 using text type ST

For information about defining your own text types for the nature of goods, see SAP Note [2006789](#). This SAP Note also contains information about enhancing the pushbuttons for copying the nature of goods in air forwarding orders and air bookings.

Process

- You enter the nature and quantity of goods as well as the nature of goods for manifest on the *Nature of Goods* tab page in your air forwarding order.

You can copy the nature of goods for manifest from the nature and quantity of goods. When you do this, the system concatenates the text, but you can then adjust it as required.

The nature and quantity of goods is printed in the house air waybill (HAWB), which you print from the air forwarding order. After you have calculated the charges, you can use the *Air Waybill View* on the *Charges* tab page to align the nature and quantity of goods text so that it appears next to the correct weight-based charge items in the HAWB printout.

The nature of goods for manifest is not used to print documents from the air forwarding order, but is transferred automatically to the follow-on documents.

- You create freight units (FUs).

The nature of goods for manifest from the air forwarding order is displayed in the corresponding freight units. If required, you can edit the text to create FU-specific information.

- You create an air booking and you create a freight order for pre-carriage and on-carriage.

The nature of goods information is created as follows:

- Nature and quantity of goods (air booking only)

You enter this information on the *Operations* tab page. If required, you can copy it from the air forwarding order to the air booking (*Copy from Requirement Documents*). If more than one air forwarding order is assigned to the air booking, the system copies the first 2 lines of text from the first 6 air forwarding orders. The text on the *Operations* tab page is then also displayed on the *Charges* tab page.

- Nature of goods for manifest (air booking and freight order)

This information is copied automatically to the air booking and freight order from the freight unit. It is displayed in the details area of a freight unit that you have selected on the *Cargo and Capacity* tab page in the air booking or on the *Items* tab page in the freight order (*Generic Item View* hierarchy type).

For both types of nature of goods, you can change the copied text. For example, you can replace the text with something that is specific to a certain stage or country, or you can write the text in another language. You can also insert a standard text that you have defined beforehand.

4. You print the air waybill (master air waybill or air waybill for a direct shipment) or manifest (security manifest or cargo manifest) from your air booking.

Similar to the air forwarding order, you can use the *Air Waybill View* on the *Charges* tab page to align the nature and quantity of goods text so that it appears next to the correct weight-based charge items in the air waybill printout.

Note that when you print an air waybill or manifest from the air booking, the system uses the following logic to derive the nature of goods:

1. It checks the air booking.
2. If the air booking does not contain any nature of goods information, it checks the freight units.
3. If the freight units do not contain any nature of goods information, it checks the air forwarding order.

The HAWB always contains the nature and quantity of goods from the air forwarding order.

 Note

- You can specify the nature and quantity of goods only for weight-based charge lines under charge items with the transportation mode *Air*.
- If there are two stages with the transportation mode *Air*, then there can be two charge lines in the air waybill view for the same logistical item. In order to avoid printing the duplicate charge line in the master air waybill or house air waybill, you must mark one of these charge lines as inactive in the *Grouped View* or *Ungrouped View* and adjust the amount in the other charge line manually, so that the overall charges remain the same.
- The order of charge lines in the *Grouped View* or *Ungrouped View* and the *Air Waybill View* are not the same. In the *Air Waybill View*, the charge lines are sorted by the position numbers and the nature of goods lines remain as defined in the data of the air forwarding order or air booking. In the *Grouped View* or *Ungrouped View*, charge lines are sorted based on the charge line numbers and the nature of goods lines align with the air waybill view.

End of the note.

More Information

[Printing](#)



Sending of Loading/Unloading Instructions and Receipt of Confirmations

You use this process to send loading and unloading instructions to an external system and to receive confirmations from an external system. The following section contains a description of an example process:

Prerequisites

- You have configured your sending system, for example, SAP Transportation Management (SAP TM).
- Your receiving system, for example, an external warehouse management system, can receive messages.
- You have configured your XI system, for example, SAP NetWeaver Process Integration (SAP NetWeaver PI).
- Freight bookings or freight orders exist.

Process

1. You send loading instructions to the warehouse by choosing ► *Follow-Up Actions* ► *Send Loading and Unloading Instructions*. SAP TM sends the `TransportationOrderLoadingAppointment_Out` message to the receiving system, for example, an external warehouse management system. This message contains the following information:
 - All relevant containers or unit load devices
 - All assigned freight orders including the items
 - If necessary, the assignment of individual items to containers or unit load devices, if these exist
2. The warehouse loads the containers or unit load devices. This means the warehouse assigns the individual items or, if necessary, changes the specified assignment. The warehouse then returns this information to you. SAP TM receives the confirmations with the `TransportationOrderLoadingAppointmentNotification_In` message. In SAP TM, the status of the items that, according to the message, were loaded, is automatically set to *Loaded*.
3. After the containers or unit load devices have arrived at the receiving warehouse, you send the unloading instructions to the warehouse. You do this by choosing ► *Follow-Up Actions* ► *Send Loading and Unloading Instructions* in the freight order or in the freight booking. SAP TM sends the `TransportationOrderLoadingAppointment_Out` message to the receiving warehouse management system. This message contains the actual contents of the freight order or freight booking.
4. The warehouse unloads the containers or unit load devices and confirms this to you. SAP TM receives the confirmations with the `TransportationOrderLoadingAppointmentNotification_In` message. In SAP TM, the status of the items that, according to the message, were unloaded, is automatically set to *Unloaded*.

The `TransportationOrderLoadingAppointmentNotification_In` message also contains the following information:

- Discrepancies
- Assignment of forwarding orders that were not originally assigned to the freight booking or the freight order and that were assigned to the warehouse retroactively
- Assignment of items from other freight orders or freight bookings
- Items that were split between multiple containers or unit load devices
- References to business transaction documents



Location Changes

You can change the location of a transportation stage that has already been scheduled. This can be necessary in the following cases:

- You have accidentally created the forwarding order with the incorrect location data. You discovered this mistake during scheduling and want to correct it.
- The actual route has been scheduled correctly, however, a discrepancy arises during execution, for example, the truck does not drive to the scheduled pre-carriage location. It goes to another location instead. You want to change this in the related execution document.
- After you have created the forwarding order and scheduled the transportation stages, you realize that the goods need to be transported to another location. You want to adapt this in the actual route of the forwarding order.

Features

You can change locations in the freight unit or in the related execution document, in other words, in the freight order, freight booking, trailer unit, or railcar unit. If you change a location, the system checks automatically whether it can transfer the changes to all related documents and then executes one of the following actions:

- The system adapts the locations in the documents.
- It adds new locations.
- If the system cannot adapt the locations, it deletes the existing assignments.

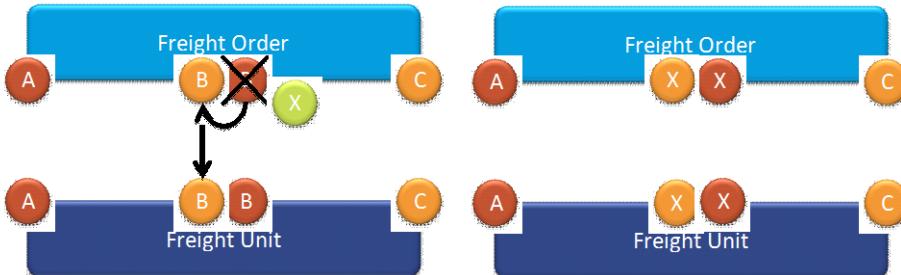
Moreover, the system adapts the following data automatically:

- It automatically recalculates the durations and distances.
- If you have changed the location in a freight booking, the system adapts pick-up and delivery in the related freight documents.

If you change the locations in a freight unit and the related execution document is locked, the system automatically undoes the change.

Example

Example 1:

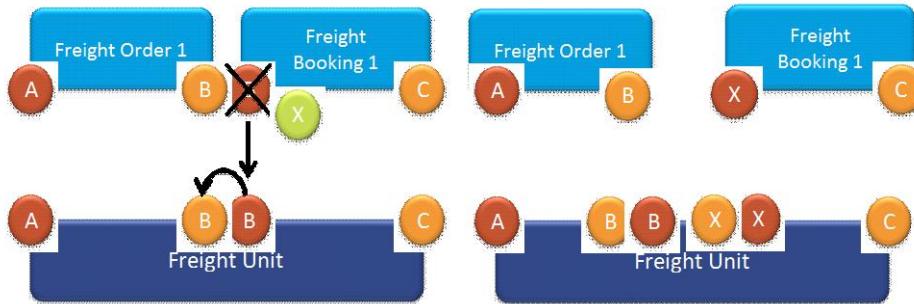


Example 1

A freight order with one freight unit goes from A to C via B.

The truck now goes to X instead of B. In the freight order, you replace location B by X. The system checks whether it can replace B with X in the freight order. As the freight order consists of only one freight unit, the freight unit can be adapted accordingly.

Example 2:

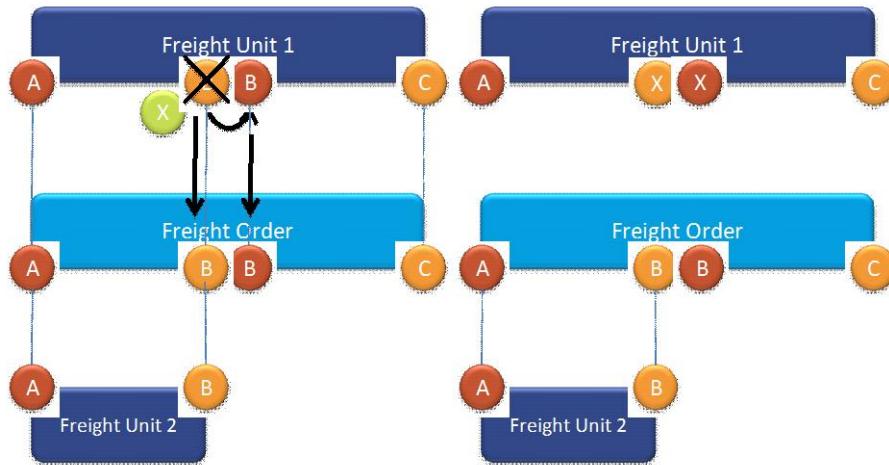


Example 2

Freight order 1 for pre-carriage goes from A to B; follow-on freight booking 1 for the main carriage goes from B to C. Freight unit 1 goes from A to C.

During scheduling, you realize that freight booking 1 should not go from B to C. Instead it should go from X to C. Therefore, in freight booking 1, you replace location B with X. The system checks whether it can also replace B with X in the freight unit. It adds an in-between transportation stage from B to X, so that freight unit 1 goes from A to C via B and X.

Example 3:



Example 3

A freight order goes from A to C via B. Two freight units are loaded.

- Freight unit 1 goes from A to C via B
- Freight unit 2 goes from A to B

During planning you realize that freight unit 1 is to be delivered via X instead of via B. Adapt freight unit 1 accordingly. The system then tries to adapt the freight order. This is not possible due to freight unit 2. For this reason, the system automatically removes the scheduling for freight unit 1. Freight unit 2 is still assigned to the original freight order.



Change Tracking

You apply this function to the following business documents in freight order management. It enables you to view any data that has been changed and provides information about the user who changed it, how it was changed, and when it was changed:

- Freight unit
- Freight order
- Freight booking
- Transportation unit
- Service order

Prerequisites

- In Customizing, you have activated change tracking for each of the business document types. For more information, see Customizing for Transportation Management under:
 - ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶
 - ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types* ▶
 - ► *Freight Order Management* ► *Transportation Unit* ► *Define Transportation Unit Types* ▶
 - ► *Freight Order Management* ► *Service Order* ► *Define Service Order Types* ▶
 - ► *Planning* ► *Freight Unit* ► *Define Freight Unit Types* ▶

Features

The changes are displayed on the user interfaces of the business documents. The assignment block for the change documents is not shown by default. However, you can display it with the pushbutton for personalizing your user interface.



Planning

In planning, freight orders are created on the basis of business documents, for example, forwarding orders. To do this, first freight units are created from the inbound business documents. Capacities are then assigned to these freight units. Various constraints are taken into account, for example, requested delivery dates. Freight orders are the result of the planning.

You can perform planning either manually or automatically.

Integration

The SAP TM component Planning is integrated with the following other SAP TM components:

Component	Integration Type
Forwarding Order Management	The system creates freight units, which form the basis for planning, from forwarding orders.
Freight Order Management	Freight orders are the result of the planning. You can generate freight bookings in the transportation cockpit.
Freight Settlement [Page 1015]	You can have the system calculate the transportation charges for your freight orders and freight bookings.
Master Data	You must create the required master data as a prerequisite for planning.

Features

You have the following options:

- Manual planning (see [Manual Planning \[Page 785\]](#))
You use manual planning to plan freight units manually.
- VSR optimization (see [VSR Optimization \[Page 806\]](#))
You can use VSR optimization to generate optimized freight orders. This generation is based, on the one hand, on the minimization of the defined costs (for example, vehicle costs, distance-dependent vehicle costs). It also considers the selected constraints (for example, windows for delivery, incompatibilities). You can start VSR optimization from interactive planning (see [Interactive Planning \[Page 774\]](#)) or schedule it in the background. You can continue to process optimization results in manual planning.
- Generating transportation proposals (see [Generation of Transportation Proposals \[Page 861\]](#))

Furthermore, you can have the system generate multiple alternative transportation proposals for each freight unit and you can then choose to use one of them.

You can subsequently perform carrier selection (see [Carrier Selection \[Page 863\]](#)) for example, and freight tendering (see [Freight Tendering](#)) or send your freight orders directly to a carrier (see [External Communication in Overland Transportation](#)).



Profiles and Settings

A number of profiles and settings are available with which you can perform transportation planning. You can use them to group planning-relevant settings, for example, capacities and planning costs. The use of profiles and settings makes it easier for you to start interactive planning and is a prerequisite for VSR optimization in the background (see [VSR Optimization \[Page 806\]](#)).

Features

The following is a list of the profiles and settings that are available to you:

- Profiles

Two profiles are available to which you can assign attributes and settings. These attributes and settings represent a type of subprofile with its own ID that you define once and can then assign to multiple profiles.

- Selection profile (see [Selection Profile \[Page 684\]](#))
 - Time-related selection attributes
 - Geographical selection attributes
 - Additional selection attributes
- Planning profile (see [Planning Profile \[Page 689\]](#))
 - Optimizer settings
 - Capacity selection
 - Planning costs (including cost functions)
 - Settings for carrier selection
 - Settings for incompatibilities

- Decreasing capacities (see [Capacity Decrease \[Page 703\]](#))
- Freight unit building rules (see [Freight Unit Building Rule \[Page 724\]](#))
- Incompatibilities and settings for incompatibilities (see [Incompatibilities \[Page 715\]](#))



Note

- Note that the profiles and settings involve Customizing that you can transport into the production system.
- You transport your profiles and settings by choosing the appropriate pushbutton and entering a transportation order. If your administrator has activated the change recording (transaction SCC4), a dialog box will automatically appear if you make changes to your profiles and settings. Here you can select a transportation order. The change recording ensures that all changes to profiles and settings are assigned to a transportation order.

We recommend activating the change recording, otherwise it will be difficult for you to ensure consistency between the different profiles and settings.

If profiles and settings are only to be changeable in the Customizing system and not in the production system, you must control this via the corresponding roles (see [Roles \[Page 1324\]](#)).

The following authorization objects are relevant in this case:

- **T_PRF_CR** for the creation of profiles and settings
- **T_PRFOPPID** for the planning profile
- **T_PRFSELID** for the selection profile
- **T_PRFINCID** for incompatibility settings
- **T_FUBRID** for freight unit creation rules
- **T_COND** for conditions

End of the note.



Selection Profile

A user-specific grouping of business documents (that is, forwarding orders, freight units, and freight orders) that is taken into account during transportation planning.

The system takes into account the settings that you make in the selection profile during interactive planning, during VSR optimization in the background (see [VSR Optimization \[Page 806\]](#)), and during carrier selection.



Note

You can define an authorization check for the change and usage requirements of each selection profile. You can configure the relevant settings using authorization object T_PRFSELID.

End of the note.

Structure

In the selection profile and in the assigned selection attributes, you define which business documents the system is to take into account as well as the maximum number of documents. You can assign the following selection attributes to a selection profile:

- Time-related selection attributes

Here you define the demand horizon, for example (see [Demand Horizon \[Page 686\]](#)).

- Geographical selection attributes

Here you define source and destination locations, for example.

- Additional selection attributes

Here you define additional attributes for database queries (see [Additional Selection Attributes \[Page 688\]](#)).

You can use conditions to further restrict or filter this selection (see [Additional Selection Attributes \[Page 688\]](#)).

You can use your selection profile as follows:

- As a selection profile for freight units

The system uses the profile to select freight units.

- As a selection for freight orders and freight bookings

The system uses the profile to select existing freight orders and freight bookings that are to be taken into account in planning.

This means that the selection of business documents made by the system depends on where and how you use your selection profile. For example, if, when calling the transportation cockpit, you specify your selection profile as a selection profile for freight units in your profile and layout set (see [Use of Profile and Layout Sets \[Page 777\]](#)), the system selects freight units. However, if you specify your selection profile as a selection profile for freight orders and freight bookings, the system selects freight orders and freight bookings.

 Note

You can define selection profiles in SAP NetWeaver Business Client by choosing  *Application Administration*  *Planning*  *Selection Profile*  *Create Selection Profile* .

Note that the selection criteria in the geographical and additional selection attributes have an effect on performance.

End of the note.



Demand Horizon

Period containing all demands that are to be taken into account in planning.

You define the demand horizon in the time-related selection attributes that you assign to your selection profile (see [Selection Profile \[Page 684\]](#)). You can define a demand horizon for pickup and a demand horizon for delivery. The system chooses all freight units and freight orders whose pick-up date/time or delivery date/time lies within the relevant demand horizon.

Structure

You can define the demand horizon as absolute or relative:

- Absolute

You define the demand horizon precisely by defining a start and end date and a start and end time.

- Relative

You do not define the demand horizon with precise dates and times, but specify instead a duration starting from the current date. The system then automatically determines the start and end date and the start and end time. If the demand horizon is not to start on the current date, but instead at a later time, you can define an offset. According to this, the relative demand horizon is defined as follows:

- Start of demand horizon = current date + defined offset

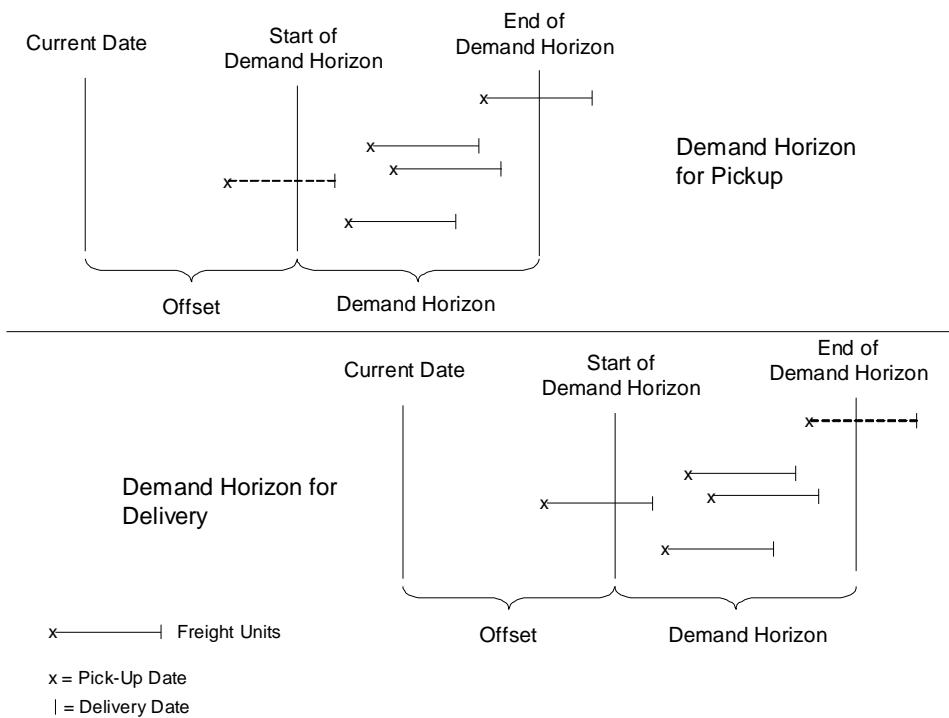
Here, the offset is made up of the offset in days and the additional offset (in hours and minutes).

- End of demand horizon = start of demand horizon + defined duration of demand horizon

Here, the duration of the demand horizon is made up of the duration in days and the additional duration (in hours and minutes).

If you specify a factory calendar, the system takes into account non-working days when calculating the start of the horizon. In this case, the planning horizon always begins on a working day.

The following figure shows how the demand horizon is defined:



Demand Horizon



Additional Selection Attributes

To restrict the selection of requirements data in a more specific way, you have the following options:

- Definition of Additional Attributes for Database Queries
- Filtering on the Basis of Conditions

Features

Definition of Additional Attributes for Database Queries

Here you define an additional filter for certain business documents:

- Business documents in forwarding order management (forwarding orders, forwarding quotations, order-based transportation requirements and delivery-based transportation requirements)
- Business documents in freight order management (freight orders, freight bookings, freight units)

Filtering on the Basis of Conditions

You can use either predefined conditions or your own conditions. If you want to use your own conditions, you must define them beforehand. You can do so in SAP NetWeaver Business Client by choosing Application Administration General Settings Condition Create Condition

For more information, see [Condition \[Page 176\]](#).



Recommendation

Filtering on the basis of conditions enables you to define any number of links, however, it is slower. We therefore recommend that you use filtering on the basis of conditions only for cases that you cannot map by defining additional attributes.

End of the recommendation.

Activities

To define additional selection attributes in SAP NetWeaver Business Client, choose Application Administration Planning Selection Profile Attributes Additional Selection Attributes Create Additional Selection Attributes

To assign your additional selection attributes to a selection profile in SAP NetWeaver Business Client, choose Application Administration Planning Selection Profiles Edit Selection Profile and then enter the required selection profile.



Planning Profile

A user-specific grouping of parameters that are taken into account during transportation planning.

The system takes into account the settings that you configure in the planning profile during manual planning, load planning, and VSR optimization (interactive and in the background; see [VSR Optimization \[Page 806\]](#)).

To define planning profiles in SAP NetWeaver Business Client, choose *Application Administration* *Planning* *Planning Profiles* *Create Planning Profile* .



Note

You can define an authorization check for the change and usage requirements of each planning profile. You can configure the relevant settings using authorization object `T_PRFOPPID`.

End of the note.

Structure

In the planning profile, you define the following, for example:

- Planning horizon (see [Planning Horizon \[Page 692\]](#))
- Profile assignments

Here, you specify a selection profile with which you can select freight orders or freight bookings.

- Parallel processing profiles

The system takes these profiles into account when reading input data and transportation network data (for example, transportation lanes, distances, and durations).

- Business document type

Here you can specify a standard business document type or a condition with which the business document type is to be determined.

- Planning strategies (see [Process Controller Configuration \[Page 1229\]](#))

You can either specify the standard strategy or use your own strategy. You can add additional methods to the standard strategy.

- Manual planning (standard strategy `VSRI_DEF`)
- Scheduling (standard strategy `VSS_DEF`)
- Checks (standard strategy `VSR_CHECK`)

The system checks capacities, incompatibilities, and multiresources, and it performs a dangerous goods check.

- VSR optimization (standard strategies `VSR_DEF` and `VSR_1STEP`)

You define this strategy in the optimizer settings.

- Load planning (standard strategy ALP_DEF)

You define this strategy in the settings for load planning.
- Generating transportation proposals (standard strategies VSR_DEF and VSR_1STEP)

You define this strategy in the optimizer settings.
- Loading and unloading durations

You can also assign the following settings and profiles to a planning profile:

- Capacity selection settings

Here, you select the required capacities such as the resources. If you use resources for which you have defined an ADR limit, VSR optimization takes into account the number of ADR points for this resource during the optimization run (see [ADR 1.1.3.6 Points Check Calculation \[Page 1150\]](#)).
- Optimizer settings

Here, you can define the optimizer runtime, the maximum number of transshipment locations and processes, and the freight order building rule (see [Freight Order Building Rule \[Page 699\]](#)), for example. You also specify whether you require rough or detailed information for your planning activities (see [Rough-Cut Planning \[Page 802\]](#)), define the required process controller strategy, and configure the settings for generating transportation proposals (see [Generation of Transportation Proposals \[Page 861\]](#)).

In the advanced settings, you can also specify whether the main aim in your transportation proposals is to ensure the lowest transportation costs possible or the shortest transportation duration possible based on the planned delivery date/time. You can also define preferences in relation to your relative weighting of the variance of carriers, routes, and departure dates, or activate or deactivate capacity constraints at transportation mode level. You can also specify whether the system is to ignore certain settings such as the capacity or ADR limit of a resource during VSR optimization.

- Settings for load optimization

Here, you can define the optimizer runtime, the planning strategy, and various rules for load planning. For example, you can define the maximum height difference between stacks in a row.
- Planning costs settings (including cost functions)

Here you define costs related to freight units and means of transport. In most cases, these costs are not actual costs. They simply offer a means of controlling the result of the optimization run (for example, earliness costs and lateness costs). For more information, see [Planning Costs \[Page 694\]](#).

Furthermore, you can define piecewise linear cost functions for a combination of means of transport and load in a certain unit of measurement (load unit). You can use cost functions to model load costs, for example. Load costs are penalty costs that you define for each means of transport and load. In most cases, these costs are also not the actual costs. They simply offer a means of controlling the result of the optimization run (for example, earliness costs and lateness costs). For more information, see [Cost Function \[Page 698\]](#).

- Incompatibility settings

Here you define settings for your incompatibilities (see [Incompatibilities \[Page 715\]](#)).

- Carrier selection settings

Here you specify whether the system is to use transportation allocations or business shares, for example.



Planning Horizon

Planning period in which transportation activities are to be executed.

You define the planning horizon in the planning profile (see [Planning Profile \[Page 689\]](#)). The planning horizon defines the possible period of time in which the system can schedule transportation activities (for example, loading and unloading, transport).

Structure

You do not define the planning horizon with precise dates and times, but enter instead a duration starting from the current date. The system then automatically determines the start and end date and the start and end time. If the planning horizon is not to start on the current date, but instead at a later time, you can define an offset. Here you can specify whether the system is to round the planning horizon to complete days. The planning horizon must not lie in the past. For the planning horizon, you can specify the time zone in which the system is to calculate the horizon.

According to this, the planning horizon is defined as follows:

- Start of planning horizon = current date + defined offset

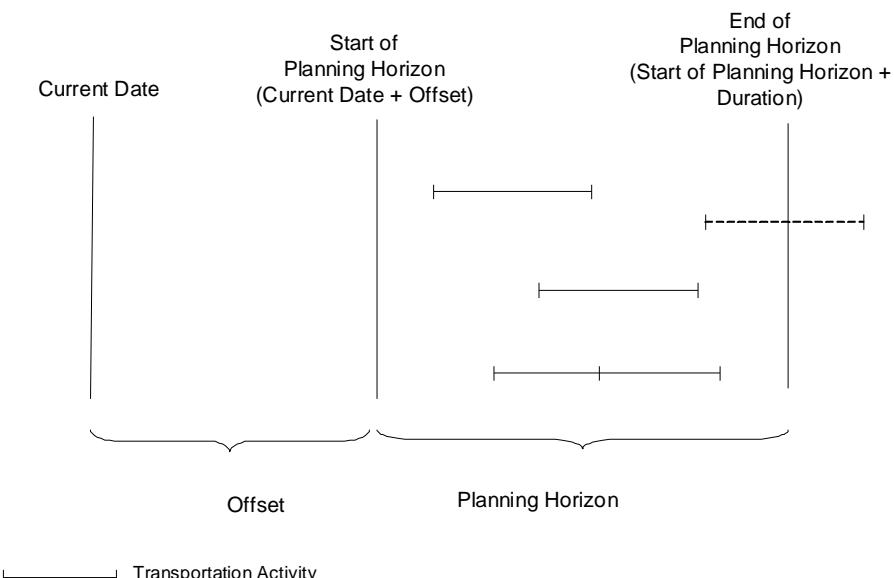
Here, the offset is made up of the offset in days and the additional offset (in hours and minutes).

- End of planning horizon = start of planning horizon + defined duration of planning horizon

Here, the duration of the planning horizon is made up of the duration in days and the additional duration (in hours and minutes).

If you specify a factory calendar, the system takes into account non-working days when calculating the start of the horizon. In this case, the planning horizon always begins on a working day.

The following figure shows how the planning horizon is defined:



Planning Horizon



Planning Costs

You can define freight-unit-dependent and means-of-transport-dependent costs. In most cases, these costs are not actual costs. They simply offer a means of controlling the result of the VSR optimization run (see [VSR Optimization \[Page 806\]](#)) (for example, earliness costs and lateness costs).

Features

Freight-Unit-Dependent Costs

Non-Delivery Costs, Earliness Costs, and Lateness Costs

You define non-delivery costs by either entering them directly or by specifying a condition (see [Condition \[Page 176\]](#)) with the condition type *Optimizer Penalty Costs for Freight Unit*.

Means-of-Transport-Dependent Costs

Fixed Costs

These are costs that the system calculates once for each capacity (for example, vehicle resource and schedule) used in the VSR optimization run.

Note

For schedules, the fixed costs are incurred per departure.

End of the note.

Dimension-Relevant Costs

These are variable transportation costs per unit for the following dimensions:

- Time (duration)
- Distance
- Transported quantity per distance
- Intermediate stop

These costs refer to the use of the dimensions of a capacity (including empty runs) during the VSR optimization run.

These costs are described in detail in the following sections:

- Costs per duration

You define the costs per duration for each VSR optimization run. You can also define a maximum value and a unit. The unit refers to both the costs and the maximum value. If you do not specify a unit, the system uses the unit *Second*.

- Costs per distance

You define the costs per distance for each VSR optimization run. You can choose from various cost bases. You specify whether the system is to use the costs per distance from

the planning costs in the planning profile (that is, from the *Costs per Distance Unit* field) or from the transportation lane. Alternatively, you can specify that the system takes into account the total of both values.

If the system is to take into account the distance costs from the planning profile or from the planning profile *and* the transportation lane, you can define a maximum value and unit. The unit refers to both the costs and the maximum value. If you do not specify a unit, the system uses the unit *Kilometer*.



Example

You want to model a case where means of transport MT1 is to be used everywhere and with constant costs per distance. Means of transport MT2 is to be used primarily in region A, and it is to be used in region B for bottleneck situations.

You therefore choose *Yes* in the *Dist. Costs from Planning Costs Settings* field (calculation basis: planning costs) for MT1, and define costs per distance unit. You choose *No* in the *Dist. Costs from Transportation Lane* field.

For MT2, you choose *No* in the *Dist. Costs from Planning Costs Settings* field (calculation basis: planning costs), and *Yes* in the *Dist. Costs from Transportation Lane* field.

In this case, the system adds the costs from the planning costs and the costs from the transportation lane.

End of the example.

If the system is to take into account the distance costs from the transportation lane only, you can choose between two types of distance costs, each of which applies a different geographical basis in its calculation logic:

- Route-based distance costs

Route-based distance costs are determined using a calculation logic that adds up the costs for the transportation of the goods from the source location to the destination location via a number of transshipment locations based on the costs for each stage.

- Destination-based distance costs

Destination-based distance costs are determined using a calculation logic that adds up the distances between the source and target locations, including all distances between transshipment locations, and multiplies the result by a cost factor. This cost factor is part of the direct transportation lane between the source location and target location and is based on the geographical location of the destination. The probability that the destination location of a transportation is the source location of the next transportation determines the value of the cost factor.



Note

You must have defined a direct transportation lane between the source location and the target location before the system can take this calculation logic for distance costs into account in the VSR optimization run.

End of the note.



Example

You want to transport goods from New York City to Minneapolis via Chicago. The distance between New York and Chicago is 800 and the distance between Chicago and Minneapolis is 400. The total distance that the system is to take into account in the VSR optimization run, for both the route-based distance costs and the destination-based distance costs, is therefore 1200 ($800 + 400$).

In the case of the route-based distance costs, the cost factor for the transportation of the goods from New York to Chicago is 3. The cost factor for the transportation of the goods from Chicago to Minneapolis is 4.

In the case of the destination-based distance costs, the cost factor for the transportation of the goods from New York to Minneapolis is 2.

If you select route-based distance costs for your VSR optimization run, the system calculates the transportation charges as follows: $800*3 + 400*4 = 4000$.

If you select destination-based distance costs for your VSR optimization run, the system calculates the transportation charges as follows: $(800 + 400)*2 = 2400$.

End of the example.

- Costs per quantity

You define the costs per quantity for each VSR optimization run. You must also define a unit. You cannot define a maximum value for the costs per quantity. However, you can specify the cost basis, in other words, whether the system is to use the costs per quantity from the transportation lane or from the schedule, or from the planning costs of the planning profile (that is, from the *Costs per Quantity* field).

In the case of costs per quantity from the transportation lane or the schedule, you can specify whether the system is to calculate the costs in a distance-independent way or whether it is to multiply them by the distance.

For nonscheduled means of transport, you take the costs per quantity from the transportation lane. For a means of transport of a schedule, you take the costs per quantity from the schedule.

In the case of costs per quantity from the planning costs, you can specify whether the system is to calculate the costs in a distance-independent way or whether it is to multiply them by the distance.



Example

The following example shows how the system calculates the costs in the case of costs per quantity from the planning costs (in a distance-independent way per transportation lane):

You want to transport a freight unit (FU) with a weight of 10 kg from A to B. You have defined costs of 5 per KG. In this case, the system calculates costs per quantity to the amount of 50.

If you transport the FU from A via C to B, the system calculates costs per quantity to the amount of 100, in other words, 50 per stage.

End of the example.

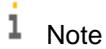
- Costs per intermediate stop

You can define the maximum number of intermediate stops and the costs per additional stop.

Cost Factors for Penalty Costs

You can use these cost factors to weight the earliness and lateness costs that you have defined for each freight unit on the basis of the means of transport. The VSR optimization multiplies these cost factors by the earliness costs or lateness costs of each freight unit. The following cost factors are available:

- Cost factor for premature pickup
- Cost factor for delayed pickup
- Cost factor for premature delivery
- Cost factor for delayed delivery



You define earliness costs and lateness costs by either entering them directly or by specifying a condition with the condition type *Optimizer Penalty Costs for Freight Unit*. You specify this condition when you define time windows for the pickup and delivery. You must then assign these time windows to a planning profile. For more information, see [Time Windows \[Page 895\]](#).

End of the note.

Activities

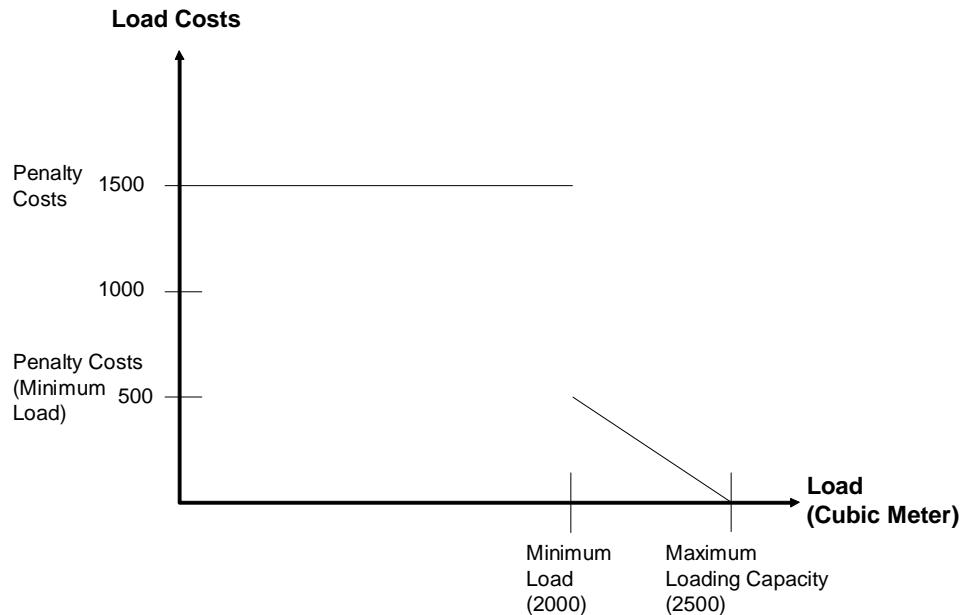
To define planning costs, in the SAP NetWeaver Business Client, choose Application Administration Planning Planning Profile Settings Planning Costs Settings Create Planning Costs Settings.

To assign your planning costs to a planning profile, in SAP NetWeaver Business Client, choose Application Administration Planning Planning Profiles Edit Planning Profile and then the planning profile.



Cost Function

TRUCK001 with means of transport TRUCK has a maximum loading capacity of 2500 cubic meters. Your company has the following business requirement: each truck is to leave the plant as full as possible. If this is not possible, the load must be at least 2000 cubic meters (minimum load). The following figure shows how you can use a cost function to map this business requirement:



Cost function

You define two segments for this cost function:

- For the first segment, you define penalty costs of 1500 and a load of 0 cubic meters. You have also defined a gradient of 0 (zero). This means that if TRUCK001 leaves the plant with a load of less than 2000 cubic meters, the optimizer calculates penalty costs of 1500.
- For the second segment, you define penalty costs of 500 and a load of 2000 cubic meters. You also define a gradient of 1.000-. This means that if TRUCK001 leaves the plant with a load of between 2000 and 2500 cubic meters, the optimizer calculates penalty costs between 500 and 0 (zero) in accordance with the gradient (decreasing in intervals of one unit for each additional cubic meter loaded onto the truck).



Freight Order Building Rule

The system takes into account freight order building rules (FOB rules) when creating and changing more than one freight order on one resource during VSR optimization (VSR = Vehicle Scheduling and Routing).

You use freight order building rules to control how the system assigns activities on one resource to different freight orders.

Features

VSR optimization can build freight orders according to the following rules:

- *New freight order when resource is empty*

VSR optimization creates a new freight order if the resource is empty, that is, no freight units and no trailers are assigned to the resource.

- *New freight order when resource is empty and depot location reached*

VSR optimization creates a new freight order when the following prerequisites are met:

- The resource is empty, that is, no freight units and no trailers are assigned to the resource.
- The resource has reached the depot location.

An exception to these rules is schedule vehicles. The system creates a freight order for every departure of a schedule vehicle. Empty runs within the route of the schedule are part of the freight order as well.

Activities

You can define FOB rules in SAP NetWeaver Business Client in the *Optimizer Settings* screen area of a planning profile (see [Planning Profile \[Page 689\]](#)).

Example

For an example of how the system builds freight orders depending on the FOB rule, see [Example for the Freight Order Building Rule \[Page 700\]](#).

More Information

[VSR Optimization \[Page 806\]](#)



Example for the Freight Order Building Rule

The following example demonstrates how the system builds freight orders based on given data depending which of the following values of the freight order building rule (FOB rule) you have chosen:

- *New freight order when resource is empty*
- *New freight order when resource is empty and depot location reached*

Given Data

You have the following freight units:

- Freight unit 1: A -> B

Freight unit 1 needs to be transported from source location SOURCE_A to destination location DEST_B.

- Freight unit 2: A -> B

Freight unit 2 needs to be transported from source location SOURCE_A to destination location DEST_B.

- Freight unit 3: C -> D

Freight unit 3 needs to be transported from source location SOURCE_C to destination location DEST_D.

- Freight unit 4: C -> D

Freight unit 4 needs to be transported from source location SOURCE_C to destination location DEST_D.

- Freight unit 5: E -> F

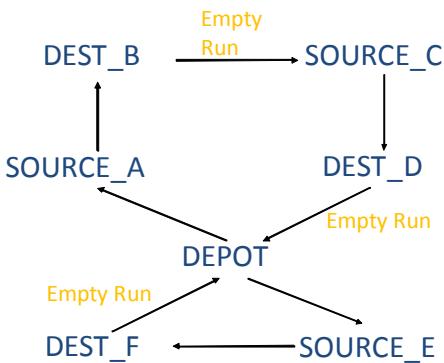
Freight unit 5 needs to be transported from source location SOURCE_E to destination location DEST_F.

- Freight unit 6: E -> F

Freight unit 6 needs to be transported from source location SOURCE_E to destination location DEST_F.

You have a resource with a capacity for four freight units and the depot location DEPOT.

The figure below illustrates the transportation plan that a truck uses to transport the freight units, as well as the empty runs, and is followed by an explanation:



Transportation plan with empty runs

The truck uses the following transportation plan to transport the freight units:

DEPOT -> SOURCE_A -> DEST_B -> SOURCE_C -> DEST_D -> DEPOT -> SOURCE_E -> DEST_F -> DEPOT

This means that the following three empty runs exist:

- DEST_B -> SOURCE_C
- DEST_D -> DEPOT
- DEST_F -> DEPOT

Result

The system builds the following freight orders depending on which of the following values of the FOB rule you have chosen:

- *New freight order when resource is empty*

The system builds the following freight orders:

- Freight order 1

This freight order contains freight unit 1 and freight unit 2.

- Freight order 2

This freight order contains freight unit 3 and freight unit 4.

- Freight order 3

This freight order contains freight unit 5 and freight unit 6.

- *New freight order when resource is empty and depot location reached*

The system builds the following freight orders:

- Freight order 1

This freight order contains freight unit 1, freight unit 2, freight unit 3, and freight unit 4.

- Freight order 2

This freight order contains freight unit 5 and freight unit 6.



Capacity Decrease

When you transport goods for multiple customers on a vehicle resource (including passive vehicle resources), in other words, the vehicle resource stops at multiple intermediate stops on the way from the source location to the destination location, you can use partitions to separate the goods. However, this results in a reduction of the total capacity of the vehicle resource since each partition consumes capacity itself. You can use this function to define how the capacity is to decrease.

Note

- This function refers only to the capacity of the vehicle resource. It is independent of compartments (see [Compartments](#)) that you have defined for the vehicle resource.
- You define decreasing capacities once for your system. You do not assign them to a profile.
- You cannot define decreasing capacities for schedule vehicles.

End of the note.

Features

Fixed Value

You can define a fixed value or a percentage by which the capacity is to decrease for each loading-relevant intermediate stop where loading, unloading, or transshipment activities take place. The system continues to reduce the capacity for the VSR optimization (see [VSR Optimization \[Page 806\]](#)) until one of the following conditions is met:

- The total capacity is consumed, in other words, it is zero.
- The maximum number of intermediate stops defined for the means of transport has been reached (user interface for the definition of planning costs).
- The maximum number of intermediate stops defined for the capacity decrease (end of intermediate stop area) has been reached.

Single Values

You can define a value by which the capacity is to decrease for a specific number of loading-relevant intermediate stops. If you do not define a value for a certain number of loading-relevant intermediate stops, the capacity remains the same.

Note

Note that in both cases the capacity decrease refers to the capacity that the vehicle resource has before the transportation start, in other words, the capacity with which you can load the vehicle resource at the source location.

End of the note.

Activities

To define capacity decrease, in SAP NetWeaver Business Client, choose  *Application Administration*  *Planning*  *General Settings*  *Decreasing Capacity Settings*  *Create Decreasing Capacity Settings*.

More Information

[Definition of Decreasing Capacities \[Page 705\]](#)



Definition of Decreasing Capacities

You have defined the following data:

- Means of transport 0001
- Load unit KG
- Vehicle resource RES1 with means of transport 0001 and a capacity of 10,000 kg

Fixed Value or Fixed Percentage

If you want to use a fixed percentage, specify the following values for the capacity decrease:

TM	Load Unit	Stop Range: Start	Stop Range: End	Value Type	Capacity Decrease	Percentage
0001	KG	2	11	Fixed Value	10	Capacity Decrease Is a Percentage

If you want to use a fixed value, specify the following values for the capacity decrease:

TM	Load Unit	Stop Range: Start	Stop Range: End	Value Type	Capacity Decrease	Percentage
0001	KG	2	11	Fixed Value	1000	Capacity Decrease Refers to Load Unit

Note

- In the case of the value type *Fixed Value*, only one entry (one line) is possible for each means of transport.
- Only when using the value type *Fixed Value* does it make sense to enter a value in the *Stop Range: End* field.

End of the note.

In both cases, the reduced capacity is as follows:

Number of Loading-Relevant Intermediate Stops	Reduced Capacity
1	10.000
2	9.000
3	8.000
4	7.000
5	6.000
6	5.000

Number of Loading-Relevant Intermediate Stops	Reduced Capacity
7	4.000
8	3.000
9	2.000
10	1.000
11	0

If, on the way from the source location to the destination location, the means of transport makes two intermediate stops where loading, unloading, or transshipment activities take place, you can load it with a capacity of 9,000 kg at the destination location. However, if the means of transport makes 10 intermediate stops where loading, unloading, or transshipment activities take place, the available capacity is only 1,000 kg. If the number of loading-relevant intermediate stops is greater than 11, the capacity remains at zero.

Single Values

If you want to define single values, specify the following values for the capacity decrease:

Stop Range: Start	Value Type	Capacity Decrease	Percentage
2	Single Value	1000	Capacity Decrease Refers to Load Unit
4	Single Value	500	Capacity Decrease Refers to Load Unit
5	Single Value	500	Capacity Decrease Refers to Load Unit
6	Single Value	700	Capacity Decrease Refers to Load Unit
8	Single Value	2000	Capacity Decrease Refers to Load Unit
9	Single Value	2300	Capacity Decrease Refers to Load Unit
10	Single Value	1000	Capacity Decrease Refers to Load Unit

 Note

In the case of single values, it does not make sense to use the option *Capacity Decrease Is a Percentage* in the *Percentage* field.

End of the note.

In this case, the reduced capacity is as follows:

Number of Loading-Relevant Intermediate Stops	Reduced Capacity
1	10.000
2	9.000

Number of Loading-Relevant Intermediate Stops	Reduced Capacity
3	9.000
4	8.500
5	8.000
6	7.300
7	7.300
8	5.300
9	3.000
10	2.000
11	2.000

If, on the way from the source location to the destination location, the means of transport makes two intermediate stops where loading, unloading, or transshipment activities take place, you can load it with a capacity of 9,000 kg at the destination location. However, if the means of transport makes 10 intermediate stops where loading, unloading, or transshipment activities take place, the available capacity is only 2,000 kg. Note that the value by which the capacity is reduced each time always refers to the value in the previous line and not to the original capacity. Only the first entry refers to the original capacity.

If the number of loading-relevant intermediate stops is greater than 11, the capacity remains at 2,000 kg.



Freight Unit Building Rule

The system takes into account freight unit building rules (FUB rules) when creating and editing freight units (see [Creation and Editing of Freight Units \[Page 719\]](#)).

Features

Consolidation

In the FUB rule, you define how the system is to consolidate freight units. To do this, you can use various freight unit building strategies (FUB strategies):

- Consolidate as much as possible

In this case, the items come from different business documents, for example, forwarding orders. The system groups the items in freight units.



Note

In addition to forwarding orders, other possible business documents are forwarding quotations, order-based transportation requirements, and delivery-based transportation requirements.

End of the note.

- Consolidate per item

In this case, the system generates one freight unit per business document item.

- Consolidate per request (compatible parts)

In this case, the system groups all items of a business document to form a freight unit.

For all three FUB strategies, the system takes into account hard constraints and incompatibilities (see [Incompatibilities \[Page 715\]](#)).

Planning and Split Quantities

The system copies the units of measure that you define in the planning quantities to the freight units that it creates. They also form the basis for checking the capacity of resources. You define the maximum capacity of a freight unit using the split quantity.



Example

You want to transport 5 tons of cement, but you can only transport it in batches of 500 kg. In this case, you define a split quantity of 500 kg. The system generates 10 freight units.

End of the example.

If the system cannot find the planning unit in the business document, it converts the unit using the values that you have defined in the product master.



Example

You want to transport 5 tons of cement, but you can only transport it in batches of 0.5 m^3 . In the product master, you have defined that 0.8 m^3 of cement is equivalent to 1 ton of cement. The system then converts 5 tons of cement into 4 m^3 and generates 8 freight units.

End of the example.

In addition to the split quantity, you can also specify a rounding value. In this case, the system calculates the freight unit quantity as a multiple of the rounding value.



Example

You define the following values:

Product	1 computer = 1 piece = 0.06 m^3
Split quantity	1 m^3
Rounding value	1 piece

Since 1 m^3 divided by 0.06 m^3 makes 16.67 m^3 , with this split quantity, the freight unit can contain a maximum of 16 computers.

If you enter 3 pieces as the rounding value, for example, because you can only pack three computers in a box, the freight unit can contain a maximum of 15 computers, since 15 is a multiple of 3 and is less than 16.67.

End of the example.

You can use the item split checkbox to control whether items are allowed to be split if the split quantity is exceeded.



Example

You have defined the following values:

<i>Freight unit building strategy</i>	Consolidate as much as possible
<i>Critical quantity</i>	Gross weight
<i>Item split allowed</i>	No
<i>Split quantity</i>	20 tons

You want to schedule four items with a total weight of 21 tons. Items 1 to 3 each contain 5 tons and item 4 contains 6 tons. Taking into account your settings, the system creates two freight units:

- Freight unit 1 with items 1 to 3
- Freight unit 2 with item 4

End of the example.

Freight Unit Update Strategy

You can specify whether it is possible to move items from one freight unit to another when freight units are updated. You do so by defining the freight unit update strategy in the freight unit building rule.



Example

There are two cargo items in a forwarding order. The system creates one freight unit for each item. One freight unit is planned (FU1) and the other freight unit is not planned (FU2). Item 1 belongs to FU1 and item 2 belongs to FU2.

If item 1 is deleted from the forwarding order, the following occurs:

- In the standard system (that is, *Item Swap Allowed (Standard Behavior)* is selected in the freight unit building rule), item 2 is moved to FU1 and FU2 is canceled.
- If you have selected *Item Swap Not Allowed* in the freight unit building rule, item 2 stays in FU2 and FU1 is canceled.

End of the example.

Document Type

You can control which document type is to result from the generation of freight units (freight unit type or freight order type). You can either enter a document type directly or enter a condition for determining the document type in the enhanced settings. You define freight unit types and freight order types in Customizing. For more information, see Customizing for *Transportation Management* under:

- ► *Planning* ► *Freight Unit* ► *Define Freight Unit Types* ▶
- ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶

If the system determines a freight order type as the document type when generating freight units, it automatically generates freight orders.

Default Transportation Order Categories for Freight Units and Transportation Units

When freight units are built, the system can create transportation units as a category of a freight document. If the freight document type is not specified in the freight unit building rule (either directly or via a condition), the system creates the following freight document categories:

Item Category	Freight Document Category
Product / package	Freight unit
Container	Container unit as an instance of the transportation unit with TU category "Container"
Railcar	Railcar unit as an instance of the transportation unit with TU category "Railcar"
Trailer	Trailer unit as an instance of the transportation unit with TU category "Trailer"

If you want the system to create "Freight unit" instead of "Container unit" as the document category for container items, you must specify the document type of the freight unit in the freight unit building rule (either directly or via a condition).



Note

If the freight unit building rule does not contain a document type, the system reads the default document type from Customizing. You must therefore ensure that a default type has been defined for each transportation unit category under ► *Transportation Management* ► *Planning* ► *Transportation Unit* ► *Define Transportation Unit Types* ▶.

End of the note.

Equipment-Based Freight Units and Transportation Units

If the equipment type and group have been defined in the freight unit building rule, the rule can be used to create equipment-based freight units and transportation units. Alternatively, you can define a vehicle type and group in the freight unit building rule. This means that the rule can be used to create a container, railcar, or transportation unit depending on the equipment or vehicle group category.

If you want the system to create “Freight unit” instead of “Container unit” as the document category for container items, you must specify the document type of the freight unit in the freight unit building rule (either directly or via a condition).

Automatic Creation of Freight Orders

If you want a freight order to be created automatically instead of a freight unit (shortcut scenario), enter a freight order type as the document type or a condition for determining this freight order type. This function is also supported for transportation units (see [Transportation Unit](#)).



Example

You specify in a condition that if the quantity exceeds 20 tons, freight order type 1 is to be used; otherwise freight unit type 1 is to be used.

This function is suitable, for example, for the following cases:

- In general you want to send small orders that are below one of the upper limits you have defined with an express delivery company.
- You always have to transport orders as a full load due to their size.

End of the example.

Process Controller Strategies

You can use strategies to define the way in which freight units are created in accordance with your own requirements. SAP delivers the standard strategy `FUB_AUTO` for freight unit building. For more information, see [Process Controller Configuration \[Page 1229\]](#).

Activities

You can define FUB rules in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *Planning* ► *General Planning Settings* ► *Freight Unit Building Rule* ► *Create Freight Unit Building Rule* ▶.

More Information

[Determination of Freight Unit Building Rules \[Page 723\]](#)

[Definition of Dimensions and Units of Measurement \[Page 134\]](#)



Determination of Freight Unit Building Rules

When creating freight units, the system determines which freight unit building rule (FUB rule) it is to take into account for a business document item. Possible business documents are:

- Forwarding order
- Order-based transportation requirement
- Delivery-based transportation requirement

Prerequisites

- Optionally, you have defined FUB rules. For more information, see [Freight Unit Building Rule \[Page 724\]](#).
- You have defined conditions with the condition type *Freight Unit Building Rule Determination*. For more information, see [Condition \[Page 176\]](#).

Features

To determine FUB rules, the system proceeds as follows:

1. The system checks whether you have specified a condition in the business document type, for example, forwarding order type. There can be only one condition per business document type.
2. If the system does not find a condition or if this condition does not return a result, the system checks whether you have specified a standard FUB rule in the business document type.
3. If you have not specified one, the system uses standard settings.



Note

You can see which FUB rule the system has used in the freight unit.

End of the note.



Definition of Dimensions and Units of Measurement

You use dimensions to group units of measurement. You need units of measurement to display product quantities, for example, for freight unit building rule (FUB rules), and to describe the capacity of vehicle resources (see [Freight Unit Building Rule \[Page\] 724](#) and [Vehicle Resource](#)).

Note

The system might display quantities with 14 decimal digits. If you want the system to round quantities to a specific number of decimal digits, follow the instructions described in SAP Note [1132219](#).

End of the note.

Prerequisites

- You have checked in Customizing for SAP NetWeaver under ► *SAP NetWeaver* ➤ *General Settings* ➤ *Check Units of Measurement* that the dimensions delivered as a standard and the associated units of measurement are complete.
- When using FUB rules, the system checks if the forwarding order contains the relevant quantities based on the FUB rules. If the forwarding order does not contain the relevant quantities, the system uses the product data. For this purpose, you have defined the following in the product master data:
 - [Base unit of measure](#) (BUoM)
 - Conversion factors

You need conversion factors to convert the base units of measure into the required units of measurement. You define these in the product master on the *Units of Meas.* tab page. For more information, see [Definition of Products](#).

If you have not defined a conversion factor, the system cannot take split quantities or rounding values into account when building freight units from business documents (forwarding orders, for example). In this case, it sets the quantities to zero.

Example

Examples for Dimensions and Units of Measurement

The following table provides you with examples of dimensions and of some units of measurement you can assign to them.

Dimension	Units of Measurement
Mass	Kilogram; milligram
Volume	Cubic centimeter; cubic decimeter

Example for the Conversion of Units of Measurement

The following units of measurement are predefined as a default:

- *Kilogram* (dimension mass)
- *Cubic decimeter* (dimension volume)

You also define the following unit of measurement:

- *Pallet* (no dimension)

Your forwarding order contains product A and product B each of which have the quantity "1 piece". You have defined *piece* as BUoM for both products.

You have defined the following conversion factors for product A:

- 1 piece = 2 kg
- 1 piece = 3 dm³

You have defined the following conversion factor for product B:

- 1 piece = 0.5 pal

In this case, product A is displayed with quantity 2 kg or 3 dm³. In the unit of measurement *pallet* (pal), the quantity 0 is displayed because you have not defined a conversion factor.

Product B is displayed with the quantity 0.5 pal. Since you have not defined conversion factors for *kilogram* or *cubic decimeter*, no conversion occurs. The system displays the value 0.



Incompatibilities

You use incompatibilities to define the compatibility of planning data that the system is to take into account during transportation planning, for example:

- Freight units with different Incoterms must not be transported together.
- Refrigerated goods must only be transported in appropriate means of transport (refrigerated trucks).
- A certain means of transport cannot be unloaded at a location since the location does not have a suitable loading ramp.

In this way, you can control how freight units are assigned to vehicle resources in manual planning, for example.

Note

For consistency reasons, you can define incompatibilities only. To define a compatibility, you have to define an incompatibility with all other attribute values.

End of the note.

Features

You can define incompatibilities in different ways.

On the one hand, you can define incompatibilities between any two attributes of two business object nodes. To do so, you define two conditions and specify the relevant results. Two business object instances are then incompatible if the result of the condition matches these relevant results.

On the other hand, you can enter only one condition and select the *Ident. Values Only* (Identical Values Only) checkbox. In this way, you can define an incompatibility between two instances of the same business object (BO), for example, two freight units. The two BO instances are then only incompatible if their values differ. If a planning run comprises many business objects and the attribute can have many values, performance might be reduced. In this case, we do not recommend that you use this option.

Alternatively, you can use customer-specific logic to determine the pairs of incompatible objects. To do so, choose the option *External Determination Strategy* in the *Determination Method* field and specify the required strategy in the *External Determination Strategy* field. For more information, see [External Strategies \[Page 1232\]](#). If you define incompatibilities with conditions and a freight unit has several products, the system only determines the first product, and it does this randomly. You can avoid this restriction by using example strategy `TM_INCOMP`. In this case, you specify two products that are incompatible in your incompatibility. The example strategy then checks whether the freight units contain these products. `TM_INCOMP` serves as an example strategy for incompatibilities, the class assigned describes the interface and serves as reference implementation for customer-specific classes. The unit tests serve documentation purposes.

The example strategy shows that condition-based incompatibilities are not always suitable. However, if a freight unit has only a single product item (package items or container items can, however, also exist), a filter on the item type *Product* in the condition is sufficient.

You use the incompatibility area to define the area in which the system is to take into account an incompatibility:

- Manual planning, VSR optimization, and generating transportation proposals
- Creating freight units
- Carrier selection (including continuous move)
- Creating delivery proposals

VSR optimization considers incompatibilities as hard constraints.

You use the incompatibility type to define the BOs between which an incompatibility is to be valid. For example, you can use the incompatibility type *FU – Compartment* to ensure that a freight unit is not transported in a certain compartment. You can also use the incompatibility type to define the incompatibility level.

 Note

You can define incompatibilities between freight units on three incompatibility levels:

- Vehicle level (this means that the two freight units must not be transported in the same vehicle or in the same compartment)
- Compartment level (this means that the two freight units must not be transported in the same compartment)
- Means-of-transport combination level (this means that the two freight units must not be transported in the same vehicle, in the same compartment, or in the same means-of-transport combination)

End of the note.

 Note

- Compartments and means-of-transport combinations are nodes of the BO vehicle resource. In this case, you have to use the node `COMPARTMENTITEM` or `MEANS_TRANSPO_COMB` from the BO vehicle resource.
- A condition type exists for each BO node that the system uses in an incompatibility type.

End of the note.

Furthermore, when defining your incompatibility, you can specify whether the system is allowed to violate incompatibilities during manual planning, VSR optimization, or background processing. You can override this setting in the incompatibility settings.

In the incompatibility settings, you specify which incompatibilities the system is to consider in a certain incompatibility area. You can assign them to your planning profile, your carrier selection settings, and your freight unit building rule. Moreover, you can define default incompatibility settings, for example, for a certain incompatibility area. This system considers these if you have not assigned any incompatibility settings to the specified profiles.

 Note

When you access the transportation cockpit, the system checks for incompatibility settings in the following order: in the profile and layout sets, in the planning profile, and in the default incompatibility settings.

If you then create a freight order or a freight booking directly in the transportation cockpit, the incompatibility settings that were identified when you accessed the cockpit are assigned to the business document. When you open the freight order or freight booking document directly, these settings are then used for the incompatibility check.

After you have defined an incompatibility, you can perform a simulation.

If you want to simulate an incompatibility with the incompatibility type *Freight Unit – Freight Unit (Vehicle Level)*, for example, you specify two freight units. In this case, the system checks whether an incompatibility exists between the two freight units.

End of the note.

Activities

You can define incompatibilities in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *Planning* ► *General Settings* ► *Incompatibility Definitions* ► *Create Incompatibility* ▶.

You can define incompatibility settings in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *Planning* ► *General Settings* ► *Incompatibility Settings* ► *Create Incompatibility Settings* ▶.

More Information

[Condition \[Page 176\]](#)

[Definition of Incompatibilities \[Page 718\]](#)



Definition of Incompatibilities

Incompatibility Between Two Freight Units with Different Transportation Groups

You want to prevent freight units with the transportation group *Liquid* and *Solid* from being delivered together. In this case, you define a condition (see [Condition \[Page 176\]](#)) with the condition type for freight unit incompatibilities. Here the output value is the transportation group for the item.

You then define an incompatibility with the incompatibility type *FU-FU (Vehicle Level)*, which specifies that freight units with these two transportation groups must not be delivered at the same time on one truck. You choose the incompatibility area for manual planning, VSR optimization, and for generating transportation proposals.

You then specify the condition that you defined before twice. You specify *Liquid* as the relevant result of the first condition. You specify *Solid* as the relevant result of the second condition.

Incompatibility Between Certain Freight Units and a Certain Means of Transport

All freight units with the transportation group *Non-Liquid* are to be incompatible with the means of transport *Tanker*. In this case, you define two conditions: one for the freight unit (with the condition type for freight unit incompatibilities) and one for the capacity, in this case, the vehicle resource, for example (with the condition type for vehicle resource incompatibilities).

You then define an incompatibility with the incompatibility type *FU-Vehicle Resource*. You specify *Non-Liquid* as the relevant result for the condition for the freight unit. You specify *Tanker* as the relevant result for the condition for the vehicle resource.

Note

Alternatively, you can specify *Liquid* as the relevant result for the condition for the freight unit and *Not a Tanker* as the relevant result for the condition for the vehicle resource.

End of the note.

Incompatibility Between Freight Units with Different Transportation Groups

You want to prevent freight units with different transportation groups from being delivered together.

In this case, you define an incompatibility and specify only one condition in which the system determines the transportation group for the freight unit. You also select the *Ident. Values Only* (Identical Values Only) checkbox. Freight units with different transportation groups are then incompatible.



Creation and Editing of Freight Units

The system automatically creates freight units from the following business documents:

- Forwarding orders
- Order-based transportation requirements
- Delivery-based transportation requirements

It considers, for example, freight unit creation rules during this process. You can then split or merge the freight units created.

The creation of freight units in turn affects planning. The larger the freight units are, the simpler the planning activities in VSR optimization. If the freight units are smaller, there may well be a higher theoretical potential for optimization, but in practice, planning in VSR optimization is made more difficult due to the higher number of freight units. To achieve the best planning result, you are advised to aim somewhere in the middle.



Example

You have a truck with a capacity of 20 tons. You are planning to transport 20 tons of flour in 1 kg packages. Neither extreme is advisable here for the reasons given above. You should not create a single freight unit with a weight of 20 tons, nor should you create 20,000 freight units with a weight of 1 kg each.

End of the example.

Prerequisites

- Business documents exist.
- If you would like the system to automatically create freight units when forwarding orders are saved, you have selected the checkbox for automatic freight unit building in Customizing for the forwarding order type. For more information, see Customizing for *Transportation Management* under *Forwarding Order Management* *Forwarding Order* *Define Forwarding Order Types*.
- You have defined freight unit types in Customizing. For more information, see Customizing for *Transportation Management* under *Planning* *Freight Unit* *Define Freight Unit Types*.
- You have defined freight unit building rules (FUB rules) and assigned freight unit types to them (see [Freight Unit Building Rule \[Page 724\]](#)).
- Optionally, you have defined incompatibilities (see [Incompatibilities \[Page 715\]](#)).

Features

Automatic Creation of Freight Units

First, the system groups all business document items under consideration of the following parameters:

- Hard constraints (source location and destination location as well as pick-up and delivery dates)
- Business document attributes and packaging information
- Incompatibilities
- FUB rules

Here the system takes into account freight units that already exist for these business documents.

The system then creates one or more freight units from these groups. If you have defined a split quantity and have selected the checkbox for the item split, the system takes these entries into account when creating multiple freight units.

In the case of automatically creating freight units, you can specify an FUB rule. If you do not specify an FUB rule, the system automatically determines the FUB rule. For more information, see [Determination of Freight Unit Building Rules \[Page 723\]](#). In the FUB rule you can enter, for example, that freight orders or transportation units are created automatically instead of freight units (see [Transportation Unit](#)) (shortcut scenario). For more information, see [Freight Unit Building Rule \[Page 724\]](#) and [Direct Creation of Freight Orders](#).

When freight units are built, the main cargo items in the forwarding documents can have different categories as defined by the shipping type. Items with different categories form a compatibility group, which means that these items cannot be grouped into one freight unit or transportation unit.

A distinction is made between the following groups:

- Package, product, and schedule line
- Container
- Railcar
- Trailer



Example

A forwarding order has a container, package, and railcar as its main cargo items. All of these items have a different compatibility group, which means that the system will create three freight units or transportation units.

End of the example.

You can also create freight units in the background (see [Forwarding Order Management Preparation \[Page 1238\]](#)). However, we recommend that you use automatic creation.

You can use strategies to create freight units in accordance with your own requirements. SAP delivers the standard strategy `FUB_AUTO` for freight unit building. For more information, see [Process Controller Configuration \[Page 1229\]](#).

The system automatically creates, for example, freight units when you save your forwarding order. For more information, see [Editing of a Forwarding Order](#).

Manual Splitting and Merging of Freight Units

You can manually split or merge the freight units that the system has created automatically. You can use drag and drop to merge the freight units.

Note

- When freight units are split, the target freight unit is the one that takes on the product items (or partial quantities of these items) that are split off and that is created during the split.
- When merging freight units, the target freight unit is the existing freight unit that takes on the product items (or partial quantities of these items) that are split off.

End of the note.

In the case of product items, you can split off or merge partial quantities. When doing so, you must specify the required quantity. You can split or merge package items and container items if they do not have any subitems, for example, products.

Note

- If empty freight units are created during splitting, the system does not immediately delete them. You can fill them again. If they are still empty when you save, the system deletes them.
- You can split a freight unit several times. If your freight unit contains, for example, 100 tons, you can enter 10 tons as the split quantity and 5 as the number of item splits. The system splits the freight unit into 5 freight units, each containing 10 tons. The original freight unit then still contains 50 tons.

End of the note.

For manual splitting and merging, the system checks the following parameters:

- Source location, destination location, and Incoterms

The system can only split or merge freight units if these parameters match the source freight unit and target freight unit.

- Incompatibilities for which you have specified in the *Manual Violation* field that the incompatibility must not be violated during manual planning
- Partial quantities

You are not allowed to split off or merge partial quantities for package items or container items.

These “hard” checks are mandatory.

The function for splitting and merging is available on the following user interfaces:

- Transportation cockpit
- User interface for displaying freight units
- Freight unit table in the planning overview

More Information

[Consideration of Equipment Data During FU Creation \[Page 734\]](#)



Determination of Freight Unit Building Rules

When creating freight units, the system determines which freight unit building rule (FUB rule) it is to take into account for a business document item. Possible business documents are:

- Forwarding order
- Order-based transportation requirement
- Delivery-based transportation requirement

Prerequisites

- Optionally, you have defined FUB rules. For more information, see [Freight Unit Building Rule \[Page 724\]](#).
- You have defined conditions with the condition type *Freight Unit Building Rule Determination*. For more information, see [Condition \[Page 176\]](#).

Features

To determine FUB rules, the system proceeds as follows:

1. The system checks whether you have specified a condition in the business document type, for example, forwarding order type. There can be only one condition per business document type.
2. If the system does not find a condition or if this condition does not return a result, the system checks whether you have specified a standard FUB rule in the business document type.
3. If you have not specified one, the system uses standard settings.



Note

You can see which FUB rule the system has used in the freight unit.

End of the note.



Freight Unit Building Rule

The system takes into account freight unit building rules (FUB rules) when creating and editing freight units (see [Creation and Editing of Freight Units \[Page 719\]](#)).

Features

Consolidation

In the FUB rule, you define how the system is to consolidate freight units. To do this, you can use various freight unit building strategies (FUB strategies):

- Consolidate as much as possible

In this case, the items come from different business documents, for example, forwarding orders. The system groups the items in freight units.



Note

In addition to forwarding orders, other possible business documents are forwarding quotations, order-based transportation requirements, and delivery-based transportation requirements.

End of the note.

- Consolidate per item

In this case, the system generates one freight unit per business document item.

- Consolidate per request (compatible parts)

In this case, the system groups all items of a business document to form a freight unit.

For all three FUB strategies, the system takes into account hard constraints and incompatibilities (see [Incompatibilities \[Page 715\]](#)).

Planning and Split Quantities

The system copies the units of measure that you define in the planning quantities to the freight units that it creates. They also form the basis for checking the capacity of resources. You define the maximum capacity of a freight unit using the split quantity.



Example

You want to transport 5 tons of cement, but you can only transport it in batches of 500 kg. In this case, you define a split quantity of 500 kg. The system generates 10 freight units.

End of the example.

If the system cannot find the planning unit in the business document, it converts the unit using the values that you have defined in the product master.



Example

You want to transport 5 tons of cement, but you can only transport it in batches of 0.5 m^3 . In the product master, you have defined that 0.8 m^3 of cement is equivalent to 1 ton of cement. The system then converts 5 tons of cement into 4 m^3 and generates 8 freight units.

End of the example.

In addition to the split quantity, you can also specify a rounding value. In this case, the system calculates the freight unit quantity as a multiple of the rounding value.



Example

You define the following values:

Product	1 computer = 1 piece = 0.06 m^3
Split quantity	1 m^3
Rounding value	1 piece

Since 1 m^3 divided by 0.06 m^3 makes 16.67 m^3 , with this split quantity, the freight unit can contain a maximum of 16 computers.

If you enter 3 pieces as the rounding value, for example, because you can only pack three computers in a box, the freight unit can contain a maximum of 15 computers, since 15 is a multiple of 3 and is less than 16.67.

End of the example.

You can use the item split checkbox to control whether items are allowed to be split if the split quantity is exceeded.



Example

You have defined the following values:

<i>Freight unit building strategy</i>	Consolidate as much as possible
<i>Critical quantity</i>	Gross weight
<i>Item split allowed</i>	No
<i>Split quantity</i>	20 tons

You want to schedule four items with a total weight of 21 tons. Items 1 to 3 each contain 5 tons and item 4 contains 6 tons. Taking into account your settings, the system creates two freight units:

- Freight unit 1 with items 1 to 3
- Freight unit 2 with item 4

End of the example.

Freight Unit Update Strategy

You can specify whether it is possible to move items from one freight unit to another when freight units are updated. You do so by defining the freight unit update strategy in the freight unit building rule.



Example

There are two cargo items in a forwarding order. The system creates one freight unit for each item. One freight unit is planned (FU1) and the other freight unit is not planned (FU2). Item 1 belongs to FU1 and item 2 belongs to FU2.

If item 1 is deleted from the forwarding order, the following occurs:

- In the standard system (that is, *Item Swap Allowed (Standard Behavior)* is selected in the freight unit building rule), item 2 is moved to FU1 and FU2 is canceled.
- If you have selected *Item Swap Not Allowed* in the freight unit building rule, item 2 stays in FU2 and FU1 is canceled.

End of the example.

Document Type

You can control which document type is to result from the generation of freight units (freight unit type or freight order type). You can either enter a document type directly or enter a condition for determining the document type in the enhanced settings. You define freight unit types and freight order types in Customizing. For more information, see Customizing for *Transportation Management* under:

- ► *Planning* ► *Freight Unit* ► *Define Freight Unit Types* □
- ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* □

If the system determines a freight order type as the document type when generating freight units, it automatically generates freight orders.

Default Transportation Order Categories for Freight Units and Transportation Units

When freight units are built, the system can create transportation units as a category of a freight document. If the freight document type is not specified in the freight unit building rule (either directly or via a condition), the system creates the following freight document categories:

Item Category	Freight Document Category
Product / package	Freight unit
Container	Container unit as an instance of the transportation unit with TU category "Container"
Railcar	Railcar unit as an instance of the transportation unit with TU category "Railcar"
Trailer	Trailer unit as an instance of the transportation unit with TU category "Trailer"

If you want the system to create "Freight unit" instead of "Container unit" as the document category for container items, you must specify the document type of the freight unit in the freight unit building rule (either directly or via a condition).



Note

If the freight unit building rule does not contain a document type, the system reads the default document type from Customizing. You must therefore ensure that a default type has been defined for each transportation unit category under ► *Transportation Management* ► *Planning* ► *Transportation Unit* ► *Define Transportation Unit Types* ▶.

End of the note.

Equipment-Based Freight Units and Transportation Units

If the equipment type and group have been defined in the freight unit building rule, the rule can be used to create equipment-based freight units and transportation units. Alternatively, you can define a vehicle type and group in the freight unit building rule. This means that the rule can be used to create a container, railcar, or transportation unit depending on the equipment or vehicle group category.

If you want the system to create “Freight unit” instead of “Container unit” as the document category for container items, you must specify the document type of the freight unit in the freight unit building rule (either directly or via a condition).

Automatic Creation of Freight Orders

If you want a freight order to be created automatically instead of a freight unit (shortcut scenario), enter a freight order type as the document type or a condition for determining this freight order type. This function is also supported for transportation units (see [Transportation Unit](#)).



Example

You specify in a condition that if the quantity exceeds 20 tons, freight order type 1 is to be used; otherwise freight unit type 1 is to be used.

This function is suitable, for example, for the following cases:

- In general you want to send small orders that are below one of the upper limits you have defined with an express delivery company.
- You always have to transport orders as a full load due to their size.

End of the example.

Process Controller Strategies

You can use strategies to define the way in which freight units are created in accordance with your own requirements. SAP delivers the standard strategy `FUB_AUTO` for freight unit building. For more information, see [Process Controller Configuration \[Page 1229\]](#).

Activities

You can define FUB rules in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *Planning* ► *General Planning Settings* ► *Freight Unit Building Rule* ► *Create Freight Unit Building Rule* ▶.

More Information

[Determination of Freight Unit Building Rules \[Page 723\]](#)

[Definition of Dimensions and Units of Measurement \[Page 134\]](#)



Freight Unit

A set of goods that are transported together across the entire transportation chain. A freight unit can include transportation constraints for transportation planning.

The freight unit is used to merge items in the following business documents that are to be transported together:

- Forwarding order
- Order-based transportation requirement
- Delivery-based transportation requirement

The freight unit is the smallest unit that can be transported. The business document data and the freight unit building rules form the basis for building freight units.

You define the most important settings for the freight unit in the freight unit type. For more information, see Customizing for *Transportation Management* under ► *Planning* ► *Freight Unit* ► *Define Freight Unit Types*.

After the freight units have been created automatically, you can display them on the user interface for the freight unit. You can also split and merge freight units there (see [Creation and Editing of Freight Units \[Page 719\]](#)). Furthermore, you can also split or merge freight unit stages on this user interface and in the transportation cockpit. When splitting a stage, you manually insert a transshipment location. When merging stages, transshipment locations are deleted automatically.

You can create a house bill of lading or a house air waybill for a freight unit (see [Building and Printing of House Bills of Lading and House Air Waybills](#)).

You can use SAP Event Management to track and monitor freight unit events (see [Tracking of Freight Units \[Page 1113\]](#)).

You can use the change controller (see [Change Controller \[Page 1220\]](#)) to check whether freight units were changed and how the system reacts to these changes.

Structure

The freight unit data is taken automatically from the business document. However, you can still change some of the data. You can access the following data from the freight unit, for example:

- Items

The freight unit items can stem from different business documents, such as forwarding orders, but a freight unit item is assigned to only one business document item, such as a forwarding order item.

- Locations

You can enter one-time locations at stage level. The system stores these new locations and adjusts stages in the document. It also adjusts the locations in the assigned execution documents.

Note

However, you should continue to make changes to existing locations in the master data.

End of the note.

- Transportation stages

The system displays loading and unloading times, transshipment locations, and means of transport, for example.

- Quantities and deviations

You can display actual quantities and deviations, for example.

- Transportation constraints

The system copies this data about the transportation stages from the business document or from the transportation stages that were created manually or by the system during planning. Depending on how the stage was created, you can make changes to them. For more information, see [Transportation Stages and Dates in the Freight Unit \[Page 730\]](#).

- Document flow

The system displays the corresponding business documents with the relevant status information.

- Dangerous goods information (see [Considering Dangerous Goods \[Page 1139\]](#)).
- Status information and blocking information (see [Statuses of Business Documents \[Page 608\]](#) and [Blocking Information \[Page 634\]](#))
- Instructions (see [Management of Instructions \[Page 1204\]](#))

More Information

[Freight Unit Building Rule \[Page 724\]](#)

[Determination of Direct Shipment Options \[Page 856\]](#)

[Interaction Between Organizational Units \[Page 372\]](#)

[Nature of Goods](#)



Transportation Stages and Dates/Times in the Freight Unit

Transportation stages and dates/times are copied from the forwarding order to the freight unit. Only the dates/times are copied from order-based and delivery-based transportation requirements.

The following section describes special features related to transportation stages and dates/times in the freight unit.

Features

Transportation Stages

If a freight unit contains transportation stages because they were predefined in the business document, transshipment must take place. In this case, you cannot delete the related transportation stops at a later point in time.

If transportation stages result from manual planning or VSR optimization for a freight unit, these transportation stages reflect the transshipment. In this case, you can change the related transportation stops at a later time, for example, delete or add further transportation stops. You can only delete if the transportation stage has not been planned (that is, you have to cancel the assignment to a freight order or a freight booking for the transportation stage).



Example

For a forwarding order, goods must be transported from A to Z. The freight unit generated from the forwarding order also goes from A to Z. In planning you refine this, since it is to be a multimodal transport. This results in the freight unit being transported from A to Z via B. These transportation stages are mapped to the freight unit accordingly. This applies for manual planning and for VSR optimization.

End of the example.

Dates/Times

After the freight units are generated, the dates/times of the business document are available in the freight unit (in the transportation stages). Windows for pickup and delivery are also copied to the freight unit from the business document.

You can overwrite windows for pickup and delivery. To do this, you must define a condition (see [Condition \[Page 176\]](#)) and enter it in the freight unit type in Customizing or enter a corresponding rule in the freight unit type. The system then calculates the window when generating the freight unit and displays it in the freight unit.

You cannot change dates/times that are copied from the business document. These dates/times can only be changed using the condition you defined for your window.



Interaction Between Organizational Units

You can use this function to model how organizational units interact with each other, for example, how a sales organization interacts with a planning and execution organization. This interaction is especially important if you have to transport certain goods in a specific transportation stage, for example, dangerous goods.

Features

The sales organization is responsible for entering the order, for example, but is not allowed to create freight bookings for specific transportation stages or send them to a carrier. It can therefore propose how to transport the goods (by specifying a route and a schedule, and assigning a freight order or a freight booking) and sets the organization interaction status to transfer the affected stages to the planning and execution organization to be checked. The planning and execution organization checks the proposal and the transportation stage details in the transportation cockpit. It can then confirm the data exactly as proposed in the forwarding order, change data such as the departure and then confirm the proposal, or reject the proposal outright. The status for the stage in the forwarding order then changes to *Confirmed*, *Confirmed with Deviations*, or *Rejected* respectively.

Note

The functions for confirming or rejecting proposals are not displayed as standard, and so the planning and execution organization must first select an appropriate layout set in the transportation cockpit. For more information, see [Use of Profile and Layout Sets \[Page 777\]](#).

End of the note.

The planning and execution organization can also create a freight booking or a freight order for the transportation stage in the transportation cockpit, or assign the transportation stage to a document that already exists. In this case, the system sets the organization interaction status automatically from *To Be Checked* to *Confirmed*. The sales organization can then confirm the transportation stages with the ordering party.

Furthermore, the planning and execution organization can select an existing freight booking in addition to the route and schedule and confirm the details for the carrier.

Even if a stage has already been confirmed, the sales organization can still make changes to the order. In this case, the system sets the status of the stage to *Changed After Confirmation*.

If the planning and execution organization rejects a stage, the sales organization can submit a new proposal by changing the status of the stage back to *To Be Checked*.

Note

If the planning and execution organization rejects unconfirmed stages that are assigned to a freight booking via an auto-confirmation profile these unconfirmed stages are automatically unplanned.

End of the note.

If the sales organization wants to cancel a stage, this must also be approved by the planning and execution organization. The sales organization therefore sets the status of the relevant stage in the forwarding order to *Cancellation Requested*. In the transportation cockpit, the planning and execution organization chooses *Confirm* for the stage and the status in the forwarding order subsequently changes to *Cancellation Approved*.

The sales organization can also remove the default route from a stage in the forwarding order by selecting the stage and choosing ► *Schedule* ► *Unassign* ▶.

If the sales organization wants to delete the stages of the default route from the actual route, it can do so by selecting one of the relevant stages and choosing *Delete Stage*. The system then replaces the stages containing the default route by the original stages.

Automatically Setting the Organization Interaction Status

The sales organization can set the organization interaction status manually from *Confirmed* or *Rejected* to *To Be Checked*, *Not Yet Requested*, or *Cancellation Requested*.

You define criteria for automatic confirmation in a profile, which the system determines based on the freight booking type. These criteria can include, for example, the security status, volume, or weight. If a transportation stage meets the criteria defined in the profile, the stage can be confirmed automatically (for example, if the volume and weight defined in the profile are less than the volume and weight defined in the transportation stage).

You can use the Business Add-In *BAdI: Change Organization Interaction Status* (/SCMTMS/TOR_ORG_INT_STATUS) to control the following cases:

- A transportation stage can be confirmed automatically (that is, the organization interaction status is set automatically from *To Be Checked* to *Confirmed*), such as when the forwarding order does not contain any dangerous goods.
- A confirmed transportation stage must be rechecked (that is, the organization interaction status is set automatically from *Confirmed* or *Rejected* to *To Be Checked*), for example, when quantities are changed.

Aggregated Organization Interaction Status

The *Statuses* tab page of the forwarding order shows the aggregated organization interaction status of the forwarding order. This is an overall status that is based on the statuses of the individual stages.

If all of the stages have the same status, this status is shown as the aggregated organization interaction status (unless all stages have the status *Confirmed with Deviations*, in which case the aggregated organization interaction status is set to *Confirmed*). If all of the stages have a status that is either *To Be Checked* or *Changed After Confirmation*, the aggregated organization interaction status is set to *Changed After Confirmation*.

In cases where the status of one stage differs from all of the others, the system sets the aggregated organization interaction status based on the following rules, which it applies in the sequence specified:

Sequence	Status of at Least One Stage	Aggregated Status
1	Cancellation Approved	Cancellation Partially Approved
2	Cancellation Requested	Cancellation Partially Requested
3	Rejected	Partially Rejected
4	Confirmed	Partially Confirmed
5	Confirmed with Deviations	Partially Confirmed

Sequence	Status of at Least One Stage	Aggregated Status
6	Changed After Confirmation	Changed After Confirmation
7	To Be Checked	To Be Checked
8	Not Yet Requested	Not Yet Requested

More Information

[Auto-Confirmation Profile](#)

[Coordination Between Customer Service Agent and Gateway Agent](#)



Consideration of Equipment Data During FU Creation

You can use this function to take into account the equipment groups and equipment types as well as the physical properties of your equipment when creating freight units (FUs). During freight unit creation, the system consolidates the business document items in a container and displays this container as a freight unit. For this freight unit, the system copies the physical properties as well as the equipment type and equipment group that you defined in Customizing.

Note

If you later change the equipment type in Customizing, you must trigger an update in the freight unit building rule based on the equipment type. The system then updates the planning-relevant quantities in the freight unit building rule based on the changed equipment type.

End of the note.

Prerequisites

- Business documents (forwarding orders, order-based or delivery-based transportation requirements) exist.
- You have defined equipment groups, equipment types, and physical properties in Customizing for Transportation Management. For more information, see [Master Data](#) [General Settings](#) [Define Equipment Groups and Equipment Types](#).

Features

Automatic Creation of Freight Units

You can influence the automatic creation of freight units by defining equipment, that is, an equipment group and an equipment type, in your freight unit building rule.

If you want to use the equipment type and the equipment group contained in the business document item (except for container item), you must make a customer-specific implementation. For more information, see SAP Note [1552874](#).

The system copies the planning-relevant quantities from the equipment. Here it considers the maximum payload weight as the maximum gross weight and the cubic capacity as the maximum volume. All of the other physical properties that you have defined in Customizing are not considered by the system when you create freight units.

If the capacity is exceeded, the system splits a business document item according to the standard process, provided that the freight unit building rule and the item type allow a split.

The system only considers equipment for the business document items of the type *Package Item* and *Product Item* (schedule line). The system does not consider equipment for container items. If the system determines a freight unit building rule for a container item and you have specified in this freight unit building rule that the system is to copy the equipment from the business document item, an error message appears and the creation of the freight units is canceled.

Manual Splitting and Merging of Freight Units

You also have the option of using manual splitting and merging to create empty containers based on equipment. Here you specify the following:

- Source location and destination location
- Freight unit building rule, equipment group, and equipment type

You have the following options:

- You enter a freight unit building rule in which you have defined an equipment group and an equipment type.
- You enter the equipment group and the equipment type.

In this case, the system uses the standard freight unit building rule.

- You enter a freight unit building rule as well as an equipment group and an equipment type.

If the freight unit building rule contains a different equipment group and equipment type, the system overwrites the values in the freight unit building rule with the values you enter here.

The system creates a freight unit that represents the container. You can then move freight units into this container.

Alternatively, you can mark freight units and merge them in a container. You enter a freight unit building rule as well as an equipment group and an equipment type. The system creates a container and assigns the freight units to this container.

The system deletes empty containers when you save.

Example

You have a forwarding order with the following two items:

Item	Quantity	Gross Weight
Item 10	10 Pallets	10,000 kg
Item 20	9 Pallets	9,000 kg

If you use equipment type CNT_EXAMPLE, the system creates the following item:

Item	Equipment Type	Gross Weight	Tare Weight
Item 10 (1 container)	CNT_EXAMPLE	22,000 kg	3,000 kg

This item has two subitems that correspond to the items of the forwarding order.

More Information

[Definition of Equipment Groups and Equipment Types](#)



Statuses of Business Documents

This section contains the list of statuses that the following business documents can have:

- Freight order (see [Freight Order](#))
- Freight booking (see [Freight Booking](#))
- Freight unit (see [Freight Unit \[Page 728\]](#))
- Transportation unit (trailer unit, see [Trailer Unit](#), railcar unit, see [Railcar Unit](#), and container unit, see [Container Unit](#))
- Service order (see [Service Order](#))

Features

The following table lists the statuses that business documents can have.

Status	Status Values	Business Documents That Can Have This Status
Life cycle status	<i>New</i> <i>In Process</i> <i>Completed</i> <i>Canceled</i>	Freight order Freight booking Freight unit Transportation unit Service order
Planning status	<i>Not planned</i> <i>Partially Planned</i> <i>Planned</i>	All plannable business documents, such as freight units or transportation units
Subcontracting status	<i>No Subcontracting Result</i> <i>In Tendering</i> <i>Carrier Assigned</i> <i>Sent</i>	All subcontractable business documents
Confirmation status	<i>No Confirmation Yet</i> <i>Invalid Confirmation</i> <i>Rejected</i> <i>Confirmed</i> <i>Confirmed with Changes</i> <i>Update Sent, No</i>	All subcontractable business documents

	<i>Confirmation Yet</i> <i>Document Changed After Confirmation</i>	
Tendering status	<i>Not Published</i> <i>Published</i> <i>Review Required</i> <i>Completed</i>	Freight order (not supported for rail freight order)
Booking confirmation status	<i>Not Sent to Carrier</i> <i>Sent to Carrier</i> <i>Rejected by Carrier</i> <i>Confirmed by Carrier</i> <i>Canceled by Shipper</i> <i>Partially Confirmed by Carrier</i> <i>Shipping Instruction Sent to Carrier</i>	Freight booking
Cargo receipt status	<i>Picked Up</i> <i>On Hand</i> <i>Shipped</i> <i>Delivered</i> <i>Delivery Failed</i>	Freight order Freight booking Freight unit Transportation unit
Execution status	<i>Not Relevant</i> <i>Not Started/MAWB Open (Air)</i> <i>In Execution</i> <i>Executed</i> <i>Interrupted</i> <i>Canceled</i> <i>Ready for Transportation</i> <i>Execution/MAWB Finalized (Air)</i> <i>Not Ready for Transportation</i>	Freight order Freight booking Freight unit Transportation unit

	<p><i>Execution/MAWB Not Finalized (Air)</i></p> <p><i>Loading in Process</i></p> <p><i>Capacity Planning Finished</i></p>	
Handling execution status	<p><i>Not Determined</i></p> <p><i>Arrived</i> (only on stop level)</p> <p><i>Not Unloaded</i> (only on item level)</p> <p><i>Cargo Ready for Unloading</i> (only on stop level)</p> <p><i>Partially Unloaded</i> (only on stop level)</p> <p><i>Cargo Partially Ready for Unloading</i> (only on stop level)</p> <p><i>Unloaded</i></p> <p><i>Cargo Unloaded</i> (only on stop level)</p> <p><i>Not Loaded</i></p> <p><i>Cargo Ready for Loading</i> (only on stop level)</p> <p><i>Partially Loaded</i> (only on stop level)</p> <p><i>Cargo Partially Ready for Loading</i> (only on stop level)</p> <p><i>Loaded</i></p> <p><i>Cargo Loaded</i> (only on stop level)</p> <p><i>Departed</i> (only on stop level)</p> <p><i>Load Plan Up-to-Date</i> (only for freight order)</p> <p><i>Load Plan Partially Up-to-Date</i> (only for freight)</p>	<p>Freight order</p> <p>Freight booking</p> <p>Transportation unit</p>

	order)	
Cargo execution status	<i>Not Determined</i> <i>Cargo Not Unloaded</i> <i>Cargo Ready for Unloading</i> <i>Cargo Partially Unloaded</i> <i>Cargo Unloaded</i> <i>Cargo Not Loaded</i> <i>Cargo Ready for Loading</i> <i>Cargo Partially Loaded</i> <i>Cargo Loaded</i>	Freight order Freight booking Transportation unit
Publishing status	<i>Published</i> <i>Not Published</i>	Freight booking (air)
Waybill/bill of lading finalized status	<i>Not Finalized</i> <i>Finalized</i> <i>Partially Finalized</i> (only for freight bookings)	Freight unit Freight booking
Shipped-on-board status	<i>Not Shipped on Board</i> <i>Shipped on Board</i>	Freight booking (ocean)
Uplift confirmation status	<i>Uplift Not Confirmed</i> <i>Uplift Confirmed</i>	Freight booking (air)
Master-bill-of-lading status	<i>Master Bill of Lading Not Received</i> <i>Master Bill of Lading Received</i>	Freight booking (ocean)
Manifest status	<i>Manifest Not Created</i> <i>Manifest Created</i>	Freight order (not supported for rail freight order) Freight booking
Delivery status	<i>Not Delivered</i> <i>Partially Delivered</i> <i>Delivered</i>	Freight unit, transportation unit, and freight order if freight order or transportation unit is automatically created instead of freight unit (see "Automatic Creation of Freight Orders" in Freight Unit Building Rule [Page 724])

Customs status	N/A	For more information, see Global Trade. [Page 1169]
Invoicing status	<i>Not Invoiced</i> <i>Partially Invoiced</i> <i>Completely Invoiced</i> <i>Over-Invoiced</i>	Freight order Freight unit Service order
Transmission-to-ERP status	<i>New — Not Yet Transmitted</i> <i>Initial Transmission Started, Not Yet Confirmed by ERP</i> <i>Transmission Successful</i> <i>Retransmitted after Changes in TM, Not Yet Confirmed by ERP</i>	Freight order Freight Booking
Schedule Data Status	<i>Data Is Up-to-Date</i> <i>Data Is Not Up-to-Date</i>	Freight order Freight booking
Document check status	<i>Last Check with Errors</i> <i>Last Check Without Errors or Warnings</i> <i>Last Check with Warnings</i> <i>Not Yet Checked</i>	Freight Order Freight Booking
Cross-document check status	<i>Last Cross-Document Check with Green Traffic Light</i> <i>Last Cross-Document Check with Yellow Traffic Light</i> <i>Not Yet Checked</i>	Freight Order Freight Booking
Archiving Status	<i>Not Archived</i> <i>Archiving in Process</i> <i>Archived</i>	Freight order Freight booking Freight unit Transportation unit

Fixing of Business Documents

- You can unfix the business document and then change it.
- The fixing only prevents the change of already existing planning results, that is, a fixed subcontractable document is allowed to be subcontracted until a carrier is assigned. If a fixed document is already assigned to a carrier, no more change is allowed in the planning results.
- In VSR optimization, a fixed freight order must not be deleted and assigned freight units must not be unassigned. However, freight units can be assigned to freight orders for schedules and to freight bookings considering the capacity.
- For manual planning, you can specify in your planning profile whether you are allowed to change a fixed freight order or not (*Consider Fixing Status*).

You can specify in Customizing for the business document type (that is, freight order type and freight booking type) that the business document is to be fixed automatically each time you save it. In case of one-step planning, the system saves the business documents only at the very end of the planning process, the fixing takes place at the very end accordingly.



Explanation of Statuses of Business Documents

This section contains an explanation about how the various statuses of business documents are set and what effects these statuses have.

Features

Life Cycle Status

This status has the following values:

- *New*

The business document has been created, but has not been considered in planning and execution yet.

- *In Process*

Planning, execution, subcontracting, or invoicing was started.

You can specify in Customizing for the business document type that the life cycle status is to be set to *In Process* immediately after creation of the business document (that is, even if none of the mentioned processes were started yet). This setting is required for business documents resulting from a planning process.

- *Complete*

The transportation execution is finished and the invoicing status is set to *Completely Invoiced* (or no invoice is expected). This status is set automatically by the system. You can set this status manually if the business document has the life cycle status *In Process*.

- *Canceled*

Planning and execution of transportation is canceled. You can set this status manually at any time in the planning process by selecting the *Cancel Document* pushbutton.

Planning Status

This status relates to the different planning states of the individual transportation stages. The planning status is set automatically by the system and is determined based on the planning status of the individual stages.

The status has the following values:

- *Not Planned*

No transportation stage is planned.

- *Partially Planned*

At least one transportation stage is planned.

- *Planned*

All transportation stages are planned.

The planning status can relate to an individual transportation stage (not only to a business document). In this case, the planning status can have the following values:

- *Unplanned*
The transportation stage has not been planned yet.
- *Planned*
The transportation stage has been planned.
- *Planned, Conflict Between FU and Freight Order/Booking Times*
The transportation stage has been planned, but there exist conflicts with time constraints regarding the predecessor or the successor transportation stage.
- *Not Ready for Planning*
The transportation stage is not ready for planning because a location is missing. The system automatically sets a planning block.

Subcontracting Status

This status is set automatically by the system and is relevant for subcontractable business documents. You define the subcontracting relevance in Customizing for the business document type.

The status has the following values:

- *No Subcontracting Result*
The carrier has not been determined for the business document.
- *In Tendering*
Carrier has not been determined, but a tendering process is already in process.
- *Carrier Assigned*
Carrier was assigned.
- *Sent*
The business document was sent to the assigned carrier.
The value *Carrier Assigned* is a prerequisite for this value.

Confirmation Status

This status is either set automatically by the system or manually by the user and is relevant for subcontractable business documents. You define the subcontracting relevance in Customizing for the business document type.

The prerequisite for this status is that the subcontracting status has the value *Sent*.

The status has the following values:

- *No Confirmation Yet*

The carrier has not sent a confirmation yet.

- *Invalid Confirmation Received*

The confirmation sent by the carrier cannot be interpreted.

- *Rejected*

The carrier rejected the business document.

- *Confirmed*

The carrier confirmed the business document.

- *Confirmed with Changes*

The carrier confirmed the business document with some changes.

- *Document Changed After Confirmation*

The business document was changed after having been sent to and confirmed by the carrier.

Tendering Status

This status is set automatically by the system and is relevant for subcontractable business documents that are tendered, that is, the subcontracting status has the value *In Tendering*. You define the tendering relevance in Customizing for the business document type.

The status has the following values:

- *Not Published*

The user or the system has started tendering for a freight order, but no requests for quotation to carriers have been published yet.

- *Published*

The user or the system has started tendering for a freight order, and has published one or several requests for quotation to carriers.

- *Review Required*

Review is required by tendering manager.

- *Completed*

Tendering is completed.

There are also the following statuses:

- Freight Request for Quotation: Life Cycle Status

- *Not Sent*

The freight request for quotation has been created in the tendering plan, but it has not been published yet.

- *Open*

The freight request for quotation has been published and sent to a carrier. Freight quotations can be submitted for this freight request for quotation.

- *Closed*

The freight request for quotation has been published and sent to a carrier, but no more freight quotations can be submitted for it.

- *Omitted*

The tendering process was completed before the freight request for quotation was sent. In other words, an omitted freight request for quotation has never been published.

- Freight Quotation: Life Cycle Status

- *Draft*

The freight quotation has been created in the tendering worklist for carriers, but it has not been submitted. It is not considered in the corresponding tendering process.

- *Sent*

The freight quotation has been created and submitted for a freight request for quotation. It is considered in the corresponding tendering process and the evaluation of submitted freight quotations.

- Tendering Step: Life Cycle Status

- *Not Started*

The tendering step has been created in a tendering plan, but not started yet. All freight requests for quotations assigned to this step are in status *Not Sent*.

- *In Process*

At least one freight request for quotation assigned to this step has been published and is in status *Open*.

- *Completed*

At least one freight request for quotation assigned to this step had been sent to a carrier. No more freight quotations can be submitted to the assigned freight requests for quotations.

- *Omitted*

The tendering process was completed before the tendering step started.

Booking Confirmation Status

This status is either set automatically by the system or manually by the user.

The status has the following values:

- *Not Sent to Carrier*

The freight booking has not been sent to the carrier.

- *Sent to Carrier*
The freight booking has been sent to the carrier.
- *Rejected by Carrier*
The freight booking has been rejected by the carrier.
- *Confirmed by Carrier*
The freight booking has been confirmed by the carrier.
- *Canceled by Shipper*
The freight booking has been canceled by the shipper.
- *Partially Confirmed by Carrier*
The freight booking has been confirmed by the carrier with quantity changes.
- *Shipping Instruction Sent to Carrier*
A shipping instruction has been sent to the carrier for the freight booking.

Cargo Receipt Status

This status is set automatically by the system or manually by the user.

The status has the following values:

- *Picked Up*
The cargo has been picked-up and is now in transit.
- *On Hand*
The cargo has been received. After this status has been set, only the actual quantities in the freight order or freight booking are taken into account. You can change these quantities in the freight order or freight booking. If changes are subsequently made in the forwarding order, they are not copied to the freight order, freight booking, or freight unit.
- *Shipped*
The cargo has been shipped. This status value is used in the direct integration of SAP Transportation Management and SAP Extended Warehouse Management. For more information, see [Direct Integration with SAP Extended Warehouse Management \[Page 1123\]](#).
- *Delivered*
The cargo has been delivered. If you have set the status manually, you can enter additional information (the recipient, for example) and the delivery date.
- *Delivery Failed*
The cargo item could not be delivered.

After you remove a freight unit from a freight order, the system allows you to keep the items without reference to the predecessor document in the freight order if the cargo receipt status of the items is at least *On Hand*. In this case, the cargo receipt status is set to *Delivery Failed* for these items. As a prerequisite, you must have selected the *Severe Execution Check* checkbox in the Customizing activity for defining freight order types.



Example

You have planned a freight unit on the freight order and execution of the freight order has started. During execution, not all cargo could be delivered to the consignee, for example. Therefore, you have removed the freight unit from the freight order. If you have selected this checkbox, the cargo items without reference to the freight unit will remain in the freight order and the cargo receipt status of the items is set to *Delivery Failed*. If you have not selected the *Severe Execution Check* checkbox in the Customizing activity for defining freight order types, such cargo items are removed from the freight order.

End of the example.

Execution Status

This status is set automatically by the system for business documents that are subject to tracking. You can specify the tracking relevance in Customizing for the business document type.

In SAP NetWeaver Business Client, you can also set this status manually.

The status has the following values:

- *Not Started/MAWB Open (Air)*
Execution has not started yet.
- *Capacity Planning Finished*
Capacity planning was finished.
- *Loading in Process*
Loading was started.
- *Ready for Transportation Execution/MAWB Finalized (Air)*
Transportation execution can be started, that is, loading was finished or a carrier accepted an order.

Note

A business document with status *MAWB Finalized* can no longer be planned manually or automatically.

End of the note.

- *Not Ready for Transportation Execution/MAWB Not Finalized (Air)*

Transportation execution cannot be started yet because either the check for readiness of execution failed or you set the status manually to this value.

- *In Execution*

Execution was started.

You can specify in Customizing for the business document type that the business document is set immediately to *In Execution* after creation.

- *Executed*

Execution has finished.

If execution is tracked with SAP Event Management, a last expected event can be specified. If this event is reported, the execution status is set automatically to *Executed*.

- *Interrupted*

Execution has been interrupted.

- *Canceled*

Execution was canceled.

- *Not Relevant*

You can specify in Customizing for the business document type that the business document is not relevant for execution tracking. The system automatically sets this status. The status does not change anymore.

Handling Execution Status

This status is either set automatically by the system or manually by the user.

You can set the handling execution status on the following levels:

- On item level for cargo items at the current stop



Note

A cargo item can be a product, a package, or a container.

End of the note.

For example, this status can indicate that a package has been loaded into a container.

- On stop level

On this level, this status indicates the progress of the execution activities at a stop. It refers to a container (capacity item or cargo item) or a cargo item.

The handling execution status is related to the cargo execution status. If all cargo items have been loaded into the container, for example, the system automatically sets the cargo execution status of the container to *Cargo Loaded*. Moreover, the handling execution status on item level and the handling execution status on stop level are related to each other.

For air freight bookings, the handling execution status is also displayed on the *Operations* tab page and indicates the logistical execution status. It contains the following:

- Location ID (location code)
- Status at last location at which freight units were picked up or delivered

- Date/time when the status was set

For ocean freight bookings and freight orders, this information is displayed on the *Statuses* tab page.

For example, if a freight order for pick-up is assigned to the air freight booking and you change the status of this freight order from *Arrived* to *Unloaded*, the logistical execution status of the air freight booking will indicate *Unloaded*.

The handling execution status *on item level* has the following values:

- *Not Determined*

The system sets this initial status value after you have created the business document. It indicates that no execution activities are to be performed for the cargo item at the current stop.

- *Not Unloaded*

The cargo item has not been unloaded at the current stop.

- *Unloaded*

The cargo item has been unloaded at the current stop.

- *Not Loaded*

The cargo item has not been loaded at the current stop.

- *Loaded*

The cargo item has been loaded at the current stop.

- *Load Plan Up-to-Date*

A load plan has been created and the item can be planned. Note that this status value is only supported for freight orders. For more information, see [Load Planning \[Page 825\]](#).

The handling execution status *on stop level* has the following values:

- *Not Determined*

The system sets this initial status value after you have created the business document. It indicates that no execution activities have been performed for the containers at a stop.

Moreover, the system sets this status value, if you change the status *Arrived* by selecting *Set to Not Arrived*.

- *Departed*

This status value indicates that the containers have departed.

If you set the source stop of the main carriage to *Departed*, the vessel is loaded and has departed (*Shipped on Board*).

If execution is tracked with SAP Event Management, the *Departure* event is sent automatically to all assigned freight units and the business document. Similarly, if you

report a *Departure* event, the system automatically sets the handling execution status on stop level to *Departed*.

- *Arrived*

The goods have arrived.

If execution is tracked with SAP Event Management, the *Arrival at Destination* event is sent automatically to all assigned freight units and the business document.

- *Cargo Ready for Unloading*

The containers are ready for unloading.

- *Partially Unloaded*

The cargo items have been partially unloaded.

- *Cargo Partially Ready for Unloading*

Some of the containers are ready for unloading, but some are not.

- *Unloaded*

The cargo items have been unloaded.

- *Not Loaded*

The cargo items have not been loaded.

- *Cargo Unloaded*

All goods have been unloaded from the containers.

- *Cargo Ready for Loading*

The containers are ready for loading.

- *Partially Loaded*

The cargo items have been partially loaded.

- *Cargo Partially Ready for Loading*

Some of the containers are ready for loading, but some are not.

- *Loaded*

The cargo items have been loaded.

- *Cargo Loaded*

All goods have been loaded into the containers.

- *Load Plan Up-to-Date*

A load plan has been created. Note that this status value is only supported for freight orders. For more information, see [Load Planning \[Page 825\]](#).

- *Load Plan Partially Up-to-Date*

A load plan has been created but some items cannot be planned due to capacity reasons. Note that this status value is only supported for freight orders. For more information, see [Load Planning \[Page 825\]](#).

For more information about the handling execution status in rail freight orders, railcar units, and container units, see [Rail Freight Order](#).

Cargo Execution Status

This status is either set automatically by the system or manually by the user. It indicates the execution status of a container (capacity item or cargo item) at the current stop, for example a container has been fully loaded at the source stop of the main carriage.

The status has the following values:

- *Not Determined*

The system sets this initial status value after you have created the business document. It indicates that no execution activities are to be performed for the container at the current stop.

- *Cargo Not Unloaded*

The container has not been unloaded at the current stop.

- *Cargo Ready for Unloading*

The container is ready for unloading.

- *Cargo Partially Unloaded*

The container has been partially unloaded at the current stop.

- *Cargo Unloaded*

The container has been unloaded at the current stop.

- *Cargo Not Loaded*

The container has not been loaded at the current stop.

- *Cargo Ready for Loading*

The container is ready for loading.

- *Cargo Partially Loaded*

The container has been partially loaded at the current stop.

- *Cargo Loaded*

The container has been loaded at the current stop.

For more information about the cargo execution status in rail freight orders, railcar units, and container units, see [Rail Freight Order](#).

Publishing Status

This status controls whether a business document can be used by other users, for example, other organizational units.

The status has the following values:

- *Not Published*
The business document has not yet been published and cannot be used by other users.
- *Published*
The business document has been published and can be used by other users.

Waybill/Bill of Lading Finalized Status

You set this status for freight units via your air forwarding orders.

This status has the following values:

- *Not Finalized*
The waybill or bill of lading has not yet been finalized.
- *Finalized*
The waybill or bill of lading has been finalized.
- *Partially Finalized* (only for freight bookings)
This status is set for a freight booking if its freight units have different waybill or bill of lading statuses, for example, if one freight unit is finalized and another freight unit is not finalized.

Shipped-on-Board Status

You set this status manually after the vessel has departed the source stop of the main carriage. The shipped-on-board date must not lie in the future.

As a prerequisite, the execution status is to be set to *Ready for Transportation Execution*.

The status has the following values:

- *Not Shipped on Board*
The vessel has not departed yet.
- *Shipped on Board*
The vessel has departed.
The system automatically sets the handling execution status of the source stop of the main carriage and all previous outbound stops to *Departed*.

Uplift Confirmation Status

You set this status manually after the aircraft has departed the source stop of the main carriage. The uplift date must not be in the future.

As a prerequisite, the execution status is to be set to *MAWB Closed*.

The status has the following values:

- *Uplift Not Confirmed*

The aircraft has not departed yet.

- *Uplift Confirmed*

The aircraft has departed.

The system automatically sets the handling execution status of the source stop of the main carriage and all previous outbound stops to *Departed*.

Master-Bill-of-Lading Status

You set this status manually after a master bill of lading has been created for an ocean freight booking. If you want to change the master bill of lading number after having set this status, you first have to reset this status.

The status has the following values:

- *Master Bill of Lading Not Received*

No master bill of lading has been received yet.

- *Master Bill of Lading Received*

A master bill of lading has been received.

Manifest Status

You set this status manually after loading has been finished.

The status has the following values:

- *Manifest Not Created*

No manifest has been created yet.

- *Manifest Created*

A manifest has been created.

Delivery Status

This status is set automatically by the system. It is derived from the cargo receipt status on item level:

- If you set the first item to *Delivered*, the system automatically sets the delivery status of the freight unit to *Partially Delivered*.

- If you set the last item to *Delivered*, the system automatically sets the delivery status of the freight unit to *Delivered*.

The status is also automatically set to *Delivered*, if the *Proof of Delivery* event is reported.

The status has the following values:

- *Not Delivered*
The freight unit has not been delivered.
- *Partially Delivered*
The freight unit has been partially delivered.
- *Delivered*
The freight unit has been delivered.

Transmission-to-ERP Status

This status is only relevant if you use transportation data from an ERP system and if you want to create ERP shipments based on the planned freight order.

The transmission-to-ERP status is set automatically by the system when the data exchange is processed.

As a prerequisite, you have set the shipment creation relevance in Customizing to *Shipment Creation in SAP ERP* for the business document type (freight order type and freight booking type).

The status has the following values:

- *New - Not Yet Transmitted*
Business document is new, and no data was transmitted to the ERP system yet.
- *Initial Transmission Started, Not Yet Confirmed by ERP*
Initial transmission of business document information to the ERP system has been started, but no confirmation has been received yet from the ERP system.
- *Transmission Successful*
Business document information was successfully transmitted to the ERP system.
- *Retransmitted after Changes in TM, Not Yet Confirmed by ERP*
Retransmission of business document information to the ERP system has been started after business document has been changed. New confirmation has not been received yet from the ERP system.

Invoicing Status

This status is only relevant if an invoice is expected from the carrier for a subcontractable business document.

The status is set automatically by the system once a cost calculation has been performed.

The status has the following values:

- *Not Invoiced*
No invoicing request was created.
- *Partially Invoiced*
Partial invoicing request was created.
- *Completely Invoiced*
Invoicing request was created for the total costs.
- *Over-Invoiced*
Invoicing request was created for additional costs.

Once a freight settlement document is created either manually or in background processing, the invoicing status can change to *Partially Invoiced*, *Completely Invoiced*, or *Over-Invoiced*. The system determines the invoicing status based on the calculated costs in the order and the invoiced values in the freight settlement document. An invoice is completed if the invoiced values equal the calculated costs. An order is partially invoiced if the invoiced values are less than the calculated costs. An invoice is over-invoiced if the invoiced values are more than the calculated costs.

Schedule Data Status

This status is set automatically if a referenced schedule has been changed. For more information, see [Use of Schedules](#).

The status has the following values:

- *Data Is Up-to-Date*
The referenced data is up-to-date.
- *Data Is Not Up-to-Date*
A referenced schedule has been changed and the referenced data is not up-to-date.

Document Check Status

This status is set automatically, If you start the check manually and save the business document. The status has the following values:

- *Last Check with Errors*
The last check was performed with errors.
- *Last Check Without Errors or Warnings*
The last check was performed without errors or warnings.
- *Last Check with Warnings*
The last check was performed with warnings.

- *Not Yet Checked*

The check has not been performed yet.

Cross-Document Check Status

The system checks if there are time conflicts between a business document and its predecessor or successor business documents. This check is performed automatically and the status set automatically when you save a business document. You can also start the check manually. In this case, the status is also set automatically.

Examples:

- A freight booking arrives too late for the subsequent freight order.
- Availability times are violated.

The status has the following values:

- *Last Cross-Document Check with Green Traffic Light*

The check was performed without errors.

- *Last Cross-Document Check with Yellow Traffic Light*

The check was performed with warnings.

- *Not Yet Checked*

The check has not been performed yet.

Archiving Status

The status has the following values:

- *Not Archived*

The business document has not yet been archived.

- *Archiving in Process*

The business document has been selected for archiving and processed by the archiving pre-processing.

- *Archived*

The business document has been written to the archive. It can still be accessed in display mode.

For more information about archiving, see [Archiving in SAP Transportation Management \(SAP TM\) \[Page 1285\]](#)



Blocking Information

Features

You can set a planning block, an execution block, and an invoicing block for the business document.

The planning block and execution block can be set as follows:

- Automatically by the system, for example, if a dangerous goods check discovers an error
- Manually
- Is copied by the system from a predecessor document, that is, from the forwarding order

For freight orders and freight bookings, only the execution block is copied from the freight unit.

The invoicing block is set automatically or manually. It cannot be copied from a predecessor document.



Time Windows

You use time windows to control when goods are to be picked up and delivered. VSR optimization (see [VSR Optimization \[Page 806\]](#)) then schedules the pickup or delivery exactly in the time window that you have defined.

You can also control how the system is to deal with cases in which these time windows are not taken into account during VSR optimization, that is, whether VSR optimization is to calculate penalty costs. You can model the following cases:

- The goods are picked up too early or too late.
- The goods are delivered too early or too late.

Features

You create time windows by defining tolerances within which a premature or delayed pickup or delivery is to be allowed. For each tolerance, you specify whether VSR optimization is to consider the tolerance as a hard, soft, or hard and soft constraint (see [Constraints for VSR Optimization \[Page 812\]](#)). In this way, you control whether VSR optimization calculates penalty costs when the constraints are not adhered to.

You can define the following tolerances:

- Maximum earliness
- Maximum delay
- Delay without penalty costs
- Earliness without penalty costs

The dates and times that you have defined for the pickup and delivery in the business document, for example, the forwarding order, form the basis for calculating the tolerances. For more information, see [Definition of Delivery Windows \[Page 900\]](#).

You can also specify that the system is to take into account the exact time for the pick-up date or delivery date. The system always uses the current point in time and rounds up or down to full days.

For more information about the link between tolerances and constraints, see [Delivery Window \[Page 897\]](#).



Note

- The system also takes into account windows for pickup and delivery in manual planning (see [Manual Planning \[Page 785\]](#)). However, this applies to hard constraints only. If it cannot adhere to the tolerances, it simply issues a warning message.
- The system already takes time windows into account when creating freight units and determines the dates of the freight units. It does not evaluate the time windows further when you access planning.

End of the note.

Activities

You define your time windows by entering a rule for windows for pickup and delivery in the freight unit type or a condition (condition type /SCMTMS/TOR_TIMEWIND). For more information, see Customizing for Transportation Management under ► *Planning* ► *Freight Unit* ► *Define Freight Unit Type* ▶.

For more information about defining conditions for time windows, see [Definition of a Condition for Time Windows \[Page 1216\]](#).



Delivery Window

You have defined the following tolerances:

- Delta premature = 2 days (tolerance for premature delivery without penalty costs)
- Delta earliest = 3 days (tolerance for maximum earliness)
- Delta delayed = 1 day (tolerance for delayed delivery without penalty costs)
- Delta latest = 2 days (tolerance for maximum delay)

The requested delivery date/time (from date/time) is 10.01., 12:00. The solid red curve in the following figures specifies that you do not want to take into account the exact time of the delivery date. The dotted blue curve specifies that you want to take into account the exact time.

The following figures show how these tolerances affect the delivery date, depending on whether you define them as hard, soft, or hard and soft constraints.

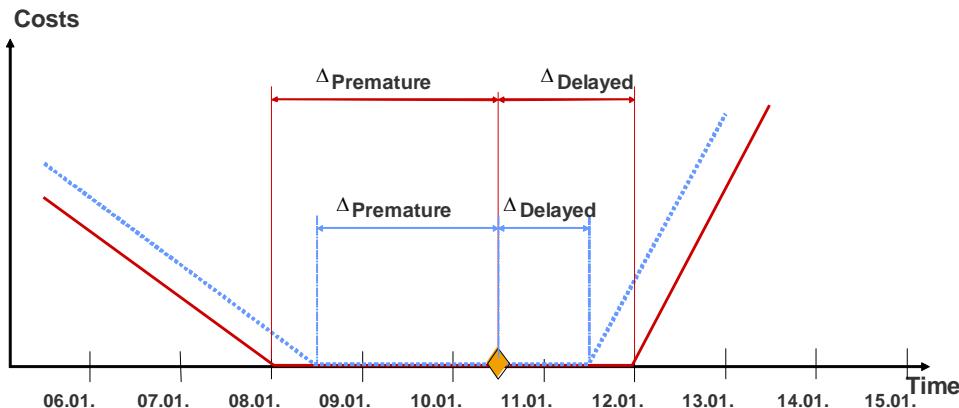


Figure 1: Soft Constraints for Premature and Delayed Delivery

In this case, a delayed delivery is allowed until 12.01. (solid red curve). Since the system is not to take into account the exact time for the delivery date, it rounds up to the full day, in other words, from 11.01., 12:00 to 12.01., midnight. No penalty costs are calculated. A delivery after 12.01. is allowed, but penalty costs are incurred.

A premature delivery can occur at the earliest on 08.01. without penalty costs being incurred. If the delivery occurs before 08.01., penalty costs are incurred. Since the system is not to take into account the exact time for the delivery date, it rounds down to the full day, in other words, from 08.01., 12:00 to 08.01., midnight.

If you have specified that the system is to take into account the exact time of the delivery date (dotted blue curve), penalty costs are incurred for a delayed delivery after 11.01., 12:00 and for a premature delivery before 08.01., 12:00.

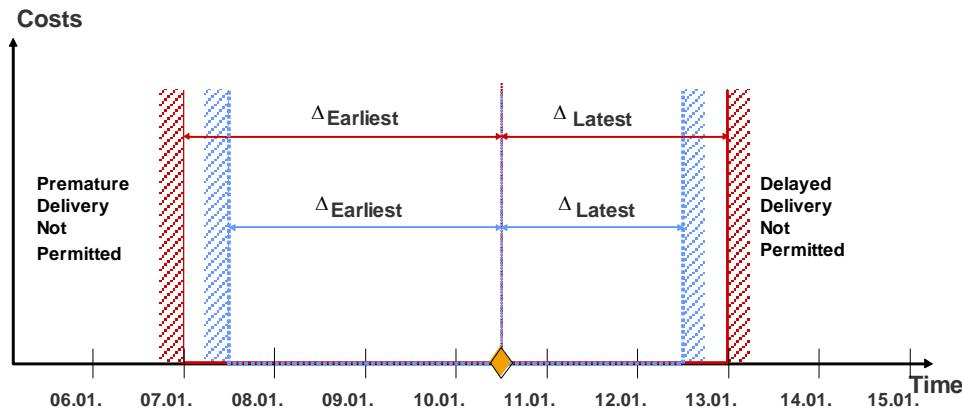


Figure 2: Hard Constraints for Premature and Delayed Delivery

In this case, a delayed delivery is not allowed after 13.01. (solid red curve). The delivery can occur at the earliest on 07.01. Since the system is not to take into account the exact time for the delivery date, it rounds up or down to the full day, in other words, from 12.01., 12:00 to 13.01., midnight and from 07.01., 12:00 to 07.01., midnight.

If you have specified that the system is to take into account the exact time of the delivery date (dotted blue curve), a delivery is not allowed after 12.01., 12:00 and before 07.01., 12:00.

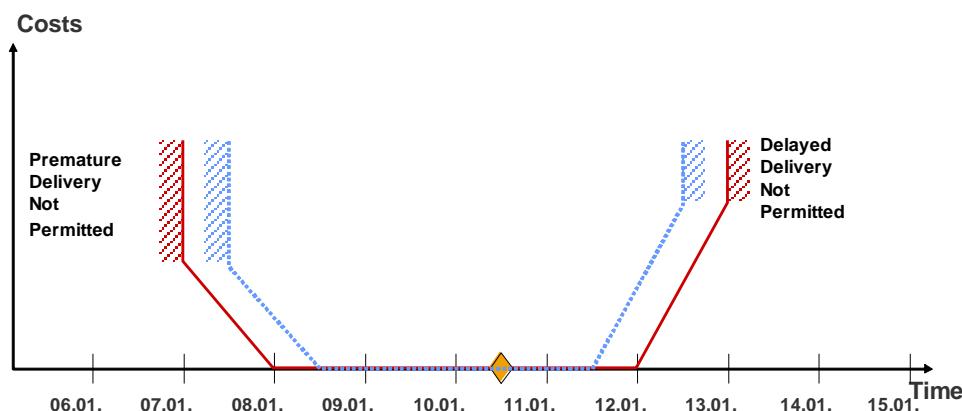


Figure 3: Hard and Soft Constraints for Premature and Delayed Delivery

In this case, a delayed delivery is allowed after 10.01. (solid red curve). Since the system is not to take into account the exact time for the delivery date, it rounds up to the full day, in other words, from 11.01., 12:00 to 12.01., midnight. However, penalty costs are incurred if the delivery occurs on 12.01. A delivery after 13.01. is not allowed.

A premature delivery is allowed from 07.01. Since the system is not to take into account the exact time for the delivery date, it rounds down to the full day, in other words, from 08.01., 12:00 to 08.01., midnight. However, penalty costs are incurred if the delivery occurs on 07.01. A delivery before 07.01. is not allowed.

If you have specified that the system is to take into account the exact time of the delivery date (dotted blue curve), a delayed delivery is not allowed after 12.01., 12:00. Penalty costs are incurred for a delivery between 11.01., 12:00 and 12.01., 12:00.

A premature delivery before 07.01., 12:00 is not allowed. Penalty costs are incurred for a delivery between 07.01., 12:00 and 08.01., 12:00.



Definition of Delivery Windows

The following examples show the options that you have when defining time windows. First of all, the relevant settings that you make are shown. A figure is then used to show how the system interprets your entries. The examples all refer to the delivery. However, they also apply in the same way to the pickup.

Example 1

In the forwarding order, you have defined the following date/time for the delivery at the destination location:

Earliest delivery (acceptable dates/times)	N/A
Delivery date/time (from) (requested dates/times)	17.09.07 00:00:00
Delivery date/time (to) (requested dates/times)	N/A
Latest delivery (acceptable dates/times)	N/A

Note

You define dates/times for delivery on the user interface for defining the forwarding order (*Locations and Dates* tab).

End of the note.

You have also defined the following tolerances:

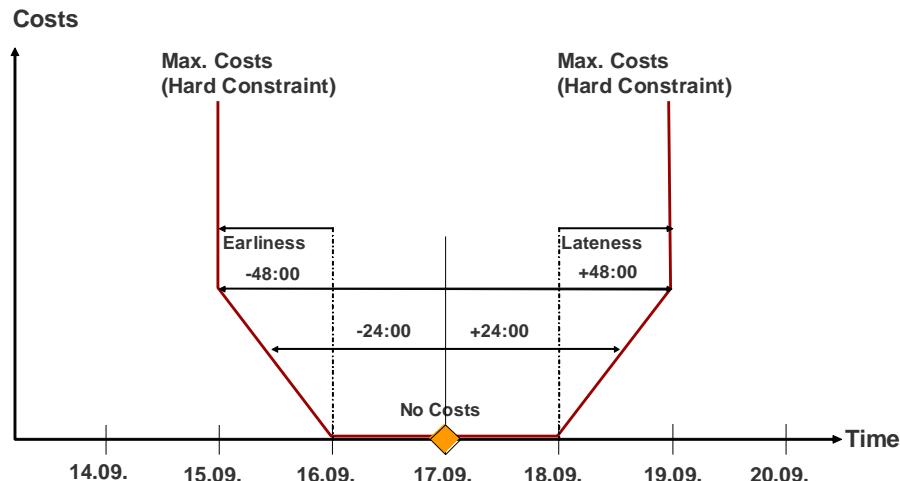
Tolerance for early delivery	24:00 hrs
Tolerance for earliest delivery	48:00 hrs
Tolerance for late delivery	24:00 hrs
Tolerance for latest delivery	48:00 hrs

Note

You define penalty costs for earliness and lateness in the planning costs settings either directly or by entering a condition (condition type /SCMTMS/FU_PNLT_COST).

End of the note.

The following figure shows how the system takes these values into account and what the time window looks like:



Time Window (Example 1)

In this case, the system takes into account all tolerances. A delayed delivery up until 18.09 does not incur any costs. Penalty costs are incurred between 18.09 and 19.09. A delivery is not permitted as of 19.09. A premature delivery can occur at the earliest on 16.09. without penalty costs being incurred. If the delivery occurs between 15.09 and 16.09, penalty costs are incurred. A delivery is not permitted before 15.09.

Example 2

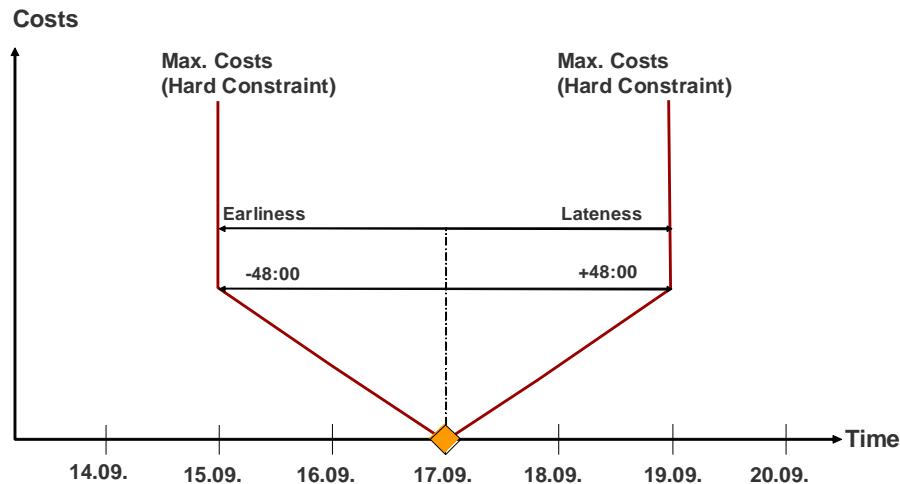
In the forwarding order, you have defined the following dates/times for the delivery:

Earliest delivery (acceptable dates/times)	N/A
Delivery date/time (from) (requested dates/times)	17.09.07 00:00:00
Delivery date/time (to) (requested dates/times)	17.09.07 00:00:00
Latest delivery (acceptable dates/times)	N/A

You have also defined the following tolerances:

Tolerance for early delivery	24:00 hrs
Tolerance for earliest delivery	48:00 hrs
Tolerance for late delivery	24:00 hrs
Tolerance for latest delivery	48:00 hrs

The following figure shows how the system takes these values into account and what the time window looks like:



Time Window (Example 2)

In this case, the system does not take into account the tolerances for early and late delivery, since it takes into account the dates/times that you have defined in the forwarding order. A delayed delivery is possible until 19.09, but penalty costs are incurred. A delivery is not permitted as of 19.09. A premature delivery can occur at the earliest on 15.09. If the delivery occurs between 15.09 and 17.09, penalty costs are incurred. A delivery is not permitted before 15.09.

Example 3

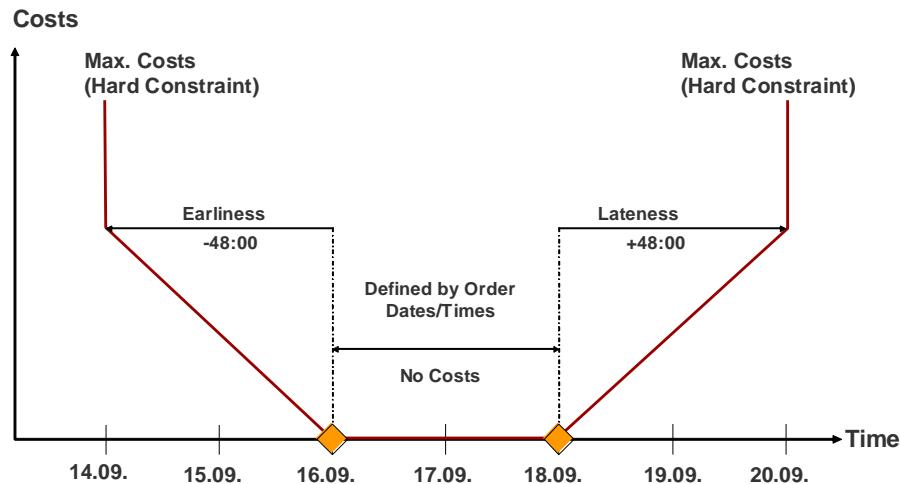
In the forwarding order, you have defined the following dates/times for the delivery:

Earliest delivery (acceptable dates/times)	N/A
Delivery date/time (from) (requested dates/times)	16.09.07 00:00:00
Delivery date/time (to) (requested dates/times)	18.09.07 00:00:00
Latest delivery (acceptable dates/times)	N/A

You have also defined the following tolerances:

Tolerance for early delivery	24:00 hrs
Tolerance for earliest delivery	48:00 hrs
Tolerance for late delivery	24:00 hrs
Tolerance for latest delivery	48:00 hrs

The following figure shows how the system takes these values into account and what the time window looks like:



Time Window (Example 3)

In this case, the system only takes into account the tolerances for early and late delivery. A delayed delivery up until 18.09 does not incur any costs. Penalty costs are incurred between 18.09 and 20.09. A delivery is not permitted as of 20.09. A premature delivery can occur at the earliest on 16.09. without penalty costs being incurred. If the delivery occurs between 14.09 and 16.09, penalty costs are incurred. A delivery is not permitted before 14.09.

Example 4

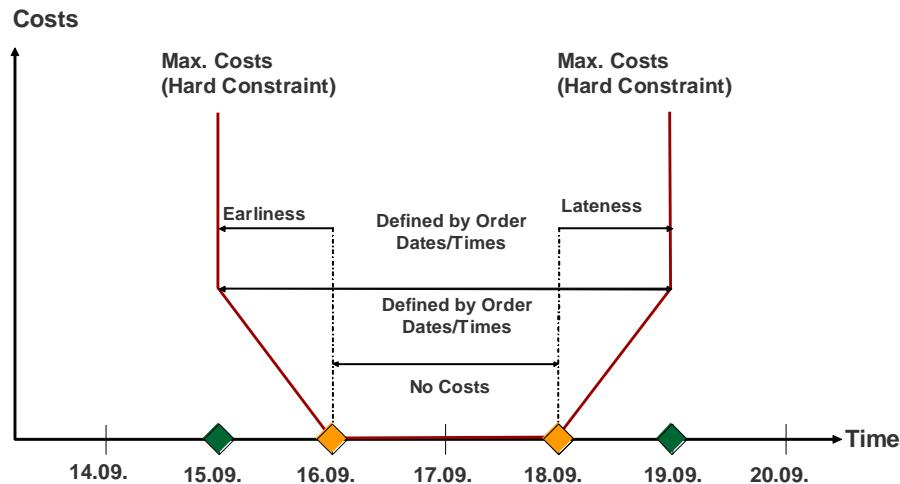
In the forwarding order, you have defined the following dates/times for the delivery:

Earliest delivery (acceptable dates/times)	15.09.07 00:00:00
Delivery date/time (from) (requested dates/times)	16.09.07 00:00:00
Delivery date/time (to) (requested dates/times)	18.09.07 00:00:00
Latest delivery (acceptable dates/times)	19.09.07 00:00:00

You have also defined the following tolerances:

Tolerance for early delivery	24:00 hrs
Tolerance for earliest delivery	48:00 hrs
Tolerance for late delivery	24:00 hrs
Tolerance for latest delivery	48:00 hrs

The following figure shows how the system takes these values into account and what the time window looks like:



Time Window (Example 4)

In this case, the system does not take any of the tolerances into account, since it takes into account the dates/times that you have defined in the forwarding order. A delayed delivery up until 18.09 does not incur any costs. Penalty costs are incurred between 18.09 and 19.09. A delivery is not permitted as of 19.09. A premature delivery can occur at the earliest on 16.09. without penalty costs being incurred. If the delivery occurs between 15.09 and 16.09, penalty costs are incurred. A delivery is not permitted before 15.09.

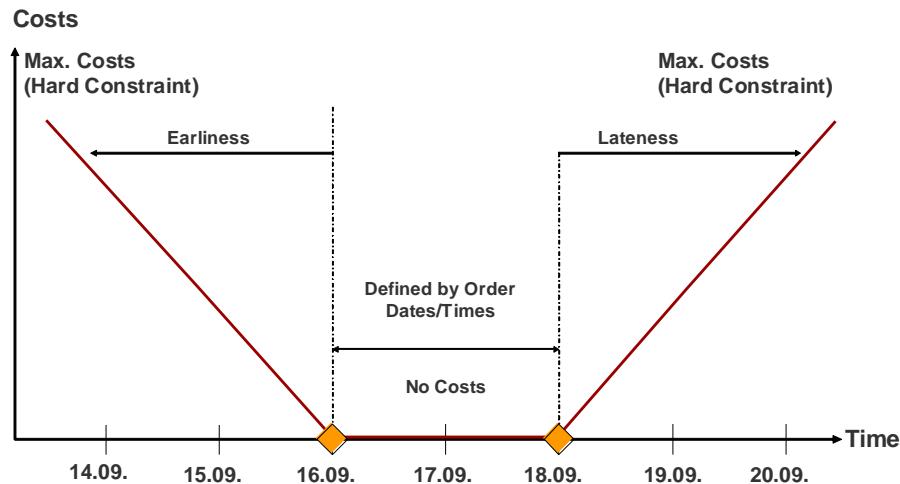
Example 5

In the forwarding order, you have defined the following dates/times for the delivery:

Earliest delivery (acceptable dates/times)	N/A
Delivery date/time (from) (requested dates/times)	16.09.07 00:00:00
Delivery date/time (to) (requested dates/times)	18.09.07 00:00:00
Latest delivery (acceptable dates/times)	N/A

In this case, you have not defined any tolerances.

The following figure shows how the system takes these values into account and what the time window looks like:



Time Window (Example 5)

Penalty costs are incurred for a delayed delivery as of 18.09. Penalty costs are not incurred for a delayed delivery between 17.09 and 18.09. Penalty costs are incurred for a premature delivery before 16.09. Penalty costs are not incurred for a premature delivery between 16.09 and 17.09.

Example 6

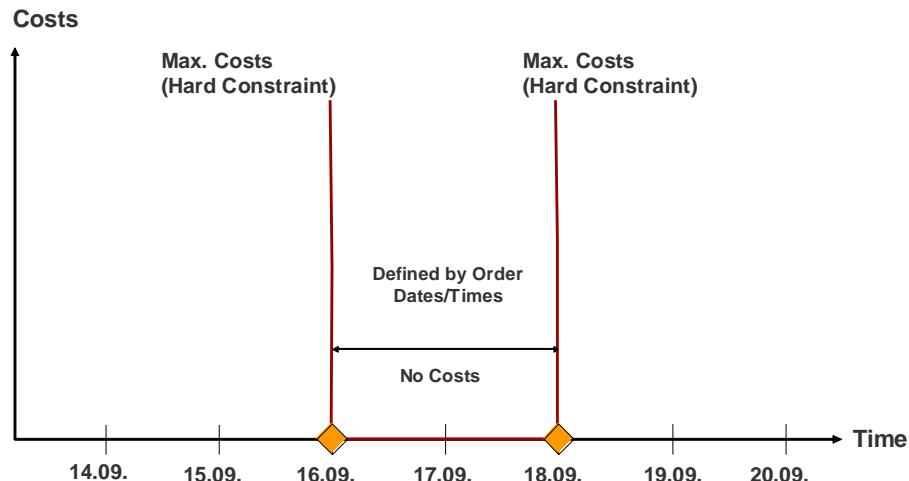
In the forwarding order, you have defined the following dates/times for the delivery:

Earliest delivery (acceptable dates/times)	16.09.07 00:00:00
Delivery date/time (from) (requested dates/times)	N/A
Delivery date/time (to) (requested dates/times)	N/A
Latest delivery (acceptable dates/times)	18.09.07 00:00:00

You have also defined the following tolerances:

Tolerance for early delivery	24:00 hrs
Tolerance for earliest delivery	48:00 hrs
Tolerance for late delivery	24:00 hrs
Tolerance for latest delivery	48:00 hrs

The following figure shows how the system takes these values into account and what the time window looks like:



Time Window (Example 6)

In this case, the system does not take any of the tolerances into account. Penalty costs are not incurred for a delayed delivery between 17.09 and 18.09. A delivery is not permitted after that. Penalty costs are not incurred for a premature delivery between 16.09 and 17.09. A delivery is not permitted before that.

Example 7

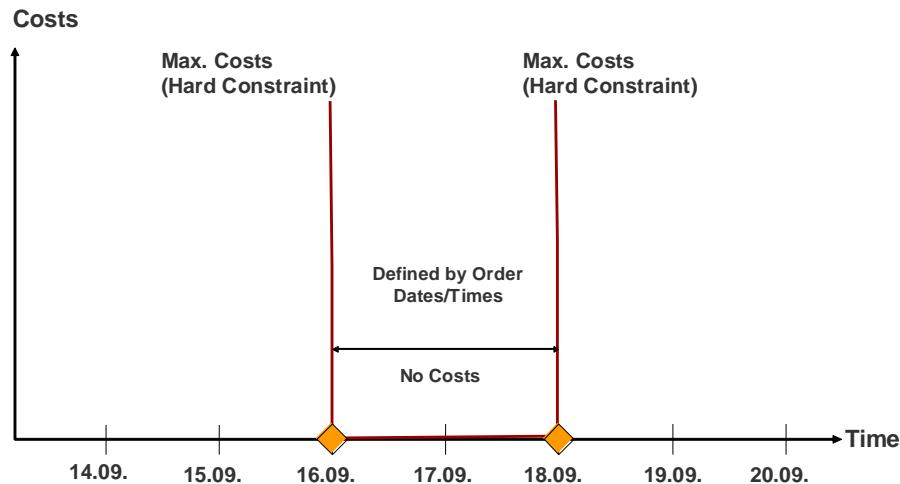
In this example, the system interprets the dates/times from the forwarding order as hard constraints without you having to define hard constraints. In the forwarding order, you have defined the following dates/times for the delivery:

Earliest delivery (acceptable dates/times)	N/A
Delivery date/time (from) (requested dates/times)	16.09.07 00:00:00
Delivery date/time (to) (requested dates/times)	18.09.07 00:00:00
Latest delivery (acceptable dates/times)	N/A

You have also defined the following tolerances:

Tolerance for early delivery	N/A
Tolerance for earliest delivery	00:00 hrs
Tolerance for late delivery	N/A
Tolerance for latest delivery	00:00 hrs

The following figure shows how the system takes these values into account and what the time window looks like:



Time Window (Example 7)

In this case, the system only takes into account the tolerances for earliest and latest delivery. Penalty costs are not incurred for a delayed delivery between 17.09 and 18.09. A delivery is not permitted after that. Penalty costs are not incurred for a premature delivery between 16.09 and 17.09. A delivery is not permitted before that.



Definition of a Condition for Time Windows

This example shows how you define a condition for a time window depending on the freight unit type.

In this case, you define a condition with the condition type /SCMTMS/TOR_TIMEWIND based on a decision table.

As the data access definition, enter /SCMTMS/TOR_TYPE (business document type of freight order management).

Depending on the freight order type, you specify in the decision table which durations and rounding rules the system is to use when calculating the times for the time window.

In the *Earliness* and *Delay* fields, you specify whether the system is to treat an earliness or delay as a constraint and, if yes, as which sort of constraint:

- As a soft constraint
- As a hard constraint
- As a soft and hard constraint

If you have entered *soft constraint* or *soft and hard constraint*, in the *Prem. Stay* (premature stay) field and the *Del. Stay* (delayed stay) field, enter the required time period in the format HH:MM.

If you entered *hard constraint* or *soft and hard constraint*, in the *EarlStStay* (earliest stay) field and the *Lat. Stay* (latest stay) field, enter the required offset in the format HH:MM.

In addition, you can specify whether the system is to round to complete days.

You can enter different values for the delivery and the pickup. To do so, enter a second data access definition /SCMTMS/TOR_STOP_CAT.

In the decision table, specify the following values for pickup:

Stop Type	Earliness	Delay	EarlStStay (earliest stay)	Round
<input type="radio"/> (pickup)	2 (hard constraint)	0 (no consideration as constraint)	0	True

This means that the pickup may not take place earlier than agreed. A delay is acceptable. The system is to round the pickup date.

You specify the following values for the delivery:

Stop Type	Earliness	Delay	Lat. Stay (latest stay)	Round
<input type="radio"/> (delivery)	0 (no consideration as constraint)	2 (hard constraint)	0	False

This means that the delivery may not take place later than agreed. An early delivery is acceptable.

Since the time of the delivery date defined by the customer is to be adhered to, specify that the system is not to round it to full days.



Change Tracking

You apply this function to the following business documents in freight order management. It enables you to view any data that has been changed and provides information about the user who changed it, how it was changed, and when it was changed:

- Freight unit
- Freight order
- Freight booking
- Transportation unit
- Service order

Prerequisites

- In Customizing, you have activated change tracking for each of the business document types. For more information, see Customizing for Transportation Management under:
 - ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶
 - ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types* ▶
 - ► *Freight Order Management* ► *Transportation Unit* ► *Define Transportation Unit Types* ▶
 - ► *Freight Order Management* ► *Service Order* ► *Define Service Order Types* ▶
 - ► *Planning* ► *Freight Unit* ► *Define Freight Unit Types* ▶

Features

The changes are displayed on the user interfaces of the business documents. The assignment block for the change documents is not shown by default. However, you can display it with the pushbutton for personalizing your user interface.



Interactive Planning

You can use interactive planning to assign freight units to the following capacities:

- Vehicle resources
- Trailers (passive vehicle resource)
- Schedules
- Freight bookings

You can assign all resources manually or using VSR optimization. Planning results in freight orders that you can then process further. Furthermore, the system can generate multiple alternative transportation proposals for each freight unit that you can then choose to use. You can also perform VSR optimization in the background.

Planning strategies (see [Planning Strategies \[Page 1231\]](#)) enable you to control whether the system is to select a carrier immediately after VSR optimization, for example. You can also use planning strategies to implement your own heuristics.

Prerequisites

- If you work with the *Profile and Layout Sets* screen, you have defined a planning profile (see [Planning Profile \[Page 689\]](#)).
Optionally, you can define additional profiles, for example, a selection profile. For more information, see [Profiles and Settings \[Page 682\]](#).
- Freight units and capacities exist.

Process

1. In SAP NetWeaver Business Client, choose ► *Planning* > *Planning* > *Transportation Cockpit* ▶.
Depending on your settings, either the *Profile and Layout Sets* screen or the *Selection* screen appears.
2. If you work with the *Profile and Layout Sets* screen, enter a profile and layout set (see [Use of Profile and Layout Sets \[Page 777\]](#)), select the relevant row, and choose *Continue*. If you work with the *Selection* screen, enter your selection criteria and choose *Continue*. For more information, see [Selection Attributes for Transportation Cockpit \[Page 780\]](#).

Note

If you want to bypass the *Profile and Layout Sets* screen the next time you call the Transportation Cockpit, select the checkbox in the *Default Set* column and also select the *Hide Screen* checkbox below the table. When you next call the Transportation Cockpit, the system loads the planning data using the criteria that you specified as the default set. You can return to the *Profile and Layout Sets* screen by choosing ► *Change Profile Selection* > *Profile Selection Screen* ▶.

End of the note.

3. Perform planning. You have the following options:

- Choose freight units and capacities to perform planning manually.
For more information, see [Manual Planning \[Page 785\]](#).
- Choose *Optimizer Planning* to perform planning using VSR optimization. You have the following options:
 - Perform VSR optimization for all entries.
 - Perform VSR optimization for selected entries only. In this case, if you do not choose any capacities, the system takes into account all capacities. If the system is to consider freight orders and freight bookings, you must also specify this.
 - Perform VSR optimization for selected entries and all resources. If the system is to consider transportation units, freight orders, and freight bookings, you must also specify this.

For more information, see [VSR Optimization \[Page 806\]](#).

-  Note
 - If you want to automatically plan container units in the transportation cockpit, you need to do one of the following:
 - In a less than container load scenario with manually assigned freight units, you need to select the container unit *only* and then choose *Optimizer Planning*.
 - In a full container load scenario, you select the container unit and choose *Optimizer Planning*.
- End of the note.
- Choose *Transportation Proposals* to have the system generate transportation proposals per freight unit.

 Note

If you want to generate transportation proposals for a container unit with assigned freight units, the system *only* considers the container unit.

End of the note.

For more information, see [Generation of Transportation Proposals \[Page 861\]](#).

- Choose *Create Delivery Proposals* to create delivery proposals.

For more information, see [Creation of ERP Deliveries from SAP TM](#).

4. Process the planning results as necessary.

 Note

If execution information already exists for a business document such as a freight order, the system cannot change the corresponding transportation stop during optimization or

manual planning. Examples of execution information include a freight unit that has already been loaded or a freight order that has already been delivered to a location.

End of the note.

More Information

[Considering Dangerous Goods \[Page 1139\]](#)

[Full Map Display \[Page 912\]](#)



Use of Profile and Layout Sets

You can use this function to define the profiles, with which you would like to enter an area, in a profile and layout set. You can also define the layout of the corresponding user interface in this set. You can use this set to then start the relevant area without having to enter the same information each time.

You can use this function when calling the transportation cockpit, carrier selection, and the creation of delivery proposals.

Features

Depending on the area for which you call the user interface for defining profile and layout sets, you can specify different profiles:

- Transportation cockpit

In this case, we recommend that you enter a selection profile for freight units as well as a planning profile to which you have already assigned a selection profile for freight orders and freight bookings.

Optionally, you can also specify incompatibility settings and settings for capacity selection. If you have already assigned incompatibility settings or settings for capacity selection to the specified planning profile, the system overwrites these settings with the settings that you specified here.

The system considers the profiles that you specify in your profile and layout set for all planning options available in the transportation cockpit.

For more information, see [Interactive Planning \[Page\] 774](#).

Note

In the transportation cockpit, you can use *Change Planning Settings* to temporarily overwrite certain settings in your profiles. The system discards these changes when you leave the transportation cockpit or change the profile selection.

End of the note.

- Carrier selection

In this case, you can enter a selection profile for freight orders and freight bookings as well as carrier selection settings.

For more information, see [Carrier Selection \[Page\] 863](#).

- Creating delivery proposals

In this case, you can enter a selection profile for freight units and a selection profile for freight orders and freight bookings as well as a delivery profile.

For more information, see [Creation of Delivery Proposals](#).

You also have the following options:

- You can define a profile and layout set as the default set. Then, the user interface for defining profile and layout sets always displays this profile and layout set.
- If you always work with the same profile and layout set, you can specify that the system is to skip the user interface for defining profile and layout sets.
- You can temporarily adjust your profile and layout set.
- You can refresh requirements for a profile and layout set. In this case, the system displays the number of unplanned freight units for this set.
- You can personalize your layout. This allows you to, for example, define the display, structure, and size of the individual screen areas as well as the selection of the pushbuttons. You can also overwrite the descriptions of the individual screen areas with your own descriptions.

This allows you to configure the following user interfaces according to your requirements:

- Transportation cockpit
- Carrier selection
- Creating delivery proposals
- Displaying the results of the VSR optimization

You then enter your personalized layout in your profile set and layout set. Even if you have entered an area with a certain personalized layout, you can still always choose and display a different layout at a later point in time.

Activities

- You can define profile and layout sets for the transportation cockpit in SAP NetWeaver Business Client by choosing *Planning* *Planning* *Transportation Cockpit*.
- To make a specific adjustment to the layout, choose *Layout Adjustment* and select any entry in the list to be adjusted. You can now select the required settings.
- To improve the overview of your rescheduling activities and the coupling and uncoupling of trailers, you can define a layout for which you select the *Dual View* checkbox on the *Orders Area* or *Transportation Units Area* tab page. You define this layout in the layout settings for the transportation cockpit. In the transportation cockpit, you can display the list with the documents to be rescheduled in two views. Alternatively, you can select the *Dual View* checkbox on the *Hierarchies Area* tab page. For more information about reassignment and coupling and uncoupling trailers, see [Reassignment \[Page 792\]](#) and [Use of Trailers \[Page 893\]](#).
- You can define profile and layout sets for carrier selection in SAP NetWeaver Business Client by choosing *Planning* *Planning* *Carrier Selection*.
- You can define profile sets and layout sets for creating delivery proposals in SAP NetWeaver Business Client by choosing *ERP Logistics Integration* *Delivery Creation* *Create Deliveries in ERP*.

- To define page layouts for all users, certain roles, or an individual user, in SAP NetWeaver Business Client, choose *Application Administration* *Planning* *General Settings* *Page Layouts*. To be able to work with this transaction, you require the appropriate authorization (authorization object `T_LAYOUT`, *Activity Manage*, *Administrate*).

More Information

[Profiles and Settings \[Page 682\]](#)



Selection Attributes for Transportation Cockpit

When you use interactive planning, selection attributes enable you to carry out your planning activities without having to configure selection profiles.

Prerequisites

Freight units and capacities exist.

Features

On the *Transportation Cockpit: Selection* screen, you have the following options:

Function	Description
<i>Continue</i>	Starts the planning function
<i>View</i>	Toggles the view between <i>Selection</i> and <i>Profile and Layout Sets</i>
<i>Layout Personalization</i>	Enables you to customize the layout of the Transportation Cockpit
<i>Settings</i>	Enables you to change the settings for the time zone, unit for distances, and alternative identification types
<i>Saved Search</i>	Enables you to load or delete a search variant that you previously saved
<i>Clear</i>	Clears all of the search criteria that you entered
<i>Save Search As</i>	Saves the criteria that you entered as a search variant
<i>Default View</i>	Specifies the view that is displayed by default when you start the Transportation Cockpit. Note that if you change the default view, you have to restart the application for the change to be applied.

Activities

To access the Selection screen in SAP NetWeaver Business Client, choose ► *Planning* ► *Planning* ► *Transportation Cockpit* ▶.

More Information

[Interactive Planning \[Page 774\]](#)



Use of Hierarchical Views

You organize the view in the transportation cockpit by creating hierarchical views for freight orders, freight bookings, trailer units, and railcar units.

If you organize these business documents into hierarchies, you can filter and sort various areas in the transportation cockpit according to specific criteria, such as the vehicle resource.

Defining hierarchical views simplifies your rescheduling activities and the coupling and uncoupling of trailers. For more information, see [Reassignment \[Page 792\]](#) and [Use of Trailers \[Page 893\]](#).

Prerequisites

- In Customizing, you have made the relevant settings so that you can configure your standard layout for rescheduling in the layout settings for the transportation cockpit.

The following hierarchy types are predefined by default:

- *FBSEA* for planning activities in sea transportation
- *FBAIR* for planning activities in air transportation
- *FOLD* for planning activities in overland transportation
- *FORAI* for planning activities in rail transportation
- *FUSTG* for planning freight unit stages
- *TUTRL* for planning trailer units
- *TURAI* for planning railcar units
- *TUCNT* for location-based planning of container units with the assigned freight units
- *TUCLD* for location-based planning of container units with the assigned freight documents
- *TUCNS* for planning of container units with the assigned freight units based on the container unit stage
- *TUCSD* for planning of container units with the assigned freight documents based on the container unit stage

You can also define hierarchies with separate hierarchy types and groupings and a view switch. You can specify the function (consumer) that each hierarchy type can use. For more information, see *Customizing for Transportation Management* under ► *Planning* ➤ *General Settings* ➤ *Define Hierarchical Views for Freight Documents*.

- You have defined a layout in the layout settings for the transportation cockpit in which you have assigned a hierarchy type to the following hierarchies on the *Hierarchies* tab page:
 - Trailer unit hierarchy
 - Container unit hierarchy

- Railcar unit hierarchy
- Freight unit hierarchy
- Ocean freight booking hierarchy
- Air freight booking hierarchy

If you do not make this assignment, the system uses the applicable default hierarchy type. For more information, see [Use of Profile and Layout Sets \[Page 777\]](#).

Features

In the transportation cockpit, you can show hierarchies as alternative order lists. You can define grouping levels for each hierarchy level and specify whether the grouping level in question is expanded by default when displayed in the transportation cockpit.

If you organize freight orders, freight bookings, trailer units, or railcar units into hierarchies, you can filter and sort various areas in the transportation cockpit according to specific criteria, such as the vehicle resource.

Activities

You integrate these hierarchies into the transportation cockpit by assigning a hierarchy type to the relevant hierarchies on the *Transportation Units Area*, *Orders Area*, or *Hierarchies Area* tab page in the page layouts for the transportation cockpit.



Command Line Planning

Within the transportation cockpit, you can carry out various planning operations without having to use the mouse.

Prerequisites

In the page layouts for the transportation cockpit, you have activated the command line. You define page layouts for the transportation cockpit in SAP NetWeaver Business Client (NWBC) by choosing **Application Administration > Planning > General Settings > Page Layouts > Page Layouts for Transportation Cockpit**.

Features

You define the commands for carrying out the required planning operations according to the following rule:

```
<Input element ID> - <Target element ID>
```

The element ID is defined in the *Index* column, which is available for all tables in the transportation cockpit. The element ID is a number that is unique for every element on the user interface. An element ID that is used for a freight unit, for example, is not also used for the resource. This means that the element ID identifies the source and the target uniquely.

For more complex planning operations, you can also enter a function code that triggers an additional system activity once the initial planning operation has been completed.

You define a command with a function code according to the following rule:

```
<Input element ID> - <Target element ID> / <Function code>
```

The function code defines the actions that are to be performed. If you do not enter a function code, the system carries out the planning operation that corresponds to the drag and drop function. The function codes are processed in the interactive planning strategy. If you want to add customer-specific function codes, you have to define a customer-specific interactive planning strategy that processes these function codes.

To decrease the time required for entry, you can combine multiple commands into a single entry. To combine multiple commands, you enter them in the command line and separate each command with a plus (+). These commands are then processed sequentially after you press ENTER.

Activities

Enter the required command in the command line.

Example

Example 1: Simple Planning of Freight Units on a Vehicle Resource

The freight units that you want to plan have the indexes 5, 6, and 7. The vehicle resource that you want to use to transport the freight units has the index 2. To assign the freight units to the vehicle resource, you enter the following command in the command line:

```
5 6 7 - 2
```

Example 2: Planning Freight Units on a Vehicle Resource with Subsequent VSR Optimization

The freight units to be planned have the indexes 5, 6, and 7. Vehicle resource A has the index 1. You want to assign the freight units to vehicle resource A and then start the VSR optimizer to perform optimized scheduling. To do so, enter the following command in the command line:

```
5 6 7 - 1 / ASSIGN_FU_TO_RES_OPT
```

For more examples, see the system documentation.



Manual Planning

In manual planning, you manually assign freight units to capacities such as vehicle resources. The system automatically creates freight documents (that is, freight orders or freight bookings) depending on the settings that you have configured in Customizing.

Integration

When you assign freight units to capacities, the system takes into account constraints such as the availability of vehicle resources, operating times, and empty runs. For more information, see [Constraints for VSR Optimization \[Page 812\]](#). In the [planning profile](#), you can specify which planning strategy you want to use. Planning strategies determine the steps that the system is to carry out during the planning process and the order in which it does so. We provide the following standard planning strategies:

- VSRI_DEF for manual planning
- VSS_DEF for scheduling
- VSRI_SCH for manual planning with subsequent scheduling



Note

Note that the tools and checks provided for manual planning are intended to provide support only. You, as the planner, remain responsible for ensuring that the planning results are consistent.

End of the note.

Prerequisites

- You have specified a planning strategy in the planning profile. For more information, see [planning profile \[Page 689\]](#).
- You have configured the settings in the Customizing activity *Define Freight Order Types* under *Transportation Management* *Freight Order Management* *Freight Order* .
- You have configured the settings in the Customizing activity *Define Transportation Unit Types* under *Transportation Management* *Planning* *Transportation Unit* .
- You have configured the settings in the Customizing activity *Define Default Freight Document Types for Stages* under *Transportation Management* *Forwarding Order Management* *Forwarding Order* .
- If you work with schedules, you have configured the settings in the Customizing activity *Define Schedule Types* under *Transportation Management* *Master Data* *Transportation Network* *Schedule* .
- If you work with vehicle resources, you have created active and passive vehicle resources. To do so, on the *SAP Easy Access Screen*, choose *Transportation Management* *Master Data* *Resource* *Resource* .

Features

SAP Transportation Management provides various ways in which you can use manual planning:

- You can create freight documents directly from freight units (see [Creation of Freight Documents from Freight Units \[Page 788\]](#)).
- You can create blank freight documents from vehicle resources, trailers, railcars, or schedules (see [Creation of Freight Documents from Resources \[Page 789\]](#)).
- You can assign freight units to existing freight documents (see [Assignment of Freight Units to Existing Freight Documents \[Page 791\]](#)).
- You can perform various planning and reassignment activities using drag and drop (see [Reassignment Activities \[Page 794\]](#)).

Subsequent Planning Assignments

Once you have planned your freight units, you have the following options:

- You can reschedule results such as freight orders from previous planning runs.
- You can remove freight units from a freight order or assign additional freight units to an existing freight order.
- You can display your freight order on the geographical map (see [Full Map Display \[Page 912\]](#)).
- You can define the relevant dates and times, for example, transportation start and loading start, and choose additional freight units and capacities.
- You can overwrite the values for distance and duration that the system has determined automatically from the transportation lane.
- You can assign the following or change the assignments that the system made automatically:
 - Resources (for example, vehicle resources) and compartments (or the vehicle resource if there is no compartment)
 - Loading and unloading locations (here you define the transportation stop (stop) at which the goods are to be loaded and the transportation stop (stop) at which the goods are to be unloaded)
- You can overwrite the loading and unloading durations manually (see [Loading and Unloading Durations](#)) that were determined automatically by the system.
- You can add further capacities such as trailers and railcars (passive vehicle resources) and define when coupling or uncoupling is to take place.
- You can add further capacities such as container units and define when loading or unloading is to take place.
- For ocean bookings, you can manually allocate freight units to containers by assigning them using drag and drop.

More Information

[Change Controller \[Page 1220\]](#)

[Consideration of Scheduling Constraints \[Page 822\]](#)

[Creation and Editing of Freight Orders](#)

[Creation and Editing of Freight Bookings](#)

[Reassignment Activities \[Page 794\]](#)



Creation of Freight Documents from Freight Units

You use this process to create [freight documents](#) on the basis of freight units. The system creates either freight orders or freight bookings depending on the settings that you have configured in Customizing.

Prerequisites

See [Manual Planning \[Page 785\]](#).

Process

1. You call the user interface for transportation planning (transportation cockpit).

For more information, see [Interactive Planning \[Page 774\]](#).

2. You select one or more freight units and choose the *Create Freight Document* pushbutton in the screen area for freight unit stages.

 Note

If you create a freight document for one or more freight unit stages created from a forwarding order, the system determines the freight document type from the Customizing activity *Define Default Freight Document Types for Stages*. If you create a freight document for one or more freight unit stages generated from a delivery-based or order-based transportation requirement, the system determines the freight document type from the information about the respective default business document type that you entered in the planning profile. However, if you have assigned a schedule to one of the stages, the system determines the freight document type from the Customizing activity *Define Schedule Types*. For more information, see the *Creation of a Freight Document for Several Stages* section of [Direct Creation of Freight Documents and Selection of Schedules](#).

End of the note.

3. You carry out any subsequent planning activities.

For more information, see [Manual Planning \[Page 785\]](#).

4. You check your planning.

The system performs a consistency check during which it checks incompatibilities, for example.

5. You start scheduling.

The system performs backward or forward scheduling. Note that if you do not complete this step, dates and times may be incorrect.

6. You save the planning results.



Creation of Freight Documents from Resources

You use this process to create [freight documents](#) in the transportation cockpit on the basis of resources such as vehicles, trailers, railcars, and schedules. If required, you can also create blank freight documents (that is, freight documents that do not contain a freight unit), which you can then process at a later time.

Prerequisites

See [Manual Planning \[Page 785\]](#).

Process

1. You call the user interface for transportation planning (transportation cockpit).

For more information, see [Interactive Planning \[Page 774\]](#).

2. On the relevant tab page, you select one or more resources and choose the *Create Freight Document* pushbutton. Alternatively, you assign freight units to the required resources by using drag and drop.
 - If you create freight documents from vehicles, railcars, or trailers, the system displays a dialog box in which you must enter the appropriate freight document type (the system proposes the document type specified in the planning profile or, if no document type is specified here, it proposes the document type from the Customizing activity *Define Freight Order Types*). Note that you do not have to enter the location data at this point. You can create freight documents without location data, although you must enter the locations before you can save the freight document.
 - If you create blank freight documents from schedules or departures, the system displays a dialog box in which you must enter the appropriate freight document type (the system proposes the document type specified in the Customizing activity *Define Schedule Types*). Note that if you create freight documents on the basis of a schedule, the system creates one freight document for each departure belonging to the selected schedule. Alternatively, you can create freight documents for one or more schedule departures.

When you create a freight document by assigning a freight unit to a schedule or schedule departure, the system adds the locations specified in the freight unit to the freight document.

Note

You can also create blank freight orders in the *Freight Orders/Freight Bookings* area of the transportation cockpit by choosing the *New* pushbutton and then the *Freight Order* option.

You can create blank road freight orders in the *Road Freight Order Hierarchy* and in the *Road Freight Orders* area of the transportation cockpit by choosing the *New Road Freight Order* pushbutton.

You can create blank rail freight orders in the *Rail Freight Order Hierarchy* and in the *Rail Freight Orders* area of the transportation cockpit by choosing the *New Road Freight Order* pushbutton.

End of the note.

3. You carry out any subsequent planning activities.

For more information, see [Manual Planning \[Page 785\]](#).

4. You check your planning.

The system performs a consistency check during which it checks incompatibilities, for example.

5. You start scheduling.

The system performs backward or forward scheduling. Note that if you do not complete this step, dates and times may be incorrect.

6. You save the planning results.



Assignment of Freight Units to Existing Freight Documents

You use this process to assign freight units to existing [freight documents](#).

Prerequisites

See [Manual Planning \[Page 785\]](#).

Process

1. You call the user interface for transportation planning (transportation cockpit).

For more information, see [Interactive Planning \[Page 774\]](#).

2. You choose one or more freight units and assign them to an existing freight document by using drag and drop, by entering a command in the command field, or by choosing the *Plan Selected Items* pushbutton (note that if you use the *Plan Selected Items* pushbutton, you must also select the freight document to which you want to assign the freight units).

3. You carry out any subsequent planning activities.

For more information, see [Manual Planning \[Page 785\]](#).

4. You check your planning.

The system performs a consistency check during which it checks incompatibilities, for example.

5. You start scheduling.

The system performs backward or forward scheduling. Note that if you do not complete this step, dates and times may be incorrect.

6. You save the planning results.



Reassignment

In the transportation cockpit, you can use this function to reschedule freight documents by using drag and drop. Alternatively, you can reassign freight documents by selecting the relevant rows and choosing the *Reassignment* pushbutton. For example, you can assign a freight unit to a new freight order if the scheduled delivery date is moved.

Prerequisites

- In the layout settings for the transportation cockpit, you have defined a layout for which you have selected the *Reassignment* checkbox on the *Orders Area* or *Transportation Units Area* tab page. Alternatively, you can select the *Reassignment* checkbox on the *Hierarchies Area* tab page. For more information, see [Use of Profile and Layout Sets \[Page 777\]](#).
- In Customizing, you have made the relevant settings so that you can configure your standard layout for reassignment in the layout settings for the transportation cockpit.

The following hierarchy types are predefined:

- *FBSEA* for reassignment in sea transportation
- *FBAIR* for reassignment in air transportation
- *FORAI* for reassignment in rail transportation
- *FOLD* for reassignment in overland transport
- *TUTRL* for reassignment of trailers
- *TURAI* for reassignment of railcars
- *TUCNT* for location-based reassignment of container units with the associated freight units
- *TUCLD* for location-based reassignment of container units with the associated freight documents
- *TUCNS* for reassignment of container units with the associated freight units based on the freight unit stage
- *TUCSD* for reassignment of container units with the associated freight documents based on the freight unit stage

In addition, you can define your own hierarchy types. For more information, see Customizing for Transportation Management under ► *Planning* ► *General Settings* ► *Define Hierarchical Views for Freight Documents* ▶.

Features

Once you have configured the relevant settings in Customizing and in the layout settings for the transportation cockpit, you can also use various hierarchy levels as drag and drop sources and targets in the hierarchy in question. For more information, see [Reassignment Activities \[Page 794\]](#).

Activities

You select the layout that you have defined in the layout settings for the transportation cockpit. In the *Freight Orders/Freight Bookings* screen area, you choose the *Dual View* pushbutton. You can now execute your reassignment activities.



Reassignment Activities

Once you have configured the relevant settings in Customizing and in the layout settings for the transportation cockpit (see [Reassignment \[Page\] 792](#)), you can use the following hierarchy levels as drag and drop sources and targets within the various hierarchies:

Note

The drag and drop source and the drag and drop target is always interchangeable.

End of the note.

Freight Order Hierarchies (Road Freight Order Hierarchy and Rail Freight Order Hierarchy)		
Drag and Drop Source	Drag and Drop Target	System Activity
Freight order	Transportation unit	<p>You couple the part of the transportation unit that is not yet coupled to the freight order.</p> <p> Note</p> <p>The coupling locations must already be available in both documents.</p> <p>End of the note.</p>
Location in freight order	Another location in the freight order	<p>You change the positions of the locations in question in the location sequence. This also transfers the requirements assigned to the location to the location in its new position in the sequence. This type of planning enables you to stop at the same location twice in succession in the same freight order.</p> <p> Note</p> <p>If you add a location at which a freight unit is unloaded to the location sequence of another freight order, the system checks whether the location at which the relevant freight unit is loaded also exists in the freight order.</p> <p>If this location is already included in the freight order, the system enhances only those requirements for this location.</p> <p>If the location is not included in the freight order, the system adds it to the freight order with the corresponding requirements.</p> <p>The same applies if you add a location at which a freight unit is loaded to the location sequence of another freight order. In this case, the system checks whether the location at which the freight unit is unloaded already exists in the freight order and carries out the relevant planning operations.</p> <p>End of the note.</p>
Location in	Same location in	You transfer the requirements assigned to the location acting

Freight Order Hierarchies (Road Freight Order Hierarchy and Rail Freight Order Hierarchy)		
Drag and Drop Source	Drag and Drop Target	System Activity
freight order	freight order	<p>as the drag & drop source to the location acting as the drag & drop target. If the location does not exist in the freight order, this action adds the location to the location sequence of the freight order. At the same time, you delete the location acting as the drag & drop source from the location sequence of the freight order to which the location and its requirements was originally assigned.</p> <p>Note</p> <p>If you add a location at which a freight unit is unloaded to another freight order, the system checks whether the location at which the relevant freight unit is loaded also exists in the freight order.</p> <p>If this location is already included in the freight order, the system enhances only those requirements for this location.</p> <p>If the location is not included in the freight order, the system adds it to the freight order with the corresponding requirements.</p> <p>The same applies if you add a location at which a freight unit is loaded to another freight order. In this case, the system checks whether the location at which the freight unit is unloaded already exists in the freight order and carries out the relevant planning operations.</p> <p>End of the note.</p>
Location in freight order	Freight order	<p>You transfer the requirements assigned to the location acting as the drag & drop source to the same location in the freight order acting as the drag & drop target. At the same time, you delete the location acting as the drag & drop source from its original position in the location sequence.</p> <p>Note</p> <p>If you add a location at which a freight unit is unloaded to the location sequence of another freight order, the system checks whether the location at which the relevant freight unit is loaded also exists in the freight order.</p> <p>If this location is already included in the freight order, the system enhances only those requirements for this location.</p> <p>If the location is not included in the freight order, the system adds it to the freight order with the corresponding requirements.</p> <p>The same applies if you add a location at which a freight unit is loaded to the location sequence of another freight order. In</p>

Freight Order Hierarchies (Road Freight Order Hierarchy and Rail Freight Order Hierarchy)		
Drag and Drop Source	Drag and Drop Target	System Activity
		<p>this case, the system checks whether the location at which the freight unit is unloaded already exists in the freight order and carries out the relevant planning operations.</p> <p>End of the note.</p>
Freight order stage	Transportation unit	You assign the freight order stage to the transportation unit and add missing locations to the location sequence for the transportation unit.
Freight unit stage	Freight order	You assign the freight unit stage to the freight order and add missing locations to the freight order.
Freight unit stage	Compartment of a freight order	You assign the freight unit stage to the compartment of a freight order and add missing locations to the freight order.
Freight unit stage	Location in freight order	You assign the freight unit stage to the freight order and add missing locations to the freight order. At the same time, you integrate the newly assigned location into the location sequence at the position predefined by the location.
Freight unit stage	Transportation unit	You assign the freight unit stage to the transportation unit and add missing locations to the transportation unit.
Transportation Unit Hierarchies (Trailer Unit Hierarchy and Railcar Unit Hierarchy)		
Drag and Drop Source	Drag and Drop Target	System Activity
Transportation unit	Freight order	<p>You couple the part of the transportation unit that is not yet coupled to the freight order.</p> <p>Note</p> <p>The coupling and uncoupling locations must already be assigned to both documents.</p> <p>End of the note.</p>
Location in the transportation unit	Other location in the transportation unit	<p>You change the positions of the locations in question in the location sequence. At the same time, you transfer the requirements assigned to the location to the location in its new position in the sequence.</p> <p>Note</p> <p>If you add a location at which a freight unit is unloaded to the location sequence of another transportation unit, the system checks whether the location at which the relevant freight unit is loaded also exists in the transportation unit.</p> <p>If this location is already included in the transportation unit,</p>

Freight Order Hierarchies (Road Freight Order Hierarchy and Rail Freight Order Hierarchy)		
Drag and Drop Source	Drag and Drop Target	System Activity
		<p>the system enhances only those requirements for this location.</p> <p>If the location is not included in the transportation unit, the system adds it to the transportation unit with the corresponding requirements.</p> <p>The same applies if you add a location at which a freight unit is loaded to the location sequence of another transportation unit. In this case, the system checks whether the location at which the freight unit is unloaded already exists in the transportation unit and carries out the relevant planning operations.</p> <p>End of the note.</p>
Location in the transportation unit	Same location in the transportation unit	<p>You assign the freight units that were assigned to the drag & drop source to the drag & drop target. At the same time, you delete the drag & drop source from the location sequence.</p> <p>Note</p> <p>If you add a location at which a freight unit is unloaded to the location sequence of another transportation unit, the system checks whether the location at which the relevant freight unit is loaded also exists in the transportation unit.</p>
Location in the transportation unit	Transportation unit	<p>If this location is already included in the transportation unit, the system enhances only those requirements for this location.</p> <p>If the location is not included in the transportation unit, the system adds it to the transportation unit with the corresponding requirements.</p> <p>The same applies if you add a location at which a freight unit is loaded to the location sequence of another transportation unit. In this case, the system checks whether the location at which the freight unit is unloaded already exists in the transportation unit and carries out the relevant planning operations.</p> <p>End of the note.</p>
Location in the transportation unit	Transportation unit	<p>You transfer the requirements assigned to the location acting as the drag & drop source to the same location in the transportation unit acting as the drag & drop target. At the same time, you delete the location acting as the drag & drop source from its original position in the location sequence.</p> <p>Note</p> <p>If you add a location at which a freight unit is unloaded to the</p>

Freight Order Hierarchies (Road Freight Order Hierarchy and Rail Freight Order Hierarchy)		
Drag and Drop Source	Drag and Drop Target	System Activity
		<p>location sequence of another transportation unit, the system checks whether the location at which the relevant freight unit is loaded also exists in the transportation unit.</p> <p>If this location is already included in the transportation unit, the system enhances only those requirements for this location.</p> <p>If the location is not included in the transportation unit, the system adds it to the transportation unit with the corresponding requirements.</p> <p>The same applies if you add a location at which a freight unit is loaded to the location sequence of another transportation unit. In this case, the system checks whether the location at which the freight unit is unloaded already exists in the transportation unit and carries out the relevant planning operations.</p> <p>End of the note.</p>
Location in the transportation unit	Freight unit stage	You assign the freight unit stage to the transportation unit and add missing locations to the transportation unit. At the same time, you integrate the newly assigned location into the location sequence at the position predefined by the location.
Freight order	Transportation unit	<p>You couple the part of the transportation unit that is not yet coupled to the freight order.</p> <p>Note</p> <p>The coupling and uncoupling locations already exist in both documents.</p> <p>End of the note.</p>
Transportation unit stage	Freight order	You couple the transportation unit stage to the freight order and add missing locations to the freight order.
Freight unit stage	Compartment in the transportation unit	You assign the freight unit stage to the compartment of a transportation unit and add missing locations to the transportation unit.
Freight unit stage	Transportation unit	You assign the freight unit stage to the transportation unit and add missing locations to the transportation unit.
Freight unit stage	Location in the transportation unit	You assign the freight unit stage to the transportation unit and add missing locations to the transportation unit. At the same time, you integrate the newly assigned location into the location sequence at the position predefined by the location.
Freight unit	Freight order	You assign the freight unit stage to the freight order and add

Freight Order Hierarchies (Road Freight Order Hierarchy and Rail Freight Order Hierarchy)		
Drag and Drop Source	Drag and Drop Target	System Activity
stage		missing locations to the freight order.

 Note

The freight order is included in the transportation unit hierarchy as information only. All of the planning operations listed in the table above that have a freight order as the drag & drop source or target are exclusively cross-hierarchy planning operations between the freight order hierarchy and the transportation unit hierarchy. These planning operations cannot be carried out in the transportation unit hierarchy using drag & drop.

End of the note.

Freight Booking Hierarchies (Air Freight Booking Hierarchy and Ocean Freight Booking Hierarchy)		
Drag and Drop Source	Drag and Drop Target	System Activity
Freight unit stage	Freight booking	You assign the freight unit stage to a freight booking.
Freight unit stage	Capacity reservation	You assign a full-container-load freight unit stage to the capacity reservation. At the same time, you replace the container from the capacity reservation with the full-container-load freight unit if the container type matches.
Freight unit stage	Container	<p>You assign a less-than-container load freight unit stage to a container.</p> <p> Note</p> <p>The container must be part of the freight booking.</p> <p>End of the note.</p>
Freight Unit Hierarchy		
Drag and Drop Source	Drag and Drop Target	System Activity
Freight unit stage	Freight order	You assign the freight unit stage to the freight order and add missing locations to the freight order.
Freight unit stage	Location in freight order	You assign the freight unit stage to the freight order and add missing locations to the freight order. At the same time, you integrate the newly assigned location into the location sequence at the position predefined by the location.
Freight unit stage	Transportation unit	You assign the freight order stage to the transportation unit and add missing locations to the location sequence for the transportation unit.

Freight Booking Hierarchies (Air Freight Booking Hierarchy and Ocean Freight Booking Hierarchy)		
Drag and Drop Source	Drag and Drop Target	System Activity
Freight unit stage	Compartment of a freight order	You assign the freight unit stage to the compartment of a freight order and add missing locations to the freight order.
Freight unit stage	Location in the transportation unit	You assign the freight unit stage to the transportation unit and add missing locations to the transportation unit. At the same time, you integrate the newly assigned location into the location sequence at the position predefined by the location.
Freight unit stage	Compartment in the transportation unit	You assign the freight unit stage to the compartment of a transportation unit and add missing locations to the transportation unit.
Freight unit stage	Freight booking	You assign the freight unit stage to a freight booking.
Freight unit stage	Capacity reservation	You assign a full-container-load freight unit stage to the capacity reservation. At the same time, you replace the container from the capacity reservation with the full-container-load freight unit if the container type matches.
Freight unit stage	Container	<p>You assign a less-than-container load freight unit stage to a container.</p> <p>Note</p> <p>The container must be part of the freight booking.</p> <p>End of the note.</p>

i Note

All of the planning operations listed here are possibly only if either the drag & drop source or the drag & drop target do not originate from the freight unit hierarchy.

End of the note.

Container Unit Hierarchy		
Drag and Drop Source	Drag and Drop Target	System Activity
Container unit stage	Freight order	You assign the container unit stage to the freight order and add missing locations to the freight order.
Container unit stage	Location in freight order	You assign the container unit stage to the freight order and add missing locations to the freight order. At the same time, you integrate the newly assigned location into the location sequence at the position predefined by the location.

Container Unit Hierarchy		
Drag and Drop Source	Drag and Drop Target	System Activity
Container unit stage	Compartment in freight order	You assign the container unit stage to the compartment of a freight order and add missing locations to the freight order.
Container unit stage	Railcar unit	You assign the container unit stage to the railcar unit and add missing locations to the location sequence for the railcar unit.
Container unit stage	Location in the railcar unit	You assign the container unit stage to the railcar unit and add missing locations to the railcar unit. At the same time, you integrate the newly assigned location into the location sequence at the position predefined by the location.
Container unit stage	Trailer unit	You assign the container unit stage to the trailer unit and add missing locations to the location sequence for the trailer unit.
Container unit stage	Location in the trailer unit	You assign the container unit stage to the trailer unit and add missing locations to the trailer unit. At the same time, you integrate the newly assigned location into the location sequence at the position predefined by the location.
Container unit stage	Freight booking	You assign the container unit stage to a freight booking and add missing locations to the container unit.



Rough-Cut Planning

You can use rough-cut planning to schedule the pre-carriage and on-carriage of a transportation without having to define specific transportation lanes.

Prerequisites

- You have assigned a transshipment location to your transportation zone or a location in the master data and have defined a fixed duration for the rough-cut planning. To assign transshipment locations, in SAP NetWeaver Business Client, you choose *Master Data* *Transportation Network* *Locations* *Assign Transshipment Locations* .
- You have configured the relevant settings and assigned the optimizer settings to your planning profile in the optimizer settings under *Consider Constraints*. For more information, see [Planning Profile \[Page 689\]](#).

Features

Rough-cut planning is based on a fixed transportation duration within which you can reach the transshipment location assigned to specific location from this location.

Note

When rough-cut planning is used, it must be used for both the pre-carriage and on-carriage. You cannot use rough-cut planning for the pre-carriage and detailed planning for the on-carriage, or vice versa.

If you have made assignments at various levels such as transportation zone or location level, the system uses the value for the most precise geographical location.

End of the note.

Example

You want to transport goods from Walldorf to Minneapolis. The source location Walldorf is in the transportation zone Southern Germany. Frankfurt airport is the transshipment location assigned to the transportation zone Southern Germany. The destination location Minneapolis is in the transportation zone Midwest. Chicago airport is the transshipment location assigned to the transportation zone Midwest.

You have a master flight schedule that connects Frankfurt and Chicago airports but do not have a transportation lane for transporting the goods between the source location in Walldorf to Frankfurt airport or between the destination location in Minneapolis and Chicago airport.

In the master data for the transportation zone Southern Germany, you have specified a rough-cut planning duration of six hours, and for the location Walldorf two hours.

If you select the *Use Rough-Cut Planning Where Defined* option in the *Rough-Cut Planning* selection list in the *Optimizer Settings* screen area in the planning profile, the system takes the rough-cut planning duration of two hours into account during planning for the transportation of goods to Frankfurt airport.



Freight Document Overview

You can use this function to display a location-based view of your resources and requirements (for example, freight units, transportation units (passive vehicle resource), and compartments):

- All [transportation stops](#) of a freight unit as well as their sequence
- All activities performed at these transportation stops, for example, loading and unloading of freight units and containers or coupling and uncoupling of railcars and trailers
- Information, for example, the start of the loading and unloading, as well as of the transport

In addition, you can use various editing options.

Features

You have the following editing options:

- Change the sequence of the transportation stops (not possible for freight orders that are based on a schedule)
- Add transportation stops (not possible for freight orders that are based on a schedule)
- Delete transportation stops (not possible for freight orders that are based on a schedule)
- Add freight units (that is, stages) to a freight order
- Delete freight units and transportation units (that is, stages) from a freight order
- Move freight units and container units from one compartment to another (within a freight order)
- Change assignment of freight units and transportation units to transportation stops

For all of these options, the system performs a series of checks. This allows the system to check, for example, dependencies between freight units as well as incompatibilities (see [Incompatibilities \[Page 715\]](#)).

Activities

The freight document overview is available on the user interfaces for the freight order and the freight booking as well as in the transportation cockpit. You can display the freight document overview in the transportation cockpit in SAP NetWeaver Business Client by choosing *Planning* *Planning* *Transportation Cockpit*.

Note that the freight document overview is only displayed for **one** freight order.



Freight-Unit Stage Groups

You can use this function to generate groups of freight unit stages (FU stages) and perform planning activities for either the entire group or individual FU stages within the group. This reduces the number of stages required for your transportation activities.

Prerequisites

- You have created forwarding orders.
- Requirement group lists are displayed in your transportation cockpit layout.

Features

When you access the transportation cockpit using selection profiles or selection criteria, the system generates FU stage groups based on forwarding order criteria such as the forwarding order ID, source and destination location, requested loading and unloading dates, and planning status (planned or unplanned).



The system redetermines FU stage groups each time you start the transportation cockpit.

End of the note.

As a transportation planner, you can use these groups to create freight orders manually. Once you have created your freight order, you have the following options:

- You can assign one or more FU stage groups to an existing freight booking, freight order, or resource.
- You can select one or more FU stages within an FU stage group and assign it or them to an existing freight booking, freight order, or resource.
- You can remove the assignment from one or more FU stage groups.
- You can remove the assignment from one or more FU stages within an FU stage group.
- You can split, merge, or remove the stages in one or more FU stage groups.

Example

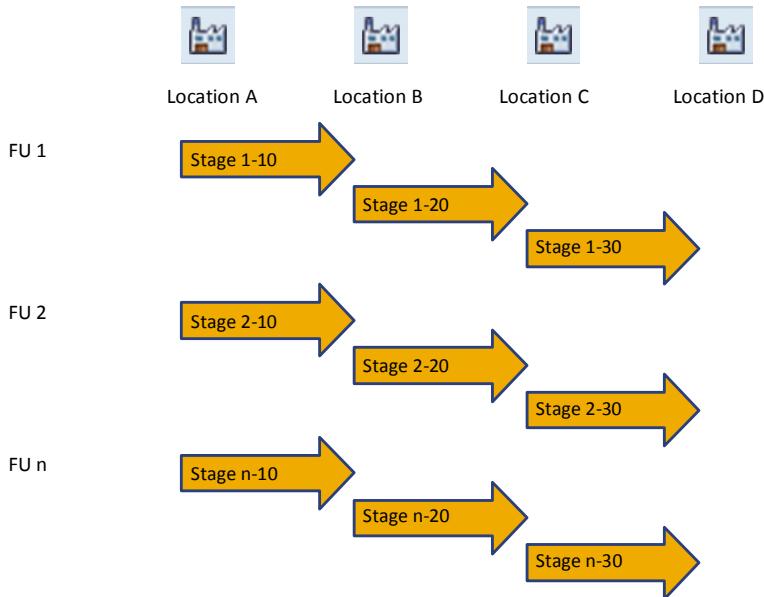
You receive a forwarding order to ship n freight units from A to D via B and C. For each freight unit, the system creates three stages:

- A to B
- B to C
- C to D

This results in a total of $3 \times n$ stages. For example, if the forwarding order contains seven freight units, the system will create a total of 21 stages.

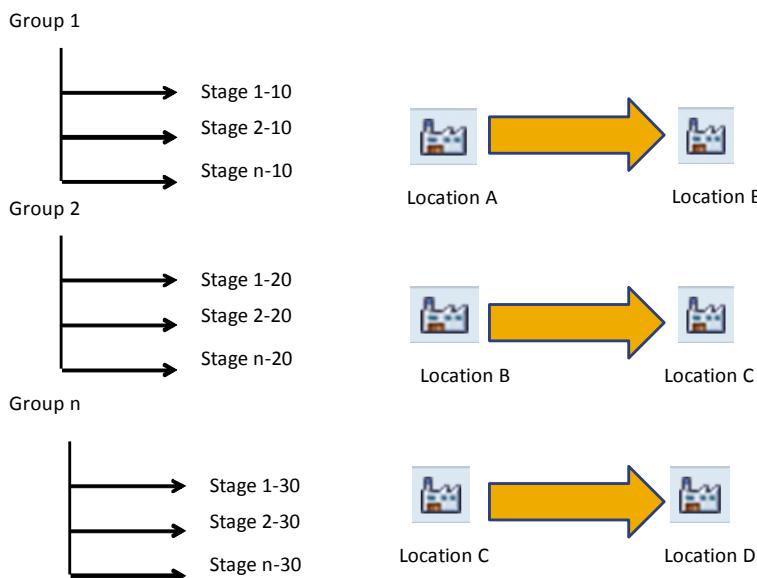
The process described above is depicted in the following figure. Freight unit 1 is shipped from location A to B resulting in stage 1-10, then from location B to C resulting in stage 1-20, and

finally from location C to D resulting in stage 1-30. The same applies to all other freight units in the forwarding order.



FU Stages Before Grouping

By aggregating the freight units by stage, only three groups are required (that is, one group for each stage). This process is shown in the following figure, whereby group 1 contains all freight units that are shipped from location A to B (stages 1-10, 2-10, and so on), group 2 contains all freight units that are shipped from location B to C (stages 1-20, 2-20, and so on), and group 3 contains all freight units that are shipped from location C to D (stages 1-30, 2-30, and so on).



FU Stages After Grouping



VSR Optimization

The aim of VSR optimization (VSR = Vehicle Scheduling and Routing) is to assign freight units to capacities (for example, vehicle resources) in a cost-effective way while adhering to constraints (see [Constraints for VSR Optimization \[Page 812\]](#)), and to determine the sequence of deliveries and transportation dates/times.

Prerequisites

- You have defined the master data for VSR optimization, for example, the network connections to the optimization server and the maximum number of users. You can do so in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *General Settings* ► *Remote Control and Communication Framework* ► *Settings* ► *Edit Destinations* ▶.
- You have created a planning profile (see [Planning Profile \[Page 689\]](#)) and have assigned the following settings to it:
 - Optimizer settings

For example, you have specified the planning strategy (see [Planning Strategies \[Page 1231\]](#)) that you want to use. You can do so in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *Planning* ► *Planning Profile Settings* ► *Optimizer Settings* ▶.
 - Planning costs settings

You can do so in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *Planning* ► *Planning Profile Settings* ► *Planning Costs Settings* ▶.
 - Capacity selection settings

You can do so in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *Planning* ► *Planning Profile Settings* ► *Capacity Selection Settings* ▶.
- You can also assign a selection profile for freight orders and freight bookings as well as incompatibility settings. If you want to perform one-step planning, you must also assign carrier selection settings (see [One-Step Planning \[Page 888\]](#)).
- You have defined transportation lanes. You can do so in SAP NetWeaver Business Client by choosing ► *Master Data* ► *Transportation Network* ► *Transportation Lanes* ► *Define Transportation Lane* ▶.
- In the case of multimodal transportations or transshipments, you have defined transshipment locations (see [Transshipment Location](#)) or default routes (see [Use of Default Routes in VSR Optimization](#)). You can do so in SAP NetWeaver Business Client by choosing ► *Master Data* ► *Transportation Network* ► *Assign Transshipment Location* ▶ or on the SAP Easy Access screen under ► *Transportation Management* ► *Master Data* ► *Transportation Network* ► *Default Route* ► *Create Default Route* ▶.
- If you want to control the input for VSR optimization or the result of VSR optimization, you have made the settings for the Business Add-Ins (BAdI) *BAdI: Preprocessing using the VSR Optimizer* and *BAdI: Postprocessing using the VSR Optimizer*.

For more information, see Customizing for SAP Transportation Management under ► *Transportation Management* ► *Business Add-Ins (BAdIs) for Transportation Management* ► *Planning* ► *VSR Optimizer* ► *VSR Optimizer Preprocessing and Postprocessing*.

For more prerequisites, see [Interactive Planning \[Page 774\]](#).

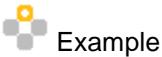
Features

VSR optimization generates a transportation plan consisting of planned freight orders from the optimization data (freight units and capacities, see [Optimization Data \[Page 809\]](#)). When doing this, it processes freight orders already available from a previous VSR optimization run or manual planning. VSR optimization inserts the freight units step-by-step into the transportation plan. Then VSR optimization modifies these initial solutions step-by-step, for example, by loading a freight unit on to another capacity or by changing the delivery sequence of a capacity. When doing this, the optimizer tries to minimize the total costs (see [Total Costs \[Page 810\]](#)) while adhering to the constraints. At the end of the planning run, VSR optimization returns the best solution found. For example, if the costs defined for non-delivery of a freight unit are lower than the costs for transporting the freight unit, the freight unit is not delivered.



To achieve the best possible planning result, we recommend that you find a happy medium between creating extremely large freight units and extremely small ones. The larger the freight units are, the simpler the planning activities in VSR optimization. If the freight units are smaller, there may well be a higher theoretical potential for optimization, but in practice, planning in VSR optimization is made more difficult due to the higher number of freight units.

End of the recommendation.



You have a truck with a capacity of 20 tons. You are planning to transport 20 tons of flour in 1 kg packages. Neither extreme is advisable here for the reasons given above. You should not create a single freight unit with a weight of 20 tons, nor should you create 20,000 freight units with a weight of 1 kg each.

End of the example.

Furthermore, you can generate multiple alternative transportation proposals, in other words, transportation plans, for each freight unit and can then choose to use one of them. For more information, see [Generation of Transportation Proposals \[Page 861\]](#).

SAP delivers the planning strategies VSR_DEF and VSR_1STEP as standard for the optimization. You can use the planning strategy VSR_1STEP to control whether the system is to perform carrier selection immediately after VSR optimization. For more information, see [One-Step Planning \[Page 888\]](#) and [Planning Strategies \[Page 1231\]](#).

The results of the VSR optimization run are explained in the explanation tool. For more information, see [Explanation Tool \[Page 815\]](#).

Activities

You start VSR optimization from interactive planning (see [Interactive Planning \[Page 774\]](#)).

To perform VSR optimization in the background, call report /SCMTMS/PLN_OPT. Choose a planning profile and a requirements selection profile (and a freight order selection profile, if

required), and execute the report in the background. The system displays the generated freight orders as the result. For more information, see [Planning Run \[Page 1240\]](#).

You can prematurely end a VSR optimization run in SAP NetWeaver Business Client by choosing *Application Administration* *General Settings* *Remote Control and Communication Framework* *Administration* *Display Active Session* . Then choose the pushbutton to stop the process.

More Information

[Consideration of Scheduling Constraints \[Page 822\]](#)



Optimization Data

Data for which the system optimizes planning during VSR optimization (see [VSR Optimization \[Page 806\]](#)).

Structure

Optimization data includes the following data:

- All freight units that match the requirements selection profile (see [Selection Profile \[Page 684\]](#))
- All freight units (planned and unplanned) that lie within the demand and planning horizons
- All data that the system determines using context determination
 - The VSR optimizer does not change this data.
- All capacities that match your settings for capacity selection

In addition, transportation lanes between all the relevant locations of the VSR optimization run (source and destination locations of the chosen freight units, transshipment locations, and depot locations) are part of the optimization data.

The following example describes the effects of transportation lanes on vehicle resources (that is, vehicle resources for which you have *not* selected the *Passive* checkbox for the relevant means of transport) without a schedule. These restrictions do not apply to schedule vehicles.

If a vehicle with means of transport 'truck' transports a freight unit from A to B, then you must define a direct transportation lane from A to B for the defined validity period for the means of transport 'truck'. It is not sufficient to have defined transportation lanes from A to C and from C to B, for example. The VSR optimizer does not combine these to create the transportation lane A to B.

This is also the case if you want to deliver one freight unit from A to C and one freight unit from A to B. It is also not sufficient in this case to have defined transportation lanes from A to C and from C to B. The freight unit can only be delivered from A to B if you have defined a direct transportation lane from A to B.

We also recommend that you define a direct transportation lane between A and B in the following case: You want to deliver a freight unit from A to B. There is no direct transportation lane defined between A and B but there is a transfer location. The freight unit can only be delivered if it is transferred at the transshipment location. To avoid unnecessary loading and unloading at a transshipment location, if a freight unit is shipped in a single vehicle on both transportation stages, we recommend that you define a direct transportation lane.



Total Costs

Costs that the system minimizes during VSR optimization (see [VSR Optimization \[Page 806\]](#)).

Structure

The total costs comprise the following costs:

- Freight unit-dependent costs
 - Earliness costs
 - Lateness costs
 - Costs for non-delivery
- Capacity-related costs
 - Fixed transportation costs per freight order
 - Load costs
 - Variable transportation costs per unit for the following dimensions:
 - Time
 - Distance
 - Intermediate stops
 - Transported quantity per distance

You define these costs in the planning costs that you assign to a planning profile (see [Planning Profile \[Page 689\]](#)).



Initial Solution

Solution that is generated, evaluated, and then optimized in VSR optimization (see [VSR Optimization \[Page 806\]](#)). There are two types of initial solution:

- The existing transportation plans from a previous VSR optimization run or manual planning form an initial solution.
- VSR optimization generates additional initial solutions by distributing freight units to capacities (for example, vehicle resources) using heuristic criteria.

VSR optimization can only process, and, where necessary, improve existing transportation plans from a previous VSR optimization run or manual planning as an initial solution, if they meet the following prerequisites:

- They must use connections with transportation lanes.
- They must lie in selected capacities.
- They must not violate any incompatibilities (unless you have permitted this in the *Incompatibilities* field in the optimizer settings).
- If they are part of a multimodal transportation, this transportation must be valid for VSR optimization (for example, the transshipment locations must correspond to the transshipment locations defined in the hierarchy).

If the initial solution is invalid, VSR optimization discards it but nevertheless executes the VSR optimization run.



Constraints for VSR Optimization

VSR optimization (see [VSR Optimization \[Page 806\]](#)) takes into account constraints when it assigns freight units to capacities. You can differentiate between hard and soft constraints:

- VSR optimization always adheres to hard constraints.
- You model soft constraints using penalty costs, for example, lateness costs that are part of the total costs.

Features

VSR optimization minimizes the total costs in the VSR optimization run while adhering to the hard constraints. By appropriately weighting the penalty costs in the total costs, you can influence the priority of adhering to the soft constraints. If, for example, you give a greater weighting to the penalty costs, the main aim of VSR optimization is to adhere to the constraints. If, however, you give a lesser weighting to the penalty costs, VSR optimization first deals with other parts of the costs (for example, minimum number of capacities) and accepts the violation of the soft constraints.



Example

Hard constraints: Loading capacities of a vehicle resource. VSR optimization can only schedule freight units within the existing transportation capacities.

Soft constraints: Requirement dates/times of freight units. VSR optimization can also schedule a freight unit after the requested delivery date. In this case, delay costs are incurred.

End of the example.

The following table shows the planning data that VSR optimization considers as constraints:

Planning Data	Constraint	Remark
Handling resources for loading and unloading as well as operating times	Hard	In addition to the operating times, VSR optimization also takes into account loading capacities for the handling resources.
Incompatibilities (see Incompatibilities [Page 715])	Hard	N/A
Pickup	Soft	VSR optimization can also schedule the pickup of the freight unit before or after the requested pick-up date/time. In this case, earliness or delay costs are incurred. You can define tolerances for the premature or delayed pickup without penalty costs (see Time Windows [Page 895]).
Pickup	Hard	VSR optimization can only schedule the pickup for the requested pick-up date/time. You can define tolerances within which a premature or delayed pickup is allowed (see Time Windows [Page 895]).
Pickup	Soft and Hard	A combination of the options described above

Planning Data	Constraint	Remark
	hard	
Delivery	Soft	VSR optimization can also schedule the delivery of the freight unit before or after the requested delivery date/time. In this case, earliness or delay costs are incurred. You can define tolerances for the premature or delayed delivery without penalty costs (see Time Windows [Page 895]).
Delivery	Hard	VSR optimization can only schedule the delivery for the requested delivery date/time. You can define tolerances within which a premature or delayed delivery is allowed (see Time Windows [Page 895]).
Delivery	Soft and hard	A combination of the options described above
Journey to depot for own means of transport	Hard	N/A
Loading and unloading durations	Hard	N/A
Schedules of means of transport (trains, ships, aircraft, and trucks)	Hard	N/A
Minimum goods wait time at the location	Hard	Relevant to transshipment only
Maximum goods wait time at the location	Hard	Relevant to transshipment only
Distance traveled	Soft	VSR optimization attempts to schedule the shortest distance possible.
Distance traveled (for each freight order)	Hard	The distance must not be greater than the value defined in the planning costs.
Distance traveled (for each freight order)	Soft and hard	A combination of the options described above
Duration	Soft	VSR optimization attempts to schedule the shortest duration possible.
Duration (for each freight order)	Hard	The duration must not be greater than the value defined in the planning costs.
Duration (for each freight order)	Soft and hard	A combination of the options described above
Number of intermediate stops	Soft	VSR optimization attempts to schedule as few intermediate stops as possible.

Planning Data	Constraint	Remark
Number of intermediate stops (for each freight order)	Hard	The number of intermediate stops must not be greater than the value defined in the planning costs.
Number of intermediate stops (for each freight order)	Soft and hard	A combination of the options described above
Decreasing capacities (see Capacity Decrease [Page 703])	Hard	N/A
Compartment capacities	Hard	N/A
Capacities of means-of-transport combinations	Hard	N/A
ADR limit	Hard	The number of ADR points for a resource must not be exceeded (see ADR 1.1.3.6 Points Check Calculation [Page 1150]).



Explanation Tool

You can obtain a detailed overview of the data that flowed into the VSR optimization run and the results that were output. In this way, you can quickly and easily recognize how the VSR optimization has optimized the costs.

In the same way, you can obtain a detailed overview of the data that flowed into the load optimization run and the results that were output. In this way, you can quickly and easily recognize how the load optimization has optimally used the loading space while taking into account various restrictions such as the maximum axle load.

Prerequisites

- You have set user parameter /SCMTMS/EXP to X to allow for the logging of the optimizer data for optimization runs that you start interactively.
- You have the authorization to work with the explanation tool (authorization object T_EXP_USR).

Features

The explanation tool for *VSR optimization* displays the following information:

- Input for the VSR optimization run
- Results of the VSR optimization run
- Solution overview

All planning-relevant costs per transportation plan are listed here. If you created transportation proposals, the costs for each transportation plan are displayed. You can see a breakdown of the costs.

- Statistics of all planning-relevant objects

Which and how many planning-relevant objects are part of the planning run are displayed here. You can also see how many objects the system determined as context and how many you selected directly.

- Information about the freight unit

The following information is displayed here:

- All freight units that took part in the planning run, as well as detail information, for example, transportation stages
- Status of the freight units after the planning run
- Analysis data, for example, reasons why freight units could not be delivered
- Information about the result of optimization

Information about the transportation plan is displayed here, for example, all freight orders.

From the explanation tool you can, in part, go to the associated business documents directly. You can use the pushbutton for calling customer functions to call the Business Add-In (BAdI) /SCMTMS/PLN_EXP, to execute your own functions for particular selected objects.

The explanation tool for *load optimization* displays the following information:

- Input for the load optimization run
- Results of the load optimization run
- Information about the cargo items

The following information is displayed here:

- All cargo items that were included in the planning run as well as detailed information such as the source and destination locations for a cargo item
- Status of the cargo items after the planning run
- Information about the result of optimization

Here, the exact position of each freight order item in the loading space is displayed. In addition, the stack, level, and row of each freight order item is displayed.

Furthermore, the current weight and the maximum permitted weight of the vehicle are displayed along with the current and maximum axle load for each axle group.

You can use the pushbutton for calling customer functions to call the Business Add-In (BAdI) /SCMTMS/PLN_EXP, to execute your own functions for particular selected objects.

Activities

To call the explanation tool for VSR optimization and load optimization, choose *Optimizer Explanation* in the transportation cockpit. You can call the transportation cockpit in SAP NetWeaver Business Client by choosing ► *Planning* ► *Planning* ► *Transportation Cockpit* ▶.

Alternatively, you can access the explanation tool for VSR optimization and for load optimization from the log display. To do so in SAP NetWeaver Business Client, choose ► *Application Administration* ► *General Settings* ► *Remote Control and Communication Framework* ► *Log* ► *Log Display* ▶.

For more information about this function, see [Planning Run \[Page 1240\]](#).

We recommend scheduling the deletion program /SCMTMS/PLN_EXP_DELETE regularly in the background.



Incremental Planning

You can use this function to plan freight orders and freight bookings in automatic planning incrementally and to add freight units to existing freight documents. This function is available for VSR optimization and the transportation proposal.

Prerequisites

In the optimizer settings of your planning profile, you have specified which type of incremental planning you want to use. You do this in SAP NetWeaver Business Client under Application Administration > Planning > Planning Profile Settings > Optimizer Settings > Edit Optimizer Settings .

Features

You can use incremental planning for the following automatic planning functions:

- Transportation proposal

You use this function to consider existing freight documents in the generation of transportation proposals for new freight units. The system adds the capacities and locations of the freight units that you want to assign to the existing freight documents. If the new locations do not fit in the location sequence of the existing freight document or if there is not enough capacity to add the new freight units to the existing freight documents, the system creates a new freight document with the new freight units and a new location sequence.

- VSR optimization

You use this function to specify whether the VSR optimizer can delete existing freight documents or only enhance them. You have the following options:

- VSR optimization without incremental planning

The VSR optimizer does not plan incrementally. Instead, it deletes existing freight documents and automatically creates new ones.

- Incremental planning with fixed freight units

The VSR optimizer cannot delete existing freight documents. Instead, it adds the capacities and locations of the freight units that you want to assign to the existing freight documents. If the new locations do not fit in the location sequence of the existing freight document or if there is not enough capacity to add the new freight units to the existing freight documents, the system creates new freight documents.

- Incremental planning with fixed freight units and fixed location sequence

The system adds existing freight documents only if there is enough capacity. Furthermore, the system adds freight units to the existing freight documents only if the new freight units have the same location sequence as the existing freight documents. If this is not the case, the system creates new freight documents.

Activities

Select the freight units and freight documents to be planned in the transportation cockpit and choose *Optimizer Planning*. For more information about optimizer planning, see [VSR Optimization \[Page 806\]](#).

Select the freight units and freight documents to be planned in the transportation cockpit and choose *Transportation Proposals*. For more information, see [Generation of Transportation Proposals \[Page 861\]](#).



Scheduling

Scheduling determines start and end times for a set of dates and times such as departure and arrival of a freight order as well as the pick-up and delivery of the assigned freight units or the coupling and uncoupling of trailers. In scheduling, the system considers multiple constraints like a predefined relative ordering among the activities of the freight order as well as the pick-up windows and the delivery windows of the assigned freight units. Scheduling can be triggered for one or more selected freight orders and is based on your settings in the planning profile (see [Planning Profile \[Page 689\]](#)).

Prerequisites

You have made the following settings in the planning profile:

- You have specified loading and unloading durations for your freight units. If you do not do so, the system sets the loading and unloading durations for your freight units to 0.
- You have specified if the system is to consider requested or acceptable pick-up and delivery dates for your freight units.
- You have specified if you want to use scheduling in a forward or in a backward direction. By default, the system uses forward scheduling.

Features

Forward and Backward Scheduling

You can use scheduling in a forward or in a backward direction:

- In forward scheduling, the system first defines the start and end time of the *first* activity to be scheduled. Afterwards, the system assigns start and end times for all succeeding activities.
- In backward scheduling, the system first defines the start and end time of the *last* activity to be scheduled. Afterwards, the system assigns start and end times for all preceding activities.

For both types of scheduling, the system tries to schedule the activities with as little idle time (in?)between (the individual activities) as possible. Equally, the system considers the coupling and uncoupling of trucks and trailers. In this case, the systems considers the coupling of the trailer to a vehicle and the loading of a freight unit into the trailer as separate activities.

Constraints

Scheduling considers the following constraints:

- Time windows for loading and unloading activities for your freight units
- Loading and unloading durations of your freight units
- Appointments for the freight order your freight units are assigned to
- Location sequence of your freight order
- Existing freight orders on resources

Note

This does not apply to multiresources.

End of the note.

- Coupling and uncoupling durations
- Calendar resources as well as the calendars and capacities for the loading and unloading activities of handling resources
- Calendars of the involved vehicle resources for loading, unloading, transportation, coupling and uncoupling activities
- Minimum and maximum goods wait times defined for transshipment locations

Additionally, you can specify specific scheduling constraints such as working times. For more information, see Customizing for *Transportation Management* under ► *Planning* ► *General Settings* ► *Define Scheduling Constraints* ▶.

Scheduling in the Freight Order User Interface

If you start scheduling from the user interfaces for freight orders, the system calculates the planned dates for your freight orders. You can select the scheduling direction either in the freight order or in the planning profile.

For the scheduling of freight orders, you have the following options:

- Scheduling based on the planning profile

With this option, the system determines the scheduling direction based on the planning profile. If you have not defined a planning profile, the system uses forward scheduling by default.

- Forward scheduling

With this option, the system uses forward scheduling irrespective of the planning profile. If you have specified a departure date/time, the system then fixes this and carries out forward scheduling starting from this date. In doing so, the system always refers to the current transportation stop.

- Backward scheduling

With this option, the system uses backward scheduling irrespective of the planning profile. If you have specified an arrival date/time, the system then fixes this and carries out backward scheduling starting from this date. In doing so, it always relates to the last transportation stop, meaning the destination location.

Activities

To start scheduling, you have the following options:

- You can start scheduling from the transportation cockpit by choosing *Scheduling* in the transportation cockpit areas for freight orders and transportation units in SAP NetWeaver Business Client under ► *Planning* ► *Planning* ► *Transportation Cockpit* ▶.

- You can start scheduling from the user interfaces for freight orders by choosing *Scheduling* and then selecting one of the options listed above. For more information, see [Scheduling of Freight Orders](#).
- If you have activated the user parameter `/SCMTMS/SCH_FORCE`, you can start scheduling automatically by entering the departure date of a freight order and pressing **ENTER**. Here, you can choose between the following options:
 - *X* activates this function for freight orders on all user interfaces in SAP NetWeaver Business Client where you can use scheduling.
 - *P* activates this function for freight orders in the transportation cockpit only.

Example

Forward Scheduling

Customer A orders 50 pallets of product X. Customer A asks for a delivery date in three weeks. Currently, the capacity of your depot is 100 m³. Product X takes up 95 m³ of your depot. Therefore, you decide to move the goods out of your depot as soon as possible in order to minimize your inventory. That is why you decide to use forward scheduling.

Backward Scheduling

Customer B orders 50 pallets of product Y. Customer B asks for a delivery date in three weeks. Currently, the capacity of your depot is 100 m³. Product Y takes up 5 m³ of your depot. Therefore, you decide to stick to the delivery time window as closely as possible. That is why you decide to use backward scheduling.

More Information

SAP Note [1908165](#)



Consideration of Scheduling Constraints

You can use this function to consider constraints for scheduling during VSR optimization. This allows VSR optimization to, for example, extend the transportation plans with long trip durations so that a driver can take his required breaks.

The system also considers the scheduling constraints during scheduling (manual planning).



Example

A truck would require two days for a trip from the east coast to the west coast of the United States. However, since the driver must take breaks along the way, a longer trip duration must be scheduled.

End of the example.

Constraints:

- No legal regulations are delivered with this function.
- The aim of this function is *not* to map legal regulations. It only allows VSR optimization to add breaks to the transportation plan that give the driver a sufficient buffer and allow him to take the required breaks.
- This function only applies for vehicle resources. Passive vehicle resources and schedules are not supported.

Prerequisites

- You have defined constraints for scheduling in Customizing. These constraints represent your rules. You combine several constraints in one set. You can assign this set to one or more means of transport. For more information, see Customizing for Transportation Management under ► *Planning* ► *General Settings* ► *Define Scheduling Constraints* ▶.
- You have defined the duration of the activities:
 - Transportation
You define this duration in the transportation lane. To do so, on the SAP Easy Access screen, choose ► *Transportation Management* ► *Master Data* ► *Transportation Network* ► *Define Transportation Lane* ▶.
 - Loading/Unloading
You define this duration in the planning profile. You can do so in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *Planning* ► *Planning Profiles* ► *Edit Planning Profile* ▶.
 - Coupling/Uncoupling
You define this duration in Customizing. For more information, see Customizing for Transportation Management under ► *Master Data* ► *Resources* ► *Define Coupling/Uncoupling Duration* ▶.

Features

Fixed and Rolling Constraints

For fixed constraints, you define the exact start time of the rule.



Example

Example 1: You want to specify that a driver is not to work more than 10 hours per day. In Customizing, you first define an activity group "Work". You define work as driving, coupling, and uncoupling. You therefore assign the activity types "transport" and "coupling/uncoupling" to your activity group. If a transportation plan consists of more than 11 hours per day, VSR optimization extends it to the next day by adding a break.

Example 2: You want to specify that a driver may only spend a maximum of 8 hours behind the wheel. In this case, you define an activity group "steering" in Customizing and assign the activity type "transportation". If the transportation plan takes longer than 8 hours per day, VSR optimization extends it to the next day by adding a break.

End of the example.

For rolling constraints, you do not define a start time of the rule. This means that the rule must be valid at any given time on the time axis.



Example

You specify that a truck may drive a maximum of 4 hours within 5 hours. However, you do not define when these 5 hours begin. This rule must therefore be valid for any 5-hour segment on the time axis. If an activity takes longer, VSR optimization also extends the transportation plan here.

End of the example.

Extending and Moving Activities

If the transportation plan is longer than the defined rule, VSR optimization extends or moves it (that is, the activities).



Example

Example 1: You have specified in Customizing that a truck may drive a maximum of eight hours per day. Now VSR optimization is to schedule an activity with 10 hours. In this case, VSR optimization extends the transportation plan. This means it schedules eight hours on the first day, adds a break, and schedules the remaining two hours on the following day.

Example 2: In Customizing, you have specified that only eight hours may be planned for activities per day. VSR optimization is now to schedule two activities of a freight order, each of five hours. In this case, VSR optimization schedules the first activity on the first day. It schedules the second activity with three hours on the first day, and it moves the remaining two hours to the next day.

End of the example.

In the result of the VSR optimization run, however, you cannot see where VSR optimization places the breaks. You can only see that the activities took longer than the durations that you defined.

Context Determination

VSR optimization considers the constraints for the scheduling per resource, not per freight order. Freight orders that VSR optimization determines as context, as well as fixed freight orders, do not lead to a preassignment.



Example

VSR optimization schedules two freight orders for one truck, each with six hours, one after the other. You have specified in Customizing that the truck may drive a maximum of eight hours per day. In this case, VSR optimization extends the second freight order, that is, it adds a break. If the first freight order was determined as context, however, VSR optimization does not extend the second freight order.

End of the example.

Activities

If you do not want to consider the scheduling constraints in manual planning (scheduling), in the transportation cockpit, choose *Edit Planning Settings* and select the corresponding checkbox.



Load Planning

You can plan the loading space of box trucks, trailers, semi-trailers, and containers in the transportation cockpit or directly in one of the following business documents:

- Road freight order
- Trailer unit
- Container unit

Planning is carried out at the level of business document items.



Note

Load planning returns an approximate calculation of how the available loading space can be optimally used, taking into account the maximum axle loads and the maximum weight of a vehicle resource. The calculation is based on the master data that you enter for the resource. It is essential that you check the results calculated during load planning.

End of the note.

Prerequisites

- You have installed SAP Visual Business. For more information about SAP Visual Business, see SAP Library for SAP Visual Business on SAP Help Portal under ► <http://help.sap.com> ► SAP NetWeaver ► SAP Visual Business 2.1 ▶.
- You have entered master data for the resources such as the height, width, and length of the loading space. For more information about the master data for load planning, see [Master Data in Load Planning \[Page 827\]](#).
- You have specified in the business document the height, width, and length of the items to be planned.

To define the dimensions of a freight order item in the *forwarding order*, choose ► *Forwarding Order Management* ► *Forwarding Order* ► *Edit Forwarding Order* ▶ in SAP NetWeaver Business Client. In the item hierarchy on the *Cargo* tab page, you can enter various package details such as the height, width or length for each package.

To define the dimensions of a freight order item in the *freight order*, choose ► *Freight Order Management* ► *Road* ► *Edit Road Freight Order* ▶ in SAP NetWeaver Business Client. In the item hierarchy on the *Freight* tab page, you can enter various package details such as the height, width or length for each package.

To define the dimensions of an item in the *container unit*, choose ► *Planning* ► *Mode-Independent* ► *Edit Container Unit* ▶ in SAP NetWeaver Business Client. In the item hierarchy on the *Cargo* tab page, you can enter various package details such as the height, width or length for each package.

To define the dimensions of an item in the *trailer unit*, choose ► *Planning* ► *Trailer Unit* ► *Edit Trailer Unit* ▶ in SAP NetWeaver Business Client. In the item hierarchy on the *Cargo* tab page, you can enter various package details such as the height, width or length for each package.

Alternatively, you can define the dimensions of a business document item in the transportation cockpit by using drag and drop to assign a freight unit to a business document. The system automatically copies the dimensions of the freight unit item to your business document.

- In the page layouts for the transportation cockpit, you have activated the following functions:
 - In the *Orders Area*, you have activated load planning for freight orders and freight bookings
 - In the *Area for Transportation Units*, you have activated load planning for container units and trailer units
 - In the *Order Details Area*, you have activated the display of the load plan

To edit page layouts for the transportation cockpit in SAP NetWeaver Business Client, choose Application Administration Planning General Settings Page Layouts Page Layouts for Transportation Cockpit . For more information, see [Use of Profile and Layout Sets \[Page 777\]](#).

Features

When you plan a road freight order on a box truck, trailer, or semi-trailer, the system takes into account capacity restrictions in terms of the height, width, length, and weight of the loading space. The same capacity restrictions also apply to the planning of a trailer unit on a trailer or semi-trailer. It also takes into account the maximum axle load of your box truck.

Furthermore, in the system you can add a split deck to your trailer or semi-trailer and consequently plan two decks.

When you plan a container unit on a container, the system also takes into account capacity restrictions in terms of the height, width, and length of the loading space as well as the total weight and the empty weight of the container.

In both the transportation cockpit and in the freight order, you can check the results of load planning as a 3D load plan or a table load plan in the form of a list of business document items. In the 3D load plan, you can show or hide individual objects as well as entire rows, columns, or stacks. The systems also provides you with information about the current load distribution and utilization of the loading space.

More Information

[Master Data in Load Planning \[Page 827\]](#)

[Automatic Load Planning \[Page 831\]](#)

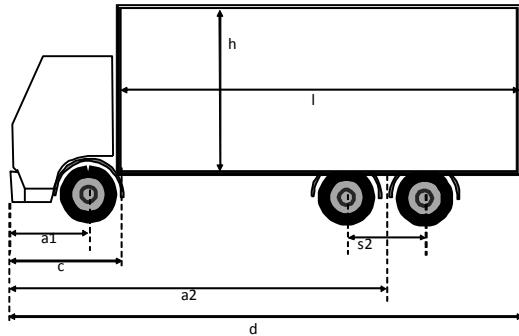
[Load Plan \[Page 855\]](#)

[Rules in Automatic Load Planning \[Page 833\]](#)



Master Data in Load Planning

You can enter various information about your vehicle resources in the master data for load planning. The figures below show a box truck and a trailer with some sample measurements:



Box Truck

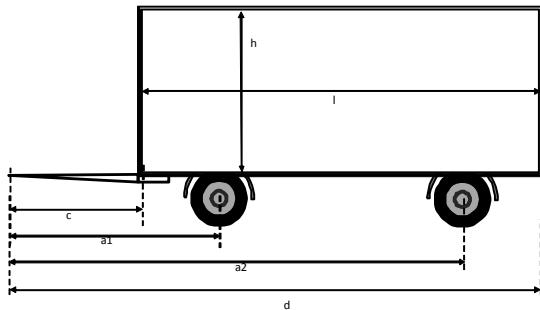
The following table explains the measurements from the figure above:

Measurement in Figure	Name in Master Data	Description
a1	Axle Group Distance 1	Distance between axle group 1 and the front of the box truck
c	Cargo Body Distance	Distance between the start of the loading space and the front of the box truck
a2	Axle Group Distance 2	Distance between axle group 2 and the front of the box truck
d	Connector Distance	Distance between the trailer coupling of the box truck and the front of the vehicle
s2	Distance Between Axles	Distance within axle group 2
h	Interior Height	Height of the loading space
l	Interior Length	Length of the loading space

Note

You must also specify the width of the box truck so that the system can include the loading space of the box truck in automatic load planning.

End of the note.



Trailer

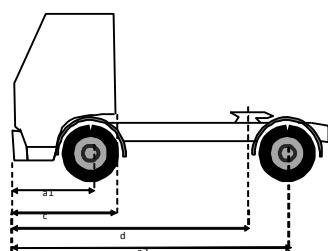
The following table explains the measurements from the figure above:

Measurement in Figure	Name in Master Data	Description
c	Cargo Body Distance	Distance between the start of the loading space and the front of the trailer
a1	Axle Group Distance 1	Distance between axle group 1 and the front of the trailer
a2	Axle Group Distance 2	Distance between axle group 2 and the front of the trailer
d	Connector Distance	Distance between the trailer coupling of the trailer and the end of the trailer
h	Interior Height	Height of the loading space
l	Interior Length	Length of the loading space

Note

You must also specify the width of the trailer so that the system can include the loading space of the trailer in automatic load planning.

End of the note.



Tractor

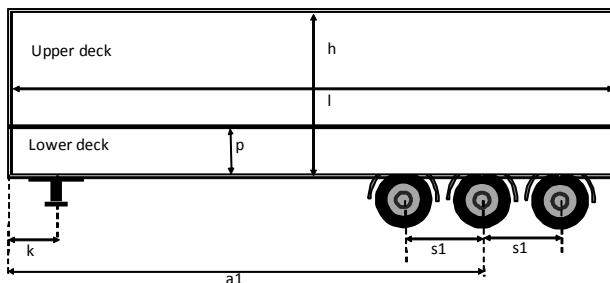
The following table explains the measurements from the figure above:

Measurement in Figure	Name in Master Data	Description
c	Cargo Body Distance	<p>Distance between the start of the loading space and the front of the tractor</p> <p>i Note</p> <p>Since a tractor does not have any loading space, <i>Cargo Body Distance</i> designates the length of the driver's cab as the start of the loading space.</p> <p>End of the note.</p>
a1	Axle Group Distance 1	Distance between axle group 1 and the front of the tractor
a2	Axle Group Distance 2	Distance between axle group 2 and the front of the tractor
d	Connector Distance	Distance between the tractor coupling and the front of the vehicle

i Note

You must also specify the width of the tractor so that the system can display the tractors in the 3D load plan.

End of the note.



Semi-Trailer

The following table explains the measurements from the figure above:

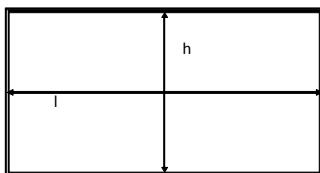
Measurement in Figure	Name in Master Data	Description
a1	Axle Group Distance 1	Distance between axle group 1 and the front of the trailer
s1	Distance Between Axles	Distance within axle group 1

Measurement in Figure	Name in Master Data	Description
k	King Pin Distance	Distance between the king pin and the front of the trailer
h	Interior Height	Height of the loading space
l	Interior Length	Length of the loading space
p	Split Deck Position	Position in the trailer at which you have added the split deck

 Note

You must also specify the width of the semi-trailer so that the system can include the loading space of the semi-trailer in automatic load planning.

End of the note.



Container

The following table explains the measurements from the figure above:

Measurement in Figure	Name in Master Data	Description
h	Interior Height	Height of the loading space
l	Interior Length	Length of the loading space

 Note

You must also specify the width of the container so that the system can include the loading space of the container in automatic load planning.

End of the note.

Activities

To define this and other master data, in SAP NetWeaver Business Client choose  **Master Data**  **Resources**  **Define Resources**.

Alternatively, on the SAP Easy Access screen choose  **Transportation Management**  **Master Data**  **Resources**  **Define Resources**.



Automatic Load Planning

In automatic load planning, also known as load optimization, the load optimizer creates a load plan for your business document. When it does so, it takes into account capacity restrictions in terms of the height, width, and length of the loading space as well as the weight. For vehicle resources with two axle groups, it also takes into account the maximum axle load.

Prerequisites

- You have created master data for the resources for which you want to optimize the load. For more information about the master data for load planning, see [Master Data in Load Planning \[Page 827\]](#).
- You have defined the master data for load optimization, for example, the network connections to the optimization server and the maximum number of users. You can do so in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *General Settings* ► *Remote Control and Communication Framework* ► *Settings* ► *Edit Destinations* ▶.
- You have created a planning profile (see [Planning Profile \[Page 689\]](#)) and have assigned the following settings to it:
 - Settings for load optimization

You have specified the strategy that you want to use for load planning. You can do so in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *Planning* ► *Planning Profile Settings* ► *Load Planning Settings* ▶. Here you can also define various rules for load optimization. For example, you can specify the maximum difference in height between two adjacent stacks or define a loading pattern (see [Rules in Automatic Load Planning \[Page 833\]](#)). You can also specify the optimizer runtime here.
 - Capacity selection settings

You can do so in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *Planning* ► *Planning Profile Settings* ► *Capacity Selection Settings* ▶.
- For more prerequisites, see [Interactive Planning \[Page 774\]](#).

Features

You can start automatic load planning from the transportation cockpit or directly in a business document. You can check the results of automatic load planning in a 3D load plan or in a table load plan containing a list of all the planned items. For more information, see [Load Plan \[Page 855\]](#).

If automatic load planning was successful, the system automatically sets the *Handling Execution Status* in the business document to *Load Plan Up-to-Date*. If some items cannot be planned due to reasons of capacity, the system automatically sets the status to *Load Plan Partially Up-to-Date*. For more information, see [Explanation of Statuses of Business Documents \[Page 614\]](#).

You can use the explanation tool for automatic load planning to compare your entries for automatic load planning with the results of the load optimization run. You can also use the explanation tool to view information on the current status of a load optimization run. For example,

you can view the actual axle load of your box truck and trailer or your tractor and semi-trailer based on the business document items that were previously planned. For more information, see [Explanation Tool \[Page 815\]](#).

Activities

To start automatic load planning in the transportation cockpit choose *Load Planning*.

To start automatic load planning from a business document, choose ► *Follow-Up Actions*
► *Perform Load Planning* ▶.

To start automatic load planning from your worklist, select the business document to be planned and choose *Perform Load Planning*.

You can call the explanation tool for automatic load planning using transaction `RCC_LOG`.



Rules in Automatic Load Planning

In automatic load planning, you can define rules to be considered by the system during a load optimization run. You can choose between the following types of rules:

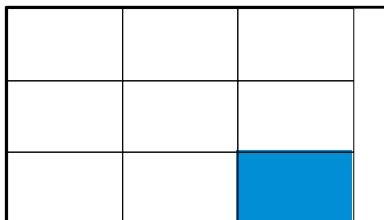
- Rules that apply to automatic load planning for all resource types. For more information, see [Load Planning Rules Independent of the Resource Type \[Page 839\]](#).
- Rules that apply only to the automatic load planning of box trucks. For more information, see [Rules for the Load Planning of Box Trucks \[Page 842\]](#).
- Rules that apply only to the automatic load planning of trailers and semi-trailers. For more information, see [Rules for the Load Planning of Trailers \[Page 844\]](#).
- Rules that apply only to the automatic load planning of the upper decks of double-deck trailers. For more information, see [Rules for the Load Planning of Upper Decks \[Page 849\]](#).

You can define different rules for the lower and upper deck of double-deck trailers.

Structure

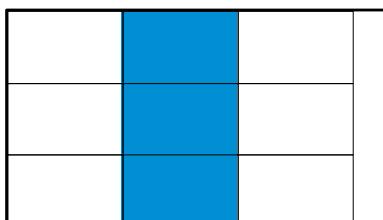
The combination of stack, row, and line indicates the exact position of each package loaded onto the resource.

The figures below show the meaning of the terms "stack", "row", and "line" in automatic load planning when viewed from above.



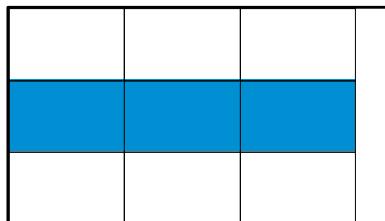
Stack

This figure shows several packages that are loaded onto the resource *one above the other*. In automatic load planning, these packages form a stack.



Row

This figure shows several packages that are loaded onto the resource *next to each other* from left to right. In automatic load planning, these packages form a row. The first row of a deck is always towards the start of the loading space.



Line

This figure shows several packages that are loaded onto the resource *one behind the other* from front to back. In automatic load planning, these packages form a line. The first line of a deck is always on the left side of the deck in the direction of travel.

Features

In your rules you can specify a combination of loading pattern and orientation for each row of your vehicle resource. The system considers this combination during a load optimization run.

Loading Pattern

You can define different loading patterns for each vehicle resource that apply to the entire resource. You can define different loading patterns for the upper and lower deck of a double-deck trailer that both apply to the entire deck. Alternatively, you can define rules for each resource that apply only to one adjacent row or to several adjacent rows.

When you define the rules for automatic load planning, you can select the following loading patterns:

- S (straight)

This loading pattern comprises only packages that are loaded onto the resource straight.

- T (turned)

This loading pattern comprises only packages that are loaded onto the resource turned.

- E

This loading pattern comprises the combination of several same-sized packages that are loaded straight and several same-sized packages that are loaded turned. The straight and turned packages sit flush at the end of the loading pattern. In loading pattern E, the packages that are loaded straight are on the *left* of the packages that are loaded turned.

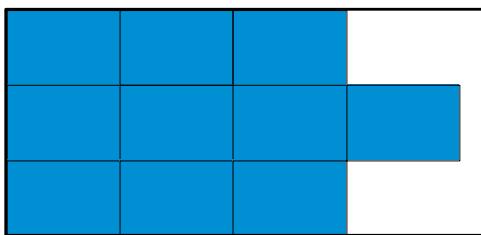
- F

This loading pattern comprises the combination of several same-sized packages that are loaded straight and several same-sized packages that are loaded turned. The straight and turned packages sit flush at the end of the loading pattern. In loading pattern F, the packages that are loaded straight are on the *right* of the packages that are loaded turned.

- P (pinwheel)

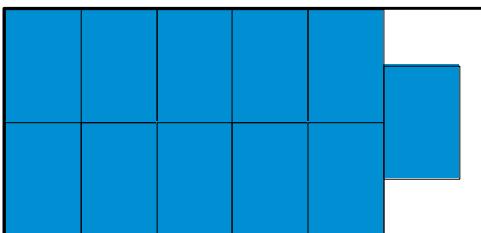
This loading pattern comprises a total of four same-sized packages that are loaded straight and turned in alternation so that they form a square with a small area that is free in the middle. As such, the shape of this loading pattern is similar to a chimney or a pinwheel.

The following figures show examples of the different loading patterns. In each of the selected examples, the loading pattern applies to the entire resource or the entire deck. The orientation of the packages is always centered.



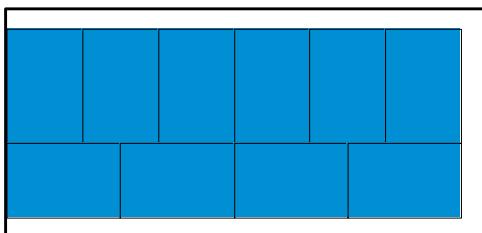
Loading Pattern S

This figure shows how all packages are loaded onto a resource in each row straight.



Loading Pattern T

This figure shows how all packages are loaded onto a resource in each row turned.

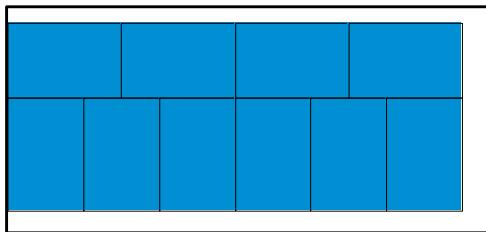


Loading Pattern E

This figure shows how all packages are loaded onto a resource in line 1 straight and in line 2 turned. Loading pattern E always comprises several same-sized packages in line 1 that are loaded straight and several same-sized packages in line 2 that are loaded turned. The straight

and turned packages sit flush at the end of a loading pattern. The loading pattern E is shown twice in this figure.

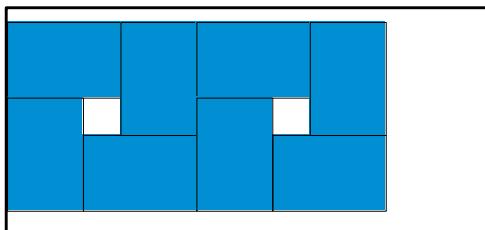
Depending on the resource type, you have to enter the following formula in the corresponding rule to get the loading pattern shown in this figure: E; E



Loading Pattern F

This figure shows how all packages are loaded onto a resource in line 1 turned and in line 2 straight. Loading pattern F always comprises several same-sized packages in line 1 that are loaded turned and several same-sized packages in line 2 that are loaded straight. The straight and turned packages sit flush at the end of a loading pattern. The loading pattern F is shown twice in this figure.

Depending on the resource type, you have to enter the following formula in the corresponding rule to get the loading pattern shown in this figure: F; F



Loading Pattern P

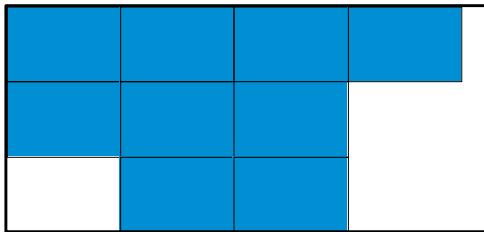
This figure shows how four same-sized packages are loaded onto a resource straight and turned in alternation so that they form a square with a small area that is free in the middle. As such, the shape of this loading pattern is similar to a chimney or a pinwheel.

Orientation

You can define each of these loading patterns with a specific orientation for all packages that are loaded in a row onto the resource. You can choose the following orientations:

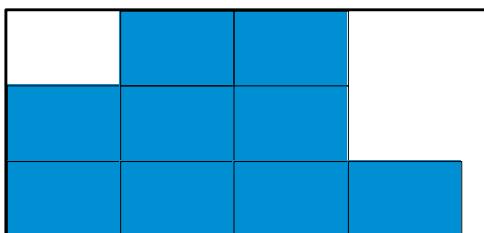
- R - right
- L - left
- C - centered
- D - distributed

The following figures show examples of the different orientations. In each of the selected examples, the orientation always applies to the entire resource or the entire deck.



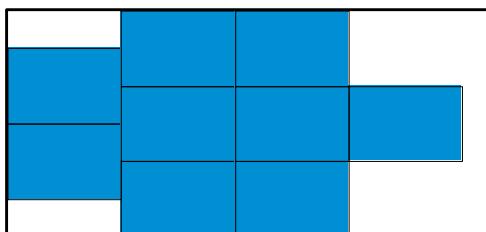
Orientation R

This figure shows how all packages are oriented on a resource in each row on the right in the direction of travel.



Orientation L

This figure shows how all packages are oriented on a resource in each row on the left in the direction of travel.



Orientation C

This figure shows how all packages are centered on a resource. If you do not enter any other orientation, during a load optimization run the system plans all packages on the resource with orientation C.



Orientation D

This figure shows how all packages are distributed across the row on a resource.

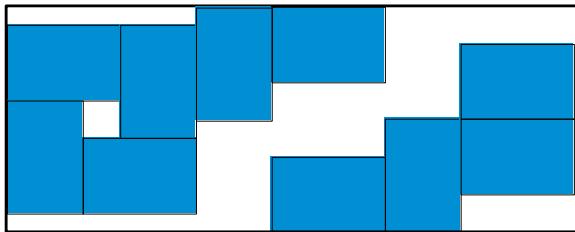
Activities

To define rules for your load optimization run, in SAP NetWeaver Business Client choose **Application Administration > Planning > Planning Profile Settings > Load Planning Settings**.

To define a specific combination of loading pattern and orientation for the individual rows of a deck, insert a semicolon in the corresponding rules after each combination of loading pattern and orientation. This means that the first combination always relates to the first row of the deck.

Example

This figure shows the result of a load optimization run using a rule that comprises different combinations of loading pattern and orientation for a single deck:



Example

You have to define the following rule to get the loading pattern shown in this figure: PC; TR; SSD; TL; SSC.



Load Planning Rules Independent of the Resource Type

You can define the following rules for load optimization runs independent of the resource type.

Features

Load Planning Rules Independent of the Resource Type		
Number	Explanation	Comment
1000	Ascending stacking height in direction of travel	You cannot combine this rule with rule 1001.
1001	Descending stacking height in direction of travel	You cannot combine this rule with rule 1000.
1100	Maximum height difference of adjacent stacks	You cannot combine this rule with rules 1101 and 1102.
1101	Maximum height difference of stacks within a row	You cannot combine this rule with rule 1100.
1102	Maximum height difference of stacks within a line	You cannot combine this rule with rule 1100.
2000	Penalty for packages that cannot be loaded based on weight instead of volume	<p>You cannot combine this rule with rule 2001.</p> <p> Note</p> <p>If you do not define a rule to determine the penalty for not loading packages, the system automatically calculates penalties based on the volume of the packages that were not loaded.</p> <p>End of the note.</p>
2001	Penalty for packages that cannot	You cannot combine this rule with rule 2000.

Load Planning Rules Independent of the Resource Type		
Number	Explanation	Comment
	be loaded based on weight x volume (instead of volume only)	<p> Note If you do not define a rule to determine the penalty for not loading packages, the system automatically calculates penalties based on the volume of the packages that were not loaded. End of the note.</p>
2100	Packages with high density must be at bottom of stack	<p>You cannot combine this rule with rule 2101.</p> <p> Note If you do not define a rule for the stacking of packages, the system considers only the weight of each package when it builds stacks. If the maximum weight that can be loaded in a specific package falls below the results of a load optimization run using these rules, the system does not consider this rule for the package in question. End of the note.</p>
2101	Packages can be positioned anywhere in stack regardless of weight and density	<p>You cannot combine this rule with rule 2100.</p> <p> Note If you do not define a rule for the stacking of packages, the system considers only the weight of each package when it builds stacks. If the maximum weight that can be loaded in a specific package falls below the results of a load optimization run using these rules, the system does not consider this rule for the package in question. End of the note.</p>
2150	Ignore LIFO principle (last in, first out)	You can use this rule to bypass the application of the LIFO principle during automatic load planning, otherwise the load optimizer always applies this rule when you plan packages on a resource.
2200	Maximum weight per stack	In the case of a double-deck trailer, the maximum weight per stack that you define here applies to both decks. You can define an alternative maximum weight for the upper deck of your double-deck trailer in rule 2201.
3000	Left-right weight balance: maximum deviation from center of cargo body (in percent)	Any deviations that are greater than the value defined in this rule are liable to penalties.

Load Planning Rules Independent of the Resource Type		
Number	Explanation	Comment
4000	U.S. Federal Bridge Formula	In the Federal Bridge Formula, the U.S. government defines specific rules that have to be considered for road transportation in the United States. For more information, see http://ops.fhwa.dot.gov/freight/publications/brdg_frm_wghts/index.htm .



Rules for the Load Planning of Box Trucks

You can define the following rules for the load optimization runs for box trucks.

Features

Number	Explanation	Comment
9000	Truck: Load all packages with same loading pattern	<p>The combination of loading pattern and orientation that you define in this rule applies to your entire box truck.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none">• 9010• 9051• 9055
9010	Truck: Load all packages with a loading pattern specific to each stack and row	<p>In this rule you can define a specific combination of loading pattern and orientation for each row of your box truck.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none">• 9000• 9051• 9055
9051	Truck: Load all packages in first row turned	<p>If you use this rule for your automatic load planning, the system turns all packages in the first row in your box truck regardless of your remaining loading patterns.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none">• 9000• 9010• 9055
9055	Truck: Load all packages in last row turned	<p>If you use this rule for your automatic load planning, the system turns all packages in the last row in your box truck regardless of your remaining loading patterns.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none">• 9000• 9010• 9051



Rules for the Load Planning of Trailers

You can define the following rules for the load optimization runs for trailers. These rules apply to both semi-trailers and normal trailers.



Note

If you are planning a double-deck trailer and you have defined alternative rules for the upper deck, the rules listed here apply to the lower deck only.

End of the note.

Features

Number	Explanation	Comment
9001	Trailer: Load all packages with same loading pattern	<p>The combination of loading pattern and orientation that you define in this rule applies to your entire trailer.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none">• 9011• 9022• 9032• 9023• 9024• 9025• 9026• 9052• 9056
9011	Trailer: Load all packages with a loading pattern specific to each stack and row	<p>In this rule you can define a specific combination of loading pattern and orientation for each row of your trailer.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none">• 9001• 9021• 9022• 9023• 9024

Number	Explanation	Comment
		<ul style="list-style-type: none"> • 9025 • 9026 • 9052 • 9056
9021	Trailer: Load all packages in each row turned	<p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none"> • 9001 • 9011 • 9022 • 9023 • 9024 • 9025 • 9026 • 9052 • 9056
9022	Trailer: Load all packages in each row straight; if not enough space turn packages in first rows	<p>If you use this rule for your automatic load planning, the system plans all packages in your trailer in straight rows. If there is not enough space for other straight rows, the system turns the remaining packages in the first rows of the trailer.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none"> • 9001 • 9011 • 9021 • 9023 • 9024 • 9025 • 9026 • 9052 • 9056

Number	Explanation	Comment
9023	<p>Trailer: Load all packages in each row straight; if not enough space turn packages in last rows</p>	<p>If you use this rule for your automatic load planning, the system plans all packages in your trailer in straight rows. If there is not enough space for other straight rows, the system turns the remaining packages in the last rows of the trailer.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none"> • 9001 • 9011 • 9021 • 9022 • 9024 • 9025 • 9026 • 9052 • 9056
9024	<p>Trailer: Load all packages in each row straight</p>	<p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none"> • 9001 • 9011 • 9021 • 9022 • 9023 • 9025 • 9026 • 9052 • 9056
9025	<p>Trailer: Load all packages in each row turned; if not enough space load all packages in first rows straight</p>	<p>If you use this rule for your automatic load planning, the system turns all packages in your trailer. If there is not enough space for other turned rows, the system plans the remaining packages in the first rows of the trailer in straight rows.</p> <p>You cannot combine this rule with the following rules:</p>

Number	Explanation	Comment
		<ul style="list-style-type: none"> • 9001 • 9011 • 9021 • 9022 • 9023 • 9024 • 9026 • 9052 • 9056
9026	<p>Trailer: Load all packages in each row turned; if not enough space load all packages in last rows straight</p>	<p>If you use this rule for your automatic load planning, the system turns all packages in your trailer. If there is not enough space for other turned rows, the system plans the remaining packages in the last rows of the trailer in straight rows.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none"> • 9001 • 9011 • 9021 • 9022 • 9023 • 9024 • 9025 • 9052 • 9056
9052	<p>Trailer: Load all packages in first row turned</p>	<p>If you use this rule for your automatic load planning, the system turns all packages in the first row in your trailer regardless of your remaining loading patterns.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none"> • 9001 • 9011

Number	Explanation	Comment
		<ul style="list-style-type: none"> • 9021 • 9022 • 9023 • 9024 • 9025 • 9026 • 9056
9056	Trailer: Load all packages in last row turned	<p>If you use this rule for your automatic load planning, the system turns all packages in the last row in your trailer regardless of your remaining loading patterns.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none"> • 9001 • 9011 • 9021 • 9022 • 9023 • 9024 • 9025 • 9026 • 9052



Rules for the Load Planning of Upper Decks

Features

You can define the following rules for the load optimization runs for the upper decks of double-deck trailers.

Rules for the Load Planning of Trailer Upper Decks		
Number	Explanation	Comment
2201	Maximum weight per stack on the upper deck	You can use this rule to define a maximum weight per stack for the upper deck of your double-deck trailer that differs from the maximum weight per stack for the lower deck of your double-deck trailer that you defined in rule 2200.
2211	Maximum weight per row on the upper deck	The maximum weight per row for the trailer upper deck does not apply to rows that are part of the loading patterns P, E, and F.
2221	Maximum weight per stack in the middle of a row on the upper deck	This rule applies only to rows with at least three stacks. The rule does <i>not</i> apply to rows that are part of the loading patterns P, E, and F. If you combine this rule with rule 2201, the system considers the lower of the two specified maximum weights.
9002	Trailer upper deck: Load all packages with same loading pattern	The combination of loading pattern and orientation that you define in this rule applies to the entire upper deck of your double-deck trailer. You cannot combine this rule with the following rules: <ul style="list-style-type: none">• 9012• 9031• 9032• 9033• 9034• 9035• 9036• 9053• 9057
9012	Trailer upper deck: Load all packages with a loading	In this rule you can define a specific combination of loading pattern and orientation for each row of the upper

Rules for the Load Planning of Trailer Upper Decks		
Number	Explanation	Comment
	pattern specific to each stack and row	<p>deck of your double-deck trailer.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none"> • 9002 • 9031 • 9032 • 9033 • 9034 • 9035 • 9036 • 9053 • 9057
9031	Trailer upper deck: Load all packages in each row turned	<p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none"> • 9002 • 9012 • 9032 • 9033 • 9034 • 9035 • 9036 • 9053 • 9057
9032	Trailer upper deck: Load all packages in each row straight; if not enough space turn packages in first rows	<p>If you use this rule for your automatic load planning, the system plans all packages on the upper deck of your double-deck trailer in straight rows. If there is not enough space for other straight rows, the system turns the remaining packages in the first rows of the upper deck.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none"> • 9002 • 9012

Rules for the Load Planning of Trailer Upper Decks		
Number	Explanation	Comment
		<ul style="list-style-type: none"> • 9031 • 9033 • 9034 • 9035 • 9036 • 9053 • 9057
9033	<p>Trailer upper deck: Load all packages in each row straight; if not enough space turn packages in last rows</p>	<p>If you use this rule for your automatic load planning, the system plans all packages on the upper deck of your double-deck trailer in straight rows. If there is not enough space for other straight rows, the system turns the remaining packages in the last rows of the upper deck.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none"> • 9002 • 9012 • 9031 • 9032 • 9034 • 9035 • 9036 • 9053 • 9057
9034	<p>Trailer upper deck: Load all packages in each row straight</p>	<p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none"> • 9002 • 9012 • 9031 • 9032 • 9033 • 9035

Rules for the Load Planning of Trailer Upper Decks		
Number	Explanation	Comment
		<ul style="list-style-type: none"> • 9036 • 9053 • 9057
9035	<p>Trailer upper deck: Load all packages in each row turned; if not enough space load all packages in first rows straight</p>	<p>If you use this rule for your automatic load planning, the system turns all packages on the upper deck of your double-deck trailer. If there is not enough space for other turned rows, the system plans the remaining packages in the first rows of the upper deck in straight rows.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none"> • 9002 • 9012 • 9031 • 9032 • 9033 • 9034 • 9036 • 9053 • 9057
9036	<p>Trailer upper deck: Load all packages in each row turned; if not enough space load all packages in last rows straight</p>	<p>If you use this rule for your automatic load planning, the system turns all packages on the upper deck of your double-deck trailer. If there is not enough space for other turned rows, the system plans the remaining packages in the last rows of the upper deck in straight rows.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none"> • 9002 • 9012 • 9031 • 9032 • 9033 • 9034 • 9035

Rules for the Load Planning of Trailer Upper Decks		
Number	Explanation	Comment
		<ul style="list-style-type: none"> • 9053 • 9057
9053	Trailer upper deck: Load all packages in first row turned	<p>If you use this rule for your automatic load planning, the system turns all packages in the first row of the upper deck of your double-deck trailer regardless of your remaining loading patterns.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none"> • 9002 • 9012 • 9031 • 9032 • 9033 • 9034 • 9035 • 9036 • 9057
9057	Trailer upper deck: Load all packages in last row turned	<p>If you use this rule for your automatic load planning, the system turns all packages in the last row of the upper deck of your double-deck trailer regardless of your remaining loading patterns.</p> <p>You cannot combine this rule with the following rules:</p> <ul style="list-style-type: none"> • 9002 • 9012 • 9031 • 9032 • 9033 • 9034 • 9035 • 9036 • 9053



Load Plan

The load plan is the result of load planning. It provides you with an overview of how the loading space available for transporting a business document is currently used. In both the transportation cockpit and in the business document, you can display the complete load plan as a 3D load plan or a table load plan of business document items. In the 3D load plan, you can show or hide individual objects as well as entire rows, columns, or stacks and fill with different colors. Furthermore, you can show and hide gridlines in your decks in the 3D load plan.

The load plan contains the following information about the business document item:

- Resource
- Item in the resource
- Loading sequence
- Row, stack, and level in the loading space
- Gross weight
- Height, width, and length
- Stackability

You also get information about the load distribution as well as additional statistical data about the current load on separate tab pages. This includes the following:

- Number of loaded business document items
- Used area on the lower deck of your double-deck trailer
- Utilization of the loading volume in percent
- Used area on the upper deck of your double-deck trailer
- Maximum weight for each axle group compared to the current weight for each axle group
- Maximum trailing load compared to the current trailing load



Determination of Direct Shipment Options

You can use this function to have direct shipment options for each carrier/service level combination determined when generating freight units. In this case, the freight units are not consolidated, but rather assigned directly to the carrier (LTL or FTL). This carrier/service level combination is also then shown as the LTL price, even if it is an FTL case without consolidation.

The VSR optimizer considers the most cost-effective LTL price to be the reference cost. If the VSR optimizer finds a consolidated solution with even lower costs during the comparison, it uses this one. If the LTL price is lower, you can convert the freight unit to a freight order automatically, manually, or by using a background report.

Alternatively, you can use this function for scenarios in which a carrier transports products from a shipping point to several consignees. One example of this is the parcel shipment process. The system can automatically determine the direct shipment options for freight units and then assign the freight units to a suitable freight order that meets the requirements in terms of the source location, carrier, and pick-up date. For more information, see [Parcel Shipment](#).

Constraints:

- The LTL price is determined and saved for the entire transportation chain of the freight unit, and not on the level of the stage. For this reason, this function does not support scenarios in which an LTL decision is made for one stage and FTL is used for a second stage. For such scenarios, a separate FTL freight order must be generated and the LTL price is not transferred to the VSR optimizer.
- LTL prices are determined for a freight unit. If a consolidated LTL price is different from the sum of the FTL prices for a freight unit, it is not taken into account. It is therefore important for you to define and use the appropriate freight unit building rules.



Note

The costs for the direct shipment come from charge management.

However, since the costs in VSR optimization do not usually correspond to the actual costs, but rather only represent an option for controlling the result of the optimization run, you have to select the costs for the direct shipment in such a way that they are comparable to the costs used by VSR optimization.

End of the note.

Prerequisites

- You have defined the carrier selection settings and specified there that they are to be used to determine the direct shipment options. To define the carrier selection settings, in SAP NetWeaver Business Client choose Application Administration Planning Planning Profile Settings Carrier Selection Settings Create Carrier Selection Settings .
- In Customizing for your freight unit type, you have made the following settings:
 - You have assigned your freight unit type to the carrier selection settings previously defined.
 - You have optionally assigned a strategy for determining carrier selection settings to your freight unit type. The system first evaluates the condition (if available). If

this condition does not return a result or if no condition exists, the system uses the carrier selection settings you assigned to your freight unit type.

- You have assigned a strategy for determining direct shipment options to your freight unit type. You use this strategy to specify that the system is to continue processing the freight units automatically once it has determined the direct shipment options.
- In the *DSO Result Rule* field for your freight unit type, you have specified how the system is to continue processing freight units for which it has determined direct shipment options. The following options are available:
 - The system converts the freight units into freight orders for direct shipments.
 - The system assigns the freight units to a freight order that meets the requirements in terms of source location, carrier, and pick-up date. If the system cannot find a suitable freight order, it creates a new one and copies the freight unit data and the direct shipment option to this order.
- You have assigned a freight order type (directly or using a condition) to your freight unit type.
- If you want the system to automatically recalculate the direct shipment options when relevant changes are made to the freight unit, in the *Type DirectShipOpt.* field (type of direct shipment options), choose the corresponding option.

For more information, see Customizing for *Transportation Management* under ► *Planning* ► *Freight Unit* ► *Define Freight Unit Types*.

- In the planning costs, you have defined a currency that is to be used when direct shipment options are determined. You can do so in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *Planning* ► *Planning Profile Settings* ► *Planning Costs Settings* ► *Create Planning Costs Settings*.

Features

The direct shipment options are determined based on process controller strategies *DSO_DEF* or *DSO_RESULT* as described in the following section. You can replace these strategies with your own strategies.

1. Execution of Carrier Selection

The system identifies a list of direct shipment options and carrier service products for each combination of carrier and service level. When doing so, it takes into account transportation lanes and freight agreements. The system considers incompatibilities based on your carrier selection settings.



Note

To restrict your results even further, you can define VSR incompatibility settings for incompatibilities between freight units and means of transport. In the carrier selection settings, you can specify that you want to use these settings for determining direct shipment options. Since the vehicle resource represents the means of transportation during the incompatibility determination (see [Incompatibilities \[Page 715\]](#)), you have to

create a dummy vehicle resource and define an incompatibility for it with the incompatibility type *FU-Vehicle Resource*.

End of the note.

2. Determination of Transit Durations

The system determines transit durations based on the duration determination type defined in the freight agreement of the corresponding carrier. The following duration determination types are supported:

- Duration determination based on conditions or freight agreements

Transit duration and calendar are either determined based on a condition (if a condition has been entered in the freight agreement), or taken directly from the freight agreement or the freight agreement type.
- Consideration of freight unit dates only

In this case, the transit duration results from the pickup and delivery dates at the transportation stops of the freight unit.
- Duration determination with external strategy

Transit duration and calendar are not determined and are part of an external scheduling (see next step). The name of the external strategy (see [External Strategies \[Page 1232\]](#)) is also contained in the freight agreement or the freight agreement type.

The result is a transit duration and calendar that are assigned to the freight unit.

3. Scheduling

The system performs scheduling based on the transit duration and calendar. The result is the earliest pickup date and the latest delivery date. The scheduling calculation depends on the duration determination type:

- Duration determination based on conditions or freight agreements

Backward scheduling is performed starting from the requested delivery date of the destination stop. Here the system considers the calendar of the source and destination location and the transit calendar.
- Consideration of freight unit dates only

Pickup and delivery dates correspond to the requested dates of the source and destination locations (transportation stops of the freight unit).
- Duration determination with external strategy

The external strategy defined in the freight agreement or the freight agreement type is called for the execution of an external scheduling. If an external strategy has not been entered, the process controller strategy `DSO_EXTSCH` is executed. It contains the method `DSO_EXTSCH`. You can replace it with your own method.

4. Any direct shipment options that have a pickup date that occurs before the pickup date of the freight unit are removed from the list of direct shipment options by the system. You can replace this step with your own implementations.

5. Selection of the most cost-effective direct shipment option

The system chooses the most cost-effective direct shipment option by selecting it. You can replace this step with your own implementations.

6. Postprocessing

Activities

On the user interface for freight units, you can display the direct shipment options that have been identified. To do so, choose *Planning* *Freight Unit* *Display Freight Unit* in SAP NetWeaver Business Client.

Depending on your Customizing settings, you can trigger the identification of direct shipment options manually from this user interface. You can also select direct shipment options here and convert freight units into freight orders for direct shipment or assign them to suitable freight orders.

Alternatively, you can schedule the conversion or assignment of freight units to run in the background. For more information, see [Processing of FUs for Direct Shipment \[Page 1249\]](#).



Note

In your personal object worklist for road freight orders and in the transportation cockpit, you can display the total of all selected DSO amounts for all freight units that are planned as part of a freight order. This amount specifies how high the costs would be if each freight unit were to be transported individually. The difference between the total amount and the amount calculated in the freight order indicates the potential savings in the case of consolidation.

End of the note.

More Information

[Process Controller Configuration \[Page 1229\]](#)

[Agreement \[Page 970\]](#)



Parallel Planning

In manual planning and in VSR optimization, multiple planners can work simultaneously. If there are conflicts with dates or times, the system issues a message.

Features

If several planners access the same object in manual planning or in VSR optimization, such as a resource or a schedule, the system issues a message that the object is locked. For multiresources, you can specify whether the multiresource is to be locked for the means of transport.

If several planners perform separate pre-carriage, main carriage, or on-carriage planning and unplanned stages exist (for example, because you specified that only the route is to be copied when transportation proposals are generated), VSR optimization creates new stages and tries to adjust the dates and times of the stages to the ones determined in the transportation proposal. If a planner plans a stage (such as the main carriage) manually and a planned freight order or freight booking exists, the system copies the dates and times to the predecessor and successor stage. It considers them a hard constraint (acceptable values). If inconsistencies occur, for example, because acceptable dates overlap, the system issues a message. If two planners plan a freight unit at the same time, for example, pre-carriage and main carriage, and conflicts arise, the system also issues a message. For time conflicts, the system sets the appropriate planning status for the freight unit stage (see [Explanation of Statuses of Business Documents \[Page 614\]](#)).



Recommendation

We recommend that you first plan stages that are critical in terms of date and time, and then the remaining stages.

End of the recommendation.



Generation of Transportation Proposals

The VSR optimizer (see [VSR Optimization \[Page 806\]](#)) uses this function to generate alternative transportation proposals for the selected freight unit of which you can then use one. Unlike in the case of an optimization run, here the VSR optimizer searches for alternative transportation proposals.

Prerequisites

- You have defined optimizer settings and have assigned them to your planning profile (see [Planning Profile \[Page 689\]](#)). For example, you have made the settings for generating transportation proposals and have specified which planning strategy you want to use. If you want to specify your transportation proposal preferences in more detail, you have selected the *Do Not Start Transportation Proposal Immediately* checkbox. You can do so in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *Planning* ► *Planning Profile Settings* ► *Optimizer Settings* ► *Create Optimizer Settings* ▶.

Note

You can use the settings from your planning profile and adjust them for each transportation proposal generation. To do this, select the *Change Proposal Settings* checkbox.

End of the note.

- To personalize the page layout to display transportation proposals, in SAP NetWeaver Business Client, you choose ► *Application Administration* ► *Planning* ► *General Settings* ► *Page Layouts* ► *Page Layouts for Transportation Proposal* ▶.

You can then include the personalized page layout in the page layouts of the transportation cockpit.

Note

If you want to specify and change specific transportation proposal preferences for planning specific freight units in the transportation cockpit, you have selected the *Calculate* and *Reset Preferences* checkboxes in the page layouts for the transportation proposals. You previously made the *Transportation Proposal Preferences* screen area visible in your page layouts.

End of the note.

For more prerequisites, see [Interactive Planning \[Page 774\]](#).

Features

A transportation proposal contains the following information:

- Route (sequence of locations of a freight unit)
- Freight order
- Assignment of freight unit to freight order

The system can take into account multiple freight units simultaneously, for example, to check how they are to be distributed across vehicles (based on the vehicle capacities).

When generating transportation proposals, the system considers the selected freight units as well as indirectly linked freight orders and freight units (see [Context Determination \[Page 910\]](#)). The system does *not* change these indirectly linked freight orders and freight units. However, it does consider them as a constraint for the selected freight units, which means that they can result in restrictions for the selected freight units. For example, no vehicle resources are available for the selected freight units if they are used by indirectly linked freight units.

In the case of transportation stages of a freight unit that have already been planned, the system only generates transportation proposals if these transportation stages are not fixed.

 Note

Planned transportation stages that the system determines using context determination are always fixed in the VSR optimizer.

End of the note.

SAP delivers the standard planning strategies `VSR_DEF` and `VSR_1STEP` for generating transportation proposals. You use the standard planning strategy `VSR_1STEP` to specify that carrier selection is to be performed directly after transportation proposals have been generated. For more information, see [One-Step Planning \[Page 888\]](#) and [Planning Strategies \[Page 1231\]](#).

When transportation proposals are generated, a dangerous goods check is performed if you have activated it. For more information, see [Considering Dangerous Goods \[Page 1139\]](#).

You can use the route planner to display the connections between the locations in the transportation proposal on a geographical map. For more information, see [Path Finder](#).

To plan specific freight units with one or more freight unit stages in the transportation cockpit, you can specify in detail your preferences for the transportation proposal in question. For more information, see [Planning Profile \[Page 689\]](#).

Activities

You can generate transportation proposals as follows:

- From interactive planning
- From the user interface for creating forwarding orders
- From the user interface for creating forwarding quotations



Carrier Selection

You can use carrier selection to assign a suitable carrier to your subcontractable business documents (for example, freight orders) either manually or automatically. The aim is to find a carrier with the lowest costs under consideration of constraints.

Prerequisites

Basic Settings

You have defined transportation lanes in the master data and, in doing so, you have defined means of transport and carriers, including carrier profiles (optional).

Optimization Options

You use one or more of the following optimization options:

- Strategies (only relevant to automatic carrier selection)
 - Costs
 - Priority

For more information, see [Strategies \[Page 866\]](#).
- Continuous Move

For more information, see [Continuous Move \[Page 869\]](#).
- Business share (only relevant to automatic carrier selection)

For more information, see [Business Share \[Page 872\]](#).
- Check against transportation allocations (relevant to both automatic carrier selection and manual carrier selection).

For more information, see [Check Against Transportation Allocations \[Page 876\]](#).

Detailed Settings

- In Customizing, you have specified that your business document types (for example, freight order types) are relevant to subcontracting. For more information see, for example, for freight orders, Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶.
- You have made further settings in the carrier selection settings. In the carrier selection settings, you define, for example, the process in which carrier selection is to be executed:
 - Regular carrier selection
 - Tendering (see [Freight Tendering](#))
 - Determination of direct shipment options (see [Determination of Direct Shipment Options \[Page 856\]](#))

You can configure the settings for carrier selection in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *Planning* ► *Planning Profile Settings* ► *Carrier Selection Settings* ► *Create Carrier Selection Settings*.

- If you want to consider external freight charges during carrier selection, you have to specify in the settings for carrier selection that you want charges from charge management to be considered. In this case, you must configure charge management accordingly (see [Charge Management and Service Product Catalogs](#)).

Features

Manual Carrier Selection

In manual carrier selection, you manually assign the required carrier to your business documents. If you have configured the check against transportation allocations, the system takes into account and checks transportation capacities (transportation allocations) that you have defined for the individual carriers. If, during the allocation, the system finds relevant transportation allocations without capacity or transportation allocations are violated by the allocation, warning messages appear.

Automatic Carrier Selection

A separate optimization is available for the automatic carrier selection. It takes into account the selected optimization options when determining the most cost-effective carrier for all business documents that you have selected. If none of the carriers are available, the system does not assign a carrier to the relevant business documents.

Determining Available Carriers

In this case, the system determines all available carriers. If you have specified in the carrier selection settings that transportation allocations are not to be considered, even those carriers without any free capacity are displayed.

Business Documents with Multiple Stops

In the case of business documents with multiple stops, the system tries to find a direct transportation lane between the source and destination locations and uses it as the starting point for the determination of available carriers.



Example

A freight order goes from A via B and C to D. In the carrier selection settings, you have selected the checkbox for overall carrier availability.

The system determines the most concrete transportation lane (using the same technique as for strategy determination) for each stage (A to B, B to C, and C to D). The result is a list of all possible carriers for each stage. The system also uses strategy determination to determine the strategy for the main carriage (direct connection from A to D). The result is a list of possible carriers. The system now creates the intersection from all these lists. The result is no carriers, one carrier, or multiple carriers that can serve all the stages including the main stage. The consideration of stages and stops is used therefore as a filter.

The system first checks which carriers cover all the stages of the freight order (A to B, B to C, and C to D). In a second step, the system chooses the carrier from those found in the first step with a direct transportation lane between A and D.

If you have not selected the checkbox for overall carrier availability in the carrier selection settings, the system uses strategy determination to determine the strategy for the main stage only.

End of the example.

SAP delivers the standard planning strategy TSPS_DEF for carrier selection. You can specify this strategy in the carrier selection settings. SAP also delivers the standard planning strategy VSR_1STEP. For more information, see [One-Step Planning \[Page 888\]](#) and [Planning Strategies \[Page 1231\]](#).

Activities

- You can call carrier selection in SAP NetWeaver Business Client by choosing ► *Planning* ► *Carrier Selection* ▶. First, a user interface is displayed where you can define profile and layout sets. For more information, see [Use of Profile and Layout Sets \[Page 777\]](#).
- To perform carrier selection in the background, schedule report /SCMTMS/TSPS_OPT_BGD. For more information, see [Selection of Carriers \[Page 1241\]](#).

More Information

[Full Map Display \[Page 912\]](#)



Strategies

Strategies are optimization options for the carrier selection. The system takes into account strategies during the automatic carrier selection. You define strategies either in the transportation lane or in carrier selection settings. In the first case, the system considers the appropriate transportation lane for each freight order. This allows it to consider different settings in one run.

Features

You can choose one of the following strategies or a combination of these strategies:

Priority

The system determines the carrier on the basis of a priority that you have defined. This means that the system chooses the carrier with the highest priority first from the transportation lane, taking into account the various restrictions.

Costs

The system determines the carrier on the basis of the lowest total costs. You can take into account either internal costs or charges calculated in charge management:

- Internal costs

Transportation costs and carrier costs that you define for your carriers:

- You define transportation costs per business document, for example, freight order (EA), weight, or volume.
- You define carrier costs per kilometer or mile.

You can define internal costs in the transportation lane (see [Transportation Lane](#)) and, in the case that no internal costs are defined in the specific transportation lane, you can define them in the carrier profile (see [Carrier Profile](#)).

Note

The costs used here are not real costs. They are simply internal costs that are used for weighting.

End of the note.

- Charges Calculated in Charge Management

You have to create a charge calculation that is set up in charge management. For more information, see [Charge Management and Service Product Catalogs](#).

For more information about how the system takes into account strategies during the carrier selection, see [Strategy Determination \[Page 868\]](#).

Activities

- Choose the required strategy for the means of transport in the transportation lane or in the carrier selection settings.

You can choose the required strategy in the transportation lane in SAP NetWeaver Business Client by choosing **Master Data** **Transportation Network** **Define Transportation Lane**.

To choose the required strategy in the carrier selection settings, in the SAP NetWeaver Business Client choose **Application Administration** **Planning** **Planning Profile Settings** **Carrier Selection Settings** **Create Carrier Selection Settings**.

2. If you want to use priorities, define the required priorities for the individual carriers in the transportation lane.
3. If you want to use internal costs, define transportation costs and carrier costs for the individual carriers either in the transportation lane or in the carrier profile.



Strategy Determination

The system tries to find the transportation lane that, out of all the transportation lanes that are relevant for the carrier selection, most closely corresponds to the business document (for example, freight order) . For more information, see [Transportation Lane](#).



Example

You have defined the following transportation lanes:

- Transportation lane between source location A and destination location B
- Transportation lane between source location A and destination transportation zone B' (contains destination location B)
- [Location Transportation Lane](#) at source location A

The freight order is to go from A to B. In this case, the system chooses the transportation lane between source location A and destination location B. This is the most concrete transportation lane, since it runs between two specified locations. The transportation lane between source location A and destination transportation zone B' is less concrete since a transportation zone can contain multiple locations. The location transportation lane at A is also less concrete since a transportation lane between two locations is more concrete than a location transportation lane. Using the strategy that you have defined for this transportation lane, the system determines the carrier.

The system takes into account the carriers in the transportation lane only. If you have a freight order with multiple stops, you can use these stops as an additional filter. For more information, see [Carrier Selection \[Page 863\]](#).

End of the example.



Continuous Move

Continuous moves are optimization options for carrier selection. The system takes into account continuous moves during automatic carrier selection only.

Prerequisites

- You have set the *Continuous Move* checkbox in the carrier profile of the suppliers. You can define a carrier profile in SAP NetWeaver Business Client by choosing *Master Data* *General* *Define Carrier Profile*. For more information see [Carrier Profile](#).
- You have made the settings relevant to the continuous move in the carrier selection settings or in the transportation lanes. You can configure the settings for carrier selection in SAP NetWeaver Business Client by choosing *Application Administration* *Planning* *Planning Profile Settings* *Carrier Selection Settings* *Create Carrier Selection Settings*. For more information, see [Transportation Lane](#).

Features

As part of automatic carrier selection, the system tries to combine subcontractable business documents (for example, freight orders) by forming continuous moves. The aim is to reduce the costs of the business documents by assigning additional business documents to a carrier. The following types of continuous moves are available:

- Simple continuous move: The carrier accepts one or more additional business documents and, after executing the first business document, directly executes the following business documents one after the other.
- Round trip: A round trip is a simple continuous move for which the following additional prerequisites must be met: The source location of the first business document and the destination location of the second business document are identical.

A round trip can only consist of exactly two business documents.



Note

The system cannot take into account complex round trips where multiple source locations (pickup) or destination locations (delivery) are served.

End of the note.

The system can combine two or more business documents in a continuous move if the following conditions are met:

- The relevant carrier is available for both business documents.
- The arrival date/time of the first business document lies in the departure window of the second business document.
- The departure date/time of the second business document lies in the arrival window of the first business document.

The system performs a check of incompatibilities for the business documents if you have activated this function in the settings for carrier selection.

Furthermore, the distance between the destination location of the first business document and the source location of the second business document must not exceed the smaller maximum distance that you have defined for the carrier in the transportation lanes.

The system checks the type of continuous move. In the case of a round trip, the system checks if the destination location of the first business document and the source location of the second business document are identical, for example. In the case of a simple continuous move, the system can combine multiple business documents without the vehicle having to return to the source location.

For more information, see [Cost Calculation for Continuous Moves \[Page 871\]](#).

Activities

1. Choose the continuous move type for the means of transport in the *Contin. Move Type* field of the transportation lane.
2. Define the following values, as required, for the individual carriers:
 - Arrival and departure windows
 - Maximum distance
 - Discount



Cost Calculation for Continuous Moves

The system first determines the costs per business document (for example, freight order). Here it considers the strategy and origin of the carrier costs that you defined in the carrier selection settings. The system then determines the discount per business document. When doing so, it takes into account the settings that you have made in the transportation lane for the carrier and the means of transport. The system deducts this discount from the costs determined previously for each business document.



Example

You have defined the following data:

Carrier A is to receive a discount of 10% on the transportation lane A->B for means of transport 0001.

Carrier A is to receive a discount of 20% on the transportation lane B->C.

There are two freight orders (FRT1 for A->B and FRT2 for B->C). The costs for FRT1 are 1000, the costs for FRT2 are 2000. The optimizer has determined that both freight orders are suitable for a continuous move.

The optimizer now calculates costs of 900 (1000 minus 10%) for FRT1 and 1600 (2000 minus 20%) for FRT2. If the optimizer were to assign the continuous move to carrier A, the total costs would therefore be 2500. The optimizer compares these costs with carrier B, for example, who offers lower costs for each freight order (for example, 950 for FRT1 and 1800 for FRT2). If the optimizer were to assign the continuous move to carrier B, the total costs for the continuous move would then be 2750. Therefore, the best solution is to assign both freight orders as a continuous move to carrier A.

End of the example.

Recalculation of Costs from Charge Management

If you specified in the carrier selection settings that the system is to perform a recalculation of costs from charge management for continuous moves, the system considers the discounts for continuous moves for the business documents from charge management in the recalculation, however, only for the carriers that offer continuous moves. The system saves the result in the ranking list. For more information, see [Charge Management and Service Product Catalogs](#).



Business Share

Business shares are optimization options for the carrier selection. The system takes into account business shares during the automatic carrier selection.

Prerequisites

You have defined business shares. You can do so in SAP NetWeaver Business Client by choosing *Planning > Business Share > Create Business Shares*.

Features

For each business share, you can define tolerances as well as penalty costs that the optimizer calculates when an excess or shortfall of the target value plus or minus these tolerances occurs. However, the penalty costs are not real costs, but instead are used for weighting purposes only.



Recommendation

It only makes sense to use business shares if you have defined penalty costs. We recommend that you also always define tolerances to give the optimizer a certain amount of leeway.

End of the recommendation.

The optimizer takes into account the following when assigning the carriers in accordance with the defined business shares:

- Transportation zone hierarchies
- Hierarchical relationships between means of transport
- Historical business shares
- Documents to which a carrier has not yet been assigned

In the tendering profile, you can define whether the system, when it is checking the target value of a business share or allocation, includes only the business documents already assigned to the relevant business share or allocation or whether it also includes the corresponding freight requests during carrier selection. For more information, see the system documentation.



Example

Carrier A is to receive 50% of all freight orders that are transported from source location DC_FRANKFURT with any means of transport of the transportation mode Street in June 2010.

End of the example.

More Information

[Creation of Business Shares and Transportation Allocations \[Page 881\]](#)



Creation of Business Shares and Transportation Allocations

You can use this function to create business shares and transportation allocations. The system uses business shares and transportation allocations during carrier selection or for capacity management in the air cargo scenario, for example.

Prerequisites

You have configured the transportation allocation settings in Customizing – for example, you have activated the use of transportation allocations and business shares. For more information, see Customizing for *Transportation Management* under ► *Planning* ► *General Settings* ► *Define Transportation Allocation Settings*.

Features

Creation of Trade Lanes

You need trade lanes both for business shares and transportation allocations. A trade lane comprises the following:

- Geography, that is, a combination of zones or locations (see [Use of Transportation Orientations \[Page 884\]](#))
- Means of transport or transportation mode (optional)



Example

Examples of trade lanes include:

- All transports from Hamburg to New York
- All transports within Germany
- All transports that leave Bavaria

End of the example.

You can use trade lanes to define geographical data with different degrees of detail. Furthermore, you can work with placeholders. Each business share and each transportation allocation is only valid for exactly one trade lane.



Note

- Trade lanes do not represent connections between objects in the transportation network, for example, locations or zones. They are a context-independent classification of any transportation-related activities.
- Trade lanes can form a hierarchy. This means that more generic trade lanes can contain more specific trade lanes (for example, *Within Germany Using Means of Transport Truck* contains *Along the Way from Frankfurt to Hamburg with Means of Transport Refrigerated Truck* and *Within Bavaria with Means of Transport Truck for Liquids*).

- Trade lanes may overlap, for example, *From Germany Using Airplane* and *Within Europe Using Airplane*.
- Trade lane hierarchies contain the following:
 - Transportation zone hierarchies, for example, *From Germany* contains *From Bavaria*, and this contains *From Plant_MÜNCHEN*
 - Hierarchical relationships between means of transport, for example, *Within Germany Using Means of Transport Truck* contains *Within Germany Using Means of Transport Refrigerated Truck*
 - Means of transport/transportation mode relationship, for example, *Within Germany Using Transportation Mode Street* contains *Within Germany Using Means of Transport Refrigerated Truck*

End of the note.

Creation of Business Shares

When you create a business share, you define the following:

- Creation options

You can specify, for example, whether a business share is to refer to a transportation lane, that is, is only to be created if the corresponding transportation lane already exists. Additionally, you can specify whether time buckets can be overwritten.

- Trade lane (see above)
- Business share details

Here you define, among other things, tolerances and penalty costs that are incurred when an excess or shortfall of these tolerances occurs. You also define the unit for your target value.

- Target value

Here you define the actual business shares, for example, 40 % for carrier A and 60 % for carrier B.

You can use this user interface for mass creation. You can create, for example, a daily time bucket for a whole year.

Creation of Transportation Allocations

When you create a transportation allocation, you define the following:

- Creation options

You can specify, for example, whether a transportation allocation is to refer to a transportation lane and whether time buckets may be overwritten.

- Trade lane (see above)
- Scope of transportation allocation

Here you enter, for example, the planning period (yearly, weekly, and so on). You are free to choose the start of the planning period. For example, you can define a bucket from Monday 14:00 until Tuesday 14:00.

- Buckets

Here you can define, for example, a sub-bucket distribution. If a carrier can only deliver, for example, in the morning, you can define two sub-buckets (*Morning* and *Afternoon*) for the bucket *Daily*. As the percentage of the assigned business documents (for example, freight orders), you define 100% for *Morning* and 0% for *Afternoon*.

In addition, you can specify the minimum and maximum product allocation quantity.

Furthermore, you can create multiple transportation allocations by defining specific parameter combinations, for which you can define specific creation options. You can specify, for example, whether a transportation allocation is to refer to a transportation lane, that is, is only to be created if the corresponding transportation lane already exists. Additionally, you can specify whether time buckets can be overwritten.

Activities

To create business shares, in SAP NetWeaver Business Client choose ► *Planning* ► *Business Share* ► *Create Business Shares* ▶.

To create carrier selection allocations, in SAP NetWeaver Business Client, choose ► *Planning* ► *Allocation* ► *Create Allocation* ▶.

To create flight schedule-based allocations, in SAP NetWeaver Business Client, choose ► *Master Data* ► *Transportation Network* ► *Schedule* ► *Edit Schedule* ▶. You then choose the *Create Transportation Allocation* pushbutton in your master flight schedule. You can access and edit the transportation allocation from your personal object worklist (POWL). To do this, in SAP NetWeaver Business Client, choose ► *Planning* ► *Worklist* ► *Overview Planning* ► *All Allocations* ▶.

To create air freight agreement allocations, in SAP NetWeaver Business Client, choose ► *Freight Agreement Management* ► *Edit Freight Agreement* ▶. You can now create a transportation allocation at item level in your freight agreement, assuming you have previously defined a corresponding trade lane.

More Information

[Carrier Selection \[Page 863\]](#)

[Transportation Allocation \[Page 878\]](#)

[Check Against Transportation Allocations \[Page 876\]](#)



Check Against Transportation Allocations

The check against transportation allocations is an optimization option that you can use as part of both the manual and automatic carrier selection.

In the check against transportation allocations, you assign transportation capacities (transportation allocations) to carriers for a certain period. You can define the following:

- The maximum number of business documents (for example, freight orders) for a carrier per transportation lane or free transportation lane for a certain period (day, week, month, quarter, or year), validity, and a certain means of transport. You define this by entering quantity unit EA for the transportation allocation.
- An allocation unit and quantity unit for each transportation allocation
- The minimum number of business documents that defines the number of agreed business documents per period (day, week, or month) and validity.

Prerequisites

- You have made the settings for transportation allocations in Customizing, for example, you have activated the use of transportation allocations. For more information, see *Customizing for Transportation Management* under ► *Planning* ► *General Settings* ► *Define Transportation Allocation Settings*.
- You have defined carrier selection allocations. You can do so in SAP NetWeaver Business Client by choosing ► *Planning* ► *Allocation* ► *Create Allocation*.
- In the carrier selection settings, you have defined whether you want to use transportation allocations or whether the system is to consider the settings for the transportation lane. In the second case, you must have marked the *Use Transp. Allocations* checkbox for your means of transport.

Features

The system checks all relevant transportation allocations during the check against transportation allocations. This means that you can define restrictions.



Example

You have defined the following capacities (transportation allocations):

- Transportation allocation belonging to a freight order from source location A to destination location B (maximum quantity = 3 EA). This is the most specific transportation allocation since the freight order runs between two specific locations (direction *Along*).
- Transportation allocation that belongs to a freight order from source transportation zone A' and destination transportation zone B' (maximum quantity = 10 EA)
- Transportation allocation for source location A (maximum quantity = 10 EA). This is the least specific transportation allocation.

The system can only assign capacities if capacities are free in all of the transportation allocations (you can override this in manual planning). In this case, the system can assign, at the most, three

business documents between A and B even if a greater capacity is available for the transportation allocation between the source and destination transportation zones, and at the source location. The reason for this assignment is that the system takes into account the lowest available capacity.

End of the example.

The system also takes into account transportation zone hierarchies and hierarchies between means of transport. You define hierarchies between means of transport by specifying higher-level means of transport when defining means of transport. This means that you can also use hierarchical relationships to define restrictions, since the system takes into account the transportation allocations in all higher-level means of transport.

More Information

[Transportation Allocation \[Page 878\]](#)

[Creation of Business Shares and Transportation Allocations \[Page 881\]](#)



Transportation Allocation

You can store information about transportation allocations of carriers in geographical areas with specific means of transport or about specific departures of a schedule. A transportation allocation defines constraints on the minimum or maximum quantity available within a certain bucket and stores the assigned quantities.

SAP Transportation Management distinguishes between three transportation allocation types:

- Air freight agreement allocation

Stores information about transportation allocations of carriers that act as constraints for air freight agreements. You can create air freight agreement allocations directly from an air freight agreement in SAP NetWeaver Business Client.

- Carrier selection allocation

Stores information about transportation allocations of carriers in a specific trade lane. The system uses carrier selection allocations when optimizing the carrier selection.

- Flight schedule-based allocation

Stores information about transportation allocations of carriers at schedule departure level in a master flight schedule. You can create flight schedule-based allocations directly from a master flight schedule in SAP NetWeaver Business Client.

If changes are made to the departure times and arrival times of the schedule departures in the corresponding master flight schedule, and if these no longer match the bucket-from date and bucket-to date of a period in your flight schedule-based allocation, the system changes the status of the referenced data for the corresponding period from *Data Is Up-to-Date* to *Data Is Not Up-to-Date*.

If the bucket-from date and the bucket-to date of your period are no longer current, you can update them directly in the period. To do so, choose *Update from Schedule*.

If the schedule to which you refer from your flight schedule-based allocation creates new departures, you can add a period to your allocation that contains the dates and times of the new departures of the corresponding schedule. To do so, choose ► *Add Bucket* ► *From New Sched. Dep.* ▶.

You can use transaction `WUF` to display a list of schedules and schedule-based allocations that reference a specific schedule.

Note

If you have defined multiple buckets for a schedule departure and execute report `/SCMTMS/MP_SCHED_CREATE_TOR` to generate air freight bookings, the system creates a separate air freight booking for each bucket.

End of the note.

You can define transportation allocation types in Customizing. For more information, see Customizing for *Transportation Management* under ► *Planning* ► *General Settings* ► *Define Transportation Allocation Types* ▶.

For more information about creating transportation allocations, see [Creation of Business Shares and Transportation Allocations \[Page 881\]](#).

 Note

You can enter multiple capacity units and units of measure in parallel for all transportation allocation types. Carrier selection, however, takes just one unit into account for each transportation allocation. You therefore need to specify for carrier selection allocations in Customizing which unit is to be taken into account during carrier selection.

For example, you can specify a maximum weight of 20 tons and a maximum volume of 45 cubic meters for a transportation allocation in SAP NetWeaver Business Client. If you have already planned 500 tones and 40 cubic meters of this transportation allocation, you cannot use this allocation further. If you have defined cubic meters as the relevant unit for carrier selection, however, carrier selection ignores the weight that has been fully used up and determines that five cubic meters of capacity are still available.

End of the note.

When you create transportation allocation types, you can specify whether a particular transportation allocation type is to use attributes or carrier selection.

The following attributes can be used, for example:

- Shipping type, such as unit load device
 - Each shipping type is assigned to a transportation mode.
- Contract basis
 - You can create just one freight booking for each shipping type/contract basis combination.
- Periodicity
 - Depending on the transportation allocation type, you can specify various periodicities, such as *daily*, *monthly*, or *departure of a schedule*.
- Handling code
 - You can define buckets with handling codes for a transportation allocation. Within the validity period for a transportation allocation, you can define a number of buckets with different handling codes in parallel. For more information about handling codes, see [Handling Codes](#).



Example

You create a flight schedule-based allocation from a master flight schedule for which you define two buckets. One bucket has the handling code *Upper Deck* and the other period has the handling code *Lower Deck*. If you now generate an air freight booking with the handling code *Upper Deck* from this master flight schedule, the system assigns the air freight booking to the bucket with the corresponding handling code automatically.

You can create a transportation allocation with the handling code *Dangerous Goods* in the same way. Any air freight bookings that you post to this transportation allocation must also have *Dangerous Goods* as the handling code.

End of the example.

Integration

Business documents (for example, freight orders) do not have a direct link (cross-business-object association) to the transportation allocation. However, if you change business document details that are relevant for the transportation allocation process, the system transfers the corresponding information to the transportation allocations. Relevant changes can be, for example:

- The assignment of a carrier to a business document
- The cancellation of a business document that has a carrier assigned to it
- Changes to the quantities

When you assign a carrier to a business document, the system books existing transportation allocations if the following data concurs in the business document and the existing transportation allocations:

- Source and destination
- Means of transport
- Carrier
- Requested dates (The system does not consider accepted dates.) In the case of overlapping periods, start and end dates are required.

 Note

If you create a booking for a specific schedule departure, the system also posts the relevant bucket of the transportation allocation assigned to the schedule, assuming you have previously made this assignment.

End of the note.

The system stores references to business documents in allocated capacities.

More Information

[Creation of Business Shares and Transportation Allocations \[Page 881\]](#)

[Check Against Transportation Allocations \[Page 876\]](#)



Creation of Business Shares and Transportation Allocations

You can use this function to create business shares and transportation allocations. The system uses business shares and transportation allocations during carrier selection or for capacity management in the air cargo scenario, for example.

Prerequisites

You have configured the transportation allocation settings in Customizing – for example, you have activated the use of transportation allocations and business shares. For more information, see Customizing for *Transportation Management* under ► *Planning* ► *General Settings* ► *Define Transportation Allocation Settings*.

Features

Creation of Trade Lanes

You need trade lanes both for business shares and transportation allocations. A trade lane comprises the following:

- Geography, that is, a combination of zones or locations (see [Use of Transportation Orientations \[Page 884\]](#))
- Means of transport or transportation mode (optional)



Example

Examples of trade lanes include:

- All transports from Hamburg to New York
- All transports within Germany
- All transports that leave Bavaria

End of the example.

You can use trade lanes to define geographical data with different degrees of detail. Furthermore, you can work with placeholders. Each business share and each transportation allocation is only valid for exactly one trade lane.



Note

- Trade lanes do not represent connections between objects in the transportation network, for example, locations or zones. They are a context-independent classification of any transportation-related activities.
- Trade lanes can form a hierarchy. This means that more generic trade lanes can contain more specific trade lanes (for example, *Within Germany Using Means of Transport Truck* contains *Along the Way from Frankfurt to Hamburg with Means of Transport Refrigerated Truck* and *Within Bavaria with Means of Transport Truck for Liquids*).

- Trade lanes may overlap, for example, *From Germany Using Airplane* and *Within Europe Using Airplane*.
- Trade lane hierarchies contain the following:
 - Transportation zone hierarchies, for example, *From Germany* contains *From Bavaria*, and this contains *From Plant_MÜNCHEN*
 - Hierarchical relationships between means of transport, for example, *Within Germany Using Means of Transport Truck* contains *Within Germany Using Means of Transport Refrigerated Truck*
 - Means of transport/transportation mode relationship, for example, *Within Germany Using Transportation Mode Street* contains *Within Germany Using Means of Transport Refrigerated Truck*

End of the note.

Creation of Business Shares

When you create a business share, you define the following:

- Creation options

You can specify, for example, whether a business share is to refer to a transportation lane, that is, is only to be created if the corresponding transportation lane already exists. Additionally, you can specify whether time buckets can be overwritten.

- Trade lane (see above)
- Business share details

Here you define, among other things, tolerances and penalty costs that are incurred when an excess or shortfall of these tolerances occurs. You also define the unit for your target value.

- Target value

Here you define the actual business shares, for example, 40 % for carrier A and 60 % for carrier B.

You can use this user interface for mass creation. You can create, for example, a daily time bucket for a whole year.

Creation of Transportation Allocations

When you create a transportation allocation, you define the following:

- Creation options

You can specify, for example, whether a transportation allocation is to refer to a transportation lane and whether time buckets may be overwritten.

- Trade lane (see above)
- Scope of transportation allocation

Here you enter, for example, the planning period (yearly, weekly, and so on). You are free to choose the start of the planning period. For example, you can define a bucket from Monday 14:00 until Tuesday 14:00.

- Buckets

Here you can define, for example, a sub-bucket distribution. If a carrier can only deliver, for example, in the morning, you can define two sub-buckets (*Morning* and *Afternoon*) for the bucket *Daily*. As the percentage of the assigned business documents (for example, freight orders), you define 100% for *Morning* and 0% for *Afternoon*.

In addition, you can specify the minimum and maximum product allocation quantity.

Furthermore, you can create multiple transportation allocations by defining specific parameter combinations, for which you can define specific creation options. You can specify, for example, whether a transportation allocation is to refer to a transportation lane, that is, is only to be created if the corresponding transportation lane already exists. Additionally, you can specify whether time buckets can be overwritten.

Activities

To create business shares, in SAP NetWeaver Business Client choose ► *Planning* ► *Business Share* ► *Create Business Shares* ▶.

To create carrier selection allocations, in SAP NetWeaver Business Client, choose ► *Planning* ► *Allocation* ► *Create Allocation* ▶.

To create flight schedule-based allocations, in SAP NetWeaver Business Client, choose ► *Master Data* ► *Transportation Network* ► *Schedule* ► *Edit Schedule* ▶. You then choose the *Create Transportation Allocation* pushbutton in your master flight schedule. You can access and edit the transportation allocation from your personal object worklist (POWL). To do this, in SAP NetWeaver Business Client, choose ► *Planning* ► *Worklist* ► *Overview Planning* ► *All Allocations* ▶.

To create air freight agreement allocations, in SAP NetWeaver Business Client, choose ► *Freight Agreement Management* ► *Edit Freight Agreement* ▶. You can now create a transportation allocation at item level in your freight agreement, assuming you have previously defined a corresponding trade lane.

More Information

[Carrier Selection \[Page 863\]](#)

[Transportation Allocation \[Page 878\]](#)

[Check Against Transportation Allocations \[Page 876\]](#)



Use of Transportation Orientations

You can use this function to create the transportation orientation for a trade lane. For more information about trade lanes, see [Creation of Business Shares and Transportation Allocations \[Page 881\]](#).

Features

The following transportation orientations are available (the parameters that are relevant for each orientation are in brackets):

- *Along* (parameter: Source and Destination; parameter type: Location or Zone)

Both the source and the destination are restricted. If the parameter type is *Zone*, the corresponding location of the relevant business document (for example, freight order) must be within the transportation zone defined. If the parameter type is *Location*, the location of the relevant business document must correspond to this parameter.



Example

From PL_FRANKFURT To ITALY

If the source location is PL_FRANKFURT and the destination location belongs to transportation zone ITALY, each object is considered as context (and is therefore relevant).

End of the example.

- *Within* (parameter: Source; parameter type: Zone)

Both the source and the destination are restricted. Both locations of the relevant business document (for example, freight order) must be within the defined transportation zone.



Example

Within GERMANY

If both the source location and the destination location belong to transportation zone GERMANY, each object is considered as context (and is therefore relevant).

End of the example.

- *From* (parameter: Source; parameter type: Zone or Location)

If the source parameter type is *Zone*, the source location of the relevant business document (for example, freight order) must be in the defined transportation zone, and the destination location must be outside of the transportation zone. If the source parameter type is *Location*, the source location of the relevant business document must correspond to this parameter. The destination is not restricted.



Example

From GERMANY

If the source location belongs to transportation zone GERMANY and the destination location is outside of this transportation zone, each object is considered as context (and is therefore relevant).

End of the example.

- *Outbound* (parameter: Source; parameter type: Zone)

Only the source is restricted. The source location of the relevant business document (for example, freight order) must be within the defined transportation zone. The destination is not restricted and it can be within or outside of the transportation zone.



Example

Outbound GERMANY

If the source location belongs to transportation zone GERMANY, each object is considered as context (and is therefore relevant).

End of the example.

- *To* (parameter: Destination; parameter type: Zone or Location)

If the destination parameter type is *Zone*, the destination location of the relevant business document (for example, freight order) must be in the defined transportation zone, and the source location must be outside of the transportation zone. If the destination parameter type is *Location*, the destination location of the relevant business document must correspond to this parameter. The source is not restricted.



Example

To GERMANY

If the destination location belongs to transportation zone GERMANY and the source location is outside of this transportation zone, each object is considered as context (and is therefore relevant).

End of the example.

- *Inbound* (parameter: Destination; parameter type: Zone)

Only the destination is restricted. The destination location of the relevant business document (for example, freight order) must be within the defined transportation zone. The source is not restricted and it can be within or outside of the transportation zone.



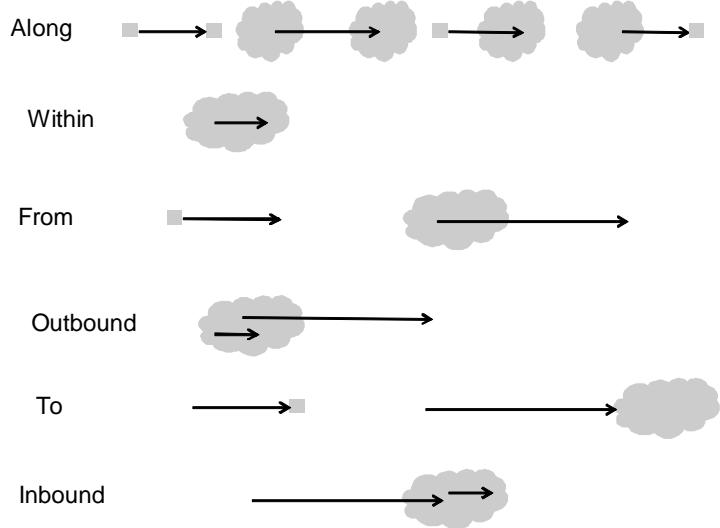
Example

Inbound GERMANY

If the destination location belongs to transportation zone GERMANY, each object is considered as context (and is therefore relevant).

End of the example.

The following graphic shows the transportation orientations described:



Transportation Orientations



Optimization as Part of Carrier Selection

Optimization as part of the carrier selection determines the assignment of carriers with the lowest costs to business documents (for example, freight orders).

It aims to achieve the following goals:

- Reduction in total costs (discounts for continuous moves)
- Consideration of all capacity restrictions for means of transport and carriers (minimum and maximum capacities are hard constraints)
- Consideration of business shares (soft constraints; from the transportation lane)
- Incompatibilities
- Carrier Activity

The total costs represent the weighted total of the following individual costs:

- Non-delivery costs for business documents that the optimizer for carrier selection cannot assign
- Costs for the assignment of carriers to business documents
- Penalty costs for violating business shares
- Discounts for continuous moves

The total of all the discounts for continuous moves is subtracted from these total costs.

The optimizer for carrier selection takes into account transportation zone hierarchies and hierarchical relationships between means of transport. You define hierarchies between means of transport by specifying higher-level means of transport when defining means of transport.

The optimization problem is solved by mixed-integer linear programming.



One-Step Planning

In the case of one-step planning, the system performs a complete planning run that comprises any combination of VSR optimization, carrier selection, and load optimization.

Features

For one-step planning, SAP delivers the standard planning strategy `VSR_1STEP`. This combines the two standard planning strategies `VSR_DEF` for VSR optimization and `TSPS_DEF` for carrier selection.

You can use `VSR_1STEP` for VSR optimization and for the generation of transportation proposals. When transportation proposals are generated, carrier selection is performed for each transportation proposal generated. If you then want to perform a load optimization, you can add method `VSR_ALP` to `VSR_1STEP`. Alternatively, you can define your own planning strategy that comprises any combination of the methods of VSR optimization, carrier selection, and load optimization. The following methods can be used, for example:

- `VSR_PRE` for preprocessing the VSR optimization run
- `VSR_OPT` for the VSR optimization run
- `VSR_POST` for postprocessing the VSR optimization run
- `VSR_TSPS` for carrier selection
- `VSR_ALP` for load planning

You can define planning strategies in Customizing for SCM Basis under ► *Process Controller* ► *Define Strategy*.

Note

SAP also delivers the standard planning strategy `VSRI_1STEP` for one-step planning in manual planning. If you enter this strategy as a strategy for manual planning in your planning profile, the system automatically performs carrier selection at the end of manual planning (that is, if you assign a freight unit to a resource). Here you can also add load optimization to the standard planning strategy. Alternatively, you can also define here your own planning strategy that comprises any combination of VSR optimization, carrier selection, and load optimization.

End of the note.

Activities

If you want to use the standard planning strategy `VSR_1STEP`, specify it in the optimizer settings. You can do so in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *Planning* ► *Planning Profile Settings* ► *Create Optimizer Settings*.

More Information

[Planning Strategies \[Page 1231\]](#)

[VSR Optimization \[Page 806\]](#)

[Carrier Selection \[Page 863\]](#)

[Load Planning \[Page 825\]](#)



Loading and Unloading Durations

Loading and unloading durations are defined and calculated using either standard values or conditions. In the planning profile, you specify how the system is to calculate loading and unloading durations. You also either define standard values or you specify a condition there.

The system calculates loading and unloading durations automatically during manual planning (see [Manual Planning \[Page 785\]](#)) and during VSR optimization (see [VSR Optimization \[Page 806\]](#)). In manual planning, you can overwrite the loading and unloading durations calculated by the system.

Features

Definition and Determination Using Conditions

You define loading and unloading durations for each freight unit based on the freight unit attributes, means of transport, or both. You also define a condition with the condition type for loading/unloading durations for freight units. You specify this condition in the planning profile. The system evaluates the condition and returns the loading or unloading duration as the output value.



Note

If you have entered the loading or unloading duration in both HHHH:MM format and in seconds, the system adds both values together.

End of the note.

Activities

You can define conditions in SAP NetWeaver Business Client by choosing *Application Administration* *General Settings* *Conditions* *Create Condition*.

More Information

[Condition \[Page 176\]](#)



Use of Multiresources

You can use [multiresources](#), for example, if an unknown number of vehicle resources of a means of transport are available, but you only want to make the settings for these vehicle resources once. You can define multiresources for vehicle resources. The system takes into account vehicle resources that you have defined as multiresources in manual planning, in VSR optimization, and when generating transportation proposals.

Restrictions

- You can only define multiresources for vehicle resources. You cannot define multiresources for trailers (passive vehicle resources). In the case of schedules, the system takes multiresources into account for the capacity only.
- You cannot define the vehicle resource in a means-of-transport combination as a multiresource.
- We recommend that you assign a means of transport for which you have selected the *Multiresource* checkbox to *one* vehicle resource only.

Prerequisites

- In Customizing for your means of transport, you have selected the *Multiresource* checkbox and have optionally specified the number of individual resources (*Number of Individual Resources* field).

For more information, see Customizing for *Transportation Management* under ► *Master Data* ► *Resources* ► *Define Means of Transport*.

By selecting the *Lock Multiresource* checkbox for the means of transport, you can prevent multiple planners from using the multiresource in parallel in multiple sessions. Using the multiresource in multiple sessions can, for example, result in the maximum number of individual resources being violated.

- You have defined a vehicle resource and assigned your means of transport. To do so, on the *SAP Easy Access* screen, choose ► *Transportation Management* ► *Master Data* ► *Resource* ► *Resource*.
- In the optimizer settings, you have optionally specified how the system is to react if the number of parallel freight orders exceeds the number of individual resources of the multiresource. You can do so in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *Planning* ► *Planning Profile Settings* ► *Optimizer Settings* ► *Create Optimizer Settings*.

Features

Vehicle Resources

During VSR optimization, the system assumes that as many vehicle resources exist as you have specified in Customizing in the *Number of Individual Resources* field. In accordance with this number, the system can plan parallel freight orders for this vehicle resource.

If you have not specified a value in Customizing in the *Number of Individual Resources* field, the system assumes that an unlimited number of vehicle resources are available. Depending on the

settings that you have made in Customizing and in the optimizer settings, the number of individual resources of a multiresource can be violated.

During manual planning, the system checks whether the number of individual resources of a multiresource is violated. The system only performs this check if the method `VSR_CHECK` is contained in your planning controller strategy or if you have selected the pushbutton for checking. The system checks all resources belonging to the business documents for which you have called the check. During the check, the system interprets the number of individual resources as maximum. If this number is violated, the system generates an error message.

When executing the report `/SCMTMS/VSR_MULTIRES_CHECK`, the system checks whether the number of individual resources of a multiresource is violated. During the check, the system interprets the number of individual resources as maximum. If this number is violated, the system generates an error message or an alert.

Schedules

If you want to define the capacity for schedules, you must define a vehicle resource. To do so, you can use a multiresource. You can only then use multiresources in multiple schedules if the capacity is the same.



Use of Trailers

You can create, edit, and display trailer units. You can also calculate charges based on trailers.

Prerequisites

You have configured the relevant settings in Customizing so that you can configure your standard layout for the use of trailers in the layout settings for the transportation cockpit. Hierarchy type *TUTRL* is predefined by default for the planning of trailer units. In addition, you can define your own hierarchy types. For more information, see *Customizing for Transportation Management* under ► *Planning* ► *General Settings* ► *Define Hierarchical Views for Freight Documents*.

You have defined a transportation unit type in Customizing. Transportation unit type *TRTL* is predefined by default for trailer units. For more information, see *Customizing for Transportation Management* under ► *Planning* ► *Transportation Unit* ► *Define Transportation Unit Types*.

Features

Creation of Trailer Units

- You use drag and drop to assign a freight unit to a trailer. The system creates a trailer unit for this trailer. You can continue planning it by, for example, assigning further freight units.

To couple and uncouple the trailer unit to vehicle resources, you use drag and drop to assign this trailer unit to the freight order of the selected vehicle resource. The system checks whether the coupling and uncoupling locations exist in both documents. If there are several coupling and uncoupling locations, you can choose one.

In an alternative scenario, your trailer is not yet assigned to a vehicle resource, but you already want to plan the trailer. We recommend that you use this procedure, for example, if you have a trailer in the yard and you want to load freight units onto it. However, at the time of planning, it is not yet clear or it is not important with which vehicle resource the trailer is to be moved or which route the vehicle resource is to take. In this case, you create a trailer unit as described above. You later assign the vehicle resource to this trailer unit using drag and drop. The system creates a new freight order for the vehicle resource and couples the trailer automatically.

- You use drag and drop to assign a trailer to an existing freight order. The system creates a new trailer unit and couples the trailer automatically to the vehicle resource of the existing freight order.
- You choose *New Trailer Unit*. You assign freight units and trailers to this trailer unit in any sequence you prefer. The system then carries out consistency checks, such as for the following attributes:
 - Means of transport
 - Transportation mode
 - Carrier

You can create an empty trailer unit and assign a trailer to it in this way, for example. However, you assign the freight units later on. We recommend that you use this

procedure, for example, if you know that the trailer will be picked up the next day but, at the time of planning, it is not yet clear which goods it is to transport.

- You select a trailer and choose *Create Trailer Unit*. You assign a document type, a source and destination location, and departure and arrival dates to this trailer unit.

Editing and Displaying Trailer Units

- You can define separate hierarchies for trailer units. For more information, see [Use of Hierarchical Views \[Page 781\]](#) and [Use of Profile and Layout Sets \[Page 777\]](#).
- You can remove the assignment of a trailer to a vehicle resource by selecting both documents and choosing *Remove Trailer*.



If this pushbutton is not displayed, check your layout.

End of the note.

- If you add an additional location for a trailer unit that is already coupled to a vehicle resource, the system automatically adds it to the freight order for the vehicle resource, since the location sequence for the vehicle resource and the coupled trailer must be identical.

Charge Calculation Based on Trailers

You consolidate freight units from multiple forwarding orders into a trailer unit and charge the customer based on a standard rate, the weight of the trailer, or any other criteria. You can maintain a charge line in the forwarding order for the trailer using the resolution base *Resource*. You maintain rates for different types of trailers using the *Means of Transport* calculation base.

Activities

You create trailer units in the transportation cockpit. You can call the transportation cockpit in SAP NetWeaver Business Client by choosing ► *Planning* ► *Planning* ► *Transportation Cockpit* ▶.

More Information

[Trailer Unit](#)

[Creation and Editing of Trailer Units](#)

[Example: Trailer Swap](#)



Time Windows

You use time windows to control when goods are to be picked up and delivered. VSR optimization (see [VSR Optimization \[Page 806\]](#)) then schedules the pickup or delivery exactly in the time window that you have defined.

You can also control how the system is to deal with cases in which these time windows are not taken into account during VSR optimization, that is, whether VSR optimization is to calculate penalty costs. You can model the following cases:

- The goods are picked up too early or too late.
- The goods are delivered too early or too late.

Features

You create time windows by defining tolerances within which a premature or delayed pickup or delivery is to be allowed. For each tolerance, you specify whether VSR optimization is to consider the tolerance as a hard, soft, or hard and soft constraint (see [Constraints for VSR Optimization \[Page 812\]](#)). In this way, you control whether VSR optimization calculates penalty costs when the constraints are not adhered to.

You can define the following tolerances:

- Maximum earliness
- Maximum delay
- Delay without penalty costs
- Earliness without penalty costs

The dates and times that you have defined for the pickup and delivery in the business document, for example, the forwarding order, form the basis for calculating the tolerances. For more information, see [Definition of Delivery Windows \[Page 900\]](#).

You can also specify that the system is to take into account the exact time for the pick-up date or delivery date. The system always uses the current point in time and rounds up or down to full days.

For more information about the link between tolerances and constraints, see [Delivery Window \[Page 897\]](#).



Note

- The system also takes into account windows for pickup and delivery in manual planning (see [Manual Planning \[Page 785\]](#)). However, this applies to hard constraints only. If it cannot adhere to the tolerances, it simply issues a warning message.
- The system already takes time windows into account when creating freight units and determines the dates of the freight units. It does not evaluate the time windows further when you access planning.

End of the note.

Activities

You define your time windows by entering a rule for windows for pickup and delivery in the freight unit type or a condition (condition type /SCMTMS/TOR_TIMEWIND). For more information, see Customizing for Transportation Management under ► *Planning* ► *Freight Unit* ► *Define Freight Unit Type* ▶.

For more information about defining conditions for time windows, see [Definition of a Condition for Time Windows \[Page 1216\]](#).



Delivery Window

You have defined the following tolerances:

- Delta premature = 2 days (tolerance for premature delivery without penalty costs)
- Delta earliest = 3 days (tolerance for maximum earliness)
- Delta delayed = 1 day (tolerance for delayed delivery without penalty costs)
- Delta latest = 2 days (tolerance for maximum delay)

The requested delivery date/time (from date/time) is 10.01., 12:00. The solid red curve in the following figures specifies that you do not want to take into account the exact time of the delivery date. The dotted blue curve specifies that you want to take into account the exact time.

The following figures show how these tolerances affect the delivery date, depending on whether you define them as hard, soft, or hard and soft constraints.

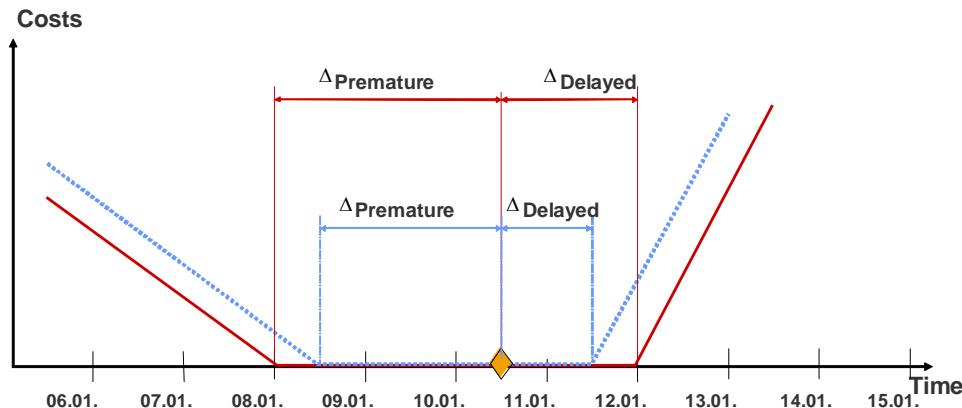


Figure 1: Soft Constraints for Premature and Delayed Delivery

In this case, a delayed delivery is allowed until 12.01. (solid red curve). Since the system is not to take into account the exact time for the delivery date, it rounds up to the full day, in other words, from 11.01., 12:00 to 12.01., midnight. No penalty costs are calculated. A delivery after 12.01. is allowed, but penalty costs are incurred.

A premature delivery can occur at the earliest on 08.01. without penalty costs being incurred. If the delivery occurs before 08.01., penalty costs are incurred. Since the system is not to take into account the exact time for the delivery date, it rounds down to the full day, in other words, from 08.01., 12:00 to 08.01., midnight.

If you have specified that the system is to take into account the exact time of the delivery date (dotted blue curve), penalty costs are incurred for a delayed delivery after 11.01., 12:00 and for a premature delivery before 08.01., 12:00.

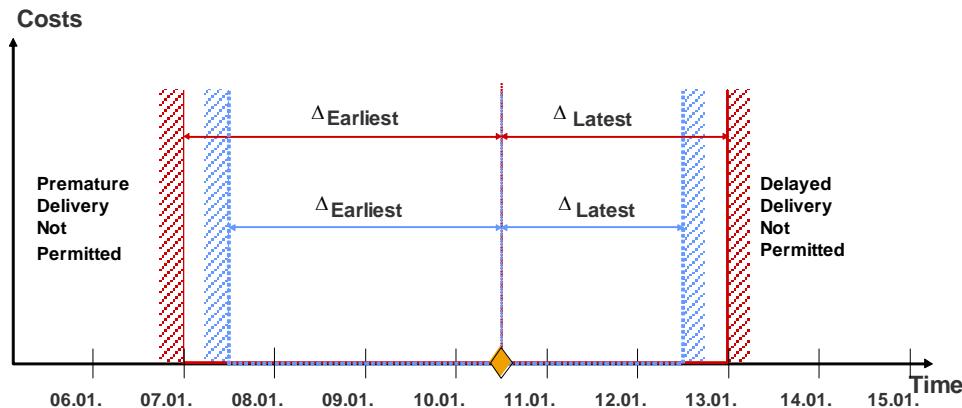


Figure 2: Hard Constraints for Premature and Delayed Delivery

In this case, a delayed delivery is not allowed after 13.01. (solid red curve). The delivery can occur at the earliest on 07.01. Since the system is not to take into account the exact time for the delivery date, it rounds up or down to the full day, in other words, from 12.01., 12:00 to 13.01., midnight and from 07.01., 12:00 to 07.01., midnight.

If you have specified that the system is to take into account the exact time of the delivery date (dotted blue curve), a delivery is not allowed after 12.01., 12:00 and before 07.01., 12:00.

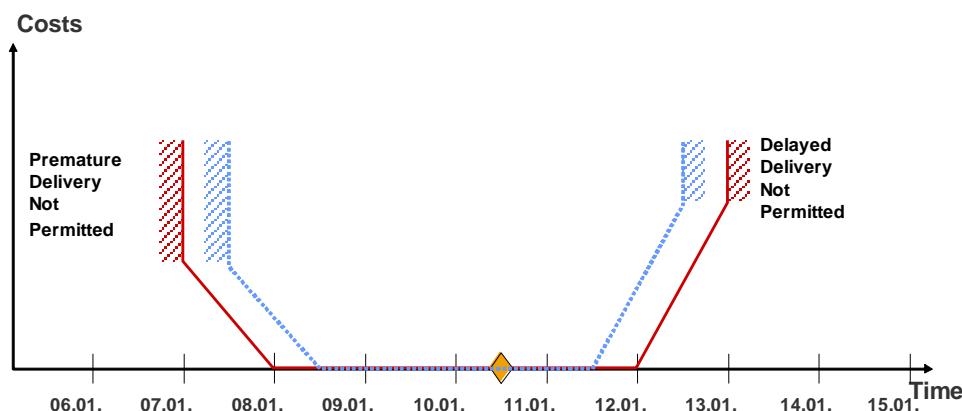


Figure 3: Hard and Soft Constraints for Premature and Delayed Delivery

In this case, a delayed delivery is allowed after 10.01. (solid red curve). Since the system is not to take into account the exact time for the delivery date, it rounds up to the full day, in other words, from 11.01., 12:00 to 12.01., midnight. However, penalty costs are incurred if the delivery occurs on 12.01. A delivery after 13.01. is not allowed.

A premature delivery is allowed from 07.01. Since the system is not to take into account the exact time for the delivery date, it rounds down to the full day, in other words, from 08.01., 12:00 to 08.01., midnight. However, penalty costs are incurred if the delivery occurs on 07.01. A delivery before 07.01. is not allowed.

If you have specified that the system is to take into account the exact time of the delivery date (dotted blue curve), a delayed delivery is not allowed after 12.01., 12:00. Penalty costs are incurred for a delivery between 11.01., 12:00 and 12.01., 12:00.

A premature delivery before 07.01., 12:00 is not allowed. Penalty costs are incurred for a delivery between 07.01., 12:00 and 08.01., 12:00.



Definition of Delivery Windows

The following examples show the options that you have when defining time windows. First of all, the relevant settings that you make are shown. A figure is then used to show how the system interprets your entries. The examples all refer to the delivery. However, they also apply in the same way to the pickup.

Example 1

In the forwarding order, you have defined the following date/time for the delivery at the destination location:

Earliest delivery (acceptable dates/times)	N/A
Delivery date/time (from) (requested dates/times)	17.09.07 00:00:00
Delivery date/time (to) (requested dates/times)	N/A
Latest delivery (acceptable dates/times)	N/A

Note

You define dates/times for delivery on the user interface for defining the forwarding order (*Locations and Dates* tab).

End of the note.

You have also defined the following tolerances:

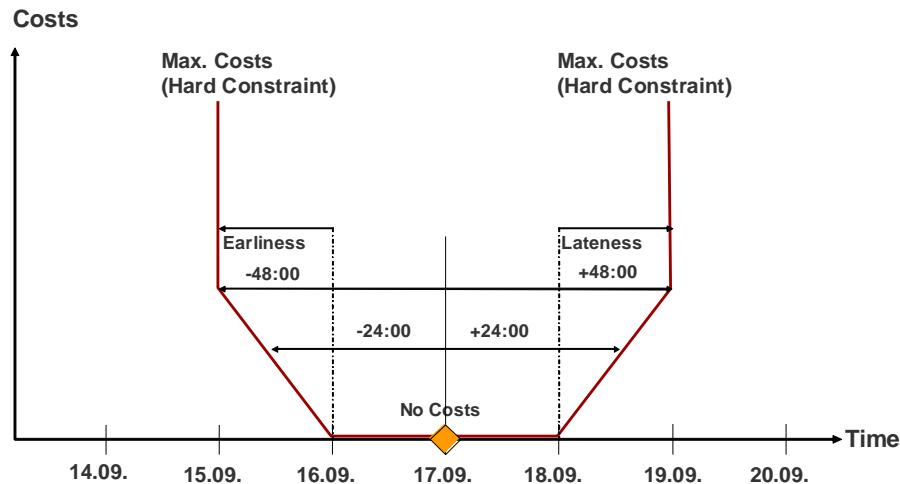
Tolerance for early delivery	24:00 hrs
Tolerance for earliest delivery	48:00 hrs
Tolerance for late delivery	24:00 hrs
Tolerance for latest delivery	48:00 hrs

Note

You define penalty costs for earliness and lateness in the planning costs settings either directly or by entering a condition (condition type /SCMTMS/FU_PNLT_COST).

End of the note.

The following figure shows how the system takes these values into account and what the time window looks like:



Time Window (Example 1)

In this case, the system takes into account all tolerances. A delayed delivery up until 18.09 does not incur any costs. Penalty costs are incurred between 18.09 and 19.09. A delivery is not permitted as of 19.09. A premature delivery can occur at the earliest on 16.09. without penalty costs being incurred. If the delivery occurs between 15.09 and 16.09, penalty costs are incurred. A delivery is not permitted before 15.09.

Example 2

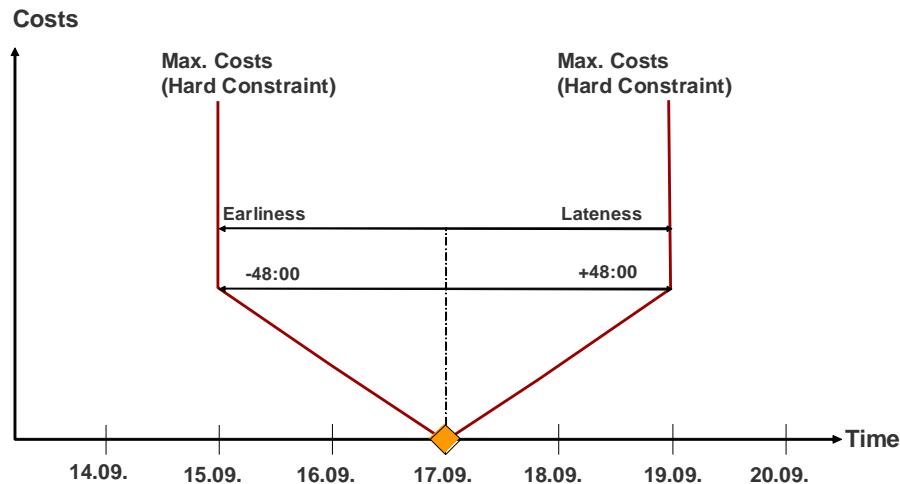
In the forwarding order, you have defined the following dates/times for the delivery:

Earliest delivery (acceptable dates/times)	N/A
Delivery date/time (from) (requested dates/times)	17.09.07 00:00:00
Delivery date/time (to) (requested dates/times)	17.09.07 00:00:00
Latest delivery (acceptable dates/times)	N/A

You have also defined the following tolerances:

Tolerance for early delivery	24:00 hrs
Tolerance for earliest delivery	48:00 hrs
Tolerance for late delivery	24:00 hrs
Tolerance for latest delivery	48:00 hrs

The following figure shows how the system takes these values into account and what the time window looks like:



Time Window (Example 2)

In this case, the system does not take into account the tolerances for early and late delivery, since it takes into account the dates/times that you have defined in the forwarding order. A delayed delivery is possible until 19.09, but penalty costs are incurred. A delivery is not permitted as of 19.09. A premature delivery can occur at the earliest on 15.09. If the delivery occurs between 15.09 and 17.09, penalty costs are incurred. A delivery is not permitted before 15.09.

Example 3

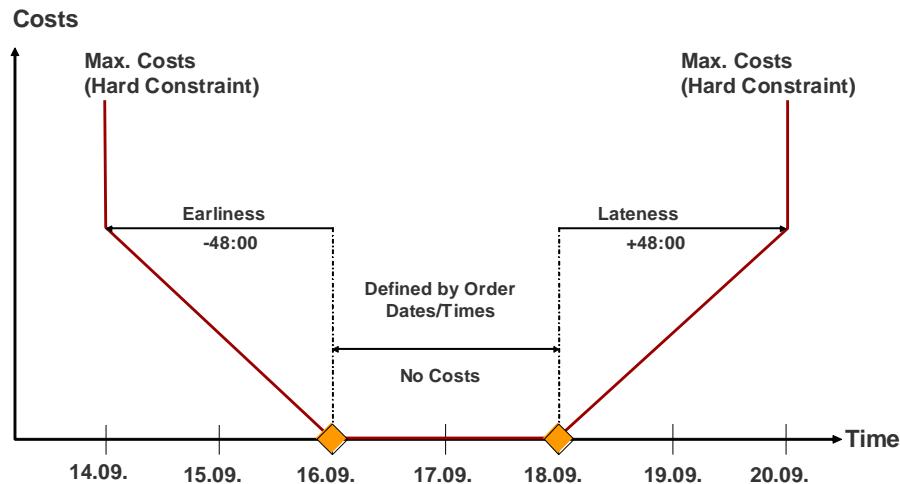
In the forwarding order, you have defined the following dates/times for the delivery:

Earliest delivery (acceptable dates/times)	N/A
Delivery date/time (from) (requested dates/times)	16.09.07 00:00:00
Delivery date/time (to) (requested dates/times)	18.09.07 00:00:00
Latest delivery (acceptable dates/times)	N/A

You have also defined the following tolerances:

Tolerance for early delivery	24:00 hrs
Tolerance for earliest delivery	48:00 hrs
Tolerance for late delivery	24:00 hrs
Tolerance for latest delivery	48:00 hrs

The following figure shows how the system takes these values into account and what the time window looks like:



Time Window (Example 3)

In this case, the system only takes into account the tolerances for early and late delivery. A delayed delivery up until 18.09 does not incur any costs. Penalty costs are incurred between 18.09 and 20.09. A delivery is not permitted as of 20.09. A premature delivery can occur at the earliest on 16.09. without penalty costs being incurred. If the delivery occurs between 14.09 and 16.09, penalty costs are incurred. A delivery is not permitted before 14.09.

Example 4

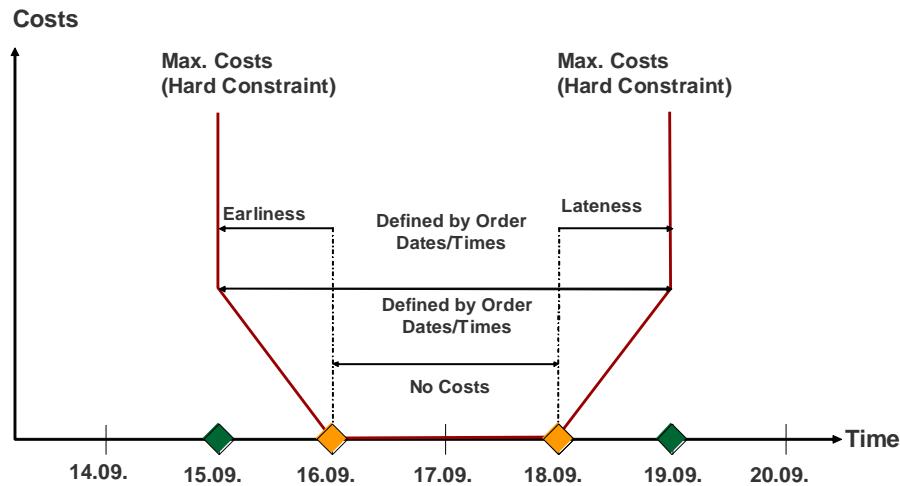
In the forwarding order, you have defined the following dates/times for the delivery:

Earliest delivery (acceptable dates/times)	15.09.07 00:00:00
Delivery date/time (from) (requested dates/times)	16.09.07 00:00:00
Delivery date/time (to) (requested dates/times)	18.09.07 00:00:00
Latest delivery (acceptable dates/times)	19.09.07 00:00:00

You have also defined the following tolerances:

Tolerance for early delivery	24:00 hrs
Tolerance for earliest delivery	48:00 hrs
Tolerance for late delivery	24:00 hrs
Tolerance for latest delivery	48:00 hrs

The following figure shows how the system takes these values into account and what the time window looks like:



Time Window (Example 4)

In this case, the system does not take any of the tolerances into account, since it takes into account the dates/times that you have defined in the forwarding order. A delayed delivery up until 18.09 does not incur any costs. Penalty costs are incurred between 18.09 and 19.09. A delivery is not permitted as of 19.09. A premature delivery can occur at the earliest on 16.09. without penalty costs being incurred. If the delivery occurs between 15.09 and 16.09, penalty costs are incurred. A delivery is not permitted before 15.09.

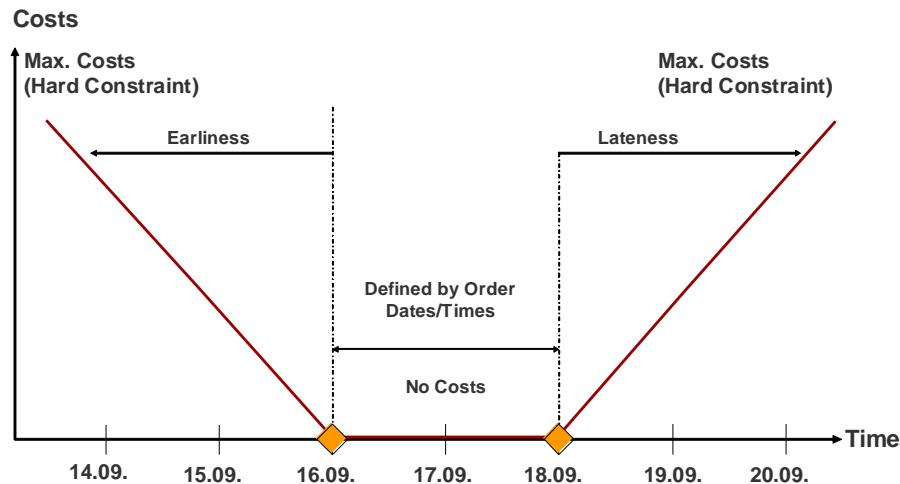
Example 5

In the forwarding order, you have defined the following dates/times for the delivery:

Earliest delivery (acceptable dates/times)	N/A
Delivery date/time (from) (requested dates/times)	16.09.07 00:00:00
Delivery date/time (to) (requested dates/times)	18.09.07 00:00:00
Latest delivery (acceptable dates/times)	N/A

In this case, you have not defined any tolerances.

The following figure shows how the system takes these values into account and what the time window looks like:



Time Window (Example 5)

Penalty costs are incurred for a delayed delivery as of 18.09. Penalty costs are not incurred for a delayed delivery between 17.09 and 18.09. Penalty costs are incurred for a premature delivery before 16.09. Penalty costs are not incurred for a premature delivery between 16.09 and 17.09.

Example 6

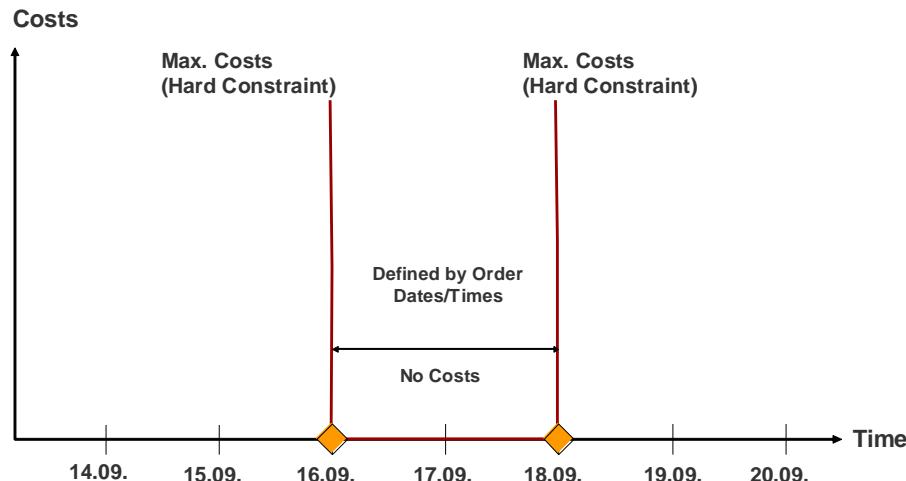
In the forwarding order, you have defined the following dates/times for the delivery:

Earliest delivery (acceptable dates/times)	16.09.07 00:00:00
Delivery date/time (from) (requested dates/times)	N/A
Delivery date/time (to) (requested dates/times)	N/A
Latest delivery (acceptable dates/times)	18.09.07 00:00:00

You have also defined the following tolerances:

Tolerance for early delivery	24:00 hrs
Tolerance for earliest delivery	48:00 hrs
Tolerance for late delivery	24:00 hrs
Tolerance for latest delivery	48:00 hrs

The following figure shows how the system takes these values into account and what the time window looks like:



Time Window (Example 6)

In this case, the system does not take any of the tolerances into account. Penalty costs are not incurred for a delayed delivery between 17.09 and 18.09. A delivery is not permitted after that. Penalty costs are not incurred for a premature delivery between 16.09 and 17.09. A delivery is not permitted before that.

Example 7

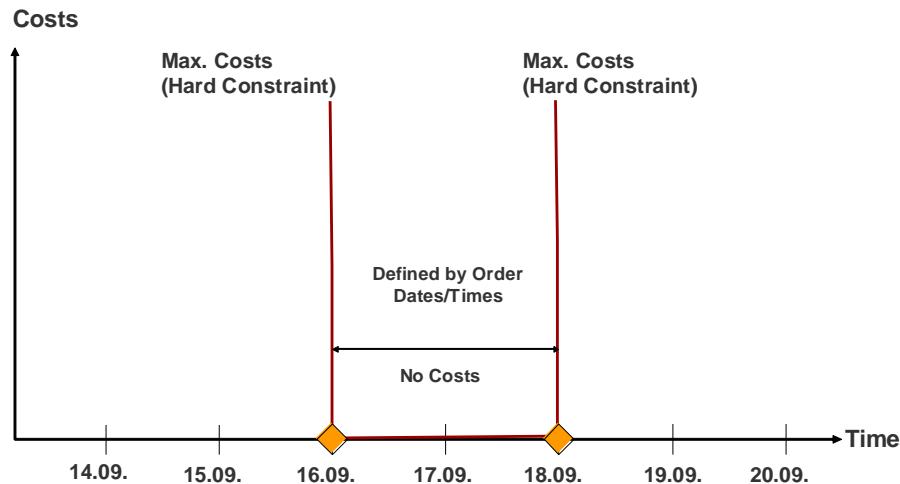
In this example, the system interprets the dates/times from the forwarding order as hard constraints without you having to define hard constraints. In the forwarding order, you have defined the following dates/times for the delivery:

Earliest delivery (acceptable dates/times)	N/A
Delivery date/time (from) (requested dates/times)	16.09.07 00:00:00
Delivery date/time (to) (requested dates/times)	18.09.07 00:00:00
Latest delivery (acceptable dates/times)	N/A

You have also defined the following tolerances:

Tolerance for early delivery	N/A
Tolerance for earliest delivery	00:00 hrs
Tolerance for late delivery	N/A
Tolerance for latest delivery	00:00 hrs

The following figure shows how the system takes these values into account and what the time window looks like:



Time Window (Example 7)

In this case, the system only takes into account the tolerances for earliest and latest delivery. Penalty costs are not incurred for a delayed delivery between 17.09 and 18.09. A delivery is not permitted after that. Penalty costs are not incurred for a premature delivery between 16.09 and 17.09. A delivery is not permitted before that.



Definition of a Condition for Time Windows

This example shows how you define a condition for a time window depending on the freight unit type.

In this case, you define a condition with the condition type /SCMTMS/TOR_TIMEWIND based on a decision table.

As the data access definition, enter /SCMTMS/TOR_TYPE (business document type of freight order management).

Depending on the freight order type, you specify in the decision table which durations and rounding rules the system is to use when calculating the times for the time window.

In the *Earliness* and *Delay* fields, you specify whether the system is to treat an earliness or delay as a constraint and, if yes, as which sort of constraint:

- As a soft constraint
- As a hard constraint
- As a soft and hard constraint

If you have entered *soft constraint* or *soft and hard constraint*, in the *Prem. Stay* (premature stay) field and the *Del. Stay* (delayed stay) field, enter the required time period in the format HH:MM.

If you entered *hard constraint* or *soft and hard constraint*, in the *EarlStStay* (earliest stay) field and the *Lat. Stay* (latest stay) field, enter the required offset in the format HH:MM.

In addition, you can specify whether the system is to round to complete days.

You can enter different values for the delivery and the pickup. To do so, enter a second data access definition /SCMTMS/TOR_STOP_CAT.

In the decision table, specify the following values for pickup:

Stop Type	Earliness	Delay	EarlStStay (earliest stay)	Round
<input type="radio"/> (pickup)	2 (hard constraint)	0 (no consideration as constraint)	0	True

This means that the pickup may not take place earlier than agreed. A delay is acceptable. The system is to round the pickup date.

You specify the following values for the delivery:

Stop Type	Earliness	Delay	Lat. Stay (latest stay)	Round
<input type="radio"/> (delivery)	0 (no consideration as constraint)	2 (hard constraint)	0	False

This means that the delivery may not take place later than agreed. An early delivery is acceptable.

Since the time of the delivery date defined by the customer is to be adhered to, specify that the system is not to round it to full days.



Context Determination

You use this function to ensure that the system processes all dependent objects, in other words, freight units and freight orders, together during VSR optimization.

Note

Context determination takes into account the transportation constraints of the freight units. However, for the sake of simplicity, only the freight units are mentioned in the following text.

End of the note.

Only if the system takes the context into account can you be sure that you have a transportation plan that is consistent with regard to all possible dependencies. Possible dependencies include:

- Incompatibilities between freight units
- Windows of the freight units
- Capacity decrease

Features

The system performs context determination automatically when you start VSR optimization in the transportation cockpit. In addition to the objects that you have selected for VSR optimization in the transportation cockpit (that is, either individual objects or all objects), it also considers indirectly linked objects. The system determines the following objects as context and hands them over to VSR optimization:

- The system determines indirectly linked freight orders from freight units.



Example

A freight unit is to be delivered from A via B and C to D. You have selected the freight unit for the stage from B to C in the transportation cockpit. A freight order exists for each of the stages A to B and C to D. The system determines these two freight orders as context.

End of the example.

- The system determines indirectly linked freight units from freight orders that have already been planned, that is, freight units that have already been planned by other planners.



Example

You have selected a freight order for stage A to B. Two additional freight units from other planners exist for the stage from A to B. The system determines these two freight units as context.

End of the example.

- The system determines indirectly linked freight units from freight units. Here, the system transfers the entire transportation chain to VSR optimization, even if you have selected only one freight unit for a stage.



Example

A freight unit is to be delivered from A via B and C to D. You have selected the freight unit for the stage from B to C in the transportation cockpit. Additional freight units exist for the stages A to B and C to D. The system determines these freight units as context.

End of the example.

- The system determines indirectly linked freight orders from resources. However, this applies to finite resources only (for multiresources, you must have specified the number of individual resources).



Example

A vehicle resource is to travel from A via B and C to D. A freight order is planned for each of the stages A to B and C to D. The system determines these two freight orders as context.

End of the example.



Note

- The system determines only those objects as context that you have not explicitly selected.
- VSR optimization uses the objects that the system has determined as context for information purposes only. VSR optimization is not permitted to change these objects.
- The system determines the context for multiresources if, in Customizing for the related means of transport, you have selected the checkbox for blocking multiresources and have entered a number of single resources that is greater than zero.

End of the note.



Full Map Display

This function allows you to switch to a full display of a map in the transportation cockpit (visual transportation cockpit) and perform planning there.

Prerequisites

For more information, see [Map Functions \[Page 1234\]](#).

Features

General Map Functions

For more information, see [Map Display \[Page 1233\]](#).

Display Options

When you display the full map, you can choose whether all of the planning objects or only selected planning objects are to be displayed. You can also use a display profile to select which planning objects are to be displayed on the map, for example, freight orders only or freight units only. You can call the display profile from the toolbar.

Planning Functions

You can carry out your planning activities on the map. If you select unplanned freight units and start planning from the context menu, for example, the system shows the possible assignments of the freight units to the resources. Select the assignments that you require.

You can also assign unplanned freight units or multirelations that contain unplanned freight units to resources by using drag and drop. When you do so, you can either assign the freight units to the resource or the resource to the freight units.

If you want to split a stage that is displayed on the map, you can assign an unplanned freight unit or multirelation to a location using drag and drop. Once you have selected the required planning option, the system adds the selected location to the freight unit stage and updates the map accordingly. This process also applies to freight orders.

You can also display transshipment locations that are not necessarily part of your planning activities. You display these locations by choosing *Show Related Transshipment Locations* from the context menu.

If a freight order does not have a vehicle assigned to it, you can also assign the vehicle by using drag and drop. To do so, you assign the freight order to a single vehicle resource or a multispot that contains at least one vehicle resource or passive vehicle resource and select the relevant planning option from the menu.

The system displays all of your transportation planning activities on the map. When you leave the full display of the map, your planning activities are also displayed in the table view of the transportation cockpit.

Activities

To switch to the full map display from in the transportation cockpit, choose *Show Map*.



Customer-Specific Functions

You can use this function to access planning data and to model your own planning processes, such as the following:

- Visually represent freight orders and freight units
- Remove forwarding orders from planning
- Add freight units to freight orders

Prerequisites

- You have defined at least one strategy of your own and at least one method of your own, and have assigned this method to your strategy. For more information about the process controller, see Customizing for *Transportation Management* under ► *Planning* ► *General Settings* ► *Configure Process Controller for Planning*.
- You have defined a customer-specific function and have assigned your strategy to this function. For more information, see Customizing for *Transportation Management* under ► *Planning* ► *General Settings* ► *Define Customer-Specific Functions for Planning*.

Features

You model your planning processes using strategies that consist of one or more methods. Each method represents an individual planning step. The process controller is the framework used for defining strategies and methods.

Once you have defined customer-specific functions in Customizing and assigned a strategy to each of them, these functions are automatically available for selection on the user interface for transportation planning. When you choose a function, the system automatically performs the corresponding planning steps.

For this, the process controller passes the planning request object `/SCMTMS/CL_CUS_REQUEST` or a customer-specific object derived from it, on through the methods. You can enhance your customer-specific object with your own data.

You can specify a request object class in Customizing. This class must be derived from the `/SCMTMS/CL_CUS_REQUEST` class. If you do not specify a class, the system uses the `/SCMTMS/CL_CUS_REQUEST` class. For more information, see Customizing for *Transportation Management* under ► *Planning* ► *General Settings* ► *Define Customer-Specific Functions for Planning*.

Activities

To perform transportation planning using customer-specific functions, in SAP NetWeaver Business Client choose ► *Planning* ► *Planning* ► *Transportation Cockpit* and then start planning. Use the corresponding pushbutton to choose the customer-specific function you want to perform.

More Information

[Process Controller Configuration \[Page 1229\]](#)



Effects of Date/Time Deviations During Execution

You can check the effects that deviations in dates/times during the execution of freight orders have on the rest of your planning. Deviations in dates/times can occur if a delay is reported.

Features

If a freight order cannot be executed as planned, for example, because the truck left late, you can adjust your planning. You do this by performing forward scheduling. The system reschedules the freight order. It does not consider the planning horizon while doing this.

Scheduling only takes place for the resource that is assigned to the freight order. If there are dependencies to other resources or freight orders, this can lead to conflicts, for example, for multimodal transports. You must solve this conflict manually or using VSR optimization. We recommend solving conflicts manually. If you use VSR optimization, you must make sure that all objects are in the planning horizon.

Activities

You can start scheduling on the following user interfaces:

- Transportation cockpit

We recommend scheduling from the transportation cockpit if the system is to consider not only the late freight order but also all of the other freight orders at the resource during scheduling. To start scheduling in SAP NetWeaver Business Client, choose ► *Planning* ➤ *Planning* ➤ *Transportation Cockpit* ▶.

- User interface for changing freight orders

We recommend scheduling from this user interface if you only want to schedule late freight orders. To start scheduling, choose the following menu path in SAP NetWeaver Business Client:

- ► *Freight Order Management* ➤ *Road* ➤ *Road Freight Order* ➤ *Edit Road Freight Order* ▶
- ► *Freight Order Management* ➤ *Rail* ➤ *Rail Freight Order* ➤ *Edit Rail Freight Order* ▶

- Freight order overview

To start scheduling in SAP NetWeaver Business Client, choose ► *Freight Order Management* ➤ *Overview Freight Orders* ▶.



Agreement Management

As a shipper or logistics service provider (LSP), you use Agreement Management to do the following:

- Forecast and assess your transportation requirements.
- Request bids from carriers for your transportation requirements.
- Negotiate contracts (agreements) with carriers.

These features help keep your transportation costs down and efficiently manage contracts with carriers.

As a carrier, you use Agreement Management to respond to shippers or LSPs with your rates for transportation services.

Carriers, shippers, and LSPs can also use Agreement Management to set up and maintain agreements, the basis for calculating transportation charges.

Integration

Agreement Management is a component of SAP Transportation Management (SAP TM). Agreement Management is integrated with the Charge Management and Service Product Catalogs component because SAP TM calculates transportation charges based on the master data stored in calculation sheets, rate tables, and scales. For more information, see [Charge Management and Service Product Catalogs](#).

Features

- Analytics

As a shipper or LSP, you can analyze historical transportation data for trade lanes, such as the number of containers or truckloads a carrier has transported in the trade lanes, to help you easily plan future transportation requirements (see [Strategic Freight Procurement Analytics \[Page 921\]](#)). You can also analyze your carriers' performance (see [Carrier Performance Analysis \[Page 934\]](#)).

- Strategic freight procurement

As a shipper or LSP, you can detail your transportation requirements, request bids from carriers, and compare the bids you receive. You can then negotiate and award the transportation business to carriers and negotiate contracts with carriers (see [Strategic Freight Procurement \[Page 916\]](#)).

- Rate quotation

As a carrier, you can respond to shippers or LSPs with your rates for transportation services (see [Forwarding Agreement Quotation \[Page 960\]](#)).

- Agreements

As a shipper, LSP, or carrier, you can create long-term contracts with your business partners as a starting point for enabling charge calculation (see [Agreement Maintenance \[Page 974\]](#)).



Strategic Freight Procurement

As a shipper or logistics service provider (LSP), you need to keep your transportation costs low while still ensuring reliable transportation services from carriers. Strategic freight procurement helps you to investigate the best rates from carriers to transport items between specific locations (trade lanes) and then to agree a contract (agreement) with the carriers. SAP Transportation Management (SAP TM) supplies the tools you need to request rate quotations, evaluate responses, and award the transportation business to carriers.

Prerequisites

- If you want to use the Business Context Viewer (BCV) to analyze your carriers' performance, you must do the following:
 - Configure the prerequisites for the BCV (see [Business Context Viewer in SAP TM](#)).
 - Configure the prerequisites for carrier performance analysis (see [Carrier Performance Analysis \[Page 934\]](#)).
 - Integrate SAP TM with SAP NetWeaver Business Warehouse BI Content 747 – SP07.
- You have defined number ranges in Customizing for *Transportation Management* under **► Master Data ► Agreement RFQs and Quotations ► Define Number Range Intervals**.
- You have defined freight agreement RFQ types in Customizing for *Transportation Management* under **► Master Data ► Agreement RFQs and Quotations ► Define Freight Agreement RFQ Types**.
- You have defined target share strategies and strategy conditions in Customizing for *Transportation Management* under **► Master Data ► Agreement RFQs and Quotations ► Define Target Share Strategies**.
- If you are a carrier responding to RFQs, you must define forwarding agreement quotation types in Customizing for *Transportation Management* under **► Master Data ► Agreement RFQs and Quotations ► Define Forwarding Agreement Quotation Types**.
- You have configured the prerequisites for agreements (see [Agreement Maintenance \[Page 974\]](#)).
- You have configured the prerequisites for output management and business-to-business communication (see [Output Management \[Page 1270\]](#)).

Process

1. You analyze the historical data of your transportation requirements from previous years.

You can analyze the historical transportation data for the trade lanes, such as gross weight, container count, number of documents, and gross volume. This analysis enables you to easily plan transportation requirements for the future. You can also do a historical cost analysis to analyze data for charges from the past. For example, you can review the planned cost and actual cost for gross weights for specific trade lanes and the charges carriers used for particular charge types. For more information, see [Strategic Freight Procurement Analytics \[Page 921\]](#).

2. You forecast your transportation requirements for the current year.

Based on data from the past, you can forecast your transportation requirements, such as gross weight, container count, and costs. You can also create a forecast simulation in which you can change data of the forecast. For more information, see [Strategic Freight Procurement Analytics \[Page 921\]](#).

3. You analyze your carriers' performance in a trade lane using the BCV.

This analysis helps you to decide which carriers you want to request rate quotations from for your transportation requirements in the trade lane. If you do not select a carrier in the BCV, the system displays the performance parameters of all the carriers operating in the trade lane. The system ranks the carriers based on key performance indicators such as carrier delivery reliability and invoice discrepancy. For more information, see [Carrier Performance Analysis \[Page 934\]](#).

 Note

You can view the historical transportation data in SAP NetWeaver Business Client by choosing  *Freight Agreement Management*  *Freight Agreement Management Overview*  *Historical Demand*  . You can create freight agreement RFQ masters directly from the historical transportation data in the *Historical Demand* personal object worklist (POWL). If you create a freight agreement RFQ master in the *Historical Demand* POWL, the system enters details into the freight agreement RFQ master, for example:

- Source location and destination location
- Carrier
- Means of transport
- Shipping type
- Requested capacity details

You can also include forecasted transportation data or additional historical transportation data in the *Historical Demand* POWL from SAP NetWeaver Business Warehouse BI Content or other systems. For more information, see Customizing for *Transportation Management* under  *Business Add-Ins (BAdls) for Transportation Management*  *Master Data*  *Agreement RFQs*  *BAdl: Historical Demand Personal Object Worklist* .

End of the note.

4. You create a freight agreement RFQ master to detail your transportation requirements.

In the freight agreement RFQ master, you specify the trade lanes, carriers, RFQ items, and logistical parameters, for example:

- Requested capacities
- Commodity codes
- Service levels
- Movement types
- Periodicities

- Rating structure

The rating structure of each RFQ item can consist of calculation sheets and rate tables. The system uses calculation sheets to specify which transportation charges to calculate and how to calculate them, and uses rate tables to define and maintain rates directly in SAP TM. For more information, see [Calculation Sheet](#) and [Rate Table](#).

5. You publish the freight agreement RFQ master.

As part of the publication process, the system automatically creates and sends individual freight agreement RFQs to the carriers based on your output management settings and using business-to-business communication. For more information, see [Freight Agreement Quotation Processing](#). Note that you can create individual freight agreement RFQs for multiple freight agreement RFQ masters and publish the freight agreement RFQ masters using the program *Mass Publication of Freight Agreement RFQ Masters* (/SCMTMS/RFQ_PUBLISH) in transaction SE38.

You can separate the creation of the individual freight agreement RFQs and the publication of the freight agreement RFQ master into 2 steps. This separation allows you to edit individual freight agreement RFQs before sending them to carriers. You separate the creation and publication in the Customizing activity *Define Freight Agreement RFQ Types*. Note that you cannot selectively send individual freight agreement RFQs to carriers – the system sends all the individual freight agreement RFQs to the carriers when you publish the freight agreement RFQ master.

You can enable an approval workflow so you have to get approval from an approver before publishing the freight agreement RFQ master. When an approver approves the publication of the freight agreement RFQ master, the system automatically publishes the freight agreement RFQ master and creates and sends the individual freight agreement RFQs to the carriers. If you separated the creation and the publication into 2 steps, and an approver approves the publication, you can then separately trigger the creation of the individual freight agreement RFQs and the publication of the freight agreement RFQ master.

6. The system notifies each carrier about the individual RFQ.

The system also reminds each carrier if they have not responded and the response deadline is approaching. For more information about system notifications, see [Requesting of Quotations for Transportation Services \[Page 928\]](#).

7. The carriers respond to the individual RFQs.

The carriers evaluate and respond to their individual RFQ with their rates for the transportation services. Carriers submit their rates and promised capacity for each charge type listed in the calculation sheet of each RFQ item. If a charge type has a rate table associated with it, carriers are expected to provide rate values for each of the combinations listed in the rate table. Carriers cannot change the structure of the calculation sheets or rate tables (see [Calculation Sheet Maintenance](#) and [Rate Definition and Maintenance](#)).

For more information about responding to freight agreement RFQ masters, see [Forwarding Agreement Quotation \[Page 960\]](#) and [Forwarding Agreement Quotation Processing](#).

8. You evaluate the responses.



Recommendation

If you already know which carriers you want to award the transportation business to, skip the following 3 steps in the process. Instead, directly create or update freight agreements for the carriers you are awarding the business to. Therefore you do not need to do the following:

1. Evaluate the responses.
2. Review the results of the response comparison and strategy spend estimation.
3. Accept your preferred target share strategy.

End of the recommendation.

After you receive the responses from carriers, you evaluate which carrier quoted the best rate by comparing the responses by RFQ item in the comparison cockpit. You compare the responses by using the optimizer for carrier selection. The optimizer is especially useful when the comparison is complex and multiple constraints must be taken into account. You compare the responses in the following way:

4. You insert the target share strategy and the strategy conditions that you want the system to apply when proposing target shares for carriers.

You define target share strategies and strategy conditions in the Customizing activity *Define Target Share Strategies*.

5. You run the optimizer to propose target shares based on the target share strategy.

The optimizer proposes the most ideal target share distribution to produce the most cost effective solution. You can run the optimizer repeatedly with different target share strategies and strategy versions.

 Note

You can run the optimizer for specific target share strategies or for all target share strategies in the freight agreement RFQ master in the back end using program *Mass Optimizer Run and Strategy Spend Estimation* (/SCMTMS/OPTIMIZER_RUN) in transaction SE38. If you do specify the target share strategies, the system runs the optimizer for all the target share strategies in the freight agreement RFQ master. The system can also estimate the strategy spend at the same time.

End of the note.

6. The system simulates the estimated strategy spend based on the responses you received from the carriers and the target share strategies.
7. You select your preferred target share strategy.

When you select your preferred target share strategy, the system automatically calculates the confirmed capacity in the freight agreement RFQ master.

 Note

If the comparison is fairly simple and the rates are the only constraints that must be taken into account, you can first compare the responses manually, as follows:

8. You compare the responses by carrier and charge type.

You can compare the responses directly in SAP TM. Alternatively, if the charge type has a rate table, you can compare the rate tables in Microsoft Excel.

9. The system ranks the carriers based on the rates the carrier quoted per charge type.
10. The system displays the results in a response comparison graph.

If you compare the rate tables in Microsoft Excel only, the system does not display the results in a graph.

End of the note.

For more information, see [Post-Bid Analysis \[Page 941\]](#).

 Note

If you are not satisfied with the responses from the carriers, you can create a new negotiation round. You can then change the details of the freight agreement RFQ master and publish it again. The carriers can then resubmit their rates.

End of the note.

9. You review the results of the response comparison and strategy spend estimation.

You can use the *Award Summary* tab page to get an overview of the business you plan to award to the carriers.

10. You accept your preferred target share strategy.

11. You create or update freight agreements for the carriers you are awarding the business to.

The system notifies the carriers about the creation or update of the freight agreements. The notification includes a copy of the freight agreement and the rate tables, if any. For more information about system notifications, see [Requesting of Quotations for Transportation Services \[Page 928\]](#).

You can enable an approval workflow so that you have to request approval to create the freight agreements. You enable this workflow in the Customizing activity *Define Freight Agreement RFQ Types*.

 Note

If you update the status of the freight agreement RFQ master to completed, the system automatically sets the status of the individual freight agreement RFQs to completed.

End of the note.

More Information

[Freight Agreement RFQ Master \[Page 924\]](#)

[Agreement \[Page 970\]](#)

[Agreement Management \[Page 915\]](#)

[Analytics](#)



Strategic Freight Procurement Analytics

You can analyze transportation data such as the number of containers or truckloads a carrier has transported in a trade lane. You can also forecast the number of containers or truckloads needed for a trade lane for a period of time. This analysis enables you to easily plan transportation requirements for the future.

Prerequisites

- You have integrated SAP Transportation Management (SAP TM) 9.1 with SAP NetWeaver Business Warehouse (SAP NetWeaver BW) *BI Content 747 - SP07*.
- You have enabled a connection to an SAP NetWeaver BW system in Customizing for *Transportation Management* under ► *Basic Functions* ► *General Settings* ► *Define General Settings for SAP TM*. You select the relevant system in the *SAP NetWeaver BW System Name* field.

Activities

In the SAP NetWeaver Business Client user interface under ► *Analytics* ► *Strategic Freight Procurement Planning*, you can use SAP NetWeaver BW applications to analyze transportation data in the following screens:

- Under *Freight Procurement Planning*, you can perform the following analysis:
 - **Transportation history**
You can analyze logistics data for a period of time in the past. For example, you can analyze data such as gross weight, container count, number of documents, and gross volume.
 - **Cost history**
You can analyze data for charges from the past. For example, you can review the planned cost and actual cost for gross weights for specific trade lanes and the charges carriers used for particular charge types.
 - **Forecast**
Based on data from the past, the system can forecast elements such as gross weight, container count, truckloads, and approximate cost for a time period. You can save this forecasted data as a Microsoft Excel file. This forecast depends on patterns from the past. For example, if you have allocated load to carrier in a particular ratio, the forecast will also be in the same ratio. You can also change the strategy the system uses to forecast data. For more information about forecast and forecast strategies, see <http://help.sap.com/netweaver>. Choose a release and under *Application Help*, choose ► *SAP NetWeaver Business Warehouse* ► *Analyzing and Planning Data* ► *Analytic Engine* ► *Planning Engine* ► *Planning Business Data with BW Integrated Planning* ► *Planning Functions* ► *Standard Planning Function Types* ► *Forecast*. Note that you specify the same forecast analysis ID and a description for both planning data and forecast.
- You can save forecasts as forecast analysis IDs. Subsequently, you can use these forecast analysis IDs to analyze carrier performance in a freight agreement

RFQ master. For more information, see [Carrier Performance Analysis \[Page 934\]](#).

You can also create a forecast simulation in which you can change and simulate forecast data. This enables you to use firm data from the future in your forecasts. For example, you are certain that a customer needs an extra 35% of a material in March. You can take the extra 35% into account when you simulate the forecast for the subsequent months.

- If historical transportation data is present in a separate system, you can manually enter the historically data into relevant info cubes and subsequently perform the analysis. For more information, see <http://help.sap.com/netweaver>. Choose a release and under *Application Help*, choose ► *Function-Oriented View* ► *Business Warehouse* ► *SAP Business Explorer* ► *BEx Web* ▶.
- You can filter data based on attributes such as transportation lane or carrier. These filters enable you to arrive at decision points such as the business share to be allotted. For more information, see <http://help.sap.com/netweaver>. Choose a release and under *Application Help*, choose ► *Function-Oriented View* ► *Business Warehouse* ► *Data Warehousing* ► *Modeling* ► *Enterprise Data Warehouse Layer* ► *Creating InfoProviders* ▶.
- Under *Carrier Performance*, the application displays graphs representing the following characteristics:

- Carrier reliability

A graph of carriers representing the percentage of orders that had a delay in pick-up or delivery, such as delivered ten hours late or picked up four hours late. Note that the graph does not represent the percentage of orders that has been delivered or picked-up on time or in advance.

- Invoice discrepancy

A graph of carriers representing the following parameters:

- The percentage of difference between the planned cost and actual cost against the actual cost in the invoices. For example, the total planned cost for 50 invoices is EUR 12,000. However, the actual cost is EUR 20,000. The percentage of amount discrepant is $((12000 - 20000) / 20000) * 100 = 40\%$.
- The percentage of invoices with different planned cost and actual cost against the total number of invoices. For example, the total number of invoices is 50 and 10 invoices have a different planned cost and actual cost. The percentage of discrepant invoices is $((10 / 50) * 100 = 20)$.

For more information, see the documentation of the Customizing activity *Define Key Performance Indicators and Profiles* under ► *Integration with Other SAP Components* ► *Transportation Management* ▶ in the SAP NetWeaver BW system.

In the SAP NetWeaver Business Client, you can use the *Overview Freight Agreement Management* personal object worklist under *Freight Agreement Management* to view the transportation history of logistics data. This feature enables you to create a freight agreement RFQ master immediately after referring to the transportation history.

The role /SCMTMS/PROCESS_ADMINISTRATOR has been enhanced to include user access to these SAP NetWeaver Business Warehouse applications. For more information, see [Roles \[Page 1324\]](#).

More Information

[Strategic Freight Procurement \[Page 916\]](#)



Freight Agreement RFQ Master

A freight agreement RFQ master is a business document containing the transportation requirements of a shipper or logistics service provider (LSP) for a specific future period. A shipper or LSP uses a freight agreement RFQ master to select a set of carriers to fulfill the transportation requirements.

Strategic freight procurement helps you to investigate the best rates from carriers to transport items between specific locations (trade lanes) and for a specific set of logistical parameters, such as shipping type, transportation mode, and movement type. You then agree a contract (agreement) with the carriers. Freight agreement RFQ masters are a key element in strategic freight procurement, as you use them to do the following:

1. Detail your transportation requirements.
2. Request capacity and rate quotations from carriers.
3. Evaluate and compare the bids you receive from carriers.
4. Distribute target share according to the carriers' bids.
5. Simulate the estimated costs based on the carriers' rates.
6. Negotiate and award the transportation business to carriers.
7. Agree the contracts with carriers.

In essence, you use freight agreement RFQ masters to request bids from carriers for transportation services and, based on those bids, select carriers to fulfill your transportation requirements.

Note

A carrier receives an individual freight agreement RFQ in the form of a forwarding agreement quotation. Forwarding agreement quotations allow carriers to respond with their transportation rates. For more information, see [Forwarding Agreement Quotation \[Page 960\]](#).

End of the note.

Structure

A freight agreement RFQ master can contain the following main tab pages and screen areas:

- *General Data*

The *General Data* tab page contains high-level information about the freight agreement RFQ master, for example:

- Organizational unit responsible
- Validity period
- Carrier details, including whether you already have an agreement in place with the carrier in the trade lane
- RFQ type

- RFQ negotiation round number
 - Deadline for responding to the freight agreement RFQ
 - Calculation sheet template the system uses to create a calculation sheet in the freight agreement RFQ master
- *Items*

The *Items* screen area contains information about the RFQ items. On this tab page, you can access the comparison cockpit to compare the responses you receive from carriers (see [Post-Bid Analysis \[Page 941\]](#)). You can also accept your preferred strategy before awarding the transportation business to carriers.

This screen area can contain the following tab pages, when relevant:

- *Calculation Sheet Overview*
This tab page displays the calculation sheet details for each RFQ item.
 - *Carriers*
This tab page displays the details of the carriers that responded to the RFQ item.
 - *Trade Lanes*
On this tab page, you enter the details about the trade lanes for each RFQ item.
 - *Capacities*
This tab page contains the capacity required from carriers, the capacity carriers can commit to, and the capacity awarded to carriers. For more information, see [Capacities in Rate Tables for Freight Agreement RFQ Masters \[Page 936\]](#).
 - *Commodity Codes*
On this tab page, you specify the commodity codes for each RFQ item.
 - *Default Route*
On this tab page, you specify the route between a location pair for delivering the RFQ item.
 - *Notes*
On this tab page, you can add any notes relevant to the RFQ item.
 - *Attachments*
On this tab page, you can upload files relevant to the RFQ item.
- *Document Flow*
The *Document Flow* tab page displays the business documents that were created based on the freight agreement RFQ master, with status information. For example, the individual freight agreement RFQs and the responses received from carriers.
- *Output Management*

On the *Output Management* tab page, you can print RFQ details and generate e-mails and faxes and send them directly to the intended recipient. You can also see a record of the documents that were already printed or sent (by e-mail or fax, for example). For more information, see [Output Management \[Page\] 1270](#).

- *Excel Integration*

On the *Excel Integration* tab page, you can download the RFQ master data into a Microsoft Excel file for editing. You can then upload the edited Microsoft Excel file back into the RFQ master. The system updates the RFQ master with your changes.

- *Versions*

The *Versions* tab page contains a list of the RFQ versions and negotiation rounds, including the status of each version.

- *Award Summary*

The *Award Summary* tab page displays graphs summarizing all the logistical information. This summary helps you to judge how the negotiation process is going and make key decisions, such as whether to initiate a new negotiation round. You can view the award summary by trade lane, carrier, or RFQ item.

You can also check what you spent last year for transportation services with the same logistical information, that is:

- Trade lane
- Shipping type
- Transportation mode

For more information, see [Award Summary \[Page\] 955](#).

- *Notes*

On this tab page, you can add any notes relevant to the freight agreement RFQ master.

- *Attachments*

On this tab page, you can upload files relevant to the freight agreement RFQ master.

- *Change Documents*

You can view all changes made to a freight agreement RFQ master on the *Change Documents* tab page or screen area. The changes are listed by date and time. You view the details of the changes at header level by selecting the relevant row in the *Transactions* screen area and at field level by selecting the relevant row in the *Record Level Changes* screen area. You must refresh the RFQ master to view recently saved changes.

 Note

You can activate the *Change Documents* tab page or screen area in Customizing for *Transportation Management* under ► *Master Data* ► *Agreement RFQs and Quotations* ► *Define Freight Agreement RFQ Types* ▶.

End of the note.

Integration

Freight agreement RFQ masters are integrated with forwarding agreement quotations, as carriers use forwarding agreement quotations to respond to individual freight agreement RFQs.

During strategic freight procurement, the system estimates the cost of using a carrier to provide transportation services in a trade lane. To perform this estimation, freight agreement RFQ masters are integrated with calculation sheets, rate tables, and ultimately charge calculation.

The system creates or updates freight agreements as part of the strategic freight procurement process.

More Information

[Strategic Freight Procurement \[Page 916\]](#)

[Requesting of Quotations for Transportation Services \[Page 928\]](#)

[Forwarding Agreement Quotation \[Page 960\]](#)

[Agreement \[Page 970\]](#)

[Calculation Sheet](#)

[Rate Table](#)

[Optimization as Part of Carrier Selection \[Page 887\]](#)



Requesting of Quotations for Transportation Services

Strategic freight procurement helps you to investigate and negotiate the best rates from carriers to transport items between specific locations (trade lanes) and for specific logistical parameters, and then to agree a contract (agreement) with the selected carriers. Requesting quotations for transportation services using freight agreement RFQ masters is a key element in strategic freight procurement. This is because you use freight agreement RFQ masters to request bids from carriers for transportation services and, based on those bids, select carriers to fulfill your transportation requirements. When requesting quotations for transportation services, you can do the following:

- Analyze historical transportation data.
- Detail your transportation requirements.
- Request and compare the bids you receive from carriers.
- Distribute target share according to the carriers' bids.
- Simulate the estimated costs based on the carriers' rates.
- Negotiate and award the transportation business to carriers.
- Agree the contracts with carriers.

Prerequisites

You have configured the prerequisites for strategic freight procurement (see [Strategic Freight Procurement \[Page 916\]](#)).

Features

Analytics

You can analyze historical transportation data for trade lanes to help you to easily plan transportation requirements for the future, as follows:

- You can perform a historical cost analysis.
- You can forecast your transportation requirements for a trade lane.
- You can create a forecast simulation in which you can change the forecast data.
- You can analyze your carriers' performance in a trade lane using the Business Context Viewer (BCV).

To view historical transportation data, in SAP NetWeaver Business Client choose ► *Freight Agreement Management* ► *Freight Agreement Management Overview* ► *Historical Demand*. You can also create freight agreement RFQ masters directly from the historical transportation data. You can also include forecasted transportation data or additional historical transportation data in the *Historical Demand* POWL from SAP NetWeaver Business Warehouse BI Content or other systems. For more information, see Customizing for *Transportation Management* under ► *Business Add-Ins (BAdIs) for Transportation Management* ► *Master Data* ► *Agreement RFQs* ► *BAdI: Historical Demand Personal Object Worklist*.

For more information about analyzing historical transportation data, see [Strategic Freight Procurement Analytics \[Page 921\]](#) and [Carrier Performance Analysis \[Page 934\]](#).

 Note

You must integrate SAP Transportation Management (SAP TM) with SAP NetWeaver Business Warehouse BI Content 747 – SP07 to use this feature.

End of the note.

Templates

You can use a template to create a freight agreement RFQ master. You can define templates in SAP NetWeaver Business Client. You can view and update templates in the *Freight Agreement RFQ Master Templates* personal object worklist.

Transportation Requirement Details

You can use the following features in freight agreement RFQ masters to detail your transportation requirements and view the rate quotations you receive from carriers:

- Templates

You can define templates for freight agreement RFQ masters to help simplify the process of creating freight agreement RFQ masters. To define a template, in SAP NetWeaver Business Client choose ► *Freight Agreement Management* ► *Freight Agreement RFQ Master Templates* ▶.

- RFQ items

You specify your transportation requirements per RFQ item. For each RFQ item, you can specify the following:

- The carrier details that are specific to the RFQ item
- The trade lanes where you want the transportation services
- The capacity that you need the carrier to be able to fulfill, the capacity the carrier can commit to, and the capacity you award to the carrier (see [Capacities in Rate Tables for Freight Agreement RFQ Masters \[Page 936\]](#))
- The commodity codes for the RFQ item
- The calculation sheet and rate tables for carriers to use when submitting their rates for the transportation services (see [Calculation Sheet](#) and [Rate Table](#))
- Logistical parameters such as shipping type, movement type, and transportation mode

Note that if you change the validity of the agreement in the freight agreement RFQ master, you can update the validity of all or selected RFQ items and service products with the same validity period.

Approval Workflow

You can enable approval workflows so that you have to get approval from an approver before publishing a freight agreement RFQ master and before creating a freight agreement during strategic freight procurement. When an approver approves the publication of the freight

agreement RFQ master, the system automatically publishes the freight agreement RFQ master and creates and sends the individual freight agreement RFQs to the carriers. You enable these approval workflows in the Customizing activity *Define Freight Agreement RFQ Types*. You can also specify that you want the system to notify an approver when you request approval. For more information, see [Approval Check](#).

You can also use an offline approval workflow to send work items for freight agreement RFQ masters by e-mail to the Microsoft Outlook inbox of a user, such as a customer agent. The user can accept or reject a work item and update the system from their inbox. For more information, see [Offline Workflow for Sending and Approving Work Items \[Page 1255\]](#).

Comparison Cockpit

After you receive responses from carriers during strategic freight procurement, you use the comparison cockpit to evaluate which carrier quoted the best rate by comparing and analyzing some or all of the responses per RFQ item or across RFQ items. The comparison cockpit supports you in the vital post-bid analysis step, which in turn supports your decision-making process. The comparison cockpit helps you to decide which carriers to award the transportation business to.

In the comparison cockpit, you compare responses by using the optimizer for carrier selection. The optimizer is especially useful when the comparison is complex and multiple constraints must be taken into account. You can also compare responses manually directly in SAP TM or in Microsoft Excel.

For more information, see [Post-Bid Analysis \[Page 941\]](#).

Negotiation Rounds and RFQ Versions

If you are not satisfied with the responses from carriers, you can create a new negotiation round. You can then change the details of the freight agreement RFQ master and publish it again. The carriers can then resubmit their rates. The system records the number of the RFQ negotiation round, indicating how many times you published a freight agreement RFQ master to carriers. The freight agreement RFQ master must be published before you can create a new negotiation round. When you create a new negotiation round, the system updates the number of negotiation rounds by 1 and resets the version number to zero. This ensures that the latest round you publish always has an associated clean version.

You can create a new version of the freight agreement RFQ master without creating a new negotiation round. A new version enables you to make changes without publishing the freight agreement RFQ master to your carriers. You can use versions for internal changes before you publish, and you can use negotiation rounds for the changes that you send to your carriers. The freight agreement RFQ master must have the *In Process* status to create a new version. If you have created individual freight agreement RFQs or published the freight agreement RFQ master, you cannot create a new version of the freight agreement RFQ master. When you create a new version, the system updates the version number by 1 and the negotiation round number remains the same. When you publish the freight agreement RFQ master, the negotiation round number is updated by 1.

To create a negotiation round, in the freight agreement RFQ master select *Follow Up -> Create Negotiation Round*.

To create a version, in the freight agreement RFQ master choose the *Generate New Version* button.

Award Summary

You can display a summary and graphs of all the logistical information in a freight agreement RFQ master. This summary helps you to judge how the negotiation process is progressing and make key decisions, such as whether to create a new negotiation round. You can also check what you spent last year for transportation services with the same logistical information, such as trade lane, shipping type, and transportation mode. For more information, see [Award Summary \[Page 955\]](#).

Mass Individual RFQ Creation and Publication

You can create individual freight agreement RFQs for multiple freight agreement RFQ masters and publish the freight agreement RFQ masters using the program *Mass Publication of Freight Agreement RFQ Masters* (/SCMTMS/RFQ_PUBLISH) in transaction SE38.



The system does not automatically publish the freight agreement RFQ masters if you separated the creation of individual freight agreement RFQs and the publication of the freight agreement RFQ master into 2 steps. You separate the creation and publication in Customizing for *Transportation Management* under *Master Data* *Agreement RFQs and Quotations* *Define Freight Agreement RFQ Types*. If you separated the creation and publication, you can also use this program to publish multiple freight agreement RFQ masters for existing individual freight agreement RFQs.

End of the note.

System Notifications

SAP TM integrates with output management (see [Output Management \[Page 1270\]](#)) to allow you to automatically notify carriers at various stages of the strategic freight procurement process, as follows:

1. After publication of the freight agreement RFQ master

The system notifies carriers that you published a freight agreement RFQ, and includes the freight agreement RFQ as an attachment. The system also attaches Microsoft Excel files for rate tables used for any charge types.

2. When the response deadline is approaching

The system sends a reminder to carriers who have not responded to the freight agreement RFQ. You define when to send this reminder in the Customizing activity *Define Freight Agreement RFQ Types*.

3. On the response deadline

On the last day of the response, the system sends a reminder to carriers who have still not responded to the freight agreement RFQ.

4. After creation of the agreement

The system notifies carriers that you created the agreement, and includes the freight agreement and rate tables, if any, as attachments.

5. When the agreement is expiring

The system notifies carriers that the freight agreement is expiring, and includes the freight agreement both as an attachment and as a link.

SAP TM uses business-to-business communication to exchange this information electronically between business partners. For more information, see [Freight Agreement Quotation Processing](#) and [Forwarding Agreement Quotation Processing](#).

Business Share Integration

When you create or update an agreement from an agreement RFQ, the system proposes a target share. The target share is the output from the optimizer run that you perform in the comparison cockpit in the freight agreement RFQ master. The system copies the share into the item details of the agreement. For more information, see [Agreement Maintenance \[Page 974\]](#).

The business share is automatically included in the agreement from the agreement RFQ. The system includes the target share in the business share, and uses the business share in the carrier selection settings in planning. For more information, see [Business Share \[Page 872\]](#).

Maintenance of RFQ Masters Using Microsoft Excel

You can download the RFQ master data into a Microsoft Excel file for editing. The Microsoft Excel file contains a worksheet with the following information:

- RFQ header details
- RFQ items
- Requested capacities
- Offered capacities
- Confirmed capacities
- Calculation sheets
- Calculation sheet items

The Microsoft Excel file also contains a worksheet for each rate table. You can then upload the edited Microsoft Excel file back into the RFQ master in your SAP TM system. The system updates the RFQ master with your changes.

To download or upload a freight agreement RFQ master in SAP NetWeaver Business Client, choose *Freight Agreement Management* *Freight Agreement RFQ Masters* . Open the freight agreement RFQ master and go to the *Excel Integration* tab page. You can also download or upload a freight agreement RFQ master using program *Excel Integration with Freight Agreement RFQs* (/SCMTMS/CARR_RFQ_EXCEL) in transaction SE38.



Your carriers can also download their individual freight agreement RFQs for editing when responding to you with their rates for the transportation services. You define which fields the carrier can edit in the Microsoft Excel file in Customizing for *Transportation Management* under *Master Data* *Agreement RFQs and Quotations* *Define Editable Fields in Excel* .

For more information about carriers responding with their rates, see [Rate Determination for Forwarding Agreement Quotation Items \[Page 966\]](#).

End of the note.

Carrier Collaboration

If your carriers do not use SAP TM, you can allow them to view and respond to the individual freight agreement RFQs that they receive from you in the following ways:

- Carrier worklist

Your carriers contact your purchasing organization for logon details to this personal object worklist.

- SAP TM collaboration portal

For more information, see [Freight Agreement RFQs on the SAP TM Collaboration Portal \[Page 940\]](#).

Carriers can only view the individual freight agreement RFQs specific to them.

Activities

To create or update freight agreement RFQ masters, in SAP NetWeaver Business Client choose ► *Freight Agreement Management* ► *Freight Agreement RFQ Masters* □.

To create a freight agreement RFQ master to start the process of updating a freight agreement, in SAP NetWeaver Business Client choose ► *Freight Agreement Management* ► *Freight Agreements* □. Open the freight agreement and choose the *Create RFQ Master* button.

More Information

[Strategic Freight Procurement \[Page 916\]](#)

[Archiving Agreements and RFQ Masters \[Page 1300\]](#)



Carrier Performance Analysis

You can use this feature to analyze and decide the carriers to which you send individual freight agreement RFQs. In SAP NetWeaver Business Client under ► *Freight Agreement Management* ➤ *Freight Agreement RFQ Master*, you choose *Business Context Viewer* (BCV) to view the carrier analysis screen.

Prerequisites

To analyze carriers' performance in the BCV, you must do the following:

- Integrate SAP Transportation Management (SAP TM) with SAP NetWeaver Business Warehouse (SAP NetWeaver BW) *BI CONTENT 747 – SP07*. The system uses the analyzed data in SAP NetWeaver BW to display the carriers' performance in the BCV.
- Implement SAP note [1715521](#).
- Activate the business configuration (BC) set */SCMTMS/BCV_ANALYSIS*. Note that when you activate this BC set, you must specify the BW logical system.
- Configure prerequisites for the BCV (see [Business Context Viewer in SAP TM](#)).

If you want the system to display the ranks of the carriers, you must assign a key performance indicator (KPI) profile to the RFQ or the RFQ item. For more information, see the documentation of the Customizing activity *Define Key Performance Indicators and Profiles* under ► *Integration with other SAP Components* ➤ *Transportation Management* in the SAP NetWeaver BW system.

If you want the system to display graphs for forecast analysis IDs, you must define forecast analysis IDs in the SAP NetWeaver BW system. For more information, see [Strategic Freight Procurement Analytics \[Page 921\]](#).

Features

The system displays the following carrier analysis parameters in the BCV:

- Carrier ranking
 - Displays the rank of the carriers based on KPIs you have specified in the KPI profile. The KPI profile can include parameters such as carrier delivery reliability or invoice discrepancy.
- Carrier reliability
 - Displays a graph of carriers representing the percentage of orders that had a delay in pick-up or delivery such as delivered ten hours late or picked up four hours late. Note that the graph does not represent the percentage of orders that have been delivered or picked-up on time or in advance.
- Invoice discrepancy
 - Displays graphs representing the following parameters:
 - The percentage of difference between the planned cost and actual cost against the actual cost in the invoices. For example, the total planned cost for 50 invoices

is EUR 12,000. However, the actual cost is EUR 20,000. The percentage of amount discrepant is $((12000-20000)/20000)*100=40\%$.

- The percentage of invoices with different planned cost and actual cost against the total number of invoices. For example, the total number of invoices is 50 and 10 invoices have a different planned cost and actual cost. The percentage of discrepant invoices is $((10/50)*100=20\%)$.
- Transportation history
Displays a chart representing the gross weight of goods transported by carriers over trade lanes for a period of time in the past.
- Forecast analysis ID
Based on the forecast analysis ID you have specified for the item type, the system displays graphs representing the predicted number of containers and load for a period of time in the future.

Activities

In the freight agreement RFQ master, you perform the following activities:

1. Select an item.
2. Enter a trade lane.
3. Choose BCV.

The system displays the performance parameters of all the carriers you have used on the trade lane.

4. Enter and select the carriers you want to analyze.

The system displays the performance parameters of only these carriers.

These steps enable you to easily decide the carriers to which you send individual freight agreement RFQs. Note that if you do not select any carrier or trade lane, the system displays the performance parameters of all the carriers you have used in all trade lanes.

 Note

You can analyze the performance of carriers only between locations. You cannot analyze the performance of carriers between transportation zones.

End of the note.

More Information

- [Agreement RFQ \[Page 924\]](#)
- [Business Context Viewer \(BCV\)](#)
- [Strategic Freight Procurement Analytics \[Page 921\]](#)
- [Strategic Freight Procurement \[Page 916\]](#)



Capacities in Rate Tables for Freight Agreement RFQ Masters

You can specify capacities in the rate tables of freight agreement RFQ masters. Capacities enable you to publish the amount of business you require from a carrier. Note that the business share feature also enables you to specify the amount of business you want to allocate to a carrier. However, you use the business share for your own analysis and business decisions. You use capacities to seek a response from carriers and as an output of business share decisions. For more information about business shares, see [Business Share. \[Page 872\]](#)

In the rate table of a freight agreement RFQ master, the system displays the following fields for a scale dimension in the Dates and Validity Rates screen area:

- *Requested Capacity*

The capacity you require from a carrier. You enter this information before publishing the freight agreement RFQ master.

- *Offered Capacity*

The capacity the carrier offers to you. The carrier enters this information when responding to the freight agreement RFQ master.

- *Confirmed Capacity*

The actual capacity you award to a carrier. After you compare the responses from the carriers and select a carrier, the system enters the confirmed capacity based on the target share proposed by the optimizer. You can manually change the confirmed capacity.

- *Average Load*

The average capacity per shipment that you transport in a trade lane during the validity period of the freight agreement RFQ master.

- *Target Share*

The capacity as a percent of the total business for an item in a trade lane that you award to a carrier.

Note

You can create rate tables from within a freight agreement RFQ master. However, you cannot specify reference rate tables. Also, reference rate tables only display the confirmed capacity.

End of the note.

Features

Capacity Drivers and Capacity Dimensions

- Capacity drivers

Capacity drivers are the dimensions in a rate table that determine your capacity requirements. For example, when you specify source location A and destination location

B as capacity drivers, you specify that you need the specified capacity from location A to location B. When you specify the capacity drivers, the system does not take any of the other dimensions into account for capacity.

In most cases, the source location and destination location are the capacity drivers (given that you are working in a trade lane for a freight agreement RFQ master). However, you can also use other drivers, such as equipment type and commodity code. You must specify at least one capacity driver in a rate table and you can have multiple capacity drivers.

Note that if you specify source location and destination location as the capacity drivers, you cannot select source location and destination location as column scales in the **Dates and Validity** **Rates** screen area.

Note

You must have the same requested capacity for all instances of a combination of capacity drivers in a rate table.

For example, you have 3 dimensions in a rate table: source location, destination location, and gross weight. The capacity drivers are source location and destination location. The rate table appears as follows:

Source Location	Destination Location	Gross Weight >= (TON)	Requested Capacity
A	B	100	100
A	B	500	100
A	C	100	200
A	D	100	300
A	D	500	300

The requested capacity is the same for all the gross weight values for the location pairs. The system copies the requested capacity of the first instance of the combination of capacity drivers throughout the rate table for all instances of that combination of capacity drivers.

End of the note.

- Capacity dimension

You can specify the dimension that you use to enter your capacity requirements for an item in a trade lane. You can only use a number-based dimension. Therefore, you must use a number-based calculation base as the capacity dimension. This in turn means you must use a calculation base that is associated with one of the following scale bases:

- *Number*
- *Quantity*
- *Volume*
- *Weight*

For example, you cannot specify a commodity code as a capacity dimension because it is not number-based. Note that the system does not use dimensional weight when estimating the strategy spend. Therefore you cannot use the following calculation bases:

- *Chargeable Weight* (CHRG_WEIGHT)
- *Chargeable Weight Based on Net Weight* (CHRG_WEIGHT_NET)
- *Customs Value* (CUSTOMS_VALUE)

You also cannot use an amount-based dimension, for example, you cannot use the following calculation bases:

- *Goods Value* (GOODS_VALUE)
- *Insurable Value* (INSURABLE_VALUE)
- *Customs Value* (CUSTOMS_VALUE)

Note that you can specify only one capacity dimension in a rate table.

You cannot specify the same dimension as both a capacity driver and a capacity dimension.

 Note

If you do not specify a capacity dimension, the system assumes that you are working with full container loads (FCLs) or full truck loads (FTLs). The capacity of the truck or container is then considered as full.

End of the note.

Creating Freight Agreement RFQ Masters from Freight Agreements

You can create a freight agreement RFQ master from a freight agreement. If there is a reference rate table in the freight agreement, the system adds a copy of the reference table as a rate table for the RFQ master. The system keeps the dimensions in the rate table, but clears the amounts for the rates and capacities.

Full Container Loads or Full Truck Loads

When working with FCLs or FTLs, the capacity of the truck or container is considered as full and you do not need to specify capacities. In an FCL or FTL scenario, you also cannot edit the average load. You cannot edit the average load because you work with full loads, and the average load is therefore not a factor in your capacity requirements. The system does not validate the shipping type against the capacity dimension.

Deleting Rates

If you delete the rate for a selected line, the system deletes only the relevant rate in the  *Dates and Validity*  *Rates* screen area. The system does not delete the amounts of other related values for the same scale dimension combination. For example, you have 3 rates for a source location and destination location, with 3 different gross volumes. If you delete the rate in the first row, the system does not delete the rate in the 2 remaining rows. The following table illustrates this behavior:

Source Location	Destination Location	Gross Volume	>=1,000	Requested Capacity
-----------------	----------------------	--------------	---------	--------------------

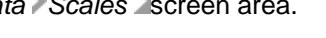
Source Location	Destination Location	Gross Volume	>=1,000	Requested Capacity
CSI-APORT-AMS	CSI-APORT-HKG	1000	None	100
CSI-APORT-AMS	CSI-APORT-HKG	2000	110	100
CSI-APORT-AMS	CSI-APORT-HKG	3000	115	100

 Note

If you delete the capacity for a selected line, the system deletes the capacity for all other lines with the same combination of capacity drivers. This occurs because you must have the same requested capacity for all instances of a combination of capacity drivers.

End of the note.

Activities

To display the capacities, on the  Rates tab page of the rate table choose the *Show More Info* button. The system only displays capacities if you have selected at least one item as the capacity driver in the  Scales screen area.

You can only enter the requested capacity and the average load. The carrier can enter only the offered capacity, in a response.

The system displays the confirmed capacity in the rate table when you award transportation business to a carrier and create an agreement.

To enable FCL or FTL, select *FCL* or *FTL* as the shipping type for the item in the *Items* screen area of the freight agreement RFQ master.

More Information

[Agreement RFQ \[Page 924\]](#)

[Requesting of Quotations for Transportation Services \[Page 928\]](#)

[Rate Table](#)

[Rate Definition and Maintenance](#)



Freight Agreement RFQs on the SAP TM Collaboration Portal

If your carriers do not use SAP Transportation Management (SAP TM), you can use the SAP TM collaboration portal to enable them to view and respond to the individual freight agreement RFQs that they receive from you. You can then view and assess their responses in SAP TM. Note that carriers can only view the individual freight agreement RFQs specific to them. For information about how your carriers respond to freight agreement RFQs using the collaboration portal, see [Freight Agreement Management \(Collaboration Portal\) \[Page 1105\]](#).

SAP TM generates a `Bid_Structure.xlsx` file for each individual freight agreement RFQ. This file contains all the data from the individual freight agreement RFQ that the carrier needs to respond to you on the collaboration portal. You can also view this file in SAP TM on the *Attachments* tab page of the individual freight agreement RFQs, though it is not editable.

Note

You define which fields the carrier can edit in the `Bid_Structure.xlsx` file in Customizing for *Transportation Management* under *Master Data* *Agreement RFQs and Quotations* *Define Editable Fields in Excel* .

End of the note.

For you to see the responses submitted on the collaboration portal, you can schedule the system to update the responses in SAP TM with the responses that have the status *Response Uploaded* on the collaboration portal. You can schedule the response update using program *Update Responses in SAP TM* (`/SCMTMS/UPLOAD_RFQ_RESPONSE`) in transaction `SE36`. You can also initiate the update for all freight agreement RFQs or specific freight agreement RFQs using this program in transaction `SE38`. Note that the response must have the status *Response Uploaded* for the response to be updated in SAP TM. If the update is successful, the status of the freight agreement RFQ changes to *Submitted*. If there are any errors, the status changes to *Submitted with Errors* and the system adds the relevant messages to the program application log.

More Information

[Strategic Freight Procurement \[Page 916\]](#)

[Requesting of Quotations for Transportation Services \[Page 928\]](#)

[Strategic Freight Sales \[Page 957\]](#)



Post-Bid Analysis

After you receive responses from carriers for the quotations you requested, you use the comparison cockpit to evaluate which carrier quoted the best rate for the specified periodicity. You compare and analyze some or all of the responses per RFQ item or across RFQ items. The comparison cockpit supports you in the vital post-bid analysis step, which in turn supports your decision-making process. The comparison cockpit helps you to decide which carriers to award the transportation business to and in what proportion.

Note

The system simulates an estimation of the cost; the system does not calculate the actual charges.

If you know which carriers you want to award the transportation business to, you can directly create or update the freight agreements. You do not need to evaluate which carrier quoted the best rate.

End of the note.

Integration

You compare responses during strategic freight procurement (see [Strategic Freight Procurement \[Page 916\]](#)).

Prerequisites

- A freight agreement RFQ master has been published.
- Carriers have responded to the individual freight agreement RFQs with their rates for the transportation services.
- You have defined target share strategies in Customizing for *Transportation Management* under *Master Data* *Agreement RFQs and Quotations* *Define Target Share Strategies* .
- You have defined a calculation profile for the organizational unit in Customizing for *Transportation Management* under *Basic Functions* *Charge Calculation* *Basic Settings* *Define Calculation Profiles* .
- You have defined a charges profile for the organizational unit, including specifying a local currency, and assigned the calculation profile defined above.
You define the charges profile in Customizing for *Transportation Management* under *Basic Functions* *Charge Calculation* *Basic Settings* *Define Charges Profiles* .
- You have assigned the charges profile defined above to the organizational unit using transaction **PPOME**.

Features

Optimization-Based Response Comparison

You compare responses by using the optimizer for carrier selection. The optimizer is especially useful when the comparison is complex and multiple constraints must be taken into account. With

the optimizer, you can simulate and analyze the potential strategy spend depending on your strategy conditions. The system can then display the results by amount and strategy version in a strategy spend comparison graph. The system displays results for the periodicity specified in the freight agreement RFQ master.

The optimizer uses target share strategies and strategy conditions to propose target shares for carriers. You define target share strategies and strategy conditions in the Customizing activity *Define Target Share Strategies*. You can define strategy conditions such as the minimum and maximum target share percentage that the optimizer should respect when proposing target shares for carriers and the minimum and maximum number of carriers to include in the target share strategy. You can specify strategy conditions for incumbent carriers and strategy conditions for all other carriers. Depending on your business process, you might want to award a higher percentage of business to an incumbent carrier. Note that the optimizer also takes the capacity promised by the carriers into account. This ensures that the optimizer proposes a target share for a carrier that is within the carrier's promised capacity.

 Note

- After specifying target share strategies and strategy conditions in a freight agreement RFQ master, you can run the optimizer in the back end for specific target share strategies or for all target share strategies in the freight agreement RFQ master. The system can also estimate the strategy spend at the same time.

You can run the optimizer in the back end using program *Mass Optimizer Run and Strategy Spend Estimation* (/SCMTMS/OPTIMIZER_RUN) in transaction SE38. You can use this program for a single freight agreement RFQ master or for multiple freight agreement RFQ masters.

If you do not specify the target share strategies when using this program for a single freight agreement RFQ master, the system runs the optimizer for all the target share strategies in the freight agreement RFQ master. When using this program for multiple freight agreement RFQ masters, you can run the optimizer only for all target share strategies in the freight agreement RFQ masters.

- You can add additional constraints to the optimizer (for example, in relation to risks or bonuses) when comparing responses to freight agreement RFQs.

For more information, see Customizing for *Transportation Management* under
► *Business Add-Ins (BAdls) for Transportation Management* ► *Master Data* ► *Agreement RFQs* ► *BAdl: Additional Optimizer Constraints* ▶.

- You can add additional parameters and costs before or after estimating the strategy spend.

For more information, see Customizing for *Transportation Management* under
► *Business Add-Ins (BAdls) for Transportation Management* ► *Master Data* ► *Agreement RFQs* ► *BAdl: RFQ Strategy Spend Estimation* ▶.

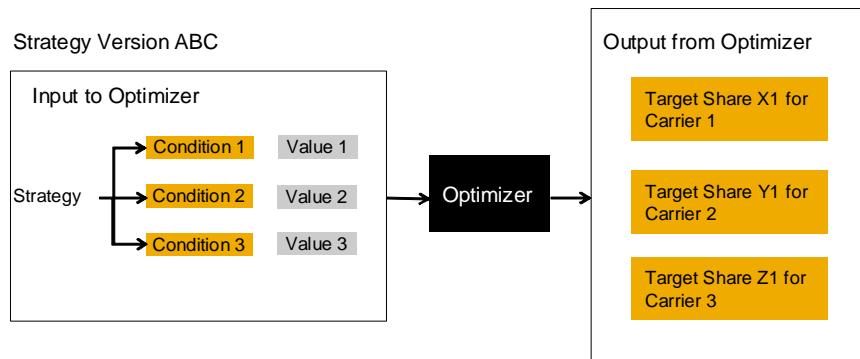
- You can replace the standard strategy spend estimation with your own customer-specific strategy spend estimation.

For more information, see Customizing for *Transportation Management* under
► *Business Add-Ins (BAdls) for Transportation Management* ► *Master Data* ► *Agreement RFQs* ► *BAdl: Customer-Specific Strategy Spend Estimation* ▶.

End of the note.

The optimizer proposes the most ideal target share distribution to produce the most cost effective solution. The system can then simulate the estimated strategy spend based on the responses you received from the carriers and the target share strategies proposed by the optimizer. This simulation gives you an indication of how much you will potentially spend if you choose the target share distribution proposed by the optimizer. Note that you can run the optimizer repeatedly with different target share strategies and strategy versions. This allows you to simulate the impact of strategy changes and compare spend variations across different strategy versions. For information about how to use the optimizer to compare responses, see [Strategic Freight Procurement \[Page 916\]](#). For information about how the system estimates the strategy spend, see [Strategy Spend Estimation \[Page 946\]](#).

An optimization-based response comparison with two versions of the same strategy mentioned above is depicted in the following figures:



Note

- The system can compare only one rate table at a time. The system cannot compare charge types with different rate tables.
- Rate tables must not contain the calculation bases *Transportation Zone of Source Location* (SOURCELOC_ZONE) or *Transportation Zone of Destination Location* (DESTLOC_ZONE).
- The system takes into account the minimum and maximum rate values that you can specify in rate tables for the line items of RFQ items.

For more information, see [Calculation Sheet Maintenance](#).

- A rate table can have just one validity period.
- The system takes into account the rates for all the capacity drivers.

For more information about capacity drivers, see [Capacities in Rate Tables for Freight Agreement RFQ Masters \[Page 936\]](#).

- If you manually change the target share for a carrier after the optimizer run, the system estimates the strategy spend based on the carrier-level target share.

The system no longer bases the estimation on the rate-table target share.

- If the optimizer proposes a target share at rate-table level for a location pair, the system applies the same target share for all the charge types in the calculation sheets for the location pair.

If the optimizer does not propose a target share at the rate-table level, the system bases the estimation for all the charge types on the carrier-level target share.

- If the optimizer cannot fill the total requested capacity because of the minimum or maximum target share you specified for the carriers, the optimizer will dismiss the minimum or maximum target share and accept the capacity offered by the carriers.



Example

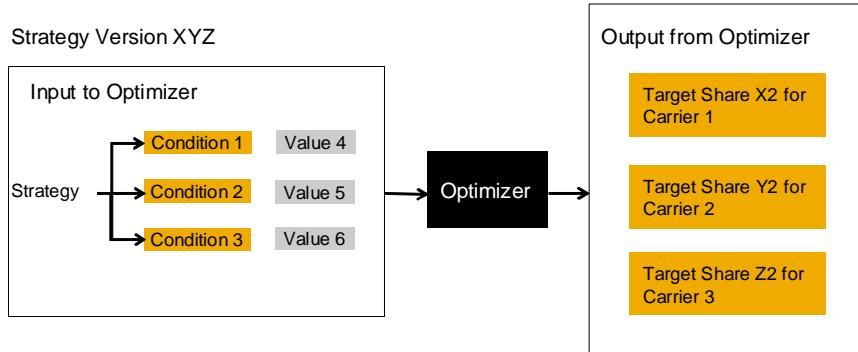
You request a capacity of 100 kg. Carrier 1 offers 60 kg and carrier 2 offers 100 kg.

You specified a maximum target share of 70% for carrier 1 so accept the offered capacity of 60 kg from that carrier.

You specified a maximum target share of 30% for carrier 2. However, this does not fill the total requested capacity of 100 kg. Therefore the optimizer dismisses the maximum target share of 30% for carrier 2 and instead accepts 40 kg of the capacity offered by carrier 2. The total requested capacity is filled.

End of the example.

End of the note.



To insert a target share strategy into a freight agreement RFQ master, in the *Response Comparison* screen area of the comparison cockpit you must first select the charge types that you want to compare using the optimizer.

Manual Response Comparison

If the comparison is fairly simple and the rates are the only constraints that must be taken into account, you can compare responses manually by carrier and charge type directly in SAP Transportation Management (SAP TM). Note that you can only compare the responses manually directly in SAP TM for charge types with flat amounts. The system ranks the carriers according to the lowest quoted rate per charge type. The system also displays the results in a response comparison graph.

Alternatively, if the charge type has a rate table associated with it, you can compare the rate tables in Microsoft Excel. If you compare the rate tables in Microsoft Excel, the system does not display the results in a response comparison graph.

Note that if you compare responses manually, you manually enter the target share for the carriers. As there is no optimizer involvement, the system estimates the strategy spend based on the carrier-level target share. The system does not base the estimation on the rate-table target share.

Currency Conversion

If you include multiple currencies when comparing responses, the system converts the currencies into a single currency as follows:

- If the RFQ items contain multiple currencies, the system converts the currencies and displays the amounts in the currency of the freight agreement RFQ master.
- If the RFQ items contain a single currency that is different to the currency of the freight agreement RFQ master, the system displays the amounts in the currency of the RFQ items.
- If the RFQ items contain a single currency but the charge types contain a different currency, the system converts the currencies and displays the amounts in the currency of the RFQ items.

You can specify the exchange rates in Customizing for SAP NetWeaver under  *General Settings*  *Currencies*  *Enter Exchange Rates*.

Graphs

You can use the response comparison graph and strategy spend comparison graph to display the comparisons visually. There is a range of graph types available, for example, stacked and horizontal graphs, pie charts, line charts, and area charts. The default graph type is a 100% stacked column graph.

Preferred Target Share Strategy

After comparing the responses using the optimizer for carrier selection, you select your preferred target share strategy. You must then accept your preferred strategy before awarding the transportation business to carriers. When you accept your preferred target share strategy, the system automatically calculates the confirmed capacity in the freight agreement RFQ master based on the target share proposed by the optimizer. You can manually change this confirmed capacity. You can then create or update freight agreements for the carriers you are awarding the business to.

More Information

[Award Summary \[Page 955\]](#)

[Requesting of Quotations for Transportation Services \[Page 928\]](#)

[Freight Agreement RFQ Master \[Page 924\]](#)

[Agreement Maintenance \[Page 974\]](#)

Strategy Spend Estimation

As part of the post-bid analysis during the strategic freight procurement process, you can compare responses from carriers in the comparison cockpit. Comparing responses helps you to evaluate which carrier quoted the best rate for the specified periodicity. In SAP Transportation Management, you can either compare responses manually by carrier and charge type directly or by using the optimizer for carrier selection. For more information about how to compare responses, see [Post-Bid Analysis \[Page 941\]](#).

With optimization-based response comparison, the system proposes the most ideal target share distribution across carriers, taking into account your strategy conditions and the capacity promised by the carriers. The system then estimates the total cost of using a particular carrier or carriers to provide the transportation business for the selected RFQ items in a freight agreement RFQ master for the specified periodicity. The system bases the estimated cost on the target share proposed by the optimizer. The system estimates the strategy spend in different ways depending on the responses you select in the *Response Comparison* screen area of the comparison cockpit.

 Note

- The system estimates the cost; the system does not calculate the actual charges.
- If you compare responses manually, you enter the target share for the carriers. Since there is no optimizer involvement, the system estimates the strategy spend based on the carrier-level target share. The system does not base the estimation on the rate-table target share.
- Rate tables must not contain the calculation bases *Transportation Zone of Source Location* (SOURCELOC_ZONE) or *Transportation Zone of Destination Location* (DESTLOC_ZONE).

End of the note.

Prerequisites

- You have configured the prerequisite settings for the post-bid analysis of the responses you receive from carriers (see [Post-Bid Analysis \[Page 941\]](#)).
- If a line item has a flat amount, you must not specify a calculation resolution base.

Estimation Considerations

- The system estimates the strategy spend for the full validity period of each RFQ item.
If the periodicity of the RFQ item is different to the validity period, the system adjusts the calculation to take this into account. For example, the validity period for an RFQ item is 12 months and the periodicity is monthly. Therefore the system estimates the strategy spend for the full 12 months by multiplying the estimated strategy spend by the periodicity value of 12.
- The system takes into account the minimum and maximum rate values that you can specify in rate tables for the line items of RFQ items.

For more information about minimum and maximum rate values, see [Calculation Sheet Maintenance](#).

- The system can estimate the strategy spend for a single rate table only.
The system cannot compare charge types with different rate tables at the same time.
- A rate table can have just one validity period.
- The system takes into account the rates for all the capacity drivers.

For more information about capacity drivers, see [Capacities in Rate Tables for Freight Agreement RFQ Masters \[Page 936\]](#).

- If you manually change the target share for a carrier after the optimizer run, the system estimates the strategy spend based on the carrier-level target share.

The system no longer bases the estimation on the rate-table target share.

- If the optimizer proposes a target share at rate-table level for a location pair, the system applies the same target share for all the charge types in the calculation sheets for the location pair.

If the optimizer does not propose a target share at the rate-table level, the system bases the estimation for all the charge types on the carrier-level target share.

- You can add additional parameters and costs before or after estimating the strategy spend.

For more information, see Customizing for *Transportation Management* under
Business Add-Ins (BAdIs) for Transportation Management *Master Data* *Agreement RFQs* *BAdI: RFQ Strategy Spend Estimation* .

- You can replace the standard strategy spend estimation with a strategy spend estimation that suits your specific requirements.

For more information, see Customizing for *Transportation Management* under
Business Add-Ins (BAdIs) for Transportation Management *Master Data* *Agreement RFQs* *BAdI: Customer-Specific Strategy Spend Estimation* .

Estimation Examples



Note

In all the examples below, the validity period for RFQ items is 12 months and the periodicity is monthly. Therefore the periodicity value is 12.

End of the note.

Example Data

You have a freight agreement RFQ master for the US East Zone to the US West Zone listing the following carriers:

- SON_CAR001
- SON_CAR002
- SON_CAR003

- SON_CAR004

You have the following RFQ items in the freight agreement RFQ master:

RFQ Item	Transportation Mode	Movement Type	Requested Capacity	Yearly Budget (USD)	Shipping Type	Validity Period
Item 100: US East Zone to Dallas	Road	Door to port	5,200 kg per month	200,000	Less than truck load (LTL)	01.02.2014-31.01.2015
Item 200: Dallas to Denver	Road	Port to port	30 containers per month	450,000	Full truck load (FTL)	01.02.2014-31.01.2015
Item 300: Denver to US West Zone	Road	Port to door	5,200 kg per month	150,000	LTL	01.02.2014-31.01.2015
Item 400: US East Zone to US West Zone	Road	Door to door	30 containers per month	750,000	FTL	01.02.2014-31.01.2015
Item 500: US East Zone to US West Zone	Road	Door to door	5,200 kg per month	850,000	LTL	01.02.2014-31.01.2015

RFQ item 100 has the following capacity details:

Details	Requested Capacity	Offered Capacity	Confirmed Capacity
Gross Weight	5,200 kg	Not applicable at this stage	Not applicable at this stage
Equipment Group	Pallets	Pallets	Pallets
Equipment Type	IG2	IG2	IG2
Periodicity	Monthly	Not applicable	Not applicable
Capacity Dimension	Gross Weight	Not applicable	Not applicable

Based on the details above, you can estimate the strategy spend for the following scenarios:

- For each stage with each carrier for RFQ items 100, 200, and 300
- For door-to-door FTL with each carrier for RFQ item 400
- For door-to-door LTL with each carrier for RFQ item 500

Scenario 1: Estimate for Each Stage with Each Carrier for RFQ Items 100, 200, and 300

For this scenario, you can run the optimizer per item by specifying constraints and running the optimizer separately for RFQ items 100, 200, and 300. Alternatively, you can run the optimizer with the same constraints across RFQ items 100, 200, and 300 for the same result.

For scenario 1, the optimizer proposes the following target share strategy for the freight agreement RFQ master at the carrier level across *the RFQ items*:

Carrier	Target Share (%)	Estimated Spend (USD)
SON_CAR001	20	5,592.60
SON_CAR002	20	5,856
SON_CAR003	40	10,812
SON_CAR004	20	5,642

You indicate your preferred target share strategy, before you create or update agreements with the carriers you are awarding the business to.

If you run the optimizer *per item*, the optimizer proposes the following target share strategy per item:

- RFQ item 100 (strategy spend estimated as USD 16,525.60):

Carrier	Target Share (%)	Estimated Spend (USD)
SON_CAR001	20	3,286.40
SON_CAR002	20	3,452.80
SON_CAR003	40	6,406.40
SON_CAR004	20	3,380

- RFQ item 200 (strategy spend estimated as USD 2,940):

Carrier	Target Share (%)	Estimated Spend (USD)
SON_CAR001	20	585
SON_CAR002	20	630
SON_CAR003	40	1,140
SON_CAR004	20	585

- RFQ item 300 (strategy spend estimated as USD 8,437):

Carrier	Target Share (%)	Estimated Spend (USD)

Carrier	Target Share (%)	Estimated Spend (USD)
SON_CAR001	20	1,721.20
SON_CAR002	20	1,773.20
SON_CAR003	40	3,265.50
SON_CAR004	20	1,677

The system also proposes the target strategy share at each RFQ item level. If there is a rate table included in the RFQ items you are estimating, then the system stores the proposed target strategy share for the trade lane using the rate table in the *Target Share* column of the rate table.

Scenario 2: Estimate for Door-to-Door Full Truck Load with Each Carrier for RFQ Item 400

For this scenario, you can estimate the strategy spend by specifying constraints and running the optimizer for RFQ item 400. The optimizer proposes the following target share strategy:

- Version 1 (strategy spend estimated as USD 13,998) with the following target share distribution:

Carrier	Target Share (%)	Estimated Spend (USD)
SON_CAR002	20	2,856
SON_CAR003	20	2,730
SON_CAR004	20	2,796
SON_CAR001	40	15,616

- Version 2 (strategy spend estimated as USD 13,930.50) with the following target share distribution:

Carrier	Target Share (%)	Estimated Spend (USD)
SON_CAR002	20	2,856
SON_CAR003	35	4,777.50
SON_CAR004	35	4,893
SON_CAR001	10	1,404

Version 2 would be your preferred target share strategy if the decision is based solely on the strategy that yields the lowest costs.

Scenario 3: Estimate for Door-to-Door Less Than Truck Load with Each Carrier for RFQ Item 500

For this scenario, you can estimate the strategy spend by specifying constraints and running the optimizer for RFQ item 500. The optimizer proposes the following target share strategy:

- Version 1 (strategy spend estimated as USD 26,811.20):

Carrier	Target Share (%)	Estimated Spend (USD)
SON_CAR002	20	5,668
SON_CAR003	20	5,096
SON_CAR004	20	5,439.20
SON_CAR001	40	10,608

- Version 2 (strategy spend estimated as USD 26,756.60):

Carrier	Target Share (%)	Estimated Spend (USD)
SON_CAR002	20	2,856
SON_CAR003	35	8,918
SON_CAR004	35	9,518.60
SON_CAR001	10	2,652

- The target share strategy can be at rate-table level for the capacity driver combination. For example, RFQ item 100 has a rate table for the *Basic Charges* charge type. The optimizer proposes the target share of 20% for carrier SON_CAR001 at the carrier level. Additionally, the optimizer proposes the target share within the rate table for the capacity driver combination.

Version 2 would be your preferred target share strategy if the decision is based solely on the strategy that yields the lowest costs.

The following table shows the carrier response for RFQ item 100 at the rate-table level when the carrier specifies the offered capacity and the optimizer proposes the target share of 20%:

Carrier Responses at Rate-Table Level for RFQ Item 100			
Trade Lane	Requested Capacity (KG)	Offered Capacity (KG)	Target Share (%)
AV-BU-KANSAS – CSI-STA-DLS	2,600	2,600	20
AV-BU-WASHINGTON – CSI-STA-DLS	2,600	2,600	20

You received the following responses for RFQ item 100 from your carriers (strategy spend estimated as USD 16,525.60):

Carrier Responses and Proposed Target Share Distribution for RFQ Item 100		
Carrier	Target Share (%)	Estimated Spend (USD)
SON_CAR001	20	3,286.40
SON_CAR002	20	3,452.80

Carrier Responses and Proposed Target Share Distribution for RFQ Item 100			
Carrier	Target Share (%)		Estimated Spend (USD)
SON_CAR003	40		6,406.40
SON_CAR004	20		3,380

RFQ item 100 has multiple charge types in the calculation sheet, as follows:

Charge Types				
Charge Type	Description	Amount	Currency	Rate Table
AQM_BASE	Basic Charges	None	USD	11448
CSI-LOAD	Loading/Unloading	100	USD	None
CSI-DOCF	Documentation	110	USD	None

RFQ item 100 has the following details in the rate table, with a dimension for gross weight because the shipping type is LTL. For the trade lane, the rates need to be assigned to the various specified weight-breaks:

Trade Lane	Average Load	>=1 KG	>=50 KG	>=100 KG	>=500 KG	>=1000 KG	Requested Capacity (KG)	Target Share (%)
AV-BU-KANSAS – CSI-STA-DLS	100	100	102	105	110	113	2,600	20
AV-BU-WASHINGTON – CSI-STA-DLS	100	105	104	107	112	115	2,600	20

For carrier SON_CAR001, the carrier-level target share is 20%. For the *Basic Charges* charge type, the system proposes the target share within the rate table as shown in the Carrier Responses at Rate-Table Level for RFQ Item 100 table. When estimating the strategy spend with carrier SON_CAR001, the system considers the target share value of the rate table because it is the most granular level data available for target share values. Therefore the system estimates the strategy spend as follows:

Case 1: A Charge Type with a Rate Table and the Average Load at the Rate-Table Level (Less Than Truck Load)

Having the average load at the rate-table level means that this is an LTL scenario. The system estimates the strategy spend by calculating $(\text{total flat amount} + \% \text{ amount} + \text{rate}) \times (\text{requested quantity} \div \text{average load}) \times (\text{target share} \div 100) \times \text{periodicity value}$.

Considering the data in the Charge Types table and the Carrier Responses at Rate-Table Level for RFQ Item 100 table, the average load for trade lane AV-BU-KANSAS – CSI_STA-DLS is 100, which falls under the rate for ≥ 100 kg. Therefore the rate is 105. The system estimates the strategy spend for this trade lane as $(\text{USD } 100 + \text{USD } 110 + 105) \times 2,600 \div 100 \times (20 \div 100) \times 12 = \text{USD } 315 \times 2,600 \div 100 \times 0.2 \times 12 = \text{USD } 19,656$.

Considering the same data for trade lane AV-BU-WASHINGTON – CSI_STA-DLS, the rate is 107. The system estimates the strategy spend for this trade lane as $(\text{USD } 100 + \text{USD } 110 + 107) \times 2,600 \div 100 \times (20 \div 100) \times 12 = \text{USD } 317 \times 2,600 \div 100 \times 0.2 \times 12 = \text{USD } 19,780.80$.

The total strategy spend for carrier SON_CAR001 is $\text{USD } 19,656 + \text{USD } 19,780.80 = \text{USD } 39,436.80$.

 Note

The system estimates the strategy spend in the same way when there is a rate table associated with another charge type that you are not comparing. However, the system performs the estimation for each trade lane (location pair) in the rate table. The system also uses the target share at rate-table level, not carrier level.

End of the note.

Case 2: A Rate Table with Multiple Dimensions and the Capacity Dimension is the Average Load

If you have a rate table with both weight and volume dimensions, you must specify the capacity dimension on the *Capacities* tab page of the RFQ item. The average load corresponds to the capacity dimension.

The system estimates the strategy spend by calculating $(\text{total flat amount} + \% \text{ amount} + \text{rate}) \times (\text{requested quantity} \div \text{average load}) \times (\text{target share} \div 100) \times \text{periodicity value}$.

The rate table contains the following rates:

Trade Lane	Requested Quantity (KG)	Target Share (%)	Average Load (KG)	>=30 KG	>=60 KG	>=90 KG	Gross Volume (M ³)
A – B	50	50	40	100	200	250	100
A – B	50	50	40	200	250	300	200
C – D	80	50	40	350	400	450	100
C – D	80	50	40	550	565	600	200

The average load for trade lane A – B is 40 kg; therefore the rate can be USD 100 or USD 200. Gross volume is not a capacity dimension so the system chooses the lowest value for the gross volume (100 ml3). The rate is therefore USD 100.

The system estimates the strategy spend for trade lane A – B by calculating $(\text{USD } 650 + \text{USD } 130 + \text{USD } 100) \times (50 \div 40) \times .5 \times 12 = \text{USD } 880 \times 1.25 \times .5 \times 12 = \text{USD } 6,600$.

Case 3: A Rate Table with a Calculation Rule

- A rate table with average load and a calculation rule

When a rate table has a price unit with a capacity dimension, the system estimates the strategy spend by calculating $(\text{total flat amount} + \% \text{ amount} + (\text{rate} \times \text{average load} \div \text{price unit})) \times (\text{requested quantity} \div \text{average load}) \times (\text{target share} \div 100) \times \text{periodicity value}$.

- A rate table without average load and with a calculation rule

When a rate table has a price unit with a capacity dimension, the system estimates the strategy spend by calculating (total flat amount + % amount + (rate × requested quantity ÷ price unit)) × requested quantity × (target share ÷ 100) × periodicity value.

Case 4: A Charge Type with a Flat Amount and a Rate Table Without an Average Load (Full Truck Load)

The system estimates the strategy spend by calculating (total flat amount + % amount + rate) × (requested quantity × (target share ÷ 100) × periodicity value).

Considering the data in the Carrier Responses at Rate-Table Level for RFQ Item 100 table (excluding the average load data), the requested capacity for trade lane AV-BU-KANSAS – CSI_STA-DLS is 2,600, which falls under the rate for >=1,000 kg. Therefore the rate is 113. The system estimates the strategy spend for this trade lane as (USD 100 + USD 110 + 113) × 2,600 × (20 ÷ 100) × 12 = USD 323 × 2,600 × 0.2 × 12 = USD 2,015,520.

Considering the same data in the Carrier Responses at Rate-Table Level for RFQ Item 100 table for trade lane AV-BU-WASHINGTON – CSI_STA-DLS, the rate is 115. The system estimates the strategy spend for this trade lane as (USD 100 + USD 110 + 115) × 2,600 × (20 ÷ 100) × 12 = USD 317 × 2,600 ÷ 100 × 0.2 × 12 = USD 2,028,000.

The total strategy spend for carrier SON_CAR001 is USD 2,015,520 + USD 2,028,000 = USD 4,043,520.

Case 5: Charge Types with Flat Amounts Only (Full Truck Loads only)

The system estimates the strategy spend by calculating flat amount × requested quantity × (target share ÷ 100) × periodicity value. Note that when the system is estimating the strategy spend for charges types with flat amounts only, then the strategy spend uses the target share at carrier level.

You have the charge types listed for RFQ item 100 in the Charge Types table with no rate tables and so the calculation sheet contains only flat amounts. The requested capacity on the *Capacities* tab page is gross weight (5,200 kg) and the carrier-level target share for carrier SON_CAR001 is 20% (see the Carrier Responses for RFQ Item 100 table).

The system estimates the strategy spend by calculating (USD 100 + USD 110) × 5,200 × (20 ÷ 100) × 12 = USD 2,620,800.

More Information

[Strategic Freight Procurement \[Page 916\]](#)



Award Summary

You can display a summary and graphs of all the logistical information in a freight agreement RFQ master. This summary helps you to judge how the negotiation process is progressing and make key decisions, such as whether to create a new negotiation round.

To access the award summary, in the freight agreement RFQ master choose the *Award Summary* tab page.

Integration

The *Award Summary* tab page is available in the freight agreement RFQ master (see [Freight Agreement RFQ Master \[Page 924\]](#)). You use the award summary during strategic freight procurement (see [Strategic Freight Procurement \[Page 916\]](#)).

Prerequisites

- A freight agreement RFQ master has been published.
- Carriers have responded to the individual freight agreement RFQs with their rates for the transportation services.

Features

Views

You can view the award summary using the following views:

Trade Lane

This view provides a summary of all RFQ items across the trade lanes of the freight agreement RFQ master. You can view important logistical parameters associated with trade lanes, such as the following:

- Equipment type
- Transportation mode
- Estimated strategy spend for the trade lane
- Budget allocated for the trade lane for the specified periodicity

On the *Items* tab page, you can view further information, for example:

- Number of carriers operating in the trade lane
- Target share distribution across various carriers
- Agreement-related information

You can see how the negotiation process with carriers is progressing because you can see how the estimated spend for the trade lane compares to the planned periodicity budget. For example, if you can easily see that the estimated spend is greater than the planned periodicity budget, you can consider creating a new negotiation round.

The graphs indicate the comparison of planned periodicity budget, estimated spend, and historical spend. On the *Items* tab page, the graph displays the information by estimated spend and by capacity.

Carrier

This view provides an award summary of all the carriers, including the target share for each carrier and the carriers that you awarded the transportation business to. In this view, you find information related to important logistical parameters that the carrier has agreed to provide or operate within, such as:

- Transportation mode
- Equipment type
- Shipping type
- Strategy spend version
- Amount

In the *Estimated Spend* view, the graph indicates the spend variation per RFQ item for all carriers. In the *Capacity* view, the graph indicates the capacity per RFQ item for all carriers and the target strategy spend assigned to them.

RFQ Item

This view provides an award summary by RFQ item. The graphs display a comparison of the periodicity budget versus the estimated spend per item and the spend per carrier for the chosen item. On the *Trade Lanes* tab page, you can view further information, for example, carrier and target share.

Historic Spend

In the *Trade Lane* and *RFQ Item* view, the system can display what you spent historically for transportation services with the same logistical information, that is, with the same trade lane, transportation mode, and shipping type. The system sends a query to SAP NetWeaver Business Warehouse for the historical data and displays it in graph format with the periodicity budget and the estimated strategy spend. Note that if the currency from SAP NetWeaver Business Warehouse differs to the currency in the RFQ master, the system converts the currency to match the currency of the RFQ master.

To check what you spent historically for transportation services with the same logistical information, choose the *Display Historic Spend* button in the *Trade Lane* or *RFQ Item* view on the *Award Summary* tab page.

More Information

[Requesting of Quotations for Transportation Services \[Page 928\]](#)



Strategic Freight Sales

Strategic freight sales helps you as a carrier or logistics service provider (LSP) to determine the best rates you can provide to transport items between specific locations (trade lanes) and then to agree a contract (agreement) with shippers or other LSPs. SAP Transportation Management (SAP TM) supplies the tools you need to receive requests for rate quotations, evaluate your responses, and also proactively send your rates to shippers or other LSPs.

This feature enables you to quickly and conveniently determine the prices you can provide for various services based on the prices you have quoted previously. This gives you higher productivity and better decision making.

Process

1. You create a forwarding agreement (FWA) quotation

A shipper or LSP can communicate requests for you to provide rates to transport specific items as follows:

- Business-to-business (B2B)

In a freight agreement RFQ master, a shipper or LSP that uses SAP TM can specify transportation items along with attributes such as transportation mode and service type. Subsequently, the shipper or LSP sends the freight agreement RFQ master to you. The system displays the freight agreement RFQ as a forwarding agreement quotation in your worklist. You can see the worklist in *SAP NetWeaver Business Client* under *Forwarding Agreement Management* *Overview Forwarding Agreement Management*. For more information, see [Strategic Freight Procurement \[Page 916\]](#).

- E-mail

A shipper or LSP uses e-mail to send you all the details of a request. Details can include information such as, items, rate tables, calculation sheets, transportation modes, and service levels. You perform the following actions to use this information in a forwarding agreement quotation:

1. Download a new forwarding agreement quotation as a Microsoft Excel file. For more information, see [Forwarding Agreement Quotation \[Page 960\]](#)
2. Enter the information the shipper or LSP has sent to the Microsoft Excel file.
3. Upload the Microsoft Excel file in the forwarding agreement quotation. For more information, see [Forwarding Agreement Quotation \[Page 960\]](#).

The system automatically fills all the fields in the forwarding agreement quotation according to the details specified in the Microsoft Excel file. Subsequently, you enter rates for the various transportation items and download the details of the forwarding agreement quotation in another Microsoft Excel file in the *Excel Integration* tab page of the forwarding agreement quotation. You can then send this excel file to the shipper or LSP.

If a shipper or LSP sends you an excel file with the request details in the format of a downloaded Microsoft Excel file, you can directly upload the file in the *Excel Integration* tab page of a new forwarding agreement quotation.

 Note

You can also change an existing forwarding agreement quotation using a Microsoft Excel file. You upload the Microsoft Excel file in the *Excel Integration* tab page of the forwarding agreement quotation. The system updates the information in the forwarding agreement quotation.

End of the note.

A shipper or LSP can contact you with a request for rates for items by email, telephone and so on. You can create a forwarding agreement quotation and enter the items the shipper or LSP has specified.

To proactively send rates for items to shippers and LSPs, you can create a forwarding agreement quotation from any of the following documents or the document items:

- Service product catalogs

You can open a service product catalog and select the service products from which you create a forwarding agreement quotation. For more information on service product catalogs, see [Service Product Catalogs](#).

- Forwarding agreements

You can open a forwarding agreement and select the agreement items you want to offer to shippers or LSP. Subsequently, you can create a forwarding agreement quotation from these items. For more information on forwarding agreements, see [Forwarding Agreement Maintenance \[Page 985\]](#).

- Forwarding agreement quotation template

- Opportunity in an SAP Customer Relationship Management (CRM) system

You can use the service products you define from the SAP TM system in an *Opportunity* business document in the SAP CRM system. Subsequently, you can create a forwarding agreement quotation to send rates for these service products. For more information, see [Integration with SAP Customer Relationship Management \[Page 1137\]](#)

2. You specify the rate for each forwarding agreement quotation item

For more information, see [Rate Determination for Forwarding Agreement Quotation Items \[Page 966\]](#)

3. You request for approval of rate from the approver

You can enter a rate proposal for an item in the item or in a response to the item. You send the item or response to your approver for approval. The approver receives the request for approval in the workflow inbox. The approver can decide whether to accept or reject your rate proposal in the response or item. If the approver accepts the proposal for a response, the system automatically copies the rates you have proposed in the response to the calculation sheet in the quotation item and the status of the response and quotation item changes to *Approved*. Note that the system does not copy all the rates but only the relevant rates for similar dimensions in the quotation item. If the approver

accepts the rate in the item, the system changes the status of the item to *Approved*. If the approver rejects the rate proposal in the response or item, the status of the response or item changes to *Rejected*. You can subsequently change the rate proposal and send it to the approver again.

 Note

You must select the checkbox *Publication Workflow* in Customizing for Transportation Management under  *Master Data*  *Agreement RFQs and Quotations*  *Define Forwarding Agreement Quotation Types*  to enable the approver to receive the quotation items for approval. If you do not select this checkbox, you must manually set the status of the forwarding quotation item to *Approved* before you can send the rate proposal to the shipper or LSP.

End of the note.

4. You send the forwarding quotation item to a shipper or an LSP

After the status of a forwarding quotation item changes to *Approved*, you can send the quotation item to the shipper or LSP. The system includes the rates you have proposed in the in the quotation item.

If the shipper or LSP accepts your quotation item, you can create a forwarding agreement from the quotation item. However, if the shipper or LSP wants to renegotiate the prices or wants additional services, the system increments the customer negotiation cycle by one or creates a new version of the document with the changes the shipper or LSP has requested. Subsequently, you repeat the process from step 2 and propose new rates.

 Note

If you want to create a new version of the forwarding agreement quotation when a shipper or LSP wants to renegotiate the prices or wants additional services, you must select the select the checkbox *Create New Version* in Customizing for Transportation Management under  *Master Data*  *Agreement RFQs and Quotations*  *Define Forwarding Agreement Quotation Types*  . The system creates the new version with the changes the shipper or LSP has requested. If you do not select this checkbox, the system increments the customer negotiation cycle by one.

End of the note.

When you use B2B communication to send the forwarding agreement quotation, the system creates a freight agreement RFQ in the SAP TM system of the shipper or LSP.

5. You create a forwarding agreement

When the shipper or LSP awards you with a quotation item, you can create a new forwarding agreement or update an existing forwarding agreement for the shipper or LSP.

Once one or more of the items have been awarded by the shipper or LSP, you can select the items and create or update a forwarding agreement with the shipper or LSP.



Forwarding Agreement Quotation

A forwarding agreement quotation is an individual business document that you as a carrier or logistics service provider (LSP) proactively send to a shipper or another LSP to bid for the provision of future transportation services in a trade lane for a defined period of time.

You can also use a forwarding agreement quotation to respond to a request for a quotation from a shipper or an LSP with your rates for transportation services. For more information, see [Strategic Freight Sales \[Page 957\]](#).

In a forwarding agreement quotation, you can perform the following actions on a forwarding quotation item:

- Generate response

You can create multiple sub items called responses under a forwarding quotation item. The response is a copy of the item and contains all the details in the item such as capacities and commodities. In the response, you can enter the rates you would like to propose for specific charge types. Subsequently, you can send these rate quotations to a shipper or an LSP.

- Build a rate proposal for an item and response, manually or automatically

For more information, see [Rate Determination for Forwarding Agreement Quotation Items \[Page 966\]](#).

- Send item for approval

After you have decided the rates for a particular item or response, you send the item for approval to your approver. For more information, see [Strategic Freight Sales \[Page 957\]](#).

- Estimate forwarding charges

You can estimate forwarding charges for a single route based on minimum input. You can estimate charges for the entire route (header-level calculation) or for individual stages of the route (stage-level calculation). Note that the more information you enter, the more accurate the charge estimation.

Structure

A forwarding agreement quotation can contain the following main tab pages and screen areas:

- *General Data*

The *General Data* tab page contains high-level information about the transportation services the shipper or LSP wants you to bid for, for example:

- Organizational unit responsible
- Validity period
- Your details, including whether the shipper or LSP already has an agreement in place with you for the trade lane
- Quotation type

- Customer negotiation cycle
 - Deadline for responding to the shipper or LSP
- *Items*

The *Items* screen area contains information about the quotation items. This screen area can contain the following tab pages, when relevant:

 - *Calculation Sheet Overview*

This tab page displays the calculation sheet details for each quotation item.
 - *Trade Lanes*

This tab page displays the details about the trade lanes for each quotation item.
 - *Capacities*

This tab page contains the capacity required from you, the carrier or logistics service provider, the capacity you can commit to, and the capacity awarded to you. For more information, see [Capacities in Rate Tables for Freight Agreement RFQ Masters \[Page 936\]](#).
 - *Commodity Codes*

This tab page displays the commodity codes for each quotation item.
 - *Notes*

This tab page displays any notes relevant to the quotation item.
 - *Attachments*

On this tab page, you can upload files relevant to the quotation item.
 - *Default Route*

On this tab page, you can use default routes to specify the sequence of locations that the system uses if there is no direct connection between your locations. If there is a direct connection between your locations, you can specify a default route to predefine entries for the organization interaction status, transportation mode, and so on.
- *Output Management*

On the *Output Management* tab page, you can print forwarding agreement quotation details and generate e-mails and faxes and send them directly to the intended recipient. You can also see a record of the documents that were already printed or sent (by e-mail or fax, for example). For more information, see [Output Management \[Page 1270\]](#).
- *Notes*

On this tab page, you can add any relevant notes.
- *Attachments*

On this tab page, you can upload relevant files.

- *Change Documents*

You can view all changes made to a forwarding agreement quotation on the *Change Documents* tab page or screen area. The changes are listed by date and time. You view the details of the changes at header level by selecting the relevant row in the *Transactions* screen area and at field level by selecting the relevant row in the *Record Level Changes* screen area. You must refresh the forwarding agreement quotation to view recently saved changes.

 Note

You can activate the *Change Documents* tab page or screen area in Customizing for *Transportation Management* under ► *Master Data* ► *Agreement RFQs and Quotations* ► *Define Forwarding Agreement Quotation Types*.

End of the note.

- *Document Flow*

You can view the business documents from which the forwarding agreement quotation was created and the business documents created from the forwarding agreement quotation.

- *Excel Integration*

You can use a Microsoft Excel file to update details when you create a new forwarding agreement quotation or when you edit an existing forwarding agreement quotation. You can perform the following actions:

- Download the forwarding agreement quotation as a Microsoft Excel file
- Update the Microsoft Excel file that you download with the shipper's or LSP's requirements
- Upload the Microsoft Excel file in the *Excel Integration* tab page

The system uses the information in the uploaded Microsoft Excel file to automatically enter information in the relevant fields in the quotation. You can then propose rates for various items in the forwarding agreement quotation.

 Note

You specify the fields of forwarding agreement quotations that you want another LSP or a shipper to be able to edit in Microsoft Excel in Customizing for *Transportation Management* under ► *Master Data* ► *Agreement RFQs and Quotations* ► *Define Editable Fields in Excel*.

End of the note.

 Note

In the forwarding agreement quotation, you can also specify an *Opportunity* business document that exists in an SAP Customer Relationship Management system. This enables you to access the forwarding agreement quotation from the CRM opportunity business document. This increases your response time and reduces workload.

End of the note.

More Information

[Freight Agreement RFQ Master \[Page 924\]](#)

[Agreement \[Page 970\]](#)

[Strategic Freight Sales \[Page 957\]](#)

[Carrier Performance Analysis \[Page 934\]](#)

For more information about SAP CRM opportunities, see SAP Library on SAP Help Portal at <http://help.sap.com/crm>. Choose a release and under *Application Help*, choose ► SAP Customer Relationship Management ► Sales ► Opportunity Management ► Integration with SAP Transportation Management ▶.



Customer Analysis

You can use this feature to review the transportation history of shippers and logistics service providers (LSPs) to which you send rate proposals for forwarding agreement quotation items. You can review the analysis in SAP NetWeaver Business Client under *Forwarding Agreement Management* *Forwarding Agreement Quotation*, you choose *Business Context Viewer* to view the customer analysis screen.

Prerequisites

You have performed the following tasks:

- Integrated SAP Transportation Management (SAP TM) with SAP NetWeaver Business Warehouse (SAP NetWeaver BW) BI CONTENT 747 – SP07. The system uses the analyzed data in SAP NetWeaver BW to display the carriers' performance in the BCV.
- Implemented SAP note [1715521](#).
- Activated the business configuration set /SCMTMS/BCV_CUSTOMER_ANALYSIS.
- Configured prerequisites for the BCV (see [Business Context Viewer in SAP TM](#)).

Features

The system displays the following customer analysis information:

- Revenue per year

Displays the total revenue earned from a shipper or an LSP over a period of time in a graph. This enables you to determine the impact the customer has on your business profits.

You can also review the revenue per quarter. This enables you to check if the revenue you generated was uniform over a particular year.

- Demand per year

Displays the total load that you carried for a customer over a period of time in a graph. This enables you to determine whether a customer is inflating demand in the request.

You can also review the demand per quarter. This enables you to check if the load you delivered was uniform over a particular year or if the load increased or decreased during certain periods.

Activities

In the forwarding agreement quotation, you can perform the following activities:

- Enter an ordering party
- Choose *Business Context Viewer*.

The system displays the historical demand and the revenue generated from the ordering party.

Note that you can also enter the sales organization so that the system displays analytics that is specific to the transportation history of the agreements between the ordering party and sales organizations. You can also analyze data for the shipper or LSP based on trade lanes. This enables you to truncate your analysis over a trade lane.

More Information

[Forwarding Agreement Quotation \[Page 960\]](#)

[Strategic Freight Sales \[Page 957\]](#)

[Business Context Viewer \(BCV\)](#)



Rate Determination for Forwarding Agreement Quotation Items

The system enables you to easily and efficiently determine the rates you want to provide to shippers or logistics service providers (LSPs) for quotation items.

Prerequisites

To influence the matching service products or agreement items the system uses to match a forwarding agreement quotation item, you have performed the following tasks in Customizing for Transportation Management under ► *Master Data* ► *Agreement RFQs and Quotations* ▶:

- Defined a selection profile in the Customizing activity *Define FWA Quotation Item Selection Profiles*
- Assigned the selection profile to a forwarding agreement quotation type in the Customizing activity *Define Forwarding Agreement Quotation Types*

Features

A shipper or logistics service providers (LSP) can request for rates for transportation items or you can proactively send your rates to shippers or LSPs. This feature enables you to determine the best rates that you can provide while taking into consideration the rates you have provided earlier for similar items. For more information about sending rates to shippers and LSPs see [Strategic Freight Sales \[Page 957\]](#).

Activities

Select an item in the forwarding agreement quotation and choose *Open Rate Builder Cockpit*. The system displays the forwarding quotation item and the calculation sheet of the item. It also displays a set of matching agreement items or service products and the calculation sheet. You can perform the following activities:

- Copy the agreement item or service product as your response
You choose one of the matching agreement items or service products and choose ► *Add* ▶ *Copy Item as Response* ▶. The system automatically copies the agreement item or service product along with the calculation sheet as a response to the quotation item.
- Copy calculation sheet to quotation item or response
You choose one of the matching agreements items or service products and choose ► *Update* ▶ *Copy Calculation Sheet to Quotation Item/Response* ▶. The system replaces the calculation sheet of the response or the quotation item with the calculation sheet of the agreement item or service product you have selected.
- Build rate for the item
You select an agreement item or service product and choose ► *Add* ▶ *Build Rate with Response* ▶. The system performs the following steps:
 1. Matches the charge types in the quotation item with the charge types in the agreement item or service product

2. Matches the rate tables in the charge types
3. Matches similar dimensions in the rate table of the quotation item with the dimensions in the rate table of the agreement item or service product

The system subsequently creates a response with a rate table for the charge types. The system automatically matches the rates it can provide for specific matching dimensions.



Example

In the rate builder cockpit, a forwarding agreement quotation item has a charge type FB00 with the rate table RT001 and the following attributes:

Source Location	Destination Location	Gross Weight in KG	Amount in USD
Bangalore	Chennai	<100	-
Bangalore	Chennai	<200	-
Bangalore	Mumbai	<100	-
Bangalore	Mumbai	<200	-

The system finds matching agreement items. You subsequently select an agreement item AGREE_1 with the rate table RT002 with the following attributes:

Source Location	Destination Location	Service Type	Gross Weight in KG	Amount in USD
Bangalore	Chennai	01	<120	500
Bangalore	Chennai	01	<240	800
Bangalore	Mumbai	01	<360	600

When you select *Build Rate with Response*, the system automatically creates a response to the forwarding agreement quotation item with a rate table RT003 with the following attributes:

Source Location	Destination Location	Gross Weight in KG	Amount in USD
Bangalore	Chennai	<120	500
Bangalore	Chennai	<240	800
Bangalore	Mumbai	<120	-
Bangalore	Mumbai	<240	-

Since the rates for locations Bangalore to Mumbai remains unfilled, you subsequently select the system generated response and select an agreement item AGREE_2 with the rate table RT004 with the following attributes:

Source Location	Destination Location	Equipment Type	Gross Weight in KG	Amount in USD

Source Location	Destination Location	Equipment Type	Gross Weight in KG	Amount in USD
Bangalore	Mumbai	20G	<120	600
Bangalore	Mumbai	20G	<400	900

When you select *Build Rate with Response*, the system automatically updates the rate table RT003 of charge type FBOO of the response with the following attributes:

Source Location	Destination Location	Gross Weight in KG	Amount in USD
Bangalore	Chennai	<120	500
Bangalore	Chennai	<240	800
Bangalore	Mumbai	<120	600
Bangalore	Mumbai	<240	900

End of the example.

Note that you can also build rate within the quotation item. The system does not create a new rate table. The system only fills the rate for existing dimensions in the rate tables.



Example

In the rate builder cockpit, a forwarding agreement quotation item has a charge type FBOO with the rate table RT001 with the following attributes:

Source Location	Destination Location	Gross Weight in KG	Amount in USD
Bangalore	Chennai	<100	-
Bangalore	Chennai	<200	-
Bangalore	Mumbai	<100	-
Bangalore	Mumbai	<200	-

The system finds matching agreement items. You subsequently select an agreement item AGREE_1 with the rate table RT002 with the following attributes:

Source Location	Destination Location	Service Type	Gross Weight in KG	Amount in USD
Bangalore	Chennai	01	<120	500
Bangalore	Chennai	01	<240	800
Bangalore	Mumbai	01	<360	600

When you select , the system automatically fills the rates in the rate tables of the forwarding agreement quotation item:

Source Location	Destination Location	Gross Weight in KG	Amount in USD
Bangalore	Chennai	<100	500
Bangalore	Chennai	<200	800
Bangalore	Mumbai	<100	600
Bangalore	Mumbai	<200	600

End of the example.

More Information

[Strategic Freight Sales \[Page 957\]](#)

[Forwarding Agreement Quotation \[Page 960\]](#)



Agreement

An agreement is a long-term contract between business partners that details their commitment to conduct business with each other in an agreed manner.

An agreement can be legally binding. Available agreement types are, for example, [freight agreement](#), [forwarding agreement](#), and [internal agreement](#). Agreement types can be mutual between the business partners.

Agreements are the basis for calculating transportation charges and can involve one or more parties. You use forwarding agreements to calculate transportation charges billable to your customer and freight agreements to calculate transportation charges billable to you by your carrier. You use internal agreements to calculate transportation charges between organizations of the same company code and between organizations of different company codes in the same company.

An agreement includes contractual data, such as the following:

- Organizational unit, for example, the sales or purchasing organization
- Involved parties, for example, the ordering party or carrier
- Terms of payment
- Validity dates

The system determines the agreement based on organization, business partner, validity period, and preconditions. Agreement determination is based mainly on the partner relationship.

Structure

An agreement can contain the following main tab pages and screen areas:

- *General Data*

The *General Data* tab page contains general information about the agreement, for example, the organizational unit responsible for the forwarding order or freight order, the validity period of the agreement, and business partner details. Note that in agreements with multiple parties, you can specify business partners and business partner hierarchy trees. In agreements with a single party, you can specify either a business partner or business partner hierarchy tree.

You can also specify the calculation sheet template the system should use when creating a calculation sheet from within the agreement.

Note

If you do not specify either the ordering party/carrier or the business partner hierarchy tree for an agreement, the system considers the agreement to be a standard agreement. A standard agreement is valid only if an agreement is not identified during agreement determination for the ordering party specified in the forwarding order or for the carrier specified in the freight order.

You can define a freight agreement or forwarding agreement type to apply to multiple organizational units and multiple business partners in Customizing for *Transportation*.

Management under ► *Master Data* ► *Agreements and Service Products* ► *Define FWA and Service Product Catalog Types* or under ► *Master Data* ► *Agreements and Service Products* ► *Define Freight Agreement Types*. You can also specify multiple organizational units and business partners for mutual agreements.

End of the note.

On this tab page, you can add an agreement determination exclusion rule or a BRFplus condition to exclude the agreement from agreement determination. During agreement determination, if the system finds a condition that matches the condition in the agreement determination exclusion rule, the system excludes the agreement. For more information, see [Rules and Conditions for Charge Management and SP Catalogs](#).

- *Items*

The *Items* screen area contains the details of the agreement items. You must define at least one item for the agreement to be relevant for charge calculation. You can assign preconditions to agreement items and each agreement item can represent any combination of them, for example:

- Service level
- Stage category
- Transportation mode
- Shipping type

The system uses these preconditions and external strategies (see [External Strategies \[Page 1232\]](#)) to determine the pick-up frequency and transit duration. Service preconditions define whether a service is valid for certain freight units.

 Note

You can assign service level, stage category, transportation mode, and shipping type only to agreements with *Editable* entered for the display control setting. You make this setting in Customizing for *Transportation Management* under ► *Master Data* ► *Agreements and Service Products*.

End of the note.

This screen area can contain the following main tab pages:

- *Precondition*
- *Details*
- *Dimensions* (freight agreements only)
- *Capacities*
- *Calculation Sheet Overview*
- *Commodity Codes*
- *Business Share* (freight agreements only)
- *Default Routes*

- *Instructions* (forwarding agreements only)

You must attach a calculation sheet to each agreement item and you can also specify additional preconditions, payment terms, and commodity codes for each agreement item. For more information about the *Calculation Sheet Overview* screen area, see [Calculation Sheet](#).

 Note

You can choose an existing reference calculation sheet or create a calculation sheet. If you enter the name of an existing reference calculation sheet, the system attaches the reference calculation sheet to the agreement item. If the calculation sheet does not already exist, the system prompts you to create it. The calculation sheet that the system creates is based on the calculation sheet template you specified on the *General Data* tab page. If you did not specify a calculation sheet template, the system creates the calculation sheet with one sum line at the top level. You should then add additional lines to the calculation sheet. For more information, see [Calculation Sheet Maintenance](#).

End of the note.

- *Output Management*

On the *Output Management* tab page, you can print agreement details and generate e-mails and faxes and send them directly to the intended recipient. You can also see a record of the documents that were already printed or sent (by e-mail or fax, for example). For more information, see [Output Management \[Page 1270\]](#).

- *Versions*

The *Versions* tab page contains a list of the agreement versions, including the status of each version.

- *Change Documents*

You can view all changes made to an agreement on the *Change Documents* tab page or screen area. The changes are listed by date and time. You view the details of the changes at header level by selecting the relevant row in the *Transactions* screen area and at field level by selecting the relevant row in the *Record Level Changes* screen area. You must refresh the agreement to view recently saved changes.

 Note

You can activate the *Change Documents* tab page or screen area in Customizing for *Transportation Management* under ► *Master Data* ► *Agreements and Service Products* ► *Define FWA and Service Product Types* or under ► *Master Data* ► *Agreements and Service Products* ► *Define Freight Agreement Types*.

End of the note.

Integration

All agreement types are integrated with calculation sheets, rate tables, and scales. For more information, see [Calculation Sheet](#), [Rate Table](#), and [Scale](#).

More Information

[Agreement Management \[Page 915\]](#)

[Agreement Maintenance \[Page 974\]](#)

[Charge Calculation](#)

[Setup of MD for Charge Management and SP Catalogs](#)

[Management of Instructions \[Page 1204\]](#)



Agreement Maintenance

You create and maintain [freight agreements](#), [forwarding agreements](#), [internal agreements](#), and [mutual agreements](#) as a starting point for enabling charge calculation.

Note

If an agreement is a mutual agreement, the agreement usage is *Customer and Service Provider*. The agreement usage of an agreement is visible in the relevant agreement personal object worklist.

End of the note.

Integration

Agreement maintenance is a step in the process to set up master data in the Charge Management and Service Product Catalogs component and is integrated with calculation sheets, rate tables, and scales. You can create all charge management master data from within an agreement. For more information, see [Setup of MD for Charge Management and SP Catalogs](#).

You can use the master data cockpit to access an overview of the agreements and the charge management master data per organizational unit, business partner, and charge type. The system also shows the relationship between the different types of charge management master data. For more information, see [Master Data Cockpit](#).

Prerequisites

- You have defined number ranges in Customizing for *Transportation Management* under *Basic Functions* *Charge Calculation* *Basic Settings* *Number Range Intervals* *Assign No. Ranges to Calc. Sheets, Rate Tables, & Scales* .
- For freight agreements, forwarding agreements, and internal agreements, you have defined agreement item types, agreement types, and a default agreement type in Customizing for *Transportation Management* under *Master Data* *Agreements and Service Products* .
- If you enable approval workflow for the release of agreements, you must create conditions and configure workflow settings (see [Workflow in SAP Transportation Management](#)).

Features

Agreement Versions

You can generate different versions of agreements, with the same validity period or with mutually exclusive validity periods. Agreement versions ensure that you do not need to create a new agreement when an agreement's validity period expires or the details of an agreement change depending on the time period. Note that you can have only one released agreement version with the same validity period or an overlapping validity period but can have multiple released agreement versions with mutually exclusive validity periods. You can revert to an earlier agreement version by deactivating the released version and releasing the earlier version. You can also delete agreement versions. The *Versions* tab page contains a list of the agreement versions, including the status of each version.

Approval Workflow

You can enable an approval workflow for the release of agreements. You can specify that you want the system to notify an approver when you request approval for the release of an agreement. You can also specify whether you can edit agreements during the approval workflow. In agreements with multiple parties, only one approver must approve the release of the agreement.

Note that the approver is the person assigned to the position that is the head of the organizational unit. Therefore, at least one organizational unit must have a position that is the head of the organizational unit. For more information, see [Approval Check](#).

The approver uses Business Workplace to approve or reject the release of agreements. For more information, see SAP Library for *SAP Business Workflow* on SAP Help Portal at <http://help.sap.com/netweaver>. In SAP Library, choose ► *SAP NetWeaver 7.3* ► *Application Help* ► *Function-Oriented View* ► *Application Server* ► *Application Server ABAP* ► *Other Services* ► *Services for Application Developers* ► *SAP Business Workflow* ► *Reference Documentation* ▶.



You enable the approval workflow and allow the agreement to be edited during the approval workflow when you define agreement types. You define freight agreement, forwarding agreement, and internal agreement types in Customizing for *Transportation Management* under ► *Master Data* ► *Agreements and Service Products* ▶.

End of the note.

Offline Approval Workflow

SAP Transportation Management (SAP TM) can send work items for agreements by e-mail to the Microsoft Outlook inbox of a user, such as a customer agent. The user can accept or reject a work item and update the system from their inbox. For more information, see [Offline Workflow for Sending and Approving Work Items \[Page 1255\]](#).

Calculation Sheets, Rate Tables, and Scales

You can create calculation sheets, rate tables, and scales from within an agreement in the following ways:

- Create a calculation sheet for each agreement item in the *Items* screen area
- Create a rate table for each calculation sheet item on the *Calculation Sheet* tab page of the *Items* screen area
- Create a scale for a rate by going to the rate table details in the *Items* screen area

You can also copy and delete the calculation sheets, rate tables, and scales from within an agreement. For more information, see [Calculation Sheet](#), [Rate Table](#), and [Scale](#).



If you copy an agreement, the system copies the calculation sheets, rate tables, and scales that you created from within the agreement or that you referenced in the agreement.

If you delete an agreement, the system deletes the calculation sheets, rate tables, and scales that you created from within the agreement. However the system does *not* delete the calculation sheets, rate tables, and scales that you referenced in the agreement.

End of the note.

Charge-Calculation-Specific Features

- Chargeable weight
- Agreement determination
- Uncontrolled transportation
- Header-level charges
- External reference number
- Resource-based internal agreements

For more information, see [Agreements and Charge Calculation \[Page 980\]](#).

Preconditions

Depending on your Customizing settings and the agreement type (freight agreement, forwarding agreement, or internal agreement), you can add preconditions at agreement and agreement-item level, for example:

- Transportation mode
- Shipping type
- Traffic direction
- Stage category
- Service level
- Contract basis
- Consolidation type

In the *Item Precondition* tab page, you can add second and subsequent preconditions to an agreement item. You can also add second and subsequent values to the same precondition. This enables you to use the same agreement item and calculation sheet for more than one precondition, and more than one precondition value. For example, you can specify a precondition of *Transportation Mode* in an agreement item that already contains a precondition of *Service Level*. You can also specify precondition values of *Sea* and *Road* for the same agreement item.

If you use the search on a precondition field to search for a precondition and you have entered an item type for the agreement item, the system displays all preconditions that are available in the system. However you can only edit the preconditions, including any default values, that you specified for the item type in the Customizing activity *Define Freight Agreement Item Types*. If you have not entered an item type for the agreement item, the system displays all the preconditions that are available in the system.

For more information, see Customizing for *Transportation Management* under ► *Master Data* ► *Agreements and Service Products* ► *Define Freight Agreement Item Types* ▶.

 Note

The availability of some preconditions is dependent on the transportation mode of the agreement or agreement item. For example, you can enter the contract basis and air waybill type only if the transportation mode is *Air*. The transportation mode in an agreement also restricts the calculation method types available in calculation sheets created from the agreement.

End of the note.

The system also uses preconditions during agreement determination. You can use preconditions to search for agreements in the relevant agreement personal object worklist in SAP NetWeaver Business Client.

You can add or remove these preconditions for freight agreements, forwarding agreements, and internal agreements in Customizing for *Transportation Management* under ► *Master Data* ► *Agreements and Service Products*.

Commodity Codes

You can define commodity codes for agreement items in forwarding, freight, and internal agreements. Commodity codes enable you to define the categories of products that the parties in the agreements have agreed to transport between them.

You can also use a wildcard entry to represent a group of commodity codes in the agreement item. The system calculates the charges when the commodity code in the forwarding order fully or partially matches the commodity code or wildcard entry in the agreement item. On the *Charges* tab page, you can see the commodity code type and commodity item number used for charge calculation. Note that you can use commodity code-based agreement determination only for item-level calculation.

You can define a rate table with the rates for commodity codes. You must specify the commodity code type for the rate table and you can use the commodity codes belonging to the commodity code type to define rates.

For example, your customer needs a product with a set of rates to transport livestock and another product and set of rates to transport food. To differentiate between the commodities, you use a commodity type of *LF*, with commodity codes of 01* to 05* for livestock and 16* to 24* for food. When you create a forwarding agreement, you select the appropriate product, and the system calculates charges based on the product you transport.

You must have defined at least one commodity code type and one or more commodity codes in a type in Customizing for *Transportation Management* under ► *Master Data* ► *Classification of Goods* ► *Define Commodity Codes*.

Default Routes

You can specify default routes for agreement items. This enables you to specify the route you take between a location pair in delivering an order. You can assign existing default routes, create new default routes, and edit default route details in the ► *General Data* ► *Default Routes* tab page under the agreement item.

When you create a forwarding order from a forwarding agreement item with a default route, the system copies the default route stages to the forwarding order. The system uses the default route you specify in the agreement as the ordered route in the order. The system uses the default route stages in charge calculation if you specify the data source as *Ordered Route* in the calculation profile. You can also specify or change the actual route later in the *Stages* tab page of the order or in planning (see [Determination of the Route](#)).

You can create and edit default routes under ► *Master Data* ► *Transportation Network* ► *Default Route*, and assign these default routes to an agreement item. You must assign a default route

type to a default route. For more information, see Customizing for *Transportation Management* under *Master Data* *Transportation Network* *Define Default Route Types* .

Freight-Agreement-Specific Features

- Specify service levels.
- Create freight booking, freight orders, and service orders from items.
- Create freight agreement RFQ masters.
- Integrate business share.
- Create freight agreements for general sales agents.
- Create transportation allocations.
- Specify dimensions and units of measure for items.

For more information, see [Freight Agreement Maintenance \[Page 982\]](#).

Forwarding-Agreement-Specific Features

- Specify service levels and create forwarding orders and forwarding quotations based on service levels.
- Specify instructions for the processing of the forwarding agreement.
- Specify to settle for transportation services on the basis of execution criteria, such as buyer's consolidation, route, or trailer unit.
- Consolidate goods from different suppliers into one container.

For more information, see [Forwarding Agreement Maintenance \[Page 985\]](#).

Consumed Capacity and Amount

At agreement-item level, you can calculate how much of the capacity specified in an agreement is consumed by orders and by invoices, and the charge amount this corresponds to. This helps you to check how much of the possible capacity you plan to use during a specified period, and how much is actually used. The system calculates what you plan to consume by checking freight orders or forwarding orders. The system calculates what is actually consumed by checking invoices. You can see the consumed capacity and amount for an agreement item on the *Capacities* tab page in the *Items* screen area of the agreement. The system calculates the actual amount based on the calculated rate for the actual capacity from the freight orders or forwarding orders. Note that you can recalculate the consumption if you want to ensure you have the most up-to-date consumption data visible in the agreement.

You can calculate the consumed capacity and amount for each agreement item in SAP NetWeaver Business Client by opening the agreement. In the *Items* screen area, select the item and choose *Follow-Up* *Calculate Consumption* .

You can calculate the consumed capacity and amount for multiple or all agreement items in one or more agreements by using program *Calculate Consumed Capacity and Amount at Agreement-Item Level* (/SCMTMS/FAG_CONSUMPTION) in transaction SE38.

Validity Period Update

If you change the validity of an agreement, you can update the validity of all the items and service products with the same validity period. You can also update the validity of selected items and service products instead.

General

- Agreement search

In the relevant agreement POWL, you can search for agreements within a zone. You do not need to specify an exact source or destination location. If you search a zone and specify to include the location within the zone, the system also searches agreements whose location is within the zone. You can also search for agreements involving a specific carrier by using the carrier's standard carrier alpha code (SCAC).

- Printing, e-mailing, and faxing

You can print agreement details and generate e-mails and faxes and send them directly to the intended recipient. For more information, see Customizing for *Cross-Application Components* under ► *Processes and Tools for Enterprise Applications* ► *Reusable Objects and Functions for BOPF Environment* ► *PPF Adapter for Output Management* ▶, as well as [Printing \[Page 1273\]](#).

Activities

To create or update freight agreements, in SAP NetWeaver Business Client choose ► *Freight Agreement Management* ► *Freight Agreements* ▶.

To create or update forwarding agreements, in SAP NetWeaver Business Client choose ► *Forwarding Agreement Management* ► *Forwarding Agreements* ▶.

To create or update internal agreements, in SAP NetWeaver Business Client choose ► *Forwarding Agreement Management* ► *Internal Agreements* ▶.

More Information

[Agreement \[Page 970\]](#)

[Agreement Management \[Page 915\]](#)

[Archiving Agreements and RFQ Masters \[Page 1300\]](#)



Agreements and Charge Calculation

SAP Transportation Management (SAP TM) calculates transportation charges on the basis of the data stored in agreements and charge management master data. You can make specific charge calculation settings as part of the creation and maintenance of agreements.

Prerequisites

You have configured the prerequisites for agreements (see [Agreement Maintenance \[Page\] 974](#)).

Features

Chargeable Weight

You can assign a dimensional weight profile at agreement level and at agreement-item level to calculate the chargeable weight of a product. By assigning a dimensional weight profile at agreement-item level, you can have a different dimensional weight profile for each stage of a freight order or forwarding order. During charge calculation, you can change the dimensional weight profile at the charge-item level in a forwarding order.

Note

A dimensional weight profile at agreement-item level has priority over a dimensional weight profile at agreement level. If you do not assign a dimensional weight profile at agreement-item level, the system uses the dimensional weight profile assigned at agreement level.

You can also assign a dimensional weight profile to the calculation profile of the organizational unit. If you do not assign a dimensional weight profile at the agreement-item and agreement header level, the system uses the dimensional weight profile assigned to the calculation profile of the organizational unit. You can assign dimensional weight profiles to calculation profiles in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Calculation Profiles*.

You can define dimensional weight profiles in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Data Source Binding* ► *Define Dimensional Weight Profiles*.

End of the note.

Agreement Determination

The system determines the agreement based on business partner and organizational unit (sales organization for forwarding agreements and purchasing organization for freight agreements). If there are multiple agreements for a carrier or customer when the system tries to calculate transportation charges, the system determines which agreement to use within the organizational hierarchy. As part of the agreement determination, if you select the *Evaluate All Agreements* checkbox in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Charges Profiles*, the system takes the leading charge type into account by skipping agreements that use calculation sheets without a leading charge type. The system then skips agreements if the leading charge type does not have a rate. If there are multiple leading charge types in a calculation sheet, all the leading charge types must have a rate defined for the system to consider the agreement and calculation sheet for charge calculation. We recommend that you maintain a single leading charge type in a calculation sheet.

The system also uses preconditions during agreement determination. For more information, see [Agreement and Calculation Sheet Determination](#).

Uncontrolled Transportation

You can specify whether an agreement is for controlled or uncontrolled transportation, which impacts on whether the system can calculate the charges for the main stage of an uncontrolled transportation. For more information, see [Uncontrolled Transportation](#).

Header-Level Charges

The system can calculate charges for an agreement item at header level even when calculating the rest of the charges at stage level. You can group the charges common to all stages in a separate agreement item. During charge calculation, the system calculates the header-level charges independently of the stage charges. The system calculates the stage charges as usual.

To enable header-level charges when calculating charges at stage level, you must maintain a calculation profile with the calculation level as stage level. For more information, see Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Calculation Profiles*. For information about calculation profiles, see [Calculation Profiles](#).

External Reference Number

You can specify the reference number of a separate agreement in an external system or the reference number your business partner uses in their internal system for your same agreement in SAP TM.

Resource-Based Internal Agreements

You can specify internal agreements as resource-based agreements to use when charging only for the use of resources. For more information, see [Internal Settlement for Resources \[Page 1077\]](#).



Example

A shipper wants carrier A to transport goods on its behalf. Carrier A outsources the transportation of the goods to carrier B. Carrier B uses carrier A's vehicles to transport the goods. Carrier A uses a resource-based internal agreement to charge carrier B for the use of its vehicles.

End of the example.

More Information

[Charge Calculation](#)

[Agreement \[Page 970\]](#)



Freight Agreement Maintenance

As part of the creation and maintenance of freight agreements, you can use the following features specific to freight agreements only.

Note that you can use many other features that are not specific to freight agreements. For more information, see [Agreement Maintenance \[Page 974\]](#).

Prerequisites

You have configured the prerequisites for agreements (see [Agreement Maintenance \[Page 974\]](#)).

Features

Service Levels

The service levels you can choose for freight agreement items are service levels that are defined for the carrier. For more information, see [Definition of Business Partners](#).

Freight Booking, Freight Orders, and Service Orders

When you create a freight document or service order from an agreement item, the system copies the services you have specified in the item to the freight document or service order. For more information, see [Definition of Carrier Service Codes](#).

Freight Agreement RFQ Masters

You can create freight agreement RFQ masters from within freight agreements to start the process of updating the freight agreements. To create a freight agreement RFQ master from within a freight agreement, in SAP NetWeaver Business Client choose ► *Freight Agreement Management* ► *Freight Agreements* ▶. Open the freight agreement and choose the *Create RFQ Master* button.

You can also create freight agreements from within freight agreement RFQ masters. To do this, in SAP NetWeaver Business Client choose ► *Freight Agreement Management* ► *Freight Agreement RFQ Masters* ▶. Open the freight agreement RFQ master and choose the ► *Follow Up* ▶ *Create/Update Agreement* ▶ button.

For more information about freight agreement RFQ masters, see [Freight Agreement RFQ Master \[Page 924\]](#).

Business Share Integration

If you include a target share when you create or update a freight agreement from a freight agreement RFQ master, the system includes the target share in the freight agreement items. If you create a freight agreement without reference to a freight agreement RFQ master, you can manually add a target share to the freight agreement items.

If you want the system to take the target share into account in planning, you must choose the *Create Business Share* button. The system includes the target share in the business share, and uses the business share in the carrier selection settings in planning. You can specify mandatory settings by choosing the *Edit Business Share* button on the *Business Shares* tab page.

To create a business share for planning, you must have specified the following settings in the freight agreement:

- Valid-from date and valid-to date
- Carrier
- Trade lane on the *Precondition* tab page
- Periodicity on the *Capacities* tab page

When you create and edit a business share, the system displays a temporary identifier (ID) in the *Business Shares* tab page. It assigns a permanent ID when you save the freight agreement.

For more information about how you can use a business share in planning, see [Business Share \[Page 872\]](#).

General Sales Agents

You can create a freight agreement for a general sales agent (GSA), and specify the airlines to which the freight agreement applies. To enable you to create this freight agreement, you must specify the following settings in ► *BP – Maintain Business Partner* ► *Display in BP Role* ► *Vendor Data* ▶:

- *Carrier Category of Agent*
- Airlines the GSA represents in the *Airline Codes* screen area

You can open the *BP – Maintain Business Partner* transaction in SAP Menu under ► *SAP Transportation Management* ► *Transportation Management* ▶ *Master Data* ▶.

In the freight agreement, when you specify the GSA carrier, you cannot specify an airline at header level. Instead you can only specify the airlines you specified in the BP master, at item level.

Transportation Allocations

In freight agreements with a single party, you can create and edit transportation allocations for freight agreement items to allocate a certain volume of business to a carrier on a specific trade lane. Note that the freight agreement item must have just one trade lane. For more information, see [Check Against Transportation Allocations \[Page 876\]](#).

Dimensions and Units of Measure

You can enter the dimensions and units of measure for a freight agreement item. You can specify the attributes, such as length, width, height, and girth, on the *Dimensions* tab page of the freight agreement. When you perform direct shipment option determination, the system compares the attributes of the parcel specified in the freight unit with that specified in the freight agreement. For the system to consider a freight agreement for charge calculation, all the attribute values specified in the freight unit must be less than or equal to the attribute values specified in the freight agreement. If there are multiple freight agreements that meet this condition, the system displays a list from which you can choose one. For more information, see [Rate Determination for Direct Shipment of Parcels](#).



Example

You define dimensions for the following freight agreement items:

- Item 100 with a height of 200 cm and width of 100 cm

- Item 200 with a height of 250 cm

When you perform direct shipment option determination for a freight unit with a height of 210 cm, the system can use freight agreement item 200 to determine the charges.

When you perform direct shipment option determination for a freight unit with height of 200 cm and width of 90 cm, the system can use both freight agreement item 100 and freight agreement item 200 to determine the charges. In this case, the system displays both from which you can choose one.

End of the example.

More Information

[Agreement \[Page 970\]](#)



Forwarding Agreement Maintenance

As part of the creation and maintenance of forwarding agreements, you can use the following features specific to forwarding agreements only.

Note that you can use many other features that are not specific to forwarding agreements. For more information, see [Agreement Maintenance \[Page 974\]](#).

Prerequisites

You have configured the prerequisites for agreements (see [Agreement Maintenance \[Page 974\]](#)).

Features

Service Levels

The service levels you can choose for forwarding agreement items are the service levels that are defined for the forwarding agreement item's transportation mode, or service levels that are defined independently of the transportation mode. You define service levels in Customizing for *Transportation Management* under ► *Forwarding Order Management* ► *Define Transportation Service Level Codes* ▶.

Instructions

If you have a forwarding agreement with service products that have services, the system automatically adds the instructions specified for the service type to the *Instructions* tab page of the forwarding agreement. You can edit or delete these instructions, and also add additional instructions. Note that if you create a forwarding order from a forwarding agreement with instructions, the system includes the instructions in the forwarding order and subsequent business documents.

You define service types in Customizing for *Transportation Management* under ► *Basic Functions* ► *General Settings* ► *Define Service Types* ▶. You define instructions and instruction sets in Customizing for *Transportation Management* under ► *Basic Functions* ► *Instructions* ► *Define Instructions and Instruction Sets* ▶. You assign instruction sets to service types in Customizing for *Transportation Management* under ► *Basic Functions* ► *Instructions* ► *Assign Instruction Sets* ▶. For more information, see [Management of Instructions \[Page 1204\]](#).

Forwarding Orders and Forwarding Quotations

You can create forwarding orders and forwarding quotations based on service products.

Forwarding Agreement Quotations

You can create forwarding agreement quotations from within forwarding agreements to start the process of updating the forwarding agreements. To create a forwarding agreement quotation from within a forwarding agreement, in SAP NetWeaver Business Client choose ► *Forwarding Agreement Management* ► *Forwarding Agreements* ▶. Open the forwarding agreement and choose the ► *Follow Up* ► *Create Forwarding Agreement Quotation* ▶ button.

You can also create forwarding agreements from within forwarding agreement quotations. To do this, in SAP NetWeaver Business Client choose ► *Forwarding Agreement Management* ► *Forwarding Agreement Quotations* ▶. Open the forwarding agreement quotation and choose the *Create Agreement* button.

For more information about forwarding agreement quotations, see [Forwarding Agreement Quotation \[Page 960\]](#).

Buyer's Consolidation

For forwarding agreement items, you can consolidate goods from different suppliers that are intended for one consignee. For more information, see [Buyer's Consolidation](#).

Settlement Basis

At the agreement item level in forwarding agreements, you can specify that you bill your business partners based on certain execution criteria, such as by the trailers used to fulfill the order, or the route taken to execute the order. During settlement, the system creates a single forwarding settlement document for all the forwarding orders that meet the specified execution criterion. By default, the settlement basis is at forwarding order level. For more information, see [Execution-Based Settlement \[Page 992\]](#).

More Information

[Agreement \[Page 970\]](#)



Settlement

You can use settlements to meet the following business requirements:

- Trigger the creation of invoices to be sent to a customer when charging for transportation services. SAP ERP creates the accounting-relevant invoices (see [Forwarding Settlement \[Page 988\]](#))
- Trigger the verification of invoices, received from suppliers or carriers for transportation charges, against freight settlement documents (FSDs) (see [Freight Settlement \[Page 1015\]](#))
- Send an internal settlement document from an internal organization in your company to another internal organization to recover costs incurred in delivering transportation services for a forwarding order (see [Internal Settlement Management \[Page 1074\]](#))
- Settle the cost of providing internal resources for freight orders (see [Internal Settlement for Resources \[Page 1077\]](#))



Forwarding Settlement

You can trigger the creation of an invoice to give to a customer for transportation service charges. You can also trigger the creation of a credit memo to give a credit to a bill-to party. The SAP ERP system creates the invoice and gives the credit that are relevant for accounting.

Integration

Forwarding Settlement is a component of SAP Transportation Management (SAP TM) and is integrated with the following SAP TM components:

Component	Integration Type
Forwarding Order Management	A forwarding order provides the basis for a forwarding settlement document [Page 989] .
Charge Management and Service Product Catalogs	A forwarding settlement document provides the basis for credit memos for forwarding orders [Page 1068] .

Forwarding Settlement is also integrated with SAP ERP, as the creation of the invoice and credit that are relevant for accounting takes place in SAP ERP.

Constraints

This component triggers the invoice and credit creation but does not replace SAP ERP Financials.



Forwarding Settlement Document

A document that is sent to SAP ERP to request the creation of an invoice to be sent to a customer.

You can use the forwarding settlement document (FWSD) to enter the data for transportation invoicing for your business partners on the ordering party side, and forward it to SAP ERP for invoicing. SAP Transportation Management (SAP TM) calculates the transportation charges on the basis of a forwarding order (FWO). You can manually change the transportation charges. After an SAP NetWeaver® Exchange Infrastructure (XI) message is sent to SAP ERP, the actual invoicing takes place in the SAP ERP system.

You can create an individual FWSD for one FWO or a collective FWSD for multiple FWOs. You can also create multiple FWSDs at the same time.

Structure

The FWSD data is taken from the FWOs. However, you can still change some of the data.

The FWSD consists of the following tab pages:

- *General Data*

The system displays general data such as the following:

- Settlement document type
- Invoice date
- Sales organization
- Payment terms
- Net amount
- Document currency

You can change some of the data, such as the invoice date and payment terms.

- *Business Partner*

The system displays the bill-to party and payer by default. You can use business partner determination to specify how the system assigns business partners to forwarding settlement documents.

- *Charges*

The system displays the transportation charges determined by the transportation charge for each FWSD item. The FWSD item could be either an FWO or individual items of the FWO, depending on the calculation level settings in the calculation profile. For more information about the calculation profile, see Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings for Charge Calculation* ► *Define Calculation Profiles* ▶. In the case of collective FWSDs, the system shows the total amount for all the FWOs assigned to the FWSD. You can change this data.

- *Orders*

The system displays the list of FWOs or FWO items that are being settled with this FWSD, depending on the calculation level settings in the calculation profile.

For FWSDs that you create for FWOs that are part of a buyer's consolidation, the system displays the freight booking document that has the container item of the buyer's consolidation. In the *Details* area of the screen, the system displays the container item and the FWOs that are part of the container.

For FWSDs that you create for FWOs that have a trailer-unit-based settlement basis, the system displays the relevant trailer unit. In the *Details* area of the screen, the system displays the FWOs in the trailer unit for a bill-to party. For more information, see [Trailer-Unit-Based Settlement \[Page 997\]](#).

For FWSDs that you create for FWOs that have a route-based settlement basis, the system displays the relevant freight order document. In the *Details* area of the screen, the system displays the forwarding orders associated with the freight order. For more information, see [Route-Based Settlement \[Page 998\]](#).

- *Document Flow*

The system displays the predecessor and successor business documents as a document flow, including the corresponding SAP ERP documents. You can access both the SAP TM and SAP ERP business documents if there is a trusted relationship between the SAP TM and SAP ERP systems and your user exists in both systems. For information about accessing a remote SAP ERP system from SAP TM, see [5.11 Remote Systems](#).

The life cycle status indicates the current stage of the FWSD in the business process. Important life cycle statuses are listed in the following table:

Life Cycle Status	Description
<i>Ready for Invoicing in SAP ERP</i>	The FWSD is ready for you to transfer for invoicing in SAP ERP.
<i>Invoiced in SAP ERP</i>	SAP ERP successfully created the invoice.
<i>Transferred for Invoicing to SAP ERP</i>	You transferred the FWSD to SAP ERP for invoicing and the status in SAP ERP is not yet known.
<i>Cancellation Requested in SAP ERP</i>	You requested the cancellation of the FWSD and SAP TM is waiting for the corresponding invoice to be canceled in SAP ERP.
<i>Canceled</i>	You canceled the FWSD and SAP ERP automatically canceled the invoice.

The confirmation status is used primarily to track the integration of SAP TM with SAP ERP, and indicates the result of the last integration interaction between SAP TM and SAP ERP. Important confirmation statuses are listed in the following table:

Confirmation Status	Description
<i>Not Yet Invoiced in SAP ERP</i>	The FWSD is not yet transferred to SAP ERP for invoicing.

Confirmation Status	Description
<i>Invoice Created in SAP ERP</i>	SAP ERP successfully created the invoice.
<i>Invoicing Failed in SAP ERP</i>	SAP ERP failed to create the invoice. You must manually check why the invoice was not created.
<i>Invoice Canceled in SAP ERP</i>	SAP ERP successfully canceled the invoice.
<i>Invoice Cancellation Failed in SAP ERP</i>	SAP ERP failed to cancel the invoice.
<i>No Confirmation from SAP ERP</i>	You transferred the FWSD to SAP ERP and the status in SAP ERP is not yet known.

Integration

The FWSD is integrated with a number of other components in SAP TM, for example:

- [Forwarding Order Management](#)

You can start the generation of an FWSD from an FWO.

- [Charge Management and Service Product Catalogs](#)

The system calculates the transportation charges based on the setup of master data objects in the Charge Management and Service Product Catalogs component, for example calculation sheets, rate tables, and scales.

- [Agreement Management \[Page 915\]](#)

The system can use the forwarding agreement to include master data objects for transportation charges in the order process, such as calculation sheets or rate tables.

More Information

[Forwarding Settlement \[Page 1004\]](#)

[Charge Calculation](#)

[Business Partner Determination](#)

[Creating and Editing Trailer Units](#)



Execution-Based Settlement

Features

As a logistics service provider (LSP) or carrier, you need flexibility in how you settle for the transportation activities you carry out on behalf of your customer. SAP Transportation Management (SAP TM) enables you to settle on the basis of individual forwarding orders as standard. You can also settle on the basis of an execution criteria, such as buyer's consolidation, route, or trailer unit.

Buyer's Consolidation

In a buyer's consolidation scenario, you are an LSP and to keep the transportation costs low for your customer, you consolidate and load the goods from different suppliers with whom your customer has an established business relationship, into one container before the main carriage. This means you pass the full container load (FCL) rate for the main carriage and on-carriage to the customer.

For more information, see [Buyer's Consolidation Settlement \[Page 994\]](#).

Execution-Based Criteria

You may also need to settle with your customer based on an execution unit such as a trailer unit, or on execution attributes such as the type of vehicle used to provide the service, or on the distance a truck traveled to fulfill the service.

For example, in a route-based settlement business scenario, your customer needs you to pickup goods from multiple locations such as warehouses and distribution centers and deliver the goods to a series of customer locations or retail outlets. Your customer wants to settle with you on the basis of an agreed rate for the full journey your truck makes as it performs the pickup and delivery activities, and not on the basis of the individual forwarding orders that you execute during the journey. You need to use an execution-based settlement criteria to enable this type of settlement.

Settlement Basis in SAP TM

You can specify a settlement basis for route-based and trailer-unit-based scenarios in the *Settlement Basis* field of an agreement item.

By default, SAP TM uses the information in an individual forwarding order to create forwarding settlement documents. For example, you create a particular forwarding settlement document for a particular forwarding order. Using the settlement basis gives you the flexibility to use different execution criteria to settle with your customers. You can settle based on how you executed the order and not by individual forwarding orders.

The table explains some of the main differences between execution-based settlement and settlement based on individual forwarding orders:

	Execution-Based Settlement	Forwarding-Order-Based Settlement
Settlement item	Execution document such as trailer unit or container	Forwarding order
Resolution base	<ul style="list-style-type: none">• In execution document	In forwarding order

	Execution-Based Settlement	Forwarding-Order-Based Settlement
grouping rule	<ul style="list-style-type: none"> • Across forwarding orders in execution document for execution stages 	
Data source (stage and logistics quantities)	Execution document such as freight booking item or trailer unit	As specified in settlement profile

In execution-based settlement, the system uses the stages from the freight order or trailer unit and not the constituent forwarding orders to calculate the settlement amount. You can settle on the basis of route-based or trailer-unit-based settlement criteria. For more information, see [Route-Based Settlement \[Page 998\]](#) and [Trailer-Unit-Based Settlement \[Page 997\]](#).

When you specify a resolution base grouping rule in the basic data of a calculation sheet, the grouping rule applies to items in a forwarding order. However, in the execution-based settlement scenario the item is a forwarding order. Therefore, the grouping logic applies across forwarding orders. For more information on the resolution base grouping rule, see [Calculation Sheet](#).

Constraints

You have specified the settings required for forwarding settlements. For more information, see [Forwarding Settlement \[Page 1004\]](#).

You have specified the appropriate settlement basis in the forwarding agreement item.

Example

You have 7 different forwarding orders that you deliver to a customer location on one trailer unit.

If you do not specify *Trailer Unit* in the *Settlement Basis* field, by default the system rates and settles each of the 7 forwarding orders individually. If you create a collective settlement for the 7 forwarding orders, the system still bases the settlement on each individual forwarding order. It performs the following tasks:

- Rates each of the forwarding orders individually
- Creates one forwarding settlement document with each of the 7 forwarding orders specified as a line item in the settlement

In contrast, if you specify *Trailer Unit* in the *Settlement Basis* field of the relevant forwarding agreement, you execute the 7 forwarding orders in one trailer unit and you settle with your customer based on a rate for the trailer unit. This rate covers all 7 forwarding orders in the trailer unit.



Buyer's Consolidation Settlement

In a buyer's consolidation scenario, you are a logistics service provider (LSP) or carrier and your customer regularly buys goods from a number of suppliers in a particular country or region, and needs to transport them to a single location. Your customer needs to keep transportation costs as low as possible and therefore requests you to do a buyer's consolidation. To enable this, you can consolidate and load the goods from the different suppliers into one container before the main carriage and deliver the consolidated container to the customer's location. This means you do not charge a less than container load (LCL) rate, and you pass the full container load (FCL) rate for the main carriage and on-carriage to the customer.

Prerequisites

You specify the following settings to enable the system to settle for the charges in a buyer's consolidation:

- *BCO (buyer's consolidation)* in the *Buyer's or Shipper's Consolidation* field of the forwarding order on the export side.
- An agreement item for buyer's consolidated transportation for main carriage and on-carriage. The agreement item includes the following settings:
 - A separate calculation sheet for the buyer's consolidation
 - *BCO (buyer's consolidation)* in the *Buyer's or Shipper's Consolidation* field

Features

Settlement as a Variant of an Execution-Based Settlement

On the export side, the system bases the settlement charges for main carriage on the information from the freight booking. The freight booking is the execution document and therefore the system settles for a buyer's consolidation as a variant of an execution-based settlement.

Settlement Fallback

The system tries to find an agreement line item with a *BCO (buyer's consolidation)* setting. If it does not find one, it tries to find an agreement line with a shipping type of *FCL* (full container load). For more information, see [Buyer's Consolidation](#).

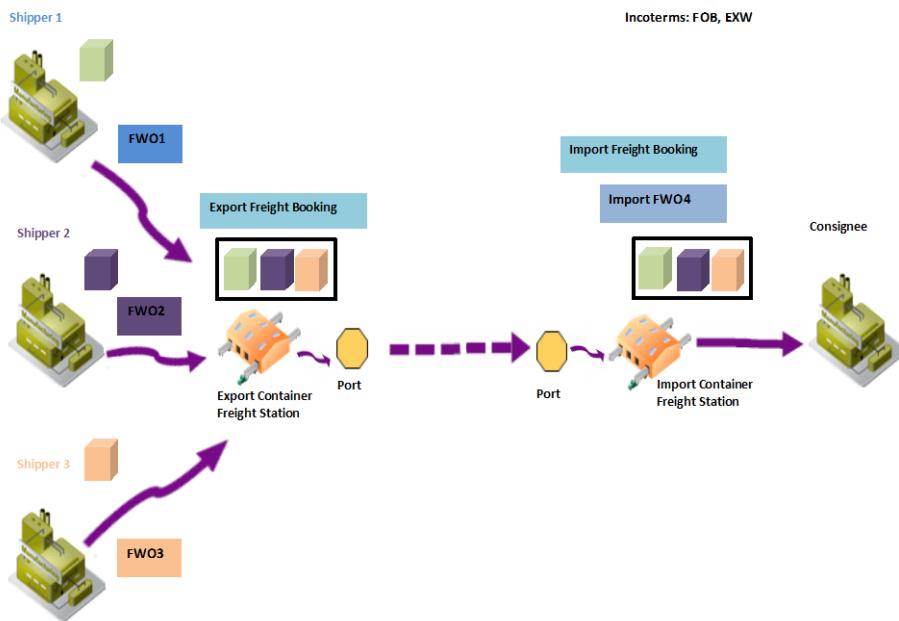
Settlement for Container Items

The system determines if the *Buyer's or Shipper's Consolidation* field in the freight booking for the container items has the *BCO (buyer's consolidation)* setting. If the setting exists, the system then creates one consolidated settlement for all the forwarding orders in the container item for the main carriage.

Example

In a buyer's consolidation with an Incoterm of *ExWorks (EXW)*, the consignee pays for all the transportation costs, including pre-carriage, main carriage, and on-carriage.

The concept is illustrated in the following figure, and is followed by an explanation:



For an Incoterm of *EXW*, on the export side there are multiple forwarding orders with one for each pickup location. The export business unit creates a settlement document that bills the import business unit, for each of the following activities:

- Pickup for forwarding order 1
- Pickup for forwarding order 2
- Pickup for forwarding order 3
- Main carriage

The system determines that the container item in the export freight booking has a buyer's or shipper's consolidation specification of *BCO* for all three forwarding orders. The system uses the container information from the export freight booking to create a single forwarding settlement document for the main carriage.

On the import side, the system automatically creates a copy of the forwarding order. This forwarding order contains a reference to the container item for the buyer's consolidation. The container item contains all the cargo information for the three forwarding orders, including the pickup locations. The import business unit creates a settlement document on the consignee, for each of the following activities:

- Pickup for forwarding order sub-items, using the cargo items in the container
- Main carriage, using the cargo information for the container item
- Delivery to the consignee, using the cargo information for the container item

More Information

[Buyer's Consolidation \(BCO\) in Import/Export](#)



Trailer-Unit-Based Settlement

Features

You load a trailer with cargo items such as pallets and packages. The pallets and packages are from different forwarding orders from your customer. According to the agreement, you want to settle for delivering the trailer unit and not for delivering individual forwarding orders. You agree a set of rates that pass on to the customer the benefit of consolidating orders that have a common destination into a single trailer unit.

For example, you agree a rate of USD 4,000 to deliver a trailer unit to a location. You use a single trailer unit to deliver 2 forwarding orders (FWO1 and FWO2). FWO1 weighs 14,000 kg and FWO2 weighs 10,000 kg. You settle with the customer at the level of trailer unit. The following table describes how the system calculates the settlement amount:

Charge Type	Calculation (USD)	Charge (USD)
Trailer-unit charge	1 x 4,000	4,000
Settlement amount	Not applicable	4,000

In contrast, for example, you agree with your customer that you do not settle on the basis of an execution criteria such as trailer unit, and instead settle on the basis of each individual forwarding order (the default setting in the *Settlement Basis* field). The following table describes how the system calculates the settlement amount:

Charge Type	Calculation (USD)	Charge (USD)
Haulage FWO1	14,000 Kg X 0.2 cents / kg	2,800
Haulage FWO2	10,000 Kg X 0.2 cents / kg	2,000
Settlement amount for FWO1 and FWO2	Not applicable	4,800

More Information

[Route-Based Settlement \[Page 998\]](#)

[Execution-Based Settlement \[Page 992\]](#)



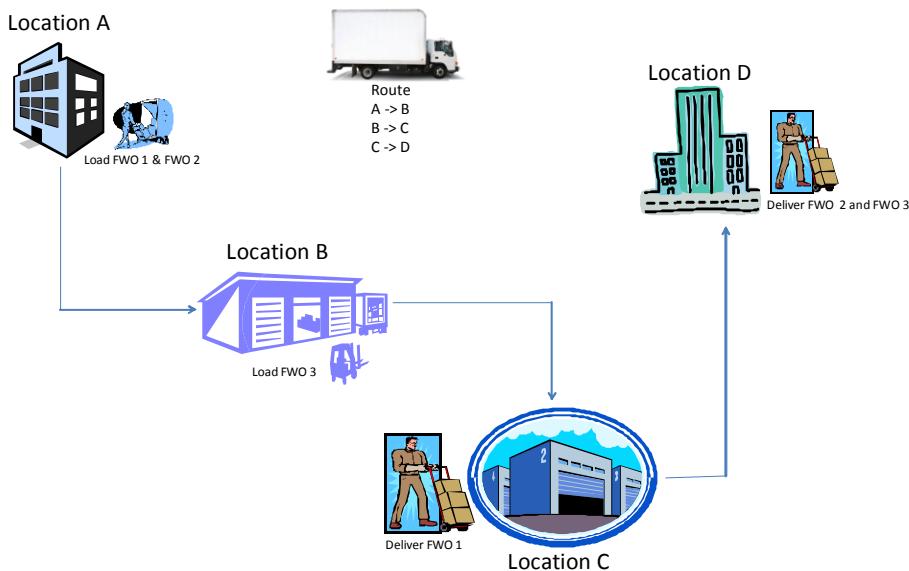
Route-Based Settlement

Features

You can settle forwarding orders in a route-based settlement if you have a transportation journey with one or more pickups and deliveries. A route-based settlement can accommodate the following business situations:

- Multiple pickup and single delivery
 - Multiple pickups from plants with a single delivery to an end location, such as a warehouse.
- Single pickup and multiple delivery
 - Pickup from a single location such as a distribution center and multiple deliveries to a series of locations such as retail outlets or customer delivery locations.
- Multiple pickup and multiple delivery
 - Multiple pickups from locations such as warehouses and distribution centers followed by deliveries to customer locations or retail outlets.
- Predefined start and end
 - Start from a specified location, pick up or delivery at scheduled locations, and return to the start location, or finish at a specified end location.

The figure below illustrates a multiple pickup and multiple delivery scenario and is followed by an explanation:



The following table describes the transportation requirements for the 3 forwarding orders:

Forwarding Order	Pickup Location	Delivery Location
FWO1	A	C
FWO2	A	D
FWO3	B	D

The following table describes the planning output. In planning, you consolidate the forwarding orders into freight order FO1. You use a 20-tonne truck.

From Location	To Location	Activity
Depot	A	Pickup FWO1 and FWO2 at location A
A	B	Pickup FWO3 at location B
B	C	Deliver FWO1 at location C
C	D	Deliver FWO2 and FWO3 at location D

You agree to a settlement basis of route-based with your customer. The system charges for the 3 forwarding orders as follows:

Charge Type	Calculation	Charge (USD)
Base charge (as distance traveled times the rate per km)	250 km X USD 1.20	300
Flat charge per truck (based on type of truck)	USD 150 for a 20-tonne truck	150
Stop charge (number of stops times the charge per stop)	2 stops X USD 50 per stop	100
Total freight cost	Not applicable	550

The system uses the information contained in freight order FO1, which executes the 3 forwarding orders, to create the forwarding settlement. On the user interface, the system displays the amount of USD 550 in line 1 of the settlement document for freight order FO1. It displays FWO1, FWO2, and FWO3 in the details screen with the full details for the journey.

More Information

[Trailer-Unit-Based Settlement \[Page 997\]](#)

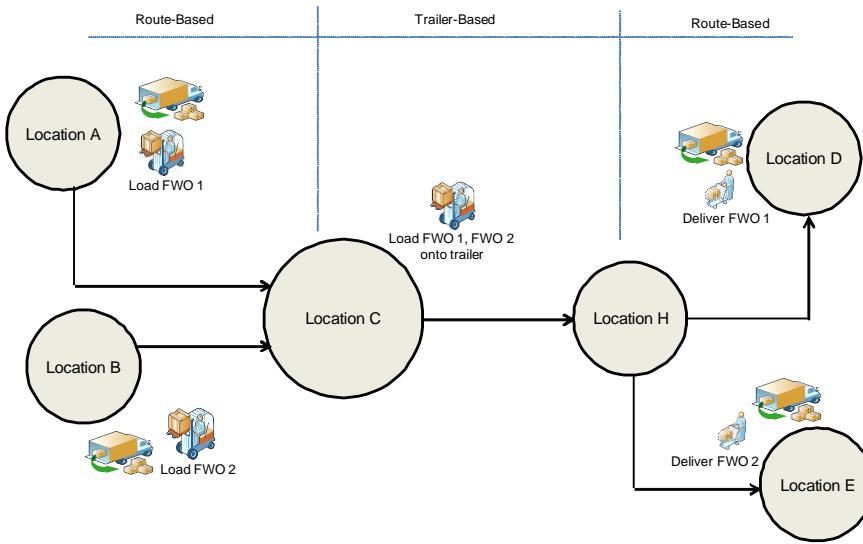
[Execution-Based Settlement \[Page 992\]](#)



Mixed Execution-Based Settlement

Business Requirement

The business requirement is illustrated in the following figure, and is followed by an explanation:



You are a carrier and your customer needs you to perform the following transportation tasks:

1. Pick up different cargo (different forwarding orders) from multiple locations

For example, you pick up cargo from customer suppliers who are based in different parts of your region.

2. Consolidate the cargo on a trailer to move it to a location as instructed by your customer

For example, you put the cargo on a trailer in a distribution center that your customer owns in a different region.

3. Deliver the cargo from the distribution center to other locations as instructed by your customer

For example, you deliver the cargo to different plants or retail outlets in the region.

4. Settle with the customer using a route-based settlement for the pick-up (pre-carriage) and delivery (on-carriage) stages. Use a trailer-unit-based settlement to settle for the main carriage.

The following table describes the transportation requirements for the forwarding orders:

Forwarding Order	Source Location	Destination Location
------------------	-----------------	----------------------

Forwarding Order	Source Location	Destination Location
FWO1	A	D
FWO2	B	E

You plan the following business documents in your system for FWO1 and FWO2:

- Freight order 1 to pick up FWO1 and bring it to location C
- Freight order 2 to pick up FWO2 and bring it to location C
- Freight order 3 to pick up FWO1 and FWO2, now consolidated on a single trailer, and bring it from C to H
- Freight order 4 to deliver FWO1 to location D
- Freight order 5 to deliver FWO2 to location E

You use a small truck to pick up and deliver the forwarding orders.

You plan to include the following charge types in the settlement:

- Base freight
Calculated as distance traveled times the rate per km
- Flat charge per truck
Calculated based on the type of truck you use to execute the forwarding orders. This charge is not applicable for the main carriage where the goods travel on a trailer.
- Base charge for trailer
Calculated as distance traveled times the rate per km for the type of trailer you use to execute the main carriage

System Settings

You must specify the settings in the following table in the relevant forwarding agreement for your customer:

Line Item	Stage Category	Settlement Basis
1	Pre-carriage	<i>Route</i>
2	Main carriage	<i>Trailer Unit</i>
3	On-carriage	<i>Route</i>

Trailer Document for Main Carriage

You plan to move FWO1 and FWO2 on a single trailer between locations C and H in the main carriage. For more information on how to plan a trailer, see [Use of Trailers \[Page 893\]](#).

Pre-Carriage and On-Carriage

You create the freight orders and plan for the pre-carriage and on-carriage stages of FWO1 and FWO2. For example, in the *Stages* screen area of the forwarding order, you can select the relevant stage and choose *Freight Document* *Create* . The system adds the forwarding order to a freight order.

Settlement Documents

When you create a forwarding settlement document for FWO1 the system creates 3 settlement documents for each of the following documents:

- Trailer document, for the main carriage of both FWO1 and FWO2
- Pre-carriage of FWO1
- On-carriage of FWO1

When you create a settlement document for FWO2, the system creates 2 settlement documents as follows (it has already created a settlement document for the main carriage, as the main carriage is part of the trailer-unit based settlement contained in FWO1):

- Pre-carriage of FWO2
- On-carriage of FWO2

To create a single settlement document for your customer for all the transportation activities, you can use the *Collective* option under *Create Forwarding Settlement Document* when you select 2 or more forwarding orders on the forwarding order overview screen.

Charges

The system charges for the 2 forwarding order as follows:

- Distance and type of truck for A to C and for B to C, pre-carriage
- Distance traveled by trailer for C to H, main carriage
- Distance and type of truck for H to D and for H to E, on-carriage

The following table explains how the system applies the charges:

Forwarding Order Stage	Charges	Calculation	Amount (USD)
Main carriage	Base freight	400 km X USD 1.20	480
	Base charge for trailer	400 km X USD 0.20	80
Pre-carriage for FWO1	Base freight	50 km X USD 1.40	70
	Flat charge for type of truck	USD 200	200
Pre-carriage for FWO2	Base freight	80 km X USD 1.40	112
	Flat charge for type of truck	USD 200	200
On-carriage for FWO1	Base freight	30 km X USD 1.40	42

Forwarding Order Stage	Charges	Calculation	Amount (USD)
	Flat charge for type of truck	USD 200	200
On-carriage for FWO2	Base freight Flat charge for type of truck	20 km X USD 1.40 USD 200	28 200

More Information

[Execution-Based Settlement \[Page 992\]](#)



Forwarding Settlement

In SAP Transportation Management (SAP TM), you can perform forwarding settlement with your ordering parties by creating a [forwarding settlement document](#) (FWSD) and sending it to SAP ERP for posting to financials.

Prerequisites

- Agreements

You have the option of specifying the settlement basis at the agreement item level, where the system uses execution data as the basis to perform invoicing. By default, the system uses the settlement basis at forwarding order level.

- Types of FWSD and number range intervals

In Customizing, you have defined types of FWSD as well as default types and number range intervals. For more information, see Customizing for *Transportation Management* under ► *Settlement* ► *Forwarding Settlement*.

- SAP ERP settings

If you use SAP ERP, in Customizing you have made the following settings:

- Defined category and subcategory codes
- Defined and assigned transportation charge types
- Mapped organizational units

For more information, in SAP ERP see Customizing for *Integration with Other SAP Components* under ► *Transportation Management* ► *Invoice Integration* ► *Billing*.

- Process controller

In Customizing, you must set up the process controller for settlement documents. For example, if you want to use a strategy to create or preprocess FWSDs differently than the standard way, you can define your own strategy using the process controller and assign it to a specific service. For more information, see Customizing for *Transportation Management* under ► *Settlement* ► *Configure Process Controller for Settlement*.

- Define default agreement party roles for stages

You have specified the agreement party role for a stage type and Incoterm combination. When you specify an Incoterm in a forwarding order (FWO), the system uses the agreement party role to identify the default agreement party for a stage. For more information, see Customizing for *Transportation Management* under ► *Forwarding Order Management* ► *Define Default Agreement Party Roles for Stages*.

- Master data for Charge Management

You have set up the master data in the Charge Management component. The system automatically calculates the transportation charges based on this master data. For more information, see [Charge Calculation](#).

- Business partner determination

You have the option of specifying a business partner determination profile, to enable the system to automatically assign business partners to the settlement document. For more information, see *Customizing for Transportation Management* under ► *Master Data* ➤ *Business Partners* ➤ *Define Partner Determination Profiles* ▶.

 Note

The system includes the bill-to party, ordering party, and payer in the settlement document by default. The system does not transfer business partners other than the bill-to party and the payer to SAP ERP, even if you enable additional parties in SAP ERP.

End of the note.

- Forwarding order

The system contains one or more forwarding orders (FWOs).

Process

1. You create the FWSD.

You can create an individual FWSD for one FWO or a collective FWSD for multiple FWOs. You can review the FWOs from your personal worklist or in the *Forwarding Order Management Overview* or *Forwarding Settlement Overview*. The system automatically creates the FWSD based on the data in the FWOs and calculates the transportation charges.

You can also create settlement documents for a shipper's consolidation. For more information, see [Shipper's Consolidation Settlement \[Page 1008\]](#).

The system uses certain criteria to divide settlements when you choose to create a collective settlement document. This can result in the system creating more than one settlement. For more information, see [Split Criteria in Settlement Document Creation \[Page 1079\]](#).

You can also create settlements for groups of charge types, charge categories, and charge subcategories from a forwarding order. You can apply different settlement creation criteria to the different groups. You can define the factory calendar for the billing schedule you want the system to use for a group of charges in a settlement group. This gives you control over when you create settlements for different charges. For more information, see [Flexible Creation of Forwarding Settlements \[Page 1011\]](#).

 Note

You can create multiple forwarding settlement documents using the *Mass Creation of Forwarding Settlement Documents* function. To access the function, in SAP NetWeaver Business Client choose ► *Application Administration* ➤ *Background Reports* ➤ *Create Forwarding Settlement Documents* ▶. For more information, see [Creation and Transfer of Forwarding Settlement Documents \[Page 1260\]](#).

End of the note.

2. You review the FWSD details.

You can preview the invoice as it would appear in the SAP ERP system. The preview contains information from the FWSD and tax information from SAP ERP.

You can use the preview for FWSDs that are at all life cycle statuses except the following:

- *Transferred for Invoicing in SAP ERP*
- *Cancellation Requested in SAP ERP*
- *Canceled*

The consistency status of the document must also be *Consistent*. When you preview an invoice, the system does not permanently store any data.

 Note

You can overwrite the address of the business partner that the system has automatically determined. For example, if you need to send an invoice to a bill-to party at another address instead of the regular address, you can change the address of the bill-to party on the *Business Partner* tab page of the FWSD. When you transfer the settlement, SAP ERP updates only the deviating address of the bill-to party in the SD billing document. For more information, see [Creation of a Forwarding Order](#).

End of the note.

3. You transfer the data to SAP ERP.

You choose the *Save and Transfer* pushbutton to send the FWSD to billing in SAP ERP. You cannot change the FWSD until you have received a confirmation from SAP ERP.

In SAP TM, you can have multiple charge types in a charge item. As standard, SAP ERP creates a billing item for a charge item, and applies tax to the billing item. If you need the flexibility to apply tax to individual charge types in a charge item, you must specify the settings in the following Customizing activities in Customizing for *Transportation Management* under ► *Settlement* ► *Tax* ▶:

- *Define Tax for Countries*

You can define the countries in which you apply tax.

- *Define Tax for Charges*

You can define tax settings for the charge categories, charge subcategories, and charge types that you use in a country. You can use charge categories and charge subcategories to specify tax settings for a group of charge types in one step. This avoids the need to specify tax settings for a large number of individual charge types.

4. SAP ERP confirms the invoice creation.

If SAP ERP created the invoice, you receive a confirmation from SAP ERP. The confirmation is displayed with the appropriate status. The life cycle status changes to *Invoiced in SAP ERP*.

If SAP ERP did not create the invoice, the confirmation status shows that invoicing failed. You need to manually check why the invoice was not created.

 Note

You can request that the FWSD is canceled at any time, even if its life cycle status is *Invoiced in SAP ERP*. After you request cancellation and transfer the FWSD to SAP ERP, SAP ERP automatically cancels the invoice. If the invoice is canceled, the FWSD has the life cycle status *Canceled*. If the invoice cannot be canceled, it is displayed with the confirmation status *Cancellation Failed in SAP ERP*. The FWSD cannot then be canceled.

You can create an FWSD for a canceled FWO to recover any costs you incurred in processing the order before cancellation. You must manually add the charges to the FWSD that is associated with the cancellation.

If you trigger the creation of an FWSD for an FWO that is a part of a buyer's consolidation, the system takes the following steps:

- Determines all the FWOs that are in the container item of the buyer's consolidation
- Creates one FWSD for all the FWOs in the container item instead of individual FWSDs for each of the FWOs

If you trigger the creation of an FWSD for an FWO that has an execution-based settlement basis, the system creates one FWSD for all the FWOs that are part of the relevant execution document for one customer. It bases the settlement on the execution document instead of the individual FWOs.

For a settlement basis of trailer unit, the execution document is the trailer unit. For a settlement basis of route-based, the execution document is a freight order.

End of the note.

More Information

Subject	See
Create a buyer's consolidation	Buyer's Consolidation
Create execution-based FWSDs	Execution-Based Settlement [Page 992]
Determine business partners automatically	Business Partner Determination
Create, edit, and display a trailer unit	Creating and Editing Trailer Units
Create an invoice in SAP ERP	SAP Help Portal at http://help.sap.com/erp under <i>SAP Central Component</i> . Select an SAP enhancement package for SAP ERP 6.0. In SAP Library, choose ► <i>SAP ERP Central Component</i> ► <i>Logistics</i> ► <i>Logistics - General (LO)</i> ► <i>Integration of SAP ERP with SAP Transportation Management</i> ▾.



Shipper's Consolidation Settlement

In a shipper's consolidation scenario, you are a logistics service provider (LSP) or carrier and you have a single customer who needs you to ship goods from a single location and deliver them to a number of different locations in a particular country or region.

Your customer needs to consolidate the goods over the pre-carriage and main carriage to optimize the freight cost. As an LSP, you need to settle for the freight cost, including the main carriage cost, with your customer. You transport the goods in one container for the pre-carriage and main carriage, and only separate the goods from the container for on-carriage delivery to the customer's location. You charge your customer a full container load (FCL) charge for the pre-carriage and main carriage.

Prerequisites

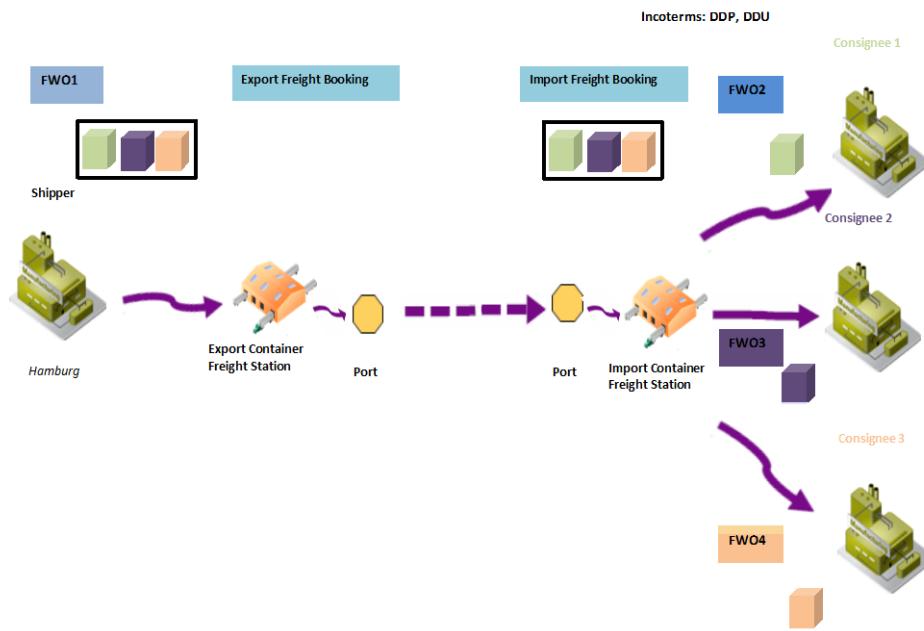
You must specify the following settings to enable the system to settle for charges in a shipper's consolidation:

- SCO (shipper's consolidation) in the *Buyer's or Shipper's Consolidation* field of the forwarding order on the export side
- An agreement item for shipper's consolidated transportation for pre-carriage and main carriage. The agreement item includes the following settings:
 - A calculation sheet for the shipper's consolidation
 - SCO (shipper's consolidation) in the *Buyer's or Shipper's Consolidation* field

Example

In a shipper's consolidation with an Incoterm of *Delivered Duty Paid (DDP)*, the seller (the shipper, your customer) pays for all the transportation costs, including pre-carriage, main carriage, and on-carriage. To enable this, the system makes the shipper, consignee, source location, and destination location information available for each item in the forwarding order.

The concept is illustrated in the following figure and is followed by an explanation:



For an Incoterm of DDP, on the export side, you create one forwarding order with one container item. In the container item, you enter the cargo you collected from the single location that you deliver to different consignees. The system uses the container as the basis for creating the forwarding settlement. The export business unit creates a settlement document on the shipper, for each of the following activities:

- Pre-carriage
- Main carriage
- On-carriage 1 in forwarding order 1 for item 1 in the container
- On-carriage 2 in forwarding order 1 for item 2 in the container
- On-carriage 3 in forwarding order 1 for item 3 in the container

In the settlement document, the system includes each of the on-carriage stages for the individual cargo items from the forwarding order.

On the import side, the system automatically creates a copy of the forwarding order for each of the on-carriages to the delivery locations. The import business unit creates a forwarding settlement document on the export business unit, for each of the on-carriages as follows:

- On-carriage 1 in forwarding order 2
- On-carriage 2 in forwarding order 3
- On-carriage 3 in forwarding order 4

The system includes each of the individual on-carriage forwarding orders in the settlement document.

More Information

[Shipper's Consolidation \(SCO\) in Import/Export](#)



Flexible Creation of Forwarding Settlements

You can create a forwarding settlement document for a group of charges in a forwarding order. This means that you can create more than one forwarding settlement document for a forwarding order, where each settlement document is for a different group of charges in the order. This enables you to create a settlement document for a group of charges that you want to settle at the same time in your transportation process.

To enable this, you specify settlement groups and settlement rules in Customizing for *Transportation Management* under ► *Settlement* ► *Define Settlement Groups and Settlement Rules*.

You assign charge types, charge categories, and charge subcategories to a settlement group. You assign a settlement group to a settlement rule. You can also specify the following additional criteria in a settlement rule:

- Minimum execution status

You can specify the minimum execution status required for a forwarding order before the system creates a forwarding settlement document.

- Service date rule

You can specify the service date rule that the system uses to determine the service date of the forwarding settlement document.

- Billing schedule

You can specify a factory calendar for the billing schedule that determines the settlement date for a settlement group.

When you create a forwarding settlement document, the system checks if a charge is contained in one of the charge types, charge subcategories, or charge categories that you have assigned to a group. If it finds a charge, it creates the forwarding settlement document according to the following criteria:

- Settlement group

The system creates a separate settlement for each settlement group.

- Settlement rule

The system creates a separate settlement for a group of charges when a forwarding order is in a particular execution status or when you reach a particular date.

Specifying settlement groups and settlement rules is optional. If you do not specify settlement groups, the system includes all the charge types from a forwarding order in one forwarding settlement document.

For more information, see Customizing for *Transportation Management* under ► *Settlement* ► *Define Settlement Groups and Settlement Rules*.

Prerequisites

General Prerequisites

- You have specified settlement groups, settlement rules, and assigned the necessary settlement groups to settlement rules in Customizing for *Transportation Management* under ► Settlement ► Define Settlement Groups and Settlement Rules ▶.
- You have assigned a settlement rule to a settlement profile. For more information, see Customizing for *Transportation Management* under ► Settlement ► Define Settlement Profile ▶.

Settlement Group Prerequisites

- If you want to assign charge types to settlement groups, you have specified charge types in Customizing for *Transportation Management* under ► Basic Functions ► Charge Calculation ► Basic Settings ► Define Charge Types ▶.
- If you want to assign charge subcategories to settlement groups, you have specified charge subcategories in Customizing for *Transportation Management* under ► Basic Functions ► Charge Calculation ► Basic Settings ► Define Charge Subcategories ▶.
- If you want to assign charge categories to settlement groups, you have specified charge categories in Customizing for *Transportation Management* under ► Basic Functions ► Charge Calculation ► Basic Settings ► Define Charge Categories ▶.

Settlement Rule Prerequisites

- If you want to use a service date rule, you have specified the necessary settings in Customizing for *Transportation Management* under ► Settlement ► Define Service Date Rules and Rule Prioritization ▶.
- If you want to specify a billing schedule, you have specified a factory calendar for a billing schedule in Customizing for *SCM Basis* under ► Master Data ► Calendar ► Maintain Factory Calendar ▶.

Activities

Determine the following information:

- The set of charges you include in forwarding settlement documents
- The set of charges you create settlements for after a forwarding order reaches a particular execution status
- The set of charges you create settlements for at regular periods of time

Example

Business Requirements

You need to settle the following charges:

- Base freight
- Fuel surcharge

- Demurrage
- Other value added services (VAS)

You need to settle base freight and fuel surcharges together. You want to settle demurrage charges in a separate settlement so that payment for base freight and fuel surcharge is not held up by disputes on the demurrage charges. You need to settle for the base freight and other VAS charges every week, and for the demurrage charges every month.

You have the following business rules to determine the service date:

- Service date for demurrage charges is the system date
- Service date for base freight, fuel surcharges, and other VAS is the pick-up date at the first location

You need to create settlement documents for basic freight charges (including base freight and fuel surcharges) and other VAS charges when the forwarding order is in execution. You need to create settlement documents for demurrage charges when the forwarding order has completed execution.

Customizing Settings

You specify the following settlement groups in Customizing for *Transportation Management* under **Settlement** **Define Settlement Groups and Settlement Rules** :

- Basic freight charges
You assign the base freight and fuel surcharge charges to this group.
- Demurrage
You assign the demurrage charge to this group.
- Other VAS
You assign the charge types for VAS to this group.

You specify the settlement rule **Standard Process Customer 1** that contains the following settings:

- Line item 1 of the *Assign Settlement Groups* table:
 - Settlement group: **Basic Freight Charges**
 - Execution status: **In Execution**
 - Service date rule: a rule that contains a date type of *Actual Start Date of Complete Carriage* at priority 1
 - Billing schedule: a weekly factory calendar
- Line item 2 of the *Assign Settlement Groups* table:
 - Settlement group: **Demurrage**
 - Execution status: **Executed**

- Service date rule: leave empty

The system uses the service date rule from the settlement profile. You must use a profile that contains an empty service date rule (if the *Service Date Rule* field is empty, the system uses the system date).
 - Billing schedule: a monthly factory calendar
- Line item 3 of the *Assign Settlement Groups* table:
 - Settlement group: Other VAS
 - Execution status: In Execution
 - Service date rule: a rule that contains a date type of *Actual Start Date of Complete Carriage* at priority 1
 - Billing schedule: a weekly factory calendar



Freight Settlement

You use this component to trigger the verification of an invoice, received from a supplier or carrier for transportation charges, against a [freight settlement document \[Page 1016\]](#).

Integration

Freight Settlement is a subcomponent of SAP Transportation Management (SAP TM) and is integrated with the following SAP TM subcomponents:

Subcomponent	Integration Type
Freight Order Management	A freight order, freight booking, and service order provides the basis for the following business documents: <ul style="list-style-type: none">• Freight settlement document• Credit memos for freight orders [Page 1070]
Charge Management and Service Product Catalogs	As a prerequisite for creating a freight settlement document, you must create the relevant charge management master data.

Freight Settlement is also integrated with SAP ERP, as the actual invoice verification takes place in SAP ERP.

Constraints

This component prepares the freight settlement document for invoice verification but does not replace SAP ERP Financials.



Freight Settlement Document

A document that is sent to SAP ERP requesting the verification of an invoice received from a supplier or carrier.

When the invoice is received, SAP ERP checks it against the data from the freight settlement document. If you perform evaluated receipt settlement, the automatically generated invoice is based on the data from the freight settlement document.

You can use the freight settlement document (FSD) to enter the data for transportation invoicing and forward it to SAP ERP for invoice verification. The transportation charges are calculated in SAP Transportation Management (SAP TM) on the basis of a freight order, service order, or freight booking. After an SAP NetWeaver® Exchange Infrastructure (XI) message is sent to SAP ERP, the actual invoice verification takes place in SAP ERP.

You can create an individual FSD for one freight order, service order, or freight booking. You can create a collective FSD for multiple freight orders or freight bookings. You can also create multiple FSDs at the same time.

Structure

The FSD data is taken from the business documents (for example, freight orders). However, you can still change some of the data.

The FSD contains the following tab pages:

- *General Data*

The system displays general data, such as the following:

- Settlement document type
- Invoice date
- Purchasing organization
- Payment terms
- Net amount
- Document currency
- The invoice amount verified by SAP ERP

You can change some of the data, such as the invoice date and payment terms.

- *Business Partner*

The system displays the invoicing party and payee by default. You can use business partner determination to specify how the system assigns business partners to freight settlement documents.

- *Charges*

The system displays the transportation charges determined by the transportation charge for each FSD item. The FSD item could be either a business document (that is, freight

order, service order, or freight booking) or individual items of the business document, depending on the calculation level settings in the calculation profile. For more information about the calculation profile, see *Customizing for Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define Calculation Profile*. In the case of collective FSDs, the system shows the total amount for all the freight orders and freight bookings assigned to the FSD. You can change this data.

- *Orders*

The system displays the list of business documents or business document items that are being settled with this FSD, depending on the calculation level settings in the calculation profile.

- *Document Flow*

The system displays the predecessor and successor business documents as a document flow, including the corresponding SAP ERP documents, such as the purchase order (PO), service entry sheet (SES), or invoice. You can access both the SAP TM and SAP ERP business documents if there is a trusted relationship between the SAP TM and SAP ERP systems and your user exists in both systems. For information about accessing a remote SAP ERP system from SAP TM, see [5.11 Remote Systems](#).

The life cycle status indicates the current stage of the FSD in the business process. Important life cycle statuses are listed in the following table:

Life Cycle Status	Description
<i>Ready for Accruals</i>	The FSD is ready for you to transfer to accruals in SAP ERP.
<i>Transferred for Accruals</i>	You transferred the FSD to SAP ERP and the status in SAP ERP is not yet known.
<i>Accruals Posted</i>	The SAP ERP system successfully created the PO and SES.
<i>Invoice Verified in SAP ERP</i>	At least one invoice has been posted against the FSD in SAP ERP.
<i>Cancellation Requested in SAP ERP</i>	You requested the cancellation of the FSD and SAP TM is waiting for the corresponding PO and SES to be canceled in SAP ERP.
<i>Canceled</i>	You canceled the FSD and SAP ERP automatically canceled the PO and SES.
<i>Reversal Requested in SAP ERP</i>	You requested the reversal of the FSD in SAP ERP and the status in SAP ERP is not yet known.
<i>Reversed in SAP ERP</i>	The SAP ERP system successfully reversed the FSD in SAP ERP. SAP ERP successfully created an SES in the PO. It automatically enabled the returns indicator in the SES.
<i>Credit Memo Created in SAP ERP</i>	The SAP ERP system posted a credit memo against the reversed FSD to reverse the accruals posting.

The confirmation status is used primarily to track the integration of SAP TM with SAP ERP, and indicates the result of the last integration interaction between SAP TM and SAP ERP. Important confirmation statuses are listed in the following table:

Confirmation Status	Description
<i>Not Transferred to SAP ERP</i>	The FSD is not yet transferred to SAP ERP for accruals posting.
<i>Confirmation from SAP ERP</i>	SAP ERP successfully created the PO.
<i>Accruals Failed</i>	SAP ERP failed to create the PO or SES.
<i>Cancellation Failed</i>	SAP ERP failed to cancel the PO or SES.
<i>No Confirmation from SAP ERP</i>	You transferred the FSD to SAP ERP and the status in SAP ERP is not yet known.
<i>Reversal Failed</i>	SAP ERP failed to reverse the accrual posting. You should try to reverse the FSD again later.

Integration

The FSD is integrated with a number of other components in SAP TM, for example:

- [Freight Order Management](#)

You can start the generation of an FSD from a freight order, service order, or freight booking.

- [Charge Management and Service Product Catalogs](#)

The system calculates the transportation charges based on the setup of master data objects in the Charge Management and Service Product Catalogs component, for example calculation sheets.

- [Agreement Management \[Page 915\]](#)

The system can use the freight agreement to include master data objects for transportation charges in the order process, such as calculation sheets or rate tables.

More Information

[Freight Settlement \[Page 1019\]](#)

[Charge Calculation](#)

[Business Partner Determination](#)



Freight Settlement

In SAP Transportation Management (SAP TM), you can perform freight settlement with your suppliers or carriers by creating a [freight settlement document](#) and sending it to SAP ERP. SAP ERP uses the settlement document to create a purchase order and a service entry sheet (SES). The SES is the basis for invoice verification in SAP ERP.

Prerequisites

- Types of settlement document and number range intervals

In Customizing, you have defined freight settlement document types as well as default types and number range intervals. For more information, see Customizing for *Transportation Management* under ► *Settlement* ► *Freight Settlement*.

- SAP ERP settings

If you use SAP ERP, you have created a service master record to assign to transportation charge types. For more information, see SAP Library for SAP ERP on SAP Help Portal at <http://help.sap.com/erp> under *SAP Central Component*. Select an SAP enhancement package for SAP ERP 6.0. In SAP Library, choose ► *SAP ERP Central Component* ► *Logistics* ► *Materials Management (MM)* ► *External Services Management (MM-SRV)* ► *Master Records from the ESM View* ► *Service Master Record*.

In Customizing, you have also made the following settings:

- Defined category and subcategory codes
- Defined and assigned transportation charge types
- Mapped organizational units

For more information, in SAP ERP see Customizing for *Integration with Other SAP Components* under ► *Transportation Management* ► *Invoice Integration* ► *Invoicing*.

- Process controller

In Customizing, you have set up the process controller for use with settlement documents. For example, if you want to use a strategy to create or preprocess settlement documents differently than the standard way, you can define your own strategy using the process controller and assign it to a specific service. For more information, see Customizing for *Transportation Management* under ► *Settlement* ► *Configure Process Controller for Settlement*.

- Master data for charge management

You have set up the master data in the Charge Management component. The system automatically calculates the transportation charges based on this master data. For more information, see [Charge Calculation](#).

- Business partner determination

You have the option of specifying a business partner determination profile, to enable the system to automatically assign business partners to a settlement document. For more

information, see Customizing for *Transportation Management* under ► *Master Data* ▶ *Business Partners* ▶ *Define Partner Determination Profiles* □.

 Note

The system includes the invoicing party, carrier, and payee in the settlement document by default. The system does not transfer business partners other than the invoicing party and the payee to SAP ERP, even if you enable additional parties in SAP ERP.

End of the note.

- Business document

The system contains one or more freight orders, service orders, or freight bookings.

Process

1. You create the freight settlement document.

Note the following system features:

- You can create an individual settlement document for one freight order, service order, or freight booking, or a collective settlement document for multiple freight orders, service orders, or freight bookings. You can access the freight orders, service orders, or freight bookings from your personal worklist, in the relevant document overview, or in the *Freight Settlement Overview*. The system automatically creates the settlement document on the basis of the data in the freight orders, service orders, or freight bookings and calculates the transportation charges.

You can create multiple freight settlement documents using the *Mass Creation of Freight Settlement Documents* function. To open the function, in SAP NetWeaver Business Client choose ► *Application Administration* ▶ *Background Reports* ▶ *Create Freight Settlement Documents* □. For more information, see [Creation and Transfer of Freight Settlement Documents \[Page 1263\]](#).

- You can create settlement documents for individual stages in freight orders that contain non-linear stages. This means you can create a settlement document for each pairing of a source location and destination location. For more information, see [Freight Orders with Non-Linear Stages](#).
- You can create separate freight settlement documents for each of the invoicing carriers in a rail freight order, where you have a different invoicing carrier for each stage in the order. This feature gives you the flexibility to work with rule 11 business situations in North America.

In rule 11 situations, the header carrier receives the order from the customer and can execute one or more of the stages. The header carrier is the carrier you specify in the ► *General Data* ▶ *Transportation* □ screen area of the freight order. The invoicing carrier is the carrier who bills the customer for the shipment. This is the carrier you specify at stage level in the rail freight order.

For more information on rail freight orders, see [Rail Transportation](#).

- You can create a settlement document for each additional agreement party if you have an existing freight order or freight booking that contains one or more

additional agreement parties. For more information, see [Additional Agreement Parties \[Page 1029\]](#).

- The system uses certain criteria to divide settlements when you choose to create a collective settlement document. This can result in the system creating more than one settlement. For more information, see [Split Criteria in Settlement Document Creation \[Page 1079\]](#).
- The system settles a parcel freight order in the same way as it settles a standard freight order. For more information on parcel freight orders, see [Parcel Shipment](#).
- When you create a freight settlement document, by default the system uses today's date as the invoice date. You have the following options to manually override the system default:
 - Implement *BAdl: Determination of Invoice Date for Freight Settlement Documents*. The system uses the settings you specify in this BAdl to determine the invoice creation date. For more information, see [Customizing for Transportation Management under Business Add-Ins \(BAdls\) for Transportation Management > Settlement > Freight Settlement](#).
 - Enter an invoice date in the *Mass Creation of Freight Settlement Documents* background processing function. The system uses the date you specify in this background function as the invoice creation date if you have not specified a rule in the BAdl.

2. You review the settlement document details for consistency.

You can review the settlement document details to check they are accurate, and you can update some of the data as needed. After you save any changes you make, you can check the consistency of the settlement document. If the automatic consistency check is successful, the system changes the consistency status of the settlement document to *Consistent* and the life cycle status of the settlement document to *Ready for Accruals*.

3. You transfer the settlement document to SAP ERP to post accruals.

Note the following system features:

- SAP TM sends the settlement document to SAP ERP when you choose *Save and Transfer*. SAP TM transfers the settlement information, including the source location and destination location information for each stage in the settlement, to SAP ERP. The location information enables SAP ERP to determine different tax rates for different locations or countries. For more information, see [Request Transportation Order Invoicing Preparation](#).
- SAP ERP creates a purchase order and an SES and releases the SES to book accruals to accounting. The SES serves as the basis for invoice verification in SAP ERP.
- When you transfer a settlement document to SAP ERP, you cannot change the settlement document until you have received a confirmation from SAP ERP.
- In SAP TM, you can have multiple charge types in a charge item. As standard, SAP ERP creates a billing item for a charge item, and applies tax to the billing item. If you need the flexibility to apply tax to individual charge types in a charge

item, you must specify the settings in the following Customizing activities in Customizing for *Transportation Management* under ► *Settlement* ► *Tax* ▶:

- *Define Tax for Countries*

You can define the countries in which you apply tax.

- *Define Tax for Charges*

You can define tax settings for the charge categories, charge subcategories, and charge types that you use in a country. You can use charge categories and charge subcategories to specify tax settings for a group of charge types in one step. This avoids the need to specify tax settings for a large number of individual charge types.

4. SAP ERP confirms the accrual creation.

Note the following conditions in the system:

- If SAP ERP creates the accruals, SAP TM receives a confirmation message from SAP ERP, and SAP TM updates the settlement document status to *Accruals Posted*.
- If SAP ERP does not create the accruals and communicates errors back to SAP TM, the life cycle status of the settlement document changes back to *In Process* and the confirmation status changes to *Accruals Failed*.

5. SAP ERP verifies the expected invoice against the actual invoice.

Note the following system features:

- SAP ERP bases the expected invoice on the SES. If SAP ERP successfully verifies the actual invoice against the expected invoice, SAP ERP notifies SAP TM by updating the settlement document with the invoice ID and actual amounts. SAP TM updates the life cycle status of the settlement document to *Invoice verified in SAP ERP*.
- SAP ERP bases the automatically generated invoice on the data from the settlement document, if you perform [evaluated receipt settlement](#).

 Note

You cannot cancel the settlement document when the invoice is posted against the settlement document in SAP ERP and the settlement document has a life cycle status of *Invoice verified in ERP*.

You can cancel the settlement document at any other time in the process. If you do this, SAP ERP automatically cancels the accruals. When the accruals are canceled, the settlement document has the status *Canceled*. If SAP ERP cannot cancel the accruals, you cannot cancel the settlement document.

End of the note.

Changes After You Post Accruals

You can include certain changes in your freight costs after you post accruals in SAP ERP. You can use the following steps to make your changes:

- Add or change charge amounts directly in the existing freight order
 - If the new or changed amount results in the invoicing status of the freight order changing to *Partially Invoiced*, you can create a new freight settlement document to send the changed amounts to SAP ERP.
 - If the new or changed amount results in the invoicing status of the freight order changing to *Over Invoiced*, you can create a credit memo in SAP TM to send the changed amounts to SAP ERP.
 - If you do not want to create a new settlement document or credit memo, you can cancel the existing settlement document provided the life cycle status of the settlement document is not *Invoice Verified in SAP ERP*. You can then create a new settlement document that contains the complete amount including the changes.

When you transfer the credit memo or the new settlement document to SAP ERP, SAP ERP creates a new purchase order and SES.

- Change charge amounts directly in the freight settlement document, provided the life cycle status of the settlement document is not *Invoice Verified in SAP ERP*. When you transfer the settlement document to SAP ERP, SAP ERP cancels the existing purchase order and SES and creates a new purchase order and SES.

Reversing a Freight Settlement Document

In your business you are a requester of transportation services, such as a shipper, and you have a close working relationship with a provider of transportation services, such as a carrier. You have enabled a self-billing (evaluated receipts settlement) process with a particular service provider. You automatically pay the service provider according to the charge details in your freight order.

Occasionally you can have the following business scenario:

1. Your carrier started to execute your transportation request.
2. You accrued the freight cost in SAP ERP.
3. You created a self-billing invoice to update the open item in your accounts payable.

Then your carrier encounters some unplanned issues. For example, the carrier does not deliver a particular transportation service due to execution issues such as a vehicle breakdown. Also, you may encounter incorrect pricing information in SAP TM or SAP ERP.

To resolve the issues, you need to reverse the freight settlement document in SAP TM. When you transfer the reversal to SAP ERP, you need to reverse the associated purchase order, SES, and accruals posting in SAP ERP. You need SAP ERP to then run the evaluated receipts settlement for the particular freight order. This posts a credit memo that reverses the self-billing invoice that SAP ERP created earlier. You can only reverse the freight settlement document when it is in the status *Invoice Verified in SAP ERP*. If the freight settlement document is not in this status, you can cancel the freight settlement document.

The following table describes the steps you must take to reverse the freight settlement document:

System	Action	Result	Life Cycle Status in SAP TM

System	Action	Result	Life Cycle Status in SAP TM
SAP TM	You choose <i>Reverse Document</i> in the freight settlement document.	SAP TM sends a reversal message to SAP ERP.	<i>Reversal Requested in SAP ERP</i>
SAP ERP	System creates an SES in which it automatically enables the returns indicator.	The freight settlement document is reversed in SAP ERP.	<i>Reversed in SAP ERP</i>
SAP ERP	You run transaction MRRL (<i>Evaluated Receipt Settlement (ERS) with Logistics Invoice Verification</i>). Under the <i>Transportation Management</i> screen area, you enter the relevant SAP TM freight order number.	SAP ERP creates a credit memo to reverse the accruals posting for the freight settlement document.	<i>Credit Memo Created in SAP ERP</i>

SAP TM updates the invoicing status of the relevant freight order to *Not Invoiced*, and you can create a new freight settlement document for the freight order.

More Information

Subject	More Information
Enable the system to determine the business partners that you use in different business document types.	Business Partner Determination
Consolidate goods from different suppliers for one consignee before the main carriage, and load the goods into one container.	Buyer's Consolidation
Integrate invoices with SAP ERP	SAP Help Portal at http://help.sap.com/erp under <i>SAP Central Component</i> . Select an SAP enhancement package for SAP ERP 6.0. In SAP Library, choose ► SAP ERP Central Component ► Logistics ► Logistics — General (LO) ► Integration of SAP ERP with SAP Transportation Management ▶.
Verify Invoices in SAP ERP	SAP Help Portal at http://help.sap.com/erp under <i>SAP Central Component</i> . Select an SAP enhancement package for SAP ERP 6.0. In SAP Library, choose ► SAP ERP Central Component ► Logistics ► Materials Management (MM) ► Logistics Invoice Verification (MM-IV) ▶.
Perform self-billing in SAP ERP	SAP Help Portal at http://help.sap.com/erp . In SAP Library, choose ► SAP ERP Central Component ► Logistics ► Materials Management (MM) ► Logistics Invoice Verification (MM-IV-LIV) ► Logistics Invoice Verification (MM-IV-LIV-Automatic Settlements ▶.

Subject	More Information
	► <i>Evaluated Receipt Settlement (ERS)</i> 



Enablement of Freight Settlement Documents for Creation

There are conditions in which you cannot create a freight settlement document under the *Freight Document -> Follow Up -> Create Freight Settlement Document* menu on the SAP NetWeaver Business Client (NWBC) user interface (UI). The tables below give you guidance on what the conditions are, and what you can do to enable the freight document for settlement.

Incorrect Statuses		
Condition	Where You Can Review the Condition (NWBC UI)	Your Response
Tendering status is not <i>Carrier Assigned, Sent, or Completed</i> (tendering has started, but has not completed).	► <i>Freight Document Subcontracting</i> ► <i>Tendering Overview</i> ▶	Finalize the tendering process.
Life cycle status of freight order or freight booking is <i>Canceled</i> .	► <i>Freight Document</i> ► <i>Statuses General</i> ▶	You cannot create a freight settlement document for a canceled document.
Freight order has an invoicing block	► <i>Freight Order</i> ► <i>Statuses Blocking Information</i> ▶	Resolve the reason for the invoicing block.
Charge correction advice document (CCAD) exists	► <i>Air Freight Booking Document Flow</i> ▶	You cannot create a freight settlement document from a freight order or freight booking when an active CCAD exists against the order or booking. Active means you have created but not yet transferred the CCAD to SAP ERP.
Credit memo exists	► <i>Freight Document</i> ► <i>Document Flow</i> ▶	You cannot create a freight settlement document from a freight order or freight booking when an active credit memo exists against the order or booking. Active means you have created but not yet transferred the credit memo to SAP ERP.
Missing Information		
Condition	Where You Can Review the Condition	Your Response
In a freight order there is no cargo, passive vehicle resource, and active vehicle resource.	For cargo (on the NWBC UI): ► <i>Freight Order</i> ► <i>Cargo</i> ► <i>Items</i> ▶ For resources (on the NWBC UI): ► <i>Freight Order</i> ► <i>General Data</i> ► <i>Resource Capacity</i> ▶	Add at least one cargo item, passive vehicle resource, or active vehicle resource.

Incorrect Statuses		
Condition	Where You Can Review the Condition (NWBC UI)	Your Response
Carrier not specified	Business partner for the party role <i>Carrier</i> on the NWBC UI <i>Freight Document</i> <i>Business Partner</i>	Enter a carrier.
No document currency specified in freight agreement or in business partner and local currency not specified in organization master data	On the NWBC UI <i>Freight Agreement</i> <i>General Data</i> <i>Document Currency</i> On the SAP Menu <i>Transportation Management</i> <i>BP – Maintain Business Partner</i> <i>Display in BP role: Carrier</i> <i>Vendor Org. Data</i> <i>Currency</i> Customizing for <i>Transportation Management</i> under <i>Basic Functions</i> <i>Charge Calculation</i> <i>Basic Settings</i> <i>Define Charges Profile</i> <i>Local Currency</i>	Enter a document currency or a local currency in at least one of the currency fields.
Settings not Enabled in Customizing		
Condition	Where You Can Review the Condition	Your Response
Subcontracting not enabled in freight order type or freight booking type Customizing activity	Customizing for <i>Transportation Management</i> under <i>Freight Order Management</i> . For freight order types, see <i>Freight Order</i> <i>Define Freight Order Types</i> . For freight booking types, see <i>Freight Booking</i> <i>Define Freight Booking Types</i> .	Enable the type for subcontracting.
Settlement not enabled in freight order type or freight booking type Customizing activity.	Customizing for <i>Transportation Management</i> under <i>Freight Order Management</i> . For freight order types, see <i>Freight Order</i> <i>Define Freight Order Types</i> . For freight booking types, see <i>Freight Booking</i> <i>Define Freight Booking Types</i> .	In Customizing, enable the type for settlement.

More Information

[Freight Tendering](#)

[Charge Correction Advice Management \[Page 1030\]](#)

[Freight Settlement \[Page 1019\]](#)



Additional Agreement Parties

This function enables you to create a freight settlement document (FSD) for each of the additional agreement parties that are contained in a freight order or freight booking. You can use an additional agreement party when you have a main carrier and another service provider in a freight order. You can use the additional agreement party for other logistics services such as export clearance and fumigation of containers.

When you create a freight settlement document from the freight order or freight booking, the system displays a dialog box if additional agreement parties exist in the freight order or freight booking. You can select one or more parties and continue with the settlement process.

If you include an additional agreement party in the freight order, the system calculates charges for all parties, including the main carrier, at header level.



Note

You cannot enter the details of the services provided by an additional agreement party in a freight order or freight booking. Instead, you can use the charge type in the freight agreement to record the service.

If you have overlapping services between the carrier and an additional agreement party, the system issues an FSD for the overlapping services to both parties. For example, you have a freight agreement with a carrier in which the carrier provides both transportation and fumigation services. You also have an additional agreement party that provides a fumigation service. You have a freight order in which the carrier provides transportation services and the additional agreement party provides a fumigation service. The system creates an FSD that includes a charge for the fumigation service for both parties. You must manage this situation outside of the system.

If you have more than one calculation sheet to cover different services from the same additional agreement party or carrier, the system cannot differentiate between the different calculation sheets. It uses just one calculation sheet when it creates an FSD. For example, you have a carrier that provides both carrier and fumigation services. In your system you have one calculation sheet for transportation charges and a second calculation sheet for fumigation charges. You have a freight order in which the same carrier provides transportation and fumigation services. The system uses just one calculation sheet to create the FSD, and you cannot create an FSD that includes both charges. Again, you must manage this situation outside of the system.

The system does not support quotations, carrier selection, and tendering for additional agreement parties.

End of the note.

More Information

For more information on freight orders and non-linear stages, see [Freight Orders with Non-Linear Stages](#).



Charge Correction Advice Management

The charge correction advice process enables you as a logistics service provider (LSP) to create a charge correction advice document (CCAD) to correct errors in invoices that you have received from a carrier for delivering air freight transportation services.

The process enables you to simulate in the SAP Transportation Management (SAP TM) system the invoicing process that takes place externally between you and a carrier in the Cargo Accounts Settlement System (CASS). The CCAD enables you to post corrections to the freight settlements that you receive from your airline carrier.

You can settle an invoice that contains charges for shipments, and corrections for errors from a previous invoice. For example, you receive invoices from your carrier at the end of each month. After you settle an invoice for the month of July, the carrier contacts you saying there was an error on a particular invoice. You paid for the transportation of a particular item that weighed 50 kg. The actual weight of the item was found to be 75 kg. You agree with the carrier to pay the extra amount due, for the extra weight. At the end of August, the carrier sends you a revised invoice that contains the corrected amount due for the extra 25 kg from the invoice in July.

Process

1. The carrier provides the air freight service for an air freight booking. You create a freight settlement document (FSD). This is the planned invoice from the carrier, and simulates the invoice that the carrier creates in an external system for the service.
2. You transfer the settlement document to SAP ERP.

The life cycle status of the FSD changes to *Accruals Posted*. In SAP ERP, the system creates a purchase order (PO) for the settlement document. The amount of the PO and the total amount in document currency in the settlement document match. The SAP ERP system also creates a service entry sheet (SES) entry for the charge item amount in SAP TM.

3. In SAP ERP, you verify the invoice from the carrier and pay the settlement amount.
4. After a short period of time, the carrier contacts you with a correction. The correction could be due to different reasons, such as an error in the weights, or incorrect rates.
5. You navigate to the relevant air freight booking and make the correction. For example, you change the weight of the item from 100 kg to 120 kg. You create a CCAD for this from the air freight booking.

The CCAD contains the amount that has already been settled, the new delta amount to be corrected, and the final correct settlement amount for the freight booking.

Note

The CCAD is a new category that you can specify in an FSD. You can only create a CCAD for an air freight booking that has an associated FSD that is at a life cycle status of *Accruals Posted*.

End of the note.

6. You transfer the CCAD to the SAP ERP system. The SAP ERP system creates a new PO with the following details:

- PO lines for the amounts that were previously invoiced, with the *Reverse Indicator* enabled
- SES lines for the amounts that are newly determined in the CCAD

SAP ERP posts return SES amounts for the PO lines, with the *Reverse Indicator* enabled. This posts returns for the previously invoiced amount. SAP ERP also posts a new SES entry for the fully adjusted correct amount. The life cycle status of the CCAD in SAP TM changes to *Accruals Posted*.

Example

The following table illustrates how the CCAD process works for an air freight booking:

Step in SAP TM	Amount in FSD/CCAD (USD)	Step in SAP ERP	Comment
Total freight cost in air freight booking	2400	None	None
Generate the FSD	2400	PO created, for example, PO1 with line 10. SES created, for example, SES 1. Linked to PO1/10 with amount USD 2400	Regular FSD process
Update the booking to reflect the correction, for example, weight correction. New total freight cost in air freight booking	3000	None	None
Generate a new CCAD	600	<ul style="list-style-type: none"> • No change to PO1, created in step 1 • PO2 has the following items: <ul style="list-style-type: none"> ○ Item 10 for USD 3000 reflecting the new changed amount ○ Item 20 for USD 2400 with returns indicator selected • SES 2 created for PO2/10, for USD 3000 • SES 3 returned for PO2/20, for USD 2400 	<p>SAP ERP posts a return for the old invoice amount of USD 2400.</p> <p>It also posts the new amount of USD 3000.</p>

The following table illustrates how the CCAD process works for an air freight booking, where the process results in negative amounts:

Step in SAP TM	Amount in FSD / CCAD (USD)	Step in SAP ERP	Comment
Total freight cost in air freight booking	2400	None	None
Generate the FSD	2400	PO created, for example, PO1 with line 10. SES created, for example, SES 1. Linked to PO1/10 with amount USD 2400	Regular FSD process
Update the booking to reflect the correction, for example, weight correction. New total freight cost in air freight booking	2000	None	None
Generate a new CCAD	-400	<ul style="list-style-type: none"> • No change to PO1, created in step 1 • PO2 has the following items: <ul style="list-style-type: none"> ◦ Item 10 for USD 2000 reflecting the new changed amount ◦ Item 20 for USD 2400 with returns indicator selected • SES 2 created for PO2/10 for USD 2000 • SES 3 returned for PO2/20, for USD 2400 	SAP ERP posts a return for the old invoice amount of USD 2400. It also posts the new amount of 2000.

More Information

[Freight Settlement \[Page\] 1019](#)

[Management of Air Freight Bookings for Airlines](#)



Cost Distribution Management

Freight costs are an important part of financial reporting in your businesses. You need the ability to allocate freight costs at charge element level across a number of charge sources to manage the following business processes:

- Freight costs
- Material valuations
- Profitability of customers, products, and lines of business

You can use cost distribution to meet the following business needs:

- Manage and assess subcontracting costs such as the cost of resources and base freight in freight orders
- Create internal settlements based on distributed subcontracted costs

For shippers, freight costs cover the following stock movements:

Inbound

- Purchases
- Sales returns
- Intercompany or intracompany stock transfers

Outbound

- Customer sales
- Purchase returns
- Intercompany or intracompany stock transfers

For logistics service providers (LSPs), freight costs cover the cost of moving the goods contained in forwarding orders for their customers.

The system uses the freight charges in the freight order, freight booking, and freight settlement document as the basis for distributing freight costs from external sources, such as carriers.

Prerequisites

- You have specified the cost distribution settings in Customizing for *Transportation Management* under ► *Basic Functions* ► *Cost Distribution* ▶.
- For both shippers and LSPs, you have assigned the distribution profiles to the relevant organization in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings* ► *Define General Settings* ▶.
- For LSPs who want to use the freight cost in a freight order or freight booking for internal settlement, you must enable freight orders or freight bookings for cost distribution.

For more information, see the following Customizing activities:

- For freight orders, see Customizing for *Transportation Management* under *Freight Order Management* *Freight Order* *Define Freight Order Types* .
- For freight bookings, see Customizing for *Transportation Management* under *Freight Order Management* *Freight Bookings* *Define Freight Booking Types* .
- For shippers who want to transfer the freight cost at ERP item level, you must enable the freight settlement document for cost distribution. For more information, see Customizing for *Transportation Management* under *Settlement* *Freight Settlement* *Define Freight Settlement Document Types* .

Features

You can view the results of a cost distribution on the user interface (UI). You can only change the distribution settings in Customizing. The following are the main cost distribution features:

- Distribution method

The system distributes costs in a direct or hierarchical distribution. In a direct distribution, the system distributes costs according to the attributes you specify in the distribution rule and distribution level without reference to where in the item hierarchy you package a product. In a hierarchical distribution, the system uses a step-by-step approach to take each level of the packaging hierarchy into account in the distribution.

- Distribution rule

The system uses criteria such as gross weight, net weight, gross volume, and distance times gross weight to perform a cost distribution.

- Distribution level

The system uses a target level of forwarding orders or ERP items in a distribution.

More Information

Topic	Link
Using cost distribution for shippers, including individual prerequisites	Cost Distribution for Shippers [Page 1035]
Using cost distribution for LSPs, including individual prerequisites	Cost Distribution for LSPs [Page 1037]
Role and structure of freight orders	Freight Order



Cost Distribution for Shippers

As a shipper, you create documents such as purchase orders, sales orders, and deliveries in SAP ERP. The SAP Transportation Management (SAP TM) system creates order-based transportation requirement (OTR) and delivery-based transportation requirement (DTR) documents to fulfill the SAP ERP demand. You use these requirements documents to create execution documents such as [freight orders](#) or [freight bookings](#). You create a [freight settlement document](#) to transfer the transportation costs to SAP ERP for verification.

You must perform cost distribution at the level of ERP item in the freight settlement document.

For example, you have a net amount in document currency of USD 1000, with a cost distribution of USD 700 for product 1, and USD 300 for product 2. When you transfer the settlement document, the SAP ERP system takes the following steps:

- Creates a service entry sheet for USD 1000
- Creates an agency business document with each product as an item. Each item has the amount of the distributed cost, USD 700 for product 1 and USD 300 for product 2.

You use customizing settings in SAP ERP to specify the type of posting you want to do with the distributed cost, for example, material valuation or general ledger and CO-PA posting. Depending on the settings you have specified, the agency business document posts to these or other cost objects. The SAP ERP system uses the underlying sales order and delivery information from the ERP item to determine from the source SAP ERP document the particular cost object against which it posts the distributed costs.

For example, in Customizing for SAP ERP, you specify that you want to perform CO-PA posting. A particular sales order references a particular CO-PA object. You create OTR or DTR orders in SAP TM for the sales order. When posting the distributed costs in SAP ERP, the system posts to the CO-PA object that is referenced in the sales order.

Examples of cost objects include cost center, profit center, CO-PA segment, and internal order.

Integration

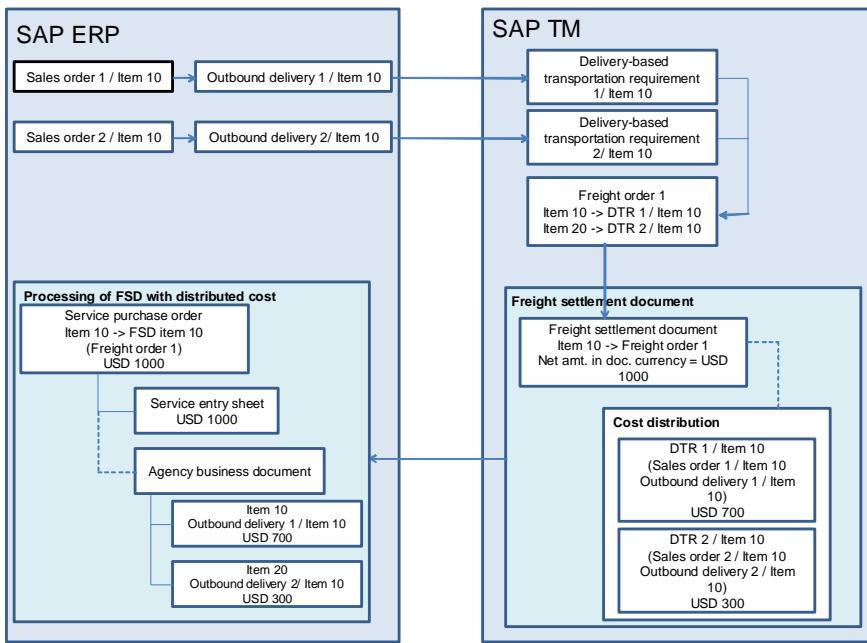
The system uses the freight settlement document to enable you to integrate with SAP ERP.

Prerequisites

- You have specified the cost distribution settings in Customizing for SAP ERP under [Integration with Other mySAP.com Components](#) [Transportation Management](#) [Invoice Integration](#) [Mapping for Cost Distribution](#).
- If you want to transfer your distributed costs to SAP ERP with the freight settlement document, you have enabled the freight settlement document for cost distribution in Customizing for Transportation Management under [Settlement](#) [Freight Settlement](#) [Define Freight Settlement Document Types](#).

Example

The figure below illustrates the process an item in each of two sales orders in SAP ERP take through the SAP TM system until the SAP ERP system updates the distributed costs against cost objects in the agency business document. It is followed by an explanation.



Processing Distributed Costs

You include two outbound deliveries in a freight order. The total amount in document currency of the freight order is USD 1000. In the associated freight settlement document, the SAP TM system distributes costs to the underlying delivery items by gross weight.

When you transfer the freight settlement document, SAP ERP takes the following steps:

- Creates a service purchase order and includes the items that correspond to the total amount in document currency for the freight settlement document.
- Posts a service entry sheet (SES) to confirm the services in the service purchase order.
- Creates an agency business document with two line items. Each line item corresponds to the individual line items in the freight order.

When the SAP ERP system creates the agency business document, it copies the account assignment details from the relevant sales order line item. In this example, the system copies the account assignments from item 10 of sales order 1 to item 10 of the agency business document.

More Information

[Cost Distribution Management \[Page 1033\]](#)

For information about how the invoice is created in SAP ERP, see SAP Library for SAP ERP on SAP Help Portal at <http://help.sap.com/erp>. In SAP Library, choose ► SAP Business Suite ► SAP ERP ► SAP ERP Central Component ► SAP Enhancement Package 6 for SAP ERP 6.0 ► Application Help ► SAP ERP Central Component ► Logistics ► Logistics - General (LO) ► Integration of SAP ERP with SAP Transportation Management ▶.



Cost Distribution for LSPs

As a logistics service provider (LSP), the customer contacts you for a transportation and you create a forwarding order in SAP TM. An organization in your company works with customers to handle order placement and a different organization works with carriers to handle order execution. You use a freight order to execute the transportation service. You use the standard charge calculation and freight settlement processes to settle costs.

You can use the cost distribution for external costs in the following settlements:

- Forwarding settlements to settle with your external customers
- Internal settlements to settle with your internal organizations

Integration

The system uses the internal agreement and internal settlement document to enable you to integrate with SAP ERP. Cost distribution is also an important prerequisite for analyzing profitability in a forwarding order (see [Profitability Analysis](#)).

Prerequisites

You have performed the following tasks:

- Enabled the freight order or freight booking for cost distribution in Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types and Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types*
- Calculated charges in the freight order or freight booking
- Specified an internal agreement between the purchasing organization of the freight order or freight booking and the business partner of the sales organizations in the forwarding orders. To create an internal agreement, in SAP NetWeaver Business Client choose ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Internal Agreements*



Note

You must specify the purchasing organization of the freight order or freight booking as a forwarding house in the organization structure.

End of the note.

- Specified a forwarding agreement between the sales organization in a forwarding order and the agreement party in the same forwarding order. The agreement party can include the prepaid agreement party and collect agreement party. This enables you to use the cost distribution for external costs as a basis for settling with your customers

For charge management, you have the following options:

- Specify a calculation sheet in which you have assigned a calculation method type of *Internal Charge Calculation* to a charge type. The system uses the cost distribution for external costs as a basis for the calculation. For example, you can use this calculation method to calculate the following costs and settlements:

- Between the purchasing organization in the freight order or freight booking and the sales organization in the forwarding order
- Between the sales organization and the agreement party in the forwarding order
- Alternatively, you can use calculation sheets with charge types that are linked to rate tables. You can use the rate tables as the basis for creating settlements. In this case, you do not need cost distribution to calculate internal settlements.

 Note

When you use a calculation sheet in which you have assigned a calculation method type of *Internal Charge Calculation* to a charge type, the system uses the cost distribution amounts from your external costs. For more information on the internal charge calculation methods see [Cost Pull](#).

End of the note.

You have specified all the prerequisites for internal settlement (see [Internal Settlement Management \[Page 1074\]](#)).

You have specified all the prerequisites for forwarding settlement (see [Forwarding Settlement \[Page 1004\]](#)).

Example

You are an LSP and you have 2 customers who need to transport cargo.

The following table explains the role of the relevant organizations in your company:

Organization	Role
SalesOrg_1	Sells services to the customer and the customer places forwarding orders with this organization
PurchaseOrg_1	Buys transportation services from carriers to execute freight orders

The following tables give you an explanation of the internal and external agreements that you create to transport the cargo:

External Agreements

Agreement	Agreement Type	Organization	Business Partner	Reason
Cust_Agmt_1	Forwarding agreement	SalesOrg_1	Customer_1	Pay for transportation services in FWO_1
Cust_Agmt_2	Forwarding agreement	SalesOrg_1	Customer_2	Pay for transportation services in FWO_2
Int_Agmt_1	Internal agreement	Purchasing_Org_1	BP_of_SalesOrg_1 (carrier)	Pay haulage cost

Internal Agreements

Agreement	Agreement Type	Organization	Business Partner	Reason
Int_Agmt_2	Internal agreement	PurchasingOrg_1	SalesOrg_1	Pay haulage cost

You create two forwarding orders in SAP TM, with one forwarding order for each customer. The carrier transports the cargo (the carrier is the business partner of SalesOrg_1). In the freight order you have external costs from the carrier.

Cost Distribution

You distribute costs by gross weight. You perform cost distribution at the level of *Forwarding Order* in the freight order. The following table describes how the system distributes costs in the freight order or freight booking:

	Base Freight (USD)	Haulage (USD)	Total (USD)
Net amount in document currency	700	300	1000
FWO_1	500	200	700
FWO_2	200	100	300

Internal Settlement with Distributed Costs

FWO_1 and FWO_2 belong to SalesOrg_1. PurchasingOrg_1 performs the following tasks:

- Executes the freight order
- Pays the execution costs

PurchasingOrg_1 uses the external costs it incurred for both forwarding orders to settle internally with SalesOrg_1. The following table describes how PurchasingOrg_1 settles with SalesOrg_1:

	External Cost (USD)
FWO_1	700
FWO_2	300

More Information

Subject	See
Create and change agreements	Agreement [Page 970]
Create and change calculation sheets	Calculation Sheet Maintenance
Calculate transportation charges according to	Calculation Methods

Subject	See
a specific logic	
Manage internal settlements	Internal Settlement Management [Page 1074]
Manage cost distribution	Cost Distribution Management [Page 1033]
Analyze profit	Profitability Analysis
Create an invoice in SAP ERP	<p>See SAP Library for SAP ERP on SAP Help Portal at http://help.sap.com/erp. In SAP Library, choose ► SAP Business Suite ► SAP ERP ► SAP ERP Central Component ► SAP Enhancement Package 6 for SAP ERP 6.0 ► Application Help ► SAP ERP Central Component ► Logistics ► Logistics - General (LO) ► Integration of SAP ERP with SAP Transportation Management ▶.</p>



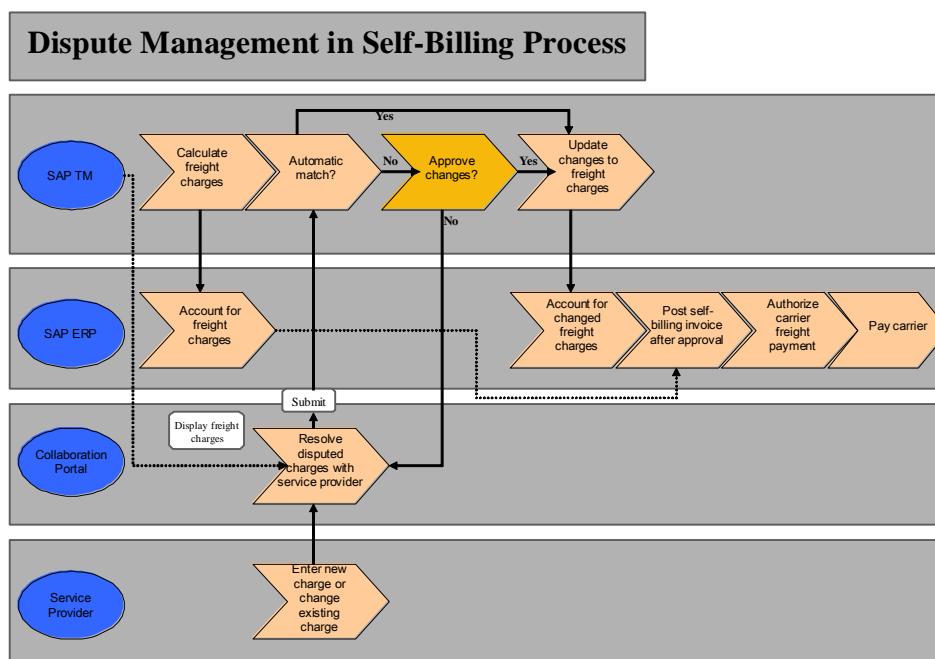
Dispute Management for Freight Settlements

As a requester of transportation services, such as a shipper, you can have a self-billing (evaluated receipt settlement) process in place with your service provider, such as your carrier. In this process, you settle automatically based on the information in the freight order and your service provider does not submit an invoice.

In your business process, you can have differences and potential disputes between what you expect to pay against what your service provider expects to be paid. You want to resolve these disputes in a collaborative way with your service provider by seeking clarification and agreement on the differences and on the disputed items.

SAP Transportation Management (SAP TM) provides you with a dispute management function in a self-billing process that enables you to collaborate closely with the provider of your transportation services. You can enable your service provider, with whom you have a self-billing process in place, to create a dispute case for a charge discrepancy or an unforeseen freight cost. For example, your carrier can claim for an unplanned detention charge or a larger dimension in a freight order.

The figure below illustrates how dispute management fits in a self-billing process and is followed by an explanation:



Your service provider can use the self-billing features on the SAP TM collaboration portal to create a dispute case against a charge amount and a logistics quantity in the freight order. On the NWBC dispute case screens, you can approve, reject, or propose a change to the dispute case. The system displays your decision on the collaboration portal, where the service provider can accept your proposal or re-submit the dispute case.

If you approve a dispute case on the NWBC dispute case screens, the system updates the freight order with information for the charge type, such as rate and quantity information. However, the system does not update header information, such as gross weight, gross volume, and total

distance. Instead, the system uses the updated header information when calculating charges. This is illustrated in the following examples:

 Example

Your carrier disputes the total distance in a freight order. The carrier traveled an extra 10 km, making the total distance 510 km and not 500 km as contained in the freight order. You, as the shipper, accept the proposal. The system does not update the total distance in the stages or header of the freight order. Instead the system uses the updated distance of 510 km when calculating charges.

End of the example.

 Example

Your carrier adds a new charge line to the freight order, claiming for an additional demurrage charge. You accept the carrier's claim. At the rate of USD 50 per hour, this amounts to a total of USD 200 for 4 hours. The system updates the freight order with the new charge line for demurrage at USD 50 per hour, amounting to USD 200 for 4 hours.

End of the example.

When you resolve disputes early, you have the following business advantages:

- Inclusion of changes and unplanned activities in one invoicing run
- Accuracy in payment

You can navigate to freight settlement dispute cases on NWBC by choosing  [Freight Settlement Dispute Case](#)  [Overview Freight Settlement Dispute Cases](#).

You cannot use the dispute management process for freight orders that contain one or more additional agreement parties, or for freight orders with more than one invoicing carrier (for example, in rule 11 scenarios for rail freight orders).

More Information

Subject	More Information
Structure of an individual dispute case on NWBC, including working with a dispute case	Freight Settlement Dispute Case [Page 1044]
Necessary Customizing settings required before you can use dispute management	Prerequisites for Dispute Management [Page 1047]
Individual aspects of dispute management	Features of Dispute Management [Page 1052]
Details of how SAP TM updates SAP ERP to post the dispute case resolution	Dispute Case Resolution and SAP ERP Update [Page 1062]

Subject	More Information
Self-billing in SAP ERP	<p>SAP Help Portal at http://help.sap.com/erp. In SAP Library, choose ► SAP ERP Central Component ► Logistics ► Materials Management (MM) ► Logistics Invoice Verification (MM-IV) ► Logistics Invoice Verification (MM-IV-LIV) ► Automatic Settlements ► Evaluated Receipt Settlement (ERS) ▶.</p>
Self-billing for your carrier on the SAP TM collaboration portal	Self-Billing (Collaboration Portal) [Page 1101]



Freight Settlement Dispute Case

A freight settlement dispute case is an individual business document that captures differences in logistics item quantities or charge amounts in a freight order. You as requester of transportation services, such as a shipper, own the information in the freight order. Your provider of transportation services, such as your carrier, checks the accuracy of the charge and logistics details in your freight order.

The service provider creates a dispute case against a freight order on the SAP Transportation Management collaboration portal. If the dispute case fails the tolerance limits you specify in Customizing, you must manually review the dispute case on the *Freight Settlement Dispute Cases NWBC* user interface (UI).

Structure

General Data

The *General Data* tab page contains high-level information about the dispute case and associated freight order, for example:

- Carrier name and freight order reference
- Source location and destination location
- Logistics information, such as gross weight, gross volume, and total distance
- Status information
- Amount information, at freight order level

Logistics Details

On the *Logistics Details* screen area, the system displays logistics dispute information for a dispute item submitted by the service provider on the collaboration portal. For example, your carrier claims the total distance is 510 km, and not 500 km as you expect. The system displays 500 km in the *Order Quantity* field, and 510 km in the *Dispute Quantity* field.

The system also displays the status of each logistics item in a dispute case.

Charge Details

On the *Charge Details* screen area, the system displays the charge dispute information for a dispute item submitted by the service provider on the collaboration portal. For example, your carrier adds an unplanned cost for 4 hours detention at the rate of USD 50 per hour, totaling USD 200. The system displays the following information on the *Charge Details* screen area:

- *Dispute Item Description: New Charge Line*
- *Charge Description: Detention*
- *Currency: USD*
- *Order Amount: 0*
- *Dispute Amount: 200*

The system also displays the status of each charge item in a dispute case.

Dispute Charge Amounts

The system displays the proposed charge amount from the service provider for the total freight order on the *Dispute Charge Amounts* screen area. This is what your service provider expects to be paid in total and is how the freight order would look if you accept the proposal from your service provider.

For example, the total order amount (total amount in your freight order) is USD 5,000. Your carrier submits a dispute case for an unplanned cost for detention of USD 200. The system displays USD 5,200 in the *Dispute Charge Amounts* screen area.

Proposed Charge Amounts

You accept, reject, or propose a change for the dispute items on the logistics details and charge details screen areas. The system displays the effect your decision has on the total charges in the freight order.

For example, the total order amount is USD 5,000. Your carrier submits a dispute case for an unplanned cost for detention of USD 200. You reject the dispute item. The system displays USD 5,000 in the *Dispute Charge Amounts* screen area.

Taking Action on a Dispute Case

In both the *Logistics Details* and *Charge Details* screen areas, you can perform the following tasks:

- Choose the *Approve* button to accept a dispute item.
- Choose the *Propose* button to propose a change to a dispute item.
- Choose the *Reject* button to reject a dispute item.

For information about dispute case statuses, see [Statuses in Dispute Management \[Page 1055\]](#).

You can also save your work without sending your decisions to the service provider in the collaboration portal. This enables you to save a draft while you finalize your decisions.

When you save and confirm a dispute case, you finalize your action on the dispute case. The system publishes your decision on the collaboration portal. Your service provider can view your decision on the portal.

Notes

On this tab page, you can add any relevant notes, enabling you to share information all through the process of dispute resolution. You can use notes to collaborate with your colleagues internally, and with your service provider externally. Your service provider can also submit notes when they submit a dispute case from the collaboration portal.

Attachments

On this tab page, you can upload relevant files, enabling you to share files all through the process of dispute resolution. You can use attachments to share information with your colleagues internally, and with your service provider externally. Your service provider can also submit an attachment when they submit a dispute case from the collaboration portal.

Tolerance Check Log

On this tab page, the system displays the following information:

- Success messages for the charge type dispute items that are inside your tolerance limits and that the system passed automatically
- Failure messages for the dispute items that are outside your tolerance limits and that the system failed automatically

The system displays the dispute cases that automatically failed the tolerance check on the *Freight Settlement Dispute Cases - All Freight Settlement Dispute Cases* personal object worklist (POWL) screen. You must manually review these dispute cases.

You can specify tolerance limits in Customizing for *Transportation Management* under
► *Settlement* ► *Freight Settlement* ► *Freight Settlement Dispute Management* ► *Define Dispute Tolerance Rules*.

Work Items

The system displays information on the work items created for the dispute case, including the approval level, the status of the work item, the approver, and the time key events in the lifecycle of the work item take place. For more information, see [Workflow for Dispute Management \[Page 1057\]](#).

Integration

- Freight settlement dispute cases are integrated with the collaboration portal because you use the collaboration portal to communicate and agree common ground with your service provider. For more information, see [Self-Billing \(Collaboration Portal\) \[Page 1101\]](#).
- Freight settlement dispute cases are also integrated with freight orders. When you accept a change in a dispute case, the system updates the changed information in the freight order. For more information, see [Freight Order Management](#).
- SAP ERP

Freight settlement dispute cases are integrated with freight orders. You create freight settlement documents from freight orders. The system transfers freight settlement documents to SAP ERP. The system does not create a freight settlement document from a dispute case. For more information about integration with SAP ERP, see SAP Help Portal at <http://help.sap.com/erp>. In SAP Library, choose ► *SAP ERP Central Component* ► *Logistics* ► *Logistics - General (LO)* ► *Integration of SAP ERP with SAP Transportation Management*.

More Information

[Dispute Management for Freight Settlements \[Page 1041\]](#)

[Prerequisites for Dispute Management \[Page 1047\]](#)

[Features of Dispute Management \[Page 1052\]](#)

[Dispute Case Resolution and SAP ERP Update \[Page 1062\]](#)



Prerequisites for Dispute Management

SAP ERP Settings

If you want to enable a dispute management process between you and your service provider to resolve disputes in your freight orders in a self-billing process, you must enable the service provider for self-billing in the master data for the vendor in SAP ERP.

You can edit the vendor master in Customizing for *SAP ERP* under ► *SAP Menu* ► *Logistics* ► *Materials Management* ► *Purchasing* ► *Master Data* ► *Vendor* ► *Purchasing* ► *Change (Current)* ▶, or by using transaction `MK02`.

For more information on working with master data for the vendor, see *SAP Library for SAP ERP* on SAP Help Portal at <http://help.sap.com/erp>. In *SAP Library*, choose ► *SAP ERP Central Component* ► *Logistics* ► *Materials Management (MM)* ► *Purchasing (MM-PUR)* ► *Master Records from the Purchasing View* ► *Vendor Master Data* ► *Maintaining Vendor Master Records* ▶.

Settlement Profile Settings

In Customizing for *Transportation Management* under ► *Settlement* ► *Define Settlement Profile* ▶, you can specify the following settings:

- Self-billing

If you want a service provider who you have enabled for self-billing settlement in SAP ERP to use the collaboration portal to verify the content of your freight orders in a self-billing process, you must enable the *Self-Billing* setting in a settlement profile. When you assign a settlement profile to your service provider in transaction `BP` (*Maintain Business Partner*), the service provider can verify the charges in the freight order on the collaboration portal.

You can enable a service provider for self-billing in the master data for the vendor in SAP ERP. However, you do not need to enable the settlement profile for that service provider for self-billing in SAP TM. This means you can have a self-billing process for all the relevant service providers, but you can enable just a subset of those service providers for self-billing on the SAP TM collaboration portal.

The following table gives an example of how you can specify service providers and is followed by an explanation:

	Self-Billing Settlement in SAP ERP	Self-Billing in Settlement Profile
<i>Carrier A</i>	Yes	No
<i>Carrier B</i>	Yes	Yes

You enable both carrier A and carrier B for a self-billing process in SAP ERP. However, only carrier B can verify the freight order charges and create dispute cases on the carrier portal.

- ERP update strategy

If you enable a settlement for self-billing, you must specify an ERP update strategy to specify the approach the system takes in updating the freight cost accrual in SAP ERP,

using the purchase order and service entry sheet (SES). For more information, see [Dispute Case Resolution and SAP ERP Update \[Page 1062\]](#).

- Other settings

If you enable a settlement for self-billing, you have the option of specifying the following settings:

- Approval workflow to enable you to use an approval workflow for all freight settlement dispute cases that fall outside the specified tolerances.
- Tolerance groups to enable you to specify lower and upper limits on disputed charge type amounts and total freight order amounts within which the system automatically approves dispute cases.
- Dispute item profile to specify the individual logistics item or charge type against which a service provider can create a dispute case.

Dispute Management Settings

In Customizing for *Transportation Management* under ► *Settlement* ► *Freight Settlement* ► *Freight Settlement Dispute Management* you must specify the following settings:

- Dispute item types

In the *Define Dispute Item Types* Customizing activity, you must specify the dispute item types that a service provider can use to create dispute items. The system uses the item types to enable the corresponding fields in the collaboration portal for your service provider. The service provider can only enter dispute amounts and create dispute cases for the enabled fields.

You add a dispute item type to a dispute item profile, so that the system can subsequently use the item type when the service provider creates a dispute case for the freight order.

- Dispute item profiles

In the *Define Dispute Item Profiles* Customizing activity, you must group the dispute item types against which you want to allow a service provider to create dispute items. By grouping item types under different profiles for different service providers, you apply different rules to different service providers for the creation of dispute cases in the collaboration portal.

We deliver the item profile **DEFAULT**. The following table contains the item types we deliver as standard in the **DEFAULT** item profile:

Item Type	Function	Use Example
CHARGELINE.DISPUTE	Propose a rate change on an existing charge line.	Create a dispute case against the base freight rate.
MANUAL.CHARGE.DISPUTE	Propose a rate change for charge lines you have manually added from an agreement.	Loading charges

Item Type	Function	Use Example
NEW.CHARGE.LINE.DISPUTE	Add a new charge type.	Detention or demurrage
ROOT.DISTANCE	Propose a change for the total distance of a freight order.	Not applicable
ROOT.GROSS.VOLUME	Propose a change on total gross volume of a freight order.	Not applicable
ROOT.GROSS.WEIGHT	Propose a change on total gross weight of a freight order.	Not applicable

For example, you do not want your carrier to propose a new charge line in a dispute case. You use the `DEFAULT` item profile and exclude the item type `NEW.CHARGE.LINE.DISPUTE`. Also, in a full truck load scenario, you do not want your carrier to create a dispute case for the total distance. You use the `DEFAULT` item profile and exclude the item type `ROOT.DISTANCE`.

- Tolerance rules

In the *Define Dispute Tolerance Rules* Customizing activity, you must specify tolerance limits for charge types that enable you to reduce administration overhead and automatically approve dispute cases. You can specify more than one tolerance in a tolerance group.

When the system creates a dispute case, it performs a tolerance check. It checks each charge type amount in the dispute case against the tolerance deviations contained in the relevant dispute tolerance. If the charge type amount falls within the tolerance limits, the system automatically passes the dispute case. If the amount falls outside the limits, the system adds the dispute case to the work list on the *Freight Settlement Dispute Case* screen for manual attention.

If you do not specify tolerance rules, you must manually review each dispute case on the *Freight Settlement Dispute Case* screen.

- Dispute case reason codes and types

In the *Define Dispute Case Reason Codes and Types* Customizing activity, you must specify the reason code that you assign to a freight settlement dispute case or a freight settlement dispute case line item to specify the reason why you created the dispute case or to record the reason why you approved, accepted with a proposal, or rejected the dispute case or line item.

You must also specify the freight settlement dispute case types that the system uses when it creates a freight settlement dispute case.

- Charge types available to a service provider on the collaboration portal

If you want to specify the charge types for which a service provider can create a new charge line on the collaboration portal, you must use the appropriate settings in the *Enable Charge Types for Collaboration Portal* Customizing activity.

If you want to filter the standard charge types for a particular service provider and means of transport, you must specify the appropriate settings in the Business Add-In (BAdI): *BAdI: Filtering of Charge Types for Collaboration Portal* in Customizing for *Transportation*

*Management under ► Business Add-Ins (BAdls) for Transportation Management
► Settlement ► Freight Settlement ► Freight Settlement Dispute Management □.*

- Approval levels and workflow

If you want to specify an approval workflow, you must specify the appropriate settings in the settlement profile in Customizing for *Transportation Management* under ► *Settlement* ► *Define Settlement Profile* □. The system uses an approval workflow for dispute cases created against freight orders for a service provider.

If you want to specify the approval levels a dispute case must pass through, and the roles that the system applies to each approval level, you must specify the appropriate settings in the *Define Approval Levels and Roles for Workflow Customizing* activity.

You can specify approval levels for level-1 users and level-2 users. Level-1 users and level-2 users can approve, accept and propose, or reject a change from a service provider. For more information, see [Workflow for Dispute Management \[Page 1057\]](#).

If you want to add or remove workflow approvers based on one or more of the details in a dispute case, you must specify *BAdl: User Determination for Dispute Case Workflow* in Customizing for *Transportation Management* under ► *Business Add-Ins (BAdls) for Transportation Management* ► *Settlement* □. The approver you specify in this BAdl overrides the approver you specify in Customizing.

- You can use the Business Configuration Set (BC Set) *Customizing Workflow Agents Approval Levels and Roles for Workflow* (/SCMTMS/INV_DISP_WFL_AGENTS_C) for the *Define Approval Levels and Roles for Workflow Customizing* activity.

More Information

Subject	More Information
Structure of an individual dispute case on NWBC, including working with a dispute case	Freight Settlement Dispute Case [Page 1044]
Individual aspects of dispute management	Features of Dispute Management [Page 1052]
Details of how SAP TM updates SAP ERP to post the dispute case resolution	Dispute Case Resolution and SAP ERP Update [Page 1062]
Working with the master data for the vendor in SAP ERP	SAP Help Portal at http://help.sap.com/erp . In SAP Library, choose ► <i>SAP ERP Central Component</i> ► <i>Logistics</i> ► <i>Materials Management (MM)</i> ► <i>Purchasing (MM-PUR)</i> ► <i>Master Records from the Purchasing View</i> ► <i>Vendor Master Data</i> ► <i>Maintaining Vendor Master Records</i> □.
Self-billing in SAP ERP	SAP Help Portal at http://help.sap.com/erp . In SAP Library, choose ► <i>SAP ERP Central Component</i> ► <i>Logistics</i> ► <i>Materials Management (MM)</i> ► <i>Logistics Invoice Verification (MM-IV)</i> ► <i>Logistics Invoice Verification (MM-IV-LIV)</i> ► <i>Automatic Settlements</i> ► <i>Evaluated Receipt Settlement (ERS)</i> □.



Features of Dispute Management

SAP Transportation Management collaboration portal

Your service provider, such as your carrier, uses your freight order numbers as a reference to display the relevant freight orders in the collaboration portal.

Depending on your Customizing settings, the service provider can use the collaboration portal to create a dispute case for the following logistics quantities:

- Gross weight
- Net weight
- Total distance

The service provider can also create a dispute case for the following charge amounts:

- Final amount of a charge line
- Rate amount of a charge line
- Total amount of a freight order

The service provider can simulate the effect the change has on the total amount for the freight order.

Tolerance Check

When the service provider submits a dispute case in the collaboration portal, SAP Transportation Management (SAP TM) applies the tolerance settings you specified in the *Define Dispute Tolerance Rules* Customizing activity. If the dispute case is within the tolerance limits, the system automatically accepts the dispute case. If the dispute case is outside the limits, it fails the tolerance check and the dispute case must be reviewed by a user in the ► *Freight Settlement* ► *Dispute Case* ► *Overview Freight Settlement Dispute Cases* screen.

The system stores the results of the tolerance checks in the *Tolerance Check Log* tab page of the individual dispute case. You have a record of the automatic acceptance and automatic failure results.

Dispute Resolution Cycle

A dispute is resolved when both you and your service provider arrive at a common agreement on the charge or logistics item under dispute. To arrive at common ground, a dispute can go through many proposal and rejection cycles where you or your service provider make proposals or reject proposals.

You can open just one dispute case on the charges and logistics quantities contained in a freight order at any one time.

If you or your service provider accept a proposal on a charge item or logistics quantity in a dispute resolution step, the system does not include that item in subsequent dispute resolution steps.

Workflow and Work Items

You can use a workflow process to structure the approval process for your dispute cases. You can ensure that one or more users in your organization approve a dispute case before you accept or reject a proposed change to a freight order from a service provider.

If you enable a workflow process to approve dispute cases, the system creates work items for your level-1 and level-2 users. You can review all the work items that are open on the *Freight Settlement Dispute Case Work Items* screen. You can review the status of the work items for an individual dispute case on the ► *Dispute Case* ► *Work Items* screen. You can navigate to the dispute case screen from the work item. For more information, see [Workflow for Dispute Management \[Page 1057\]](#).

Dispute Cases Statuses

The following table contains the statuses that can apply to a dispute case:

Status	Answers the Question
Life cycle status	Is the overall dispute case open or resolved?
Action status	Who needs to act on the overall dispute case?
Workflow status	What is the status of an individual work item?
Dispute item status in the <i>Logistics Details</i> tab page and the <i>Charge Details</i> tab page	What is the approval status of an individual dispute item?
Dispute status for total amount	What is the overall approval status for the total amount of the freight order?

For more information, see [Statuses in Dispute Management \[Page 1055\]](#).

Dispute Case Status in Freight Order

You can review the dispute case status in a freight order on the ► *Statuses* ► *Subcontracting* screen. The status indicates the resolution status of a dispute case in a freight order, and is explained in detail in the following table:

Status	Status Description
No Dispute	The default status of the freight order when there are no disputes created against the freight order.
Awaiting Your Approval	You as the service requester must act to approve, make a proposal, or reject the dispute created by your service provider.
Awaiting Carrier Approval	Your service provider must take action on a dispute case. This means you as the service requester have taken one of the following actions: <ul style="list-style-type: none">Rejected the claim from your service provider. If your service provider agrees with your decision, they must accept the dispute.Proposed a solution that is acceptable to you against the claim from the service provider. If your service provider agrees with your decision, they

Status	Status Description
	must accept the dispute.
Resolved	Both you as the service requester and your service provider have agreed on common ground in the dispute and you both have agreed on a decision.

Deletion of Draft Dispute Cases

There can be situations where your service provider creates a dispute case on the collaboration portal, but does not submit the dispute case. For example, the service provider may close the browser screen before they submit the dispute. In such a situation, the system creates a draft dispute case that is incomplete. To delete these draft dispute cases from the system, you must run the program /SCMTMS/DEL_DRAFT_DISP_CASE. We recommend that you run this program at regular intervals to keep your system clean.

More Information

[Freight Settlement Dispute Case \[Page 1044\]](#)

[Prerequisites for Dispute Management \[Page 1047\]](#)

[Dispute Management for Freight Settlements \[Page 1041\]](#)

[Dispute Case Resolution and SAP ERP Update \[Page 1062\]](#)



Statuses in Dispute Management

Life Cycle Status

The life cycle status indicates the resolution status of the overall dispute case. The following table explains what the individual status values mean:

Status	Status Description
<i>In Dispute</i>	Indicates that the transportation service requester and the transportation service provider have not yet agreed a resolution to the dispute case. Both parties disagree on the logistics information or charge information in the freight order.
<i>Dispute Resolved</i>	Indicates that the transportation service requester and the transportation service provider have agreed a resolution to the dispute case. This means that you as a service requester have taken one of the following actions: <ul style="list-style-type: none">Accepted the claim from the service providerRejected the claim of the service provider and the service provider accepted this decisionProposed a solution that is acceptable to you against the claim from the service provider, and the service provider accepts your proposal

Action Status

The action status indicates the party that owns the next action in the dispute resolution process. The following table explains what the individual status values mean:

Status	Status Description
<i>Awaiting Your Approval</i>	You as the service requester must act to approve, make a proposal, or reject the dispute created by your service provider.
<i>Awaiting Carrier Approval</i>	Your service provider must act to approve, make a proposal, or reject the dispute. This means you as the service requester have taken one of the following actions: <ul style="list-style-type: none">Rejected the dispute from your service provider. If your service provider agrees with your decision, they must accept the dispute.Proposed a solution that is acceptable to you against the claim from the service provider. If your service provider agrees with your decision, they must accept the dispute.
<i>Completed</i>	Both you as the service requester and your service provider have agreed on a decision for the dispute case.

Workflow Status

The workflow status indicates the status of the workflow for a dispute case. The following table explains what the individual status values mean:

Status	Status Description
Workflow Not Enabled	You have not enabled a workflow to resolve disputes with your service provider in the Customizing settings for the relevant settlement profile (see Prerequisites for Dispute Management [Page 1047]). The dispute case does not go through an automatic and structured approval process.
Automatically Approved	The system has used the tolerance settings you specified in Customizing to approve the dispute case automatically in the background (see Prerequisites for Dispute Management [Page 1047]). You do not need to take any action.
Awaiting Approval	You are waiting for one or more of the approvers in the workflow to take action on the dispute. The approvers in the workflow must accept, accept with a proposal, or reject the dispute case (see Workflow for Dispute Management [Page 1057]).
Completed	The workflow has no more work items and the dispute case has an action status of <i>Completed</i> .

Dispute Item Status

The dispute item status indicates the resolution status of a dispute item for an individual logistics item or an individual charge type. The following table explains what the individual status values mean:

Status	Status Description
New	You as the service requester must act on the dispute item. You must accept, accept with a proposal, or reject the dispute item.
Approved by You	You as the service requester have approved the dispute item.
Accepted by You with Proposal	You as the service requester make a proposal against the dispute submitted by your service provider, and send the proposal to your service provider for action.
Rejected by You	You as the service requester reject the dispute submitted by your service provider.
Approved by Carrier	Your service provider approves the dispute item. Your service provider can approve a dispute item when you as the service requester make a proposal and the service provider accepts your proposal.
Accepted by Carrier with Proposal	Your service provider submits a revised proposal or submits a change to a proposal that you have made.
Approved by Tolerance Check	The system has used the tolerance settings you specified in Customizing to approve the dispute item automatically in the background (see Prerequisites for Dispute Management [Page 1047]). You do not need to take any action.



Workflow for Dispute Management

As standard, we deliver a 2-level approval process for your dispute case approval workflow. In this process, when your service provider submits a dispute case from the SAP Transportation Management (SAP TM) collaboration portal, the system sends the dispute case to a level-1 approver for approval. When the level-1 approver takes action, the system sends the dispute case to a level-2 approver for approval.

Both the level-1 approver and level-2 approver can accept, accept with a proposal, or reject the dispute case. When the level-2 approver takes action, the system updates the collaboration portal. If the level-2 approver rejects the dispute case, your service provider can make a new proposal and submit the dispute case to you again. If the level-2 approver accepts the dispute case with a proposal and the service provider does not agree with the proposal, the service provider can make a new proposal and submit the dispute case again. Both situations create a fresh round of negotiation and the 2-level approval process begins again.

You must enable the relevant settlement profile for the approval workflow. For more information, see [Prerequisites for Dispute Management \[Page 1047\]](#).

Features

Workflow Configuration

We have implemented the 2-level approval workflow WS61200016 as standard. You can review the configuration of the standard workflow in transaction SWDD (*Workflow Builder*).

We have added an action to the standard Post Processing Framework (PPF) profile for dispute cases in freight settlement. We have used the settings in the following table to specify the standard workflow in the PPF profile:

Object Type	Object Name
Application	/SCMTMS/TRANSPORTATION
Action profile	/SCMTMS/TOR_INV_PREP (<i>Transfer Freight Settlement Document to ERP</i>)
Action definition	/SCMTMS/FDI_WFL (<i>Workflow for Dispute Invoice</i>)
Processing type	<i>Workflow (Default)</i>
Workflow template	WS61200016

You can review these settings in Customizing for *Cross Application Components* under *Processes and Tools for Enterprise Applications* *Reusable Objects and Functions for BOPF Environment* *PPF Adapter for Output Management* *Maintain PPF Settings* .

As standard, the system triggers the workflow when your service provider submits a dispute case from the collaboration portal.

You can implement your own approval workflow. To do this you must create a workflow configuration to suit your business needs in transaction SWDD, and specify the workflow in the *Workflow* processing type, under the /SCMTMS/FDI_WFL action definition.

User and Role Specification

The system uses the role and the user assigned to the role to determine the approver for a work item. You specify the user in the purchasing organization of the freight order. For more information, see [Assigning Employees to Organizational Units](#). You specify the role in Customizing for *Transportation Management* under ► *Settlement* ► *Define Settlement Profile* ► *Define Approval Levels and Roles for Workflow* . For more information, see [Prerequisites for Dispute Management \[Page 1047\]](#) under ► *Dispute Management Settings* ► *Approval levels and workflow* .

The system uses the approval level of the work item and the role assigned to the user to assign a work item to an approver.

For example, you assign employees John Brown and Josephine Green to a purchasing organization in your company. You assign a role of settlement specialist for John Brown and a role of transportation manager for Josephine Green in transaction PFCG (*Role Maintenance*). In the *Define Approval Levels and Roles for Workflow* activity, you specify approval level 1 for the settlement specialist role and approval level 2 for the transportation manager role. You enable the settlement profile for the approval workflow.

When the system creates a dispute case for freight orders in the purchasing organization, it first sends a work item for the dispute case to John Brown. When he finishes with the work item, the system then sends the work item to Josephine Green. If you assign more than one user to the same role, the system sends the work item to all the users assigned to the role. However, the system moves the workflow on to the next stage if just one of the users takes action on the work item.

More Information

[Workflow Error Resolution for Dispute Management \[Page 1059\]](#)

[Prerequisites for Dispute Management \[Page 1047\]](#)

[Features of Dispute Management \[Page 1052\]](#)

[Statuses in Dispute Management \[Page 1055\]](#)

For more information on specifying roles, see SAP Library for SAP NetWeaver on SAP Help Portal at <http://help.sap.com/netweaver>. Choose the appropriate release and in SAP Library, choose ► *SAP NetWeaver Library: Function-Oriented View* ► *Application Server* ► *Application Server ABAP* ► *Other Services* ► *Services for Application Developers* ► *SAP Business Workflow* ► *Role Documentation* .



Workflow Error Resolution for Dispute Management

Features

You can use transaction SWI2_DIAG to check if the system does not process a work item due to an error in your system settings or a technical error. You must run the transaction to check for errors. The system provides information such as the cause of the error, the workflow step at which the error happened, and the ID of the work item. When you resolve an error, you must choose the *Restart Workflow* button on the *Diagnosis of Workflow with Errors* screen to process the work item again. The system continues with the workflow from the point where the error occurs.

Resolution of Specific Errors

The following list contains details on the errors you may encounter, and the steps you must take to resolve the errors:

- Users not assigned to your purchasing organization

You have not assigned users to the purchasing organization to which the freight order belongs. The service provider has created the dispute case against the freight order. The system cannot choose a user and therefore cannot create a work item. In transaction PPOME (*Organization and Staffing Change*) -> *Staff Assignments*, you must ensure your level-1 approver and level-2 approver are assigned to the purchase organization that you use in the freight order.

- Incorrect roles assigned to approval levels

You have assigned a level-1 approver and a level-2 approver to the correct purchasing organization. You have specified the role that the system uses for level-1 approval and level-2 approval in Customizing for *Transportation Management* under ► *Settlement* ► *Freight Settlement* ► *Freight Settlement Dispute Management* ► *Define Approval Levels and Roles for Workflow*. However, although you have specified the level-1 approver and level-2 approver in the purchasing organization, you have not assigned the users to a role that you have used in the Customizing activity.

For example, the following table contains the settings you specify in transaction PPOME for the users in your purchasing organization:

User	Role	Role Description
Josephine Green	/SCMTMS/TRANSPORTATION_MANAGER	Transportation manager
John Brown	/SCMTMS/SETTLEMENT_SPECIALIST	Settlement specialist

The following table contains the settings you specify in the *Define Approval Levels and Roles for Workflow* Customizing activity:

Approval Level	Role	Role Description
1	/SCMTMS/TRANSPORTATION_PLANNER	Transportation planner
2	/SCMTMS/PURCHASING_CLERK	Purchasing clerk

- You have not specified a role for a transportation manager and settlement specialist in the *Define Approval Levels and Roles for Workflow Customizing* activity. The system does not create a work item.

• Approval level number or role not specified in the *Define Approval Levels and Roles for Workflow Customizing* activity

You must specify an approval level for level 1 and level 2 of the workflow in Customizing for *Transportation Management* under *Settlement* *Freight Settlement* *Freight Settlement Dispute Management* *Define Approval Levels and Roles for Workflow* . You must also specify a role for each approval level in the *Define Approval Levels and Roles for Workflow Customizing* activity. This ensures that the system selects a role for an approval level. The system automatically sets the approval level when you use the Business Configuration Set (BC Set) *Customizing Workflow Agents Approval Levels and Roles for Workflow* for the *Define Approval Levels and Roles for Workflow Customizing* activity.

- Incorrect logic in *BAdI: User Determination for Dispute Case Workflow*

You may have implemented incorrect logic in the *BAdI: User Determination for Dispute Case Workflow* in Customizing for *Transportation Management* under *Business Add-Ins (BAdIs) for Transportation Management* *Settlement* *Freight Settlement* *Freight Settlement Dispute Management* . The system uses your standard settings to determine the approvers for your workflow. However, you can use this BAdI to overwrite the standard settings, to add or remove workflow approvers according to your own logic. For example, the system determines John Brown as the level-1 user. You implement this BADI to override this standard determination. However, due to an error in the BAdI logic, the system does not identify an approver.

Note

If you specify levels and roles in the *Define Approval Levels and Roles for Workflow Customizing* activity but do not enable the approval workflow in the relevant settlement profile, the system takes the following action:

- Displays a workflow status of *Workflow Not Enabled*
- Does not use the level and roles settings as you have not enabled the workflow

End of the note.

More Information

Subject	More Information
Workflow process for dispute management	Workflow for Dispute Management [Page 1057]
Prerequisites you need for dispute management	Prerequisites for Dispute Management [Page 1047]
Key aspects of dispute management	Features of Dispute Management [Page 1052]

Subject	More Information
Explanation of dispute management statuses	Statuses in Dispute Management [Page 1055]
Standard SAP workflow process	SAP Library for SAP NetWeaver on SAP Help Portal at http://help.sap.com/netweaver . Choose the appropriate release and in SAP Library, choose ► SAP NetWeaver Library: Function-Oriented View ► Application Server ► Application Server ABAP ► Other Services ► Services for Application Developers ► SAP Business Workflow ► SAP Business Workflow: Reference Documentation ▶.
Resolution of errors in standard SAP workflow process	SAP Library for SAP NetWeaver on SAP Help Portal at http://help.sap.com/netweaver . Choose the appropriate release and in SAP Library, choose ► SAP NetWeaver Library: Function-Oriented View ► Application Server ► Application Server ABAP ► Other Services ► Services for Application Developers ► SAP Business Workflow ► Role Documentation ► Roles in Workflow ► Workflow System Administrator ► Business Workflow Administration ► Workflow System Administration ► Workflow Runtime Administration ► Diagnosing Workflows with Errors ▶.



Dispute Case Resolution and SAP ERP Update

A dispute is resolved when both you and your service provider arrive at a common agreement on the charge or logistics item under dispute. The system updates the freight order with the changed charge information. The dispute case status of the freight order must be *Dispute Resolved* before the system can update the freight order.

You use the background function *Creation of Freight Settlement Documents* to create, change, and transfer the freight settlement documents to SAP ERP (see [Creation and Transfer of Freight Settlement Documents \[Page 1263\]](#)). The freight settlement document contains the changes from the freight order.

Charge Correction Advice Document

You can only create charge correction advice documents for air freight documents on the NWBC UI. However, the system can create a charge correction advice document for a freight order that is involved in the dispute management process when you use the background function to create and transfer freight settlement documents.

A charge correction advice document contains the amount that has already been settled, the new delta amount to be corrected, and the final correct settlement amount for the freight order.

When SAP ERP receives a charge correction advice document, it takes the following steps:

- Posts a service entry sheet (SES) return to reverse the amount you previously transferred from SAP Transportation Management (SAP TM)
- Posts an SES with the revised freight order charge

SAP ERP Update Strategy

The system uses the SAP ERP update strategy that you specify in the relevant settlement profile in Customizing to update SAP ERP. For more information, see *Customizing for Transportation Management* under ► *Settlement* ► *Define Settlement Profile*.

For example, you have a freight order with a transportation charge of USD 2000. Your carrier creates a dispute case for the transportation rate, and you resolve the dispute by changing the transportation charge to USD 2300. Depending on the SAP ERP update strategy you specify, and the life cycle status of the freight settlement document, when you run the background function the system updates SAP ERP as follows:

- *Change Current FSD and Resend*

Life Cycle Status of FSD	System Action	Example
<i>New/In Process/Ready for Accruals</i>	Include the new charges and recalculate the existing freight settlement document if just one freight settlement document exists for the freight order.	SAP TM changes the charges in the freight settlement document from USD 2000 to USD 2300.
<i>Accruals Posted</i>	<ul style="list-style-type: none">○ Include the new charges and recalculate the existing freight settlement document if just one freight settlement	SAP ERP has already created a purchase order and an SES entry for

Life Cycle Status of FSD	System Action	Example
	<p>document exists for the freight order.</p> <ul style="list-style-type: none"> ○ On transfer of the freight settlement document to SAP ERP, delete the previously created purchase order and SES in SAP ERP. Create a new purchase order and SES for the recalculated amount. 	<p>USD 2000 before you resolved the dispute case.</p> <p>SAP ERP posts a cancellation for USD 2000 and a new posting for USD 2300.</p>
Cancelled	Create a new freight settlement document with the updated amount.	SAP TM creates a new freight settlement document for USD 2300.
Invoice Verified in SAP ERP	<p>Create a charge correction advice document for the delta amount.</p> <p>This covers a positive amount, where you need to pay an extra amount to your carrier, or a negative amount, where you need to recover an amount from your carrier.</p>	<p>SAP ERP has already created a purchase order and an SES entry for USD 2000 before you resolved the dispute case.</p> <p>SAP TM creates a charge correction advice document for USD 300.</p> <p>SAP ERP posts a reversal for USD 2000 and a new posting for USD 2300.</p>

- *Create New FSD for Delta Amount*

Life Cycle Status of FSD	System Action	Example
New/In Process/Ready for Accruals	Include the new charges and recalculate the existing freight settlement document if just one freight settlement document exists for the freight order.	SAP TM changes the charges in the freight settlement document from USD 2000 to USD 2300.
Accruals Posted/Invoice Verified in SAP ERP	<ul style="list-style-type: none"> ○ Create a new freight settlement document for a positive delta amount if the invoicing status of the freight order is <i>Partially Invoiced</i>. A positive amount is where you owe your carrier an extra amount as a result of the dispute resolution. ○ Create a charge correction advice document if you have a negative amount 	<ul style="list-style-type: none"> ○ SAP TM creates a new freight settlement document for the delta amount of USD 300. SAP ERP creates a new purchase order and SES entry for USD 300. ○ If the transportation charge had been updated to USD 1800 after you resolved the dispute case, SAP TM would have created a charge correction advice document for

Life Cycle Status of FSD	System Action	Example
	that you must recover from your carrier.	USD -200. SAP ERP would reverse the posting of USD 2000 and create a new posting for USD 1800.
Cancelled	Create a new freight settlement document with the updated amount.	SAP TM creates a new freight settlement document for USD 2300.

- *Reverse and Repost with New FSD*

Life Cycle Status of FSD	System Action	Example
New/ <i>In Process/Ready for Accruals</i>	Include the new charges and recalculate the existing freight settlement document if just one freight settlement document exists for the freight order.	SAP TM changes the charges in the freight settlement document from USD 2000 to USD 2300.
<i>Accruals Posted/Invoice Verified in SAP ERP</i>	<ul style="list-style-type: none"> ○ Create a new freight settlement document for a positive delta amount if the invoicing status of the freight order is <i>Partially Invoiced</i>. A positive amount is where you owe your carrier an extra amount as a result of the dispute resolution. ○ Create a charge correction advice document if you have a negative amount that you must recover from your carrier. 	<ul style="list-style-type: none"> ○ SAP ERP has already created a purchase order and an SES entry for USD 2000 before you resolved the dispute case. SAP TM creates a charge correction advice document for USD 300. SAP ERP posts a reversal for USD 2000 and a new posting for USD 2300. ○ If the transportation charge had been updated to USD 1800 after you resolved the dispute case, SAP TM would have created a charge correction advice document for USD -200. SAP ERP would reverse the posting of USD 2000 and create a new posting for USD 1800.
Cancelled	Create a new freight settlement document with the updated amount.	SAP TM creates a new freight settlement document for USD 2300.

-  Note

- Regardless of the SAP ERP update strategy, if a freight settlement document has the life cycle status *Transferred for Accruals* or *Cancellation Requested in SAP ERP* when you run the background function, the system reports an error. You must wait until SAP ERP updates the life cycle status in SAP TM to either *Accruals Posted* or *In Process* before you take further action. If the system updates the status to *In Process*, errors have occurred in SAP ERP.

- The system includes the new charges and recalculates the existing freight settlement document if just one freight settlement document exists for the freight order. If more than one freight settlement document already exists for the freight order, it does not calculate charges. Instead, on the NWBC screen, you must manually change and save and transfer the correct freight settlement document or generate a new freight settlement document for the changed freight charges.

End of the note.

Background Function to Publish Freight Settlement Dispute Cases

You can use a background function to publish freight settlement dispute cases in batches in the background. This function protects you against your service provider guessing and exploiting your tolerance settings. When you run the background function, you as a requester of transportation services confirm the decisions you make to accept, reject, or proposal changes for the relevant dispute cases. The system makes your decision visible to your service provider on the collaboration portal. For more information, see [Publication of Freight Settlement Dispute Cases \[Page 1267\]](#).

Background Function to Create and Transfer Freight Settlement Documents

You can include, exclude, or include only the freight orders for which all dispute cases are resolved when you create and transfer freight settlement documents in the background. For more information, see [Creation and Transfer of Freight Settlement Documents \[Page 1263\]](#).

More Information

[Freight Settlement Dispute Case \[Page 1044\]](#)

[Prerequisites for Dispute Management \[Page 1047\]](#)

[Features of Dispute Management \[Page 1052\]](#)

[Charge Correction Advice Management \[Page 1030\]](#)

For more information on SAP ERP, see SAP Help Portal at <http://help.sap.com/erp>. In SAP Library, choose ► SAP ERP Central Component ► Logistics ► Logistics - General (LO) ► Integration of SAP ERP with SAP Transportation Management.



Credit Memos

You can create a credit memo for the following business reasons:

- Damaged goods
- Delays in transports
- Service level agreements not met
- Overcharges for transportation service

The type of credit memo you create depends on your role in the transportation process. You can create the following credit memo types:

- A credit memo for a forwarding order to reflect the credit you provide as a logistics service provider (LSP) to your customer. Here you create a credit memo with reference to a forwarding settlement document. For more information, see [Credit Memos for Forwarding Orders \[Page 1068\]](#).
- A credit memo for a freight order to reflect the credit your carrier provides to you. Here you can create a credit memo with reference to a freight order, freight booking, or service order. For more information, see [Credit Memos for Freight Orders \[Page 1070\]](#).

You can transfer a credit memo to SAP ERP for processing. You can create more than one credit memo for a particular forwarding settlement document, freight order, freight booking, or service order. However at any given time, there can be only one credit memo for a particular forwarding settlement document, freight order, freight booking, or service order in SAP Transportation Management (SAP TM) that has not yet been transferred successfully to SAP ERP.

Prerequisites

In Customizing, you have to set up the process controller for use with settlement documents. For example, if you want to use a strategy to create or preprocess forwarding settlement documents differently than the standard way, you can define your own strategy using the process controller and assign it to a specific service. For more information, see *Customizing for Transportation Management* under ► *Settlement* ► *Configure Process Controller for Settlement*.

Features

Charges

The system displays the transportation charges that have been invoiced in the *Already Invoiced Amount* field. The system displays the difference between the amount that has been invoiced and the amounts credited in all credit memos entered against the settlement in the *Credit Remaining Amount* field.

You can enter a credit amount against each of the charge types up to the amount in the *Credit Remaining Amount* field. The system controls the credit amount you can provide because you cannot exceed the invoiced amount.

Cancellation

You can request that the credit memo is canceled at any time, even if the life cycle status is *Credit Memo Created in SAP ERP*. After you request cancellation, SAP ERP automatically

cancels the credit memo. If the credit memo is canceled, it has the life cycle status *Canceled*. If the credit memo cannot be canceled, it has the confirmation status *Credit Memo Cancellation Failed in SAP ERP*.

More Information

[Forwarding Settlement Document \[Page 989\]](#)

[Freight Settlement Document \[Page 1016\]](#)



Credit Memos for Forwarding Orders

You can use a credit memo to give a credit to a bill-to party in a forwarding settlement where you have over-invoiced for transportation services. You use a forwarding settlement document as a reference when you create a forwarding credit memo.

Prerequisites

- Types of credit memo and credit memo reason codes

In Customizing, you have defined a credit memo type that the system uses to automatically enter certain settings when you create a credit memo. You have also defined the reasons for why the credit memo is necessary. For more information, see *Customizing for Transportation Management* under ► Settlement ► Forwarding Settlement ► Define Credit Memo Reason Codes and Types for Forwarding SDs ▶.

- SAP ERP settings

If you use SAP ERP, in Customizing you have made the following settings:

- Defined category and subcategory codes
- Defined and assigned transportation charge types
- Mapped organizational units

For more information, in SAP ERP see *Customizing for Integration with Other SAP Components* under ► Transportation Management ► Invoice Integration ► Billing ▶.

- Forwarding settlement documents

The system contains a forwarding settlement document that is associated with one or more forwarding orders.

Features

Credit Memo Preview

You can preview a credit memo as it would appear in SAP ERP. The preview contains information from the credit memo and tax information from SAP ERP.

You can use the preview for credit memo documents that are at all life cycle statuses except the following:

- *Transferred for Credit Memo Creation in SAP ERP*
- *Cancellation Requested in SAP ERP*
- *Canceled*

The credit memo must also be consistent. In a preview, the system does not permanently store any data.

Activities

You can create a credit memo from a forwarding settlement document. You can access the credit memos from the forwarding settlement documents overview screen. The system creates the credit memo on the basis of the data in the associated forwarding settlement documents and displays the amount that has already been invoiced.

The forwarding settlement document you reference can be one of the following types:

- Individual forwarding settlement document that references just one forwarding order
- Collective forwarding settlement document that references more than one forwarding order

More Information

[Credit Memos \[Page 1066\]](#)



Credit Memos for Freight Orders

You can use a credit memo to get a credit from a carrier in a freight settlement where you have overpaid for transportation services. You use a freight order, freight booking, or a service order as a reference when you create a freight credit memo.

Note

For air freight bookings, you use a charge correction advice document (CCAD) to process changes in charges, including issuing a credit.

End of the note.

Prerequisites

- Master data for charge management

You have set up a freight agreement in the *Charge Management and Service Product Catalogs* component. The system automatically calculates the transportation charges based on an agreement. For more information, see [Charge Calculation](#).

- Types of credit memo and credit memo reason codes

In Customizing, you have defined a credit memo type that the system uses to automatically enter certain settings when you create a credit memo. You have also defined the reasons for why the credit memo is necessary. For more information, see *Customizing for Transportation Management* under *Settlement* *Freight Settlement* *Define Credit Memo Reason Codes and Types for Freight SDs* .

- Orders and bookings

The system contains one or more freight order, freight booking, or service order that has been invoiced by a freight settlement document.

Activities

You can create a credit memo from an individual freight order, freight booking, or service order, or from the freight order, freight booking, or service order overview screen. You can access the credit memos from the freight settlement documents overview screen.

The system creates the credit memo on the basis of the data in the associated freight settlement documents and displays the amount that has already been invoiced.

Example

The following table illustrates how the freight credit memo process works for an ocean freight booking:

Step in SAP TM	Amount in FSD / Freight Credit Memo (USD)	Step in SAP ERP	Comments
Total freight cost in ocean freight booking	2400	None	None

Step in SAP TM	Amount in FSD / Freight Credit Memo (USD)	Step in SAP ERP	Comments
Create the freight settlement document and transfer this to SAP ERP.	2400	Purchase order (PO) created, for example, PO1 with line 10. Service entry sheet (SES) created, for example, SES 1. Linked to PO1/10 with amount USD 2400.	Regular freight settlement document process
Update the booking to reflect the correction, for example, weight correction. New total freight cost in freight booking.	2000	None	None
Create the freight credit memo and transfer this to SAP ERP.	-400	SAP ERP posts a new amount of -400. PO, for example, PO2 with line 10, marked as returns item. SES created, for example, SES 2. Linked to PO2/10 with amount USD 400.	PO based on returns item created.

More Information

[Credit Memos \[Page 1066\]](#)



Internal Settlement

You can send an internal settlement document from an internal organization in your company to another internal organization to recover costs incurred in delivering transportation services for a forwarding order (see [Internal Settlement Management \[Page 1074\]](#)).

You can also create internal settlement documents to settle the cost of providing internal resources for freight orders (see [Internal Settlement for Resources \[Page 1077\]](#)).

In the standard internal settlement process, the internal settlement is between the purchasing organization of the freight order and the sales organization of the forwarding order. In the internal settlement process for resources, the settlement is between the organizations that own the resources that are used to execute the order and the purchasing organization of the freight order.

Prerequisites

- You have specified a forwarding settlement document type for internal settlement documents in Customizing for *Transportation Management*. For more information, see *Settlement* *Forwarding Settlement* *Define Forwarding Settlement Document Types*
- You have specified the general prerequisites for calculating charges. For more information, see [Charge Calculation](#).
- You have assigned a sales organization unit (cost sender organization) in SAP TM to an internal order or cost center in SAP ERP for cost distribution. For more information, see Customizing for *SAP ERP* under *Integration with Other mySAP.com Components* *Transportation Management* *Invoice Integration* *Mapping for Cost Distribution* *Assign TM Sales Org. Unit to Internal Order/Cost Center*
- You have assigned a purchase organization unit (cost receiver organization) in SAP TM to an internal order or cost center account in SAP ERP for cost distribution. For more information, see Customizing for *SAP ERP* under *Integration with Other mySAP.com Components* *Transportation Management* *Invoice Integration* *Invoicing* *Mapping of Organizational Units* *Assign TM Purchase Org. Unit to Internal Order/Cost Center*
- By default, the SAP TM system creates an [intercompany settlement](#) document for organizations that belong to different company codes. If you want to use an [intracompany settlement](#) for a company organization, you must select the *Intracompany Settlement* checkbox in the *Org. Data* tab page of the relevant organization structure. You can access the structure using transaction PPOCE.
- For intercompany settlements, you have specified the following settings in Customizing for *SAP ERP*:
 - Category and subcategory codes
 - Transportation charge types

You have also assigned the transportation charge types and mapped organizational units. For more information, see *Integration with Other mySAP.com Components* *Transportation Management* *Invoice Integration* *Billing*

- For intracompany settlements, you have mapped the SAP TM charge types to the SAP ERP primary cost elements. For more information, see *Integration with Other*

Features

Intercompany Settlements

When you transfer the internal settlement document to SAP ERP, the SAP ERP system creates an SD billing document.

Intracompany Settlements

When you transfer the settlement document, the SAP ERP system does not create an SD billing document. Instead it reposts the primary costs to an internal order or cost center. The SAP TM system performs the following tasks:

- Displays the accounting document in the document flow
- Uses internal settlements to move the cost of the forwarding order that contains the freight order or freight booking from the purchasing organization to the sales organization

More Information

For information about how SAP ERP handles internal settlements, see SAP Library for *SAP ERP* on SAP Help Portal at <http://help.sap.com/erp>. In SAP Library, choose ► *SAP ERP Enhancement Packages* > *ERP Central Component Enhancement Package 5* > *SAP ERP Central Component* > *Logistics* > *Logistics - General (LO)* > *Integration of SAP ERP with SAP Transportation Management*.



Internal Settlement Management

You can send an internal settlement document from an internal organization in your company to another internal organization to recover costs incurred in delivering transportation services for a forwarding order.

If the organizations involved belong to the same company code, the settlement is an intracompany settlement. If the organizations belong to different company codes, the settlement is an intercompany settlement.

Prerequisites

- You have specified an internal settlement rule in Customizing for *Transportation Management* under *Forwarding Order Management* *Define Stage Type Sequence for Movement Types*. A stage in a forwarding order must reach the execution status you specify here before you can create and edit internal settlements.
- For internal settlements (both intracompany and intercompany settlements), you must have an internal agreement in place between the purchasing organization (forwarding house) of the freight order or freight booking that is executing the stage, and the sales organization in the forwarding order.
- You have specified the all the relevant internal settlement prerequisites (see [Internal Settlement \[Page 1072\]](#)).

Activities

Determining the Appropriate Agreement

You perform planning on a forwarding order to finalize its execution. The forwarding order contains a breakdown of the stages you require to fulfill the order. Based on this breakdown, the system calculates the charges for the order. When it calculates charges it determines the appropriate internal agreement to use to perform the calculation.

Manually Creating an Internal Settlement Document

You can manually create an internal settlement document in the *Forwarding Orders for Internal Settlement* screen by selecting the following business documents:

- Appropriate freight order or freight booking
- Appropriate forwarding order in the details area of the screen. The freight order or freight booking executes this forwarding order

The system checks the following information in the forwarding order:

- Purchasing organization of the freight order or freight booking executing the stage
- Sales organization of the overall forwarding order

Depending on the internal organizations that are involved, the system creates internal settlements that are either intercompany or intracompany settlements.

Creating Multiple Internal Settlement Documents

You can also create multiple internal settlement documents using the *Mass Creation of Forwarding Settlement Documents* report, and selecting a category of *Internal Settlement Document*. To access the report, in SAP NetWeaver Business Client, choose *Application Administration* *Background Reports* *Create Forwarding Settlement Documents*.

Working with Forwarding Orders for Internal Settlement

You can display all the freight orders or freight bookings that contain forwarding orders that must be settled internally in the *Forwarding Orders for Internal Settlement* screen. The purchasing organization of the freight order or freight booking has settled with the carrier. The sales organization in the forwarding order has sold the transportation service to a customer. Now the purchasing organization needs to recover the costs of providing the transportation service from the sales organization.

The system displays the freight orders and freight bookings from the viewpoint of the purchasing organization. When you choose an individual line item that contains a freight order or freight booking in the worklist, the system displays the associated forwarding orders under the worklist.

Specifying a Forwarding House

You must specify the purchasing organization of the freight order or freight booking that is executing the stage as a forwarding house. The forwarding house acts as the organization in the internal agreement. The business partner of the sales organization in the forwarding order acts as the business partner in the agreement, and is treated as a customer of the forwarding house.

Example

A sales organization receives a forwarding order from a customer. The sales organization delegates the execution of the main carriage to an internal organization. This internal execution organization uses an internal settlement document to bill the sales organization that received the forwarding order, to recover the costs of executing the main carriage.

In Customizing, you have specified an internal settlement rule of *In Execution* in the *Define Stage Type Sequence for Movement Types* Customizing activity. When the execution status of the freight booking that executes the main carriage goes to *In Execution*, the main carriage of the forwarding order is ready for internal settlement. You can create the internal settlement document in the following ways:

- Manually from the *Forwarding Orders for Internal Settlement* screen
- Automatically, using the batch program

If the internal organization that executed the main carriage belongs to the same company code as the sales organization that received the forwarding order, the system creates an intracompany settlement. If the organizations belong to different company codes, the system creates intercompany settlements.

More Information

Subject	See
Using internal settlement documents to settle the costs of providing internal resources	Internal Settlement for Resources [Page 1077]

Subject	See
Role and structure of an agreement	Agreement [Page 970]
Using forwarding settlements	Forwarding Settlement [Page 1004]
Using cost distribution for logistics service providers (LSPs)	Cost Distribution for LSPs [Page 1037]



Internal Settlement for Resources

You can create internal settlement documents to recover costs for the internal resources you use in executing orders, for example, trailers and trucks.

Prerequisites

- You have enabled a freight order type for internal settlements if you use your own resources to execute freight orders. You have also assigned the internal settlement document type that you use to create internal settlements for your own resources to the relevant freight order type. For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶.
- For freight orders in which you have used your own resources, you must have an internal agreement in place between the organizational unit assigned to the resource (forwarding house, sales organization, sales group, or sales office) and the business partner assigned to the purchasing organization or purchasing group of the freight order that is using the resource.
- You have specified *Resource* in the *Resource* field on the *General Data* tab page of the relevant internal agreement.
- You have put in place all the relevant prerequisites for managing internal settlement documents (see [Internal Settlement Management \[Page 1074\]](#)).

Features

You can use an internal settlement for a resource when you are a logistics service provider and you do not subcontract the movement of goods to a carrier. Instead, you move the goods using your own resources, such as trucks and trailers.

Different organizations in your company can provide the resources. The organizations that provide the resources need to get paid. You can use the internal settlement for resources feature to enable this payment.

For example, you have a trailer that organization 1 provides, and a truck and driver that organization 2 provides. Organization 3 is the purchasing organization that manages the freight order. Organizations 1 and 2 create internal settlements on organization 3 to recover the cost of providing their resources. Usually, you base an internal settlement document on a forwarding order. However, for the freight orders that you execute using your own resources, you base the internal settlement on a freight order.

Activities

You perform planning on a forwarding order to finalize its execution. You create freight orders to execute the forwarding orders using your own resources, such as trailers or trucks. You create internal settlement documents to settle the costs of using your own resources.

You can manually create an internal settlement document for a resource in a freight order by choosing ► *Follow Up* ► *Create Internal Settlement Document* ▶.

You can also create multiple internal settlement documents using the *Mass Creation of Freight Settlement Documents* report, and selecting a create option of Internal Settlement Document. To

access the report, in SAP NetWeaver Business Client, choose  Application Administration > Background Reports > Create Freight Settlement Documents.

The system checks the following information in the freight order:

- Organizational unit that is assigned to the resource
- Purchasing organization of the overall freight order

Depending on the internal organizations that are involved, the system creates an internal settlement that is either an intercompany settlement or an intracompany settlement. If the organizational unit of the resource and the purchase organization of the freight order belong to the same company code, the system creates an intracompany settlement. If the organizations belong to different company codes, the system creates an intercompany settlement.

The system displays a list of the resources that you include in the particular internal settlement document.



Example

A sales organization receives a forwarding order from a customer. The sales organization delegates the execution of the main carriage to an internal purchasing organization. The purchasing organization uses internal resources, such as trailers and trucks, that are assigned to other internal organizations to plan and execute the order. The forwarding order is executed using the internal resources. The organizations that own the trucks and trailers bill the purchasing organization of the freight order to recover the costs of providing the trucks and trailers.

End of the example.

More Information

Topic	Link
Overview of internal settlement document management	Internal Settlement Management [Page 1074]
Role and structure of agreements	Agreement [Page 970]
Role and structure of trailer units	Trailer Unit
Creating, editing, and displaying trailer units	Creating and Editing Trailer Units



Split Criteria in Settlement Document Creation

When you create a collective forwarding settlement document or freight settlement document, the system attempts to combine the settlement for the forwarding orders or freight orders you have selected into a single forwarding settlement document or freight settlement document.

However, the split criteria arise when particular conditions are different between the orders the system is trying to combine. As a result, the system creates multiple settlement documents.

The system makes a split in no particular order of priority.

Features

Split Criteria for Forwarding Settlement Documents

The system uses the following split criteria when it attempts to create a collective forwarding settlement document:

- Bill-to party
- Payer
- Ordering party
- Payment term
- Credit segment
- Document currency
- Source location
- Destination location
- Calculation level
- Stage, if you specify the *Stage Split* setting in the *Define Settlement Profile* Customizing activity. For more information, see Customizing for *Transportation Management* under ► *Settlement*.
- Settlement group, where you group the charge types that you want to settle at the same time in your process. For more information, see [Flexible Creation of Forwarding Settlements \[Page 1011\]](#).

Split Criteria for Freight Settlement Documents

The system uses the following split criteria when it attempts to create a collective freight settlement document:

- Carrier or additional agreement party
- Invoicing party
- Payee
- Payment term

- Document currency
- Calculation level
- Stage, if you specify the *Stage Split* setting in the *Define Settlement Profile* Customizing activity.

Example

You have two forwarding orders that you want to combine into one forwarding settlement document. You select the orders and select the combine option to create the settlement documents in the worklists screen. However, the bill-to party in the first order does not match the bill-to party in the second order. In this case, the system creates two settlement documents.

More Information

Topic	Link
Freight settlements	Freight Settlement [Page 1019]
Forwarding settlements	Forwarding Settlement [Page 1004]
Creating a forwarding order	Creation of a Forwarding Order
Working with freight orders	Creation and Editing of Freight Orders
Working with freight bookings	Creation and Editing of Freight Bookings



Collaboration Portal

The SAP Transportation Management collaboration portal for carriers (SAP TM collaboration portal) supports collaborative business processes.

As a carrier working with several shippers that use the SAP TM collaboration portal, you have separate access to each of your shippers. In each case, you can work only with this one shipper.

The shipper can provide you with the following areas in the SAP TM collaboration portal:

- In the *Freight Order Management* area, you can take part in a tendering process started by a shipper. You can view your shipper's freight requests for quotation and submit freight quotations to the shipper. You can accept, change, or reject the shipper's freight requests for quotation.

You can report planned and unexpected events for a freight order as well as enter deviating quantities.

For more information, see [Freight Order Management \(Collaboration Portal\) \[Page 1084\]](#).

- In the *Freight Settlement* area, you can enter the differences in the logistical item quantities or charge amounts in a freight order and create a freight settlement dispute case against the shipper.

For more information, see [Freight Settlement \[Page 1098\]](#).

- In the *Freight Agreement Management* area, you can respond to your shipper's freight agreement RFQs with your rates for the transportation services.

For more information, see [Freight Agreement Management \(Collaboration Portal\) \[Page 1105\]](#).

Note

To improve readability, this documentation is aimed at a carrier who works with a shipper. However, it also applies to a carrier who works with a logistics service provider.

End of the note.



User Settings (Collaboration Portal)

In the user settings in the upper right of the screen, you can make general and area-specific settings under *Settings*.

General Settings

You can set your time zone and specify a unit of measurement for distances.

You can reset the personal settings that you made in the different areas of the SAP Transportation Management collaboration portal. The default settings are then reinstated for the following:

- Column sequence
- Column width
- Column visibility
- Sort sequence
- Filter by columns

Freight Order Management

You can specify the number of days in the past the start date of the execution of freight RFQs must lie so that the freight RFQs are still displayed.

You can specify the number of days in the past the start date of the execution of freight orders must lie so that the freight orders are still displayed.

You can specify whether the individual locations are displayed to you on a map.

Freight Settlement

You can specify the number of days in the past the departure date of the freight order must lie so that the freight order is still displayed.

Freight Agreement Management

You can specify the number of days in the past the deadline for responding to freight agreement RFQs must lie so that the freight agreement RFQs are still displayed.

More Information

For more information about personalization, see [Personalization in Freight Order Management \(Coll. Portal\) \[Page 1085\]](#), [Personalization in Freight Settlement \(Collaboration Portal\) \[Page 1099\]](#), and [Personalization in Freight Agreement Management \(Coll. Portal\) \[Page 1106\]](#).



Home (Collaboration Portal)

As a carrier, you enter the SAP Transportation Management collaboration portal through the *Home* screen. This screen displays a worklist with the key performance indicators (KPIs) for the available areas in the form of tiles. From the tiles, you can navigate to the individual areas to continue your work.

You can see only the areas that are relevant for you.

Features

The KPIs show how many business objects of a certain kind have a specific status.

The following KPIs are available for the different areas:

Freight Order Management

- Open freight RFQs: the number of freight RFQs to which you can respond with a freight quotation
- Pending freight quotations: the number of freight quotations that you have submitted to the shipper and for which a decision about the award is pending
- Open freight orders for execution: the number of open freight orders for which you still have to report at least one event

Freight Settlement

- Disputes to be approved: the number of freight orders for which you have created dispute cases and for which the shipper has already decided that you have to accept or reject
- Submitted disputes: the number of freight orders for which you have created dispute cases and for which the shipper has not yet made a decision

Freight Agreement Management

- Open freight agreement RFQs: the number of freight agreement RFQs for which you have not yet submitted your rates to the shipper
- Freight agreement RFQs that were submitted with errors: the number of freight agreement RFQs that you have submitted to the shipper and that contain errors (for example, incorrect file format, corrupt file, or incorrect bid structure)



Freight Order Management (Collaboration Portal)

The following functions are available in freight order management:

- [Tendering \(Collaboration Portal\) \[Page 1087\]](#)
- [Event Handling \(Collaboration Portal\) \[Page 1094\]](#)



Personalization in Freight Order Management (Coll. Portal)

In freight order management there are several ways in which you can personalize your settings. The settings enable you to adjust the layout and selection of data to meet your own requirements.

Features

Table View and Detail View

When you log on, the view that was displayed when you last logged off is displayed again (table view or detail view). On mobile devices, the detail view is always displayed.

Personalizing the Table View

The table view enables you to configure the following options for freight RFQs, freight quotations, and freight orders:

- Filter:

When you log on, the status quick filter that was active when you last logged out is applied again. The system also reapplies the filter values that were set for individual columns.

- Sort sequence:

The system retains the sort sequence for the individual columns (*ascending* or *descending*).

- Column width:

The system retains the width of the individual columns.

- Column sequence:

When you log on, the column sequence is the same as when you last logged out. You can change the sequence of the columns.

- Column visibility:

You can show or hide columns.

Personalizing the Detail View

The detail view enables you to configure the following options for freight RFQs, freight quotations, and freight orders:

- Quick filter:

When you log on, the status quick filter that was active when you last logged out is applied again.

- Sort sequence:

When you log on, the system retains the sort sequence for a column (*ascending* or *descending*) that was set when you last logged out.

Personalizing the Cargo Items

In the view containing the cargo items, the system displays the cargo items for each stop by default. However, you can choose to hide these cargo items. If the cargo items were hidden when you last logged out, they remain hidden when you log in again. The settings that control whether cargo items are shown or hidden apply in the same way to the Tendering and Event Handling areas. This means that the same setting always applies to both areas.

You can change the width of the individual columns in the details of the cargo item table. You can also change the column sequence and show or hide individual columns.

If you personalize one of the tables containing cargo items, your settings are applied to all of the tables in the Tendering or Event Handling area. This means that you can select different settings for the two areas.

You can also change the column sequence for the tables in the dialog for accepting a freight RFQ with changes.

Personalizing the Table Containing Attachments

The *Attachments* table can be personalized as follows:

- Sort sequence:
You can sort the sequence for a column (*Ascending* or *Descending*).
- Column width:
You can adjust the width of the individual columns.
- Column sequence:
You can change the sequence of the columns.
- Column visibility:
You can show or hide columns.

The system automatically saves your settings.

More Information

For more information about applying sort sequences and filters, see [Freight RFQ \(Collaboration Portal\) \[Page 1088\]](#) and [Freight Quotation \(Collaboration Portal\) \[Page 1090\]](#).



Tendering (Collaboration Portal)

As a carrier, you can display the freight requests for quotation (RFQs) that you have received from a shipper. You can also display the freight quotations that you submitted to your shipper for a specific freight RFQ.

If you do not make any changes you can accept one or more freight RFQs. If you make changes you can accept only one freight RFQ. You can reject one or more freight RFQs and provide a reason for rejection. Furthermore, you can display the details about the tendered freight order, such as item details, location information, and business partner.

More Information

The business process of tendering in the *Freight Order Management* area in the SAP Transportation Management collaboration portal corresponds to the tendering process in the standard SAP TM system. For more information as a shipper, see [Freight Tendering](#) and [Tendering](#).



Freight Request for Quotation (Collaboration Portal)

On the *Freight Request for Quotation* screen, you can access the functions described below.

Filter

From the toolbar, you can apply the quick filter to filter freight RFQs by their status (*open*, *closed*, *all*).

In the table view, you can apply a filter to those fields that support the filter function by entering a filter value in accordance with the SAP UI5 standard. You can show or hide individual columns and change their sequence by using drag and drop.

To remove the filter, delete the value from the input field and press ENTER.

Search

You can find freight RFQs using the search field in the toolbar. The system returns all freight RFQs that contain the search term in a field (fuzzy search) irrespective of whether the field is shown or hidden. If you want to delete the search term, click the X at the end of the search field.

Sort

If a field can be sorted, you can display the contents of the individual columns in ascending or descending order.

- To do so in the detail view, place the cursor on a column header and press the primary mouse button. Alternatively, press ENTER when the focus is on the UI element. If you repeat the operation, the sort sequence is reversed.
- To do so in the table view, place the cursor on a column header and press the primary mouse button. Then select the required sort option (*Sort Ascending* or *Sort Descending*). If you want to sort by several columns, press and hold CTRL.

Business Functions

On the *Freight Requests for Quotation* screen, you can view all freight requests for quotation that you have received from a specific shipper. You can display open and closed freight RFQs.

You have the following options:

- You can accept one or more freight RFQs at the same time.
- You can reject one or more freight RFQs at the same time and specify a reason for rejection.
- You can accept a freight RFQ with changes.
- You can view the stop sequence and the tendering details (cargo information, locations, and business partners).
- You can display the source location and destination location of a freight RFQ on a map.
- You can view the lowest suggested price submitted by another carrier.

 Note

Quotation-related information in the freight RFQ refers to the freight quotation that was most recently received.

End of the note.

You can export the content of a freight RFQ from the table view to a Microsoft Excel file. If you are using Apple's Web browser "Safari", you have to add the ending .xls to the exported file before you can open it.

More Information

[Personalization in Freight Order Management \(Coll. Portal\) \[Page 1085\]](#)



Freight Quotation (Collaboration Portal)

On the *Freight Quotation* screen, you can access the functions described below.

Filter

From the toolbar, you can apply the quick filter to filter freight quotations by the status of the associated freight request for quotation (*Awarded*, *Pending*, *Rejected*, and *All*).

In the table view, you can apply a filter to those fields that support the filter function by entering a filter value in accordance with the SAP UI5 standard. You can show or hide individual columns and change their sequence by using drag and drop. To remove the filter, delete the value from the input field and press ENTER.

Search

You can find freight quotations using the search field in the toolbar. The system returns all freight quotations that contain the search term in a field (fuzzy search) irrespective of whether the field is shown or hidden. If you want to delete the search term, click the cross at the end of the search field.

Sort

If a field can be sorted, you can display the contents of the individual columns in ascending or descending order.

- To do so in the detail view, place the cursor on a column header and press the primary mouse button. Alternatively, press ENTER when the focus is on the UI element. If you repeat the operation, the sort sequence is reversed.
- To do so in the table view, place the cursor on a column header and press the primary mouse button. Then select the required sort option (*Sort Ascending* or *Sort Descending*). If you want to sort by several columns, press and hold CTRL.

Business Functions

You can display all of the freight quotations that you have sent to a shipper. If you want to display information about a specific freight quotation in the detail view, you must select a single row.

If you have accepted a freight RFQ with changes, your suggested price is shown on the freight quotation as the submitted price. On the *Freight Request for Quotation* screen, the system always displays the information from the freight RFQ most recently submitted.

You can display the source location and destination location of a freight quotation on a map.

You can view the lowest suggested price submitted by another carrier.

You can export the content of a freight quotation from the table view to a Microsoft Excel file. If you are using Apple's Web browser "Safari", you have to add the ending `.xls` to the exported file before you can open it.

More Information

[Personalization in Freight Order Management \(Coll. Portal\) \[Page 1085\]](#)



Stop Sequence (Collaboration Portal)

The stop sequence view enables you to see which cargo items were loaded and unloaded at each stop.

Features

For each stop in the stop sequence, you can view the expected arrival and departure times, as well as the gross weight and volume of the truck once the loading or unloading operation has been completed at a specific location.

You can also view the weight, volume, quantity, and dimensions for each separate cargo item, and see whether the item is classified as dangerous goods. You can also see whether each cargo item is to be loaded or unloaded at the specific location.

On the *Freight Requests for Quotation* screen, the table view and detail view show the calculated gross weight and volume for the entire freight order. You can view the calculated quantity in the table view only.



Note

The information for the stops in the stop sequence view applies only to one freight RFQ, even if you access it from the freight quotation. The information about the freight quotation refers to the quotation most recently submitted.

End of the note.

The system transfers the quantities from the freight order using the following logic:

- If the actual quantity is specified, this quantity is used.
- If the actual quantity is not specified, the system takes into account the planned quantities.
- If neither the actual nor the planned quantity is specified, the system does not display anything.
- If both the planned and the actual quantities are specified, the system transfers all of the actual quantities.

Actual and planned quantities are not combined.

The system also transfers the dimensions (height, width, and depth) and the calculated cargo information (weight, volume, and quantity) from the freight order.

The start and end dates are requested dates for each location that the shipper specified in the freight order. If the shipper has not entered a requested date, the system displays the acceptable dates in the stop sequence.



Requested Dates and Acceptable Dates (Collaboration Portal)

The shipper specifies a requested start date and a requested end date in the freight order. The shipper can also enter the earliest acceptable start date and the latest acceptable end date. The system transfers these dates to the freight RFQ as follows:

- If the earliest acceptable start date and latest acceptable end date have been specified, these dates are copied to the freight RFQ.
- If only the requested dates have been specified, these dates are copied to the freight RFQ.



Acceptance or Rejection of a Freight RFQ (Coll. Portal)

When your shipper sends a freight request for quotation (RFQ), you can accept it without making any changes, accept it with changes, or reject it.

Accepting Freight RFQ Without Changes

If you are in agreement with the freight RFQ, you can accept it without making any changes.

Accepting Freight RFQ with Changes

Depending on the tendering settings, you can use the following functions:

- If you want to accept a freight RFQ with changes, you can change the price and dates. You can suggest your own price in relation to the price limit of the shipper. You can change both the amount and the currency. Your suggested price appears on the freight quotation as the submitted price.
- You can overwrite dates (start and end date) requested by the shipper. These appear on the freight quotation as the submitted dates. Acceptable dates are fixed limits defined by the shipper and are used to delimit the requested dates. You cannot change the acceptable dates.

Rejecting a Freight RFQ

If you reject a freight RFQ, you can specify a rejection reason.

If you reject several freight RFQs at the same time, each one is assigned the same rejection reason.

More Information

For more information as a shipper, see [Acceptance or Rejection of a Freight Request for Quotation](#).



Event Handling (Collaboration Portal)

As a carrier, you can report expected (planned) and unexpected events related to a freight order or the stops of a freight order, to your shipper. You can filter the freight orders by their status, and select the individual freight order for which you want to report an event, such as *Arrival* or *Loading Begin* (for an expected event), or *Delay* (for an unexpected event).

You can add comments and choose a reason for the event. Also, you can upload attachments and add notes to the freight order.

You can display the locations where the events occur on a map, or you can display the sequence of locations in a numbered list.

If there is a discrepancy between the quantity given in the freight order and the actual quantity, you can report this discrepancy by entering the actual quantity.

More Information

For more information about the integration with SAP Event Management as a shipper, see [Integration with SAP Event Management \[Page 1112\]](#) and [Tracking of Freight Orders and Freight Bookings \[Page 1115\]](#).



Execution of Freight Orders (Collaboration Portal)

As a carrier, you can report planned and unexpected events related to a freight order, to your shipper.

Features

Under *Freight Order Management* *Freight Orders for Execution* you can access the functions described below.

Filter

You can apply the quick filter in the toolbar to filter the freight orders by the status of the event confirmation:

- Open
The system displays the freight orders for which you have not yet reported all the planned events.
- Closed
The system displays the freight orders for which you have already reported all the planned events.
- Canceled
The system displays the freight orders that were once assigned to you and that have since been canceled by the shipper.
- All
The system displays all the freight orders.

In the table view, you can apply a filter to those fields that support the filter function by entering a filter value in accordance with the SAP UI5 standard. You can show or hide individual columns and change their sequence by using drag and drop. To remove the filter, delete the value from the input field and press ENTER.

Search

You can search for freight orders using the search field in the toolbar. The system returns all freight orders that contain the search term in a field (fuzzy search) irrespective of whether the field is shown or hidden. If you want to delete the search term, click the cross at the end of the search field.

Sort

If a field can be sorted, you can display the contents of the individual columns in ascending or descending order.

- To do so in the detail view, place the cursor on a column header and press the primary mouse button. Alternatively, press ENTER when the focus is on the UI element. If you repeat the operation, the sort sequence is reversed.

- To do so in the table view, place the cursor on a column header and press the primary mouse button. Then select the required sort option (sort ascending or sort descending). If you want to sort by several columns, press and hold CTRL.

Map-Based View and Location-Based View

In the user settings you can specify whether you want to display the locations where the events occur in a map-based view or in a location-based view.

- In the map-based view, the location of each event is displayed on a map and you can view the sequence of events.

If locations are blue, all events have already been reported. If locations are yellow, there are still events to be reported. You can select individual locations and report events for the selected location.

- In the location-based view, the individual events are numbered according to their sequence.

The planned date and time is displayed for each event (loading start, loading end, departure, arrival, unloading start, unloading end). You can report the date with the time at which the event actually occurred. You can add a comment and a reason for each event.

Planned Events

In the detail view and in the table view, the next planned (open) event is displayed for each freight order together with the affected locations and the date and time. When you select a single row you can report the next open event directly.

You can also report planned events in the freight order details. Here you can report not only the next planned event but also all open events.

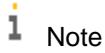


The system displays planned events only if your shipper has set up an integration with SAP Event Management in the back-end system.

End of the note.

Unplanned Events

In the freight order details, you can report unplanned events on the *Events* tab page that affect an individual location or the transportation as a whole (for example, a delay). You can enter the date and time, a comment, and a reason for each event.



You cannot update an unplanned event once it has been created.

End of the note.

Attachments

In the freight order details, you can upload attachments on the *Events* tab page (for example, loading instructions or proof of delivery).

Notes

In the freight order details, you can add notes to a freight order.

Quantity Discrepancies

In the freight order details, you can report quantity discrepancies on the *Cargo tab* page by entering the actual quantity.

Export to Microsoft Excel

You can export the freight orders with their events from the table view to a Microsoft Excel file. If you are using Apple's Web browser "Safari", you have to add the ending .xls to the exported file before you can open it.

Activities

- Cancel
The system closes the current screen without saving any changes.
- Confirm next
You can confirm the next planned event.
- Confirm
You can confirm the event. When you do this you can report the date and time when the event actually occurred and enter a comment and a reason.
- Add note
You can add a note.
- Upload
You can upload attachments.
- Add event
 - Location events: You can add a new, unplanned event for an individual location.
 - Tour events: You can add a new, unplanned event that affects the entire transportation.
- Report discrepancy
You can report quantity discrepancies.
- Export
You can export freight orders to a Microsoft Excel file.



Freight Settlement (Collaboration Portal)

As a carrier, you can have differences between what your shipper expects to pay against what you expect to be paid. You can resolve these differences in a collaborative way with your shipper by seeking clarification and agreement on the disputed items. To facilitate close collaboration, your shipper has shared information on the charges and logistics quantities from their freight orders, on the SAP Transportation Management collaboration portal.

You can use the *Freight Settlement* *Freight Orders for Self-Billing* screens if you have an automatic payment process in place with your shipper. You can create a dispute case for an existing freight cost and logistics quantity, or for an additional freight cost.

You cannot use the dispute management process for freight orders that contain one or more additional agreement parties, or for freight orders with more than one invoicing carrier (for example, in rule 11 scenarios for rail freight orders).

More Information

Role	More Information
Carrier	Self-Billing (Collaboration Portal) [Page 1101]
Carrier	Dispute Case Management for Self-Billing (Collaboration Portal) [Page 1102]
Shipper	Dispute Management for Freight Settlements [Page 1041]



Personalization in Freight Settlement (Collaboration Portal)

The *Freight Orders for Self-Billing* screen offers several ways in which you can personalize your settings. The settings enable you to adjust the layout and selection of data to meet your own requirements.

Features

Table View and Detail View

When you log in, the view that was displayed when you last logged out is displayed again (table view or detail view). On mobile devices, the detail view is always displayed.

Personalizing the Table View

The table view enables you to configure the following options for freight orders:

- Filter

When you log in, the status quick filter that was active when you last logged out is applied again. The system also reapplies the filter values that were set for individual columns.

- Sort sequence

The system retains the sort sequence for the individual columns (ascending or descending).

- Column width

The system retains the width of the individual columns from when you last logged out. You can adjust the width of the individual columns.

- Column sequence

When you log in, the column sequence is the same as when you last logged out. You can change the sequence of the columns.

- Column visibility

You can show or hide columns.

Personalizing the Detail View

The detail view enables you to configure the following options for freight orders:

- Quick filter

When you log in, the status quick filter that was active when you last logged out is applied again.

- Sort sequence

When you log in, the system retains the sort sequence for a column (ascending or descending) that was set when you last logged out.

Personalizing the Charge Details

In the view containing the charge details, you can change the width of the individual columns in the *Charges* table.

The *Attachments* table enables you to configure the following options for the documents:

- Sort sequence
 - You can sort the sequence for a column (ascending or descending).
- Column width
 - You can adjust the width of the individual columns.
- Column sequence
 - You can change the sequence of the columns.
- Column visibility
 - You can show or hide individual columns.

The system automatically saves your settings.

More Information

[User Settings \(Collaboration Portal\) \[Page 1082\]](#)



Self-Billing (Collaboration Portal)

You can have a billing process in place with your shipper where you do not submit an invoice to your shipper for the transportation services you provide. Instead, your shipper pays you automatically in a self-billing process, based on the information in the freight order.

You can use *Freight Orders for Self-Billing* on the collaboration portal to resolve a discrepancy in the shipper's freight order, before the shipper creates a self-billing invoice. You can use the self-billing features to create a dispute case against a charge amount and a logistics quantity in the shipper's freight order. For example, depending on the settings your shipper specifies, you can claim for an unplanned detention charge or a different distance in a freight order.

In SAP TM, the shipper can accept, reject, or propose a change to your proposal in the dispute case. The system displays the shipper's decision on the *Freight Orders for Self-Billing* screens, where you can accept the shipper's proposal or resubmit a new proposal.

If you accept a dispute case, the system updates the relevant charge amount or logistics quantity in the shipper's freight order.

The system only displays the freight orders that you can work on. You can open just one dispute case against a freight order at any one time.

When you resolve disputes early, you have the following business advantages:

- Inclusion of changes and unplanned activities in one billing run
- Accuracy in payment

More Information

[Dispute Case Management for Self-Billing \(Collaboration Portal\) \[Page 1102\]](#)



Dispute Case Management for Self-Billing (Collaboration Portal)

Filters

- No Dispute

The system displays the following freight orders from the shipper's system:

- Freight orders for which you have not created disputes cases
- Freight orders for which you created dispute cases where the dispute cases are now resolved

- Submitted

The system displays the freight orders from the shipper's system against which you have created a dispute case, and on which you are awaiting a decision from the shipper.

- For Approval

The system displays the freight orders from the shipper's system against which you have created a dispute case, and on which the shipper has made a decision. You must take further action on these dispute cases because the shipper either rejected your proposal or has submitted their own proposal.

Show Details

To show the details of a freight order, you must choose one of the freight orders. You cannot edit the freight order details when you choose this button. You can only display the details of a freight order against which you have not already created a dispute, or that has had the associated dispute case approved.

Create Dispute

You must select just one of the freight orders to create a dispute case.

You cannot create a dispute case for a freight order that already has an existing dispute case that is in one of the following conditions:

- Submitted by you to the shipper for action
- Awaiting your approval

You can enter change values for each of the rate amount (*Amount*), price unit (*Unit Price*), and unit of measure (*UoM*) fields, and also to the quantity field.

Depending on the settings your shipper enables, you can create a new charge type. You can upload files to support your case. You can also add a note to communicate the reason for your change to the shipper.

Calculate Charges

You must calculate charges to finalize your proposed changes and to review the impact of your changes on the final amount of the charge line and total amount of the freight order. The system

displays an error if you submit your proposal without calculating charges. The system uses the charge settings from the shipper's system to calculate charges, and takes into account your proposed changes such as rate amount and logistics quantity.

Submit Proposal

When you submit a proposal, the system creates a dispute case in the shipper's system.

Shipper Accepts Your Proposal

The system displays the dispute cases that have been approved by the shipper under the *No Dispute* filter. When the shipper approves your proposal, the system uses the rate amount and quantity changes you proposed to update the freight order in the shipper's system. The system changes the status of the dispute case from *Awaiting Shipper Approval* to *Resolved*.

Submit New Proposals for an Existing Dispute Case

Your shipper reviews your dispute case proposal. The shipper either accepts or rejects your proposal, or sends a counter proposal back to you for review. The system displays the freight orders that contain a proposal from the shipper under the *For Approval* filter.

The shipper's proposal appears in the rate amount (*Amount*), price unit (*Unit Price*), unit of measure (*UoM*), and *Quantity* fields. Your original proposed change appears in the change fields.

You can overwrite your original proposal in the change fields with a fresh proposal. You can also upload new files and add new notes. The system keeps the original files and notes from both you and the shipper. You must calculate charges and submit your new proposal.

Actions

- Cancel

The system closes the current screen without saving any changes.

- Accept

You accept the proposal from the shipper. The system changes the dispute case status to *Accepted*. The system updates the freight order with the rate and quantity values entered by the shipper. However, the system does not update header information, such as gross weight, gross volume, and total distance. Instead, the system uses the updated header information when calculating charges. This is illustrated in the following examples:

- You dispute the total distance in a freight order. You traveled an extra 10 km, making the total distance 510 km and not 500 km as contained in the freight order. Your shipper accepts your dispute. The system does not update the total distance in the stages or header of the freight order. Instead the system uses the updated distance of 510 km when calculating charges.
 - You create a dispute for an additional demurrage charge and you add a new charge line to the freight order. Your shipper accepts the dispute. At the rate of USD 50 per hour, this amounts to a total of USD 200 for 4 hours. The system updates the freight order with the new charge line for demurrage at USD 50 per hour, amounting to USD 200 for 4 hours.
- Edit Proposal.

You can edit the proposal your shipper has made. You can enter new changes and resubmit the dispute case.

- Calculate Charges

The system calculates the charges for the changes you entered, based on the charge information in the shipper's system.

- Submit Proposal

The system submits (or resubmits) your proposed changes to the shipper for approval.

Export to Microsoft Excel

You can export freight orders for self-billing to a Microsoft Excel file. If you use the Apple browser Safari, to open the exported file you must add the filename extension .x/s to the file.

More Information

[Self-Billing \(Collaboration Portal\) \[Page 1101\]](#)



Freight Agreement Management (Collaboration Portal)

As a carrier, you receive a freight agreement RFQ from your shipper asking you to bid for the provision of future transportation services in a trade lane. In the SAP Transportation Management collaboration portal, you can respond to your shipper with your rates for the transportation services.

To submit your rates, you download the bid structure file (`Bid_Structure.xlsx`), enter your rates, and save the file as `RFQ_Response.xlsx`. You upload this file, and any other files that support your rate quotation, to the freight agreement RFQ. You can then submit your rates to your shipper.

More Information

For more information about freight agreement management as a shipper, see [Strategic Freight Procurement \[Page 916\]](#) and [Freight Agreement RFQs on the SAP TM Collaboration Portal \[Page 940\]](#).



Personalization in Freight Agreement Management (Coll. Portal)

In *Freight Agreement Management* there are several ways in which you can personalize your settings. The settings enable you to adjust the layout and selection of data to meet your own requirements.

Features

Table View and Detail View

When you log on, the view that was displayed when you last logged off is displayed again (table view or detail view). On mobile devices, the detail view is always displayed.

Personalizing the Table View

The table view enables you to configure the following options for freight agreement RFQs:

- Filter: When you log on, the status quick filter that was active when you last logged out is applied again. The system also reapplies the filter values that were set for individual columns.
- Sort sequence: The system retains the sort sequence for the individual columns (ascending or descending).
- Column width: The system retains the width of the individual columns.
- Column sequence: When you log on, the column sequence is the same as when you last logged out. You can change the sequence of the columns.
- Column visibility: You can show or hide columns.

Personalizing the Detail View

The detail view enables you to configure the following options:

- Quick filter: When you log on, the status quick filter that was active when you last logged out is applied again.
- Sort sequence: When you log on, the system retains the sort sequence for a column (ascending or descending) that was set when you last logged out.

Personalizing the Details of Freight Agreement RFQs

In the view containing the details of freight agreement RFQs, you can configure the following options:

- You can change the individual column widths.
- You can change the column sequence using drag and drop.
- You can show or hide individual columns.

More Information

For more information about user settings, see [User Settings \(Collaboration Portal\) \[Page 1082\]](#).



Freight Agreement RFQ (Collaboration Portal)

In freight agreement management you can negotiate freight agreements with your shipper. You evaluate the shipper's individual RFQs and respond to these individual RFQs with your rates for the transportation services.

The following functions are available for the freight agreement RFQ:

Filter

From the toolbar, you can apply the quick filter to filter freight agreement RFQs by their status (*Open*, *Submitted*, *Closed*, *All*).

In the table view, you can apply a filter to those fields that support the filter function by entering a filter value in accordance with the SAP UI5 standard. You can show or hide individual columns and change their sequence by using drag and drop. To remove the filter, delete the value from the input field and press ENTER.

Search

You can find freight agreement RFQs using the search field in the toolbar. The system returns all freight RFQs that contain the search term in a field (fuzzy search) irrespective of whether the field is shown or hidden. If you want to delete the search term, click the X at the end of the search field.

Sort

If a field can be sorted, you can display the contents of the individual columns in ascending or descending order.

- To do so in the detail view, place the cursor on a column header and press the primary mouse button. Alternatively, press ENTER when the focus is on the UI element. If you repeat the operation, the sort sequence is reversed.
- To do so in the table view, place the cursor on a column header and press the primary mouse button. Then select the required sort option (*Sort Ascending* or *Sort Descending*). If you want to sort by several columns, press and hold CTRL.

Business Functions

You can view all freight agreement RFQs that you have received from a specific shipper. You can apply the quick filter to restrict the number of freight agreement RFQs displayed. The system displays the exact status of each freight agreement RFQ (*Open*, *Submitted*, *Submitted with Errors*, *Response Uploaded*, *Closed*, *Canceled*), the deadline for providing a response, and the validity period of the freight agreement.

You can navigate to the details of the freight agreement RFQ using the ID of the freight agreement RFQ. The negotiation round of the freight agreement RFQ, the version number of the freight agreement RFQ, and any additional notes are also displayed here.

You can also review of a list of documents that relate to a freight agreement RFQ. For more information about uploading and downloading documents, see [File Upload and File Download \(Collaboration Portal\) \[Page 1109\]](#).



File Upload and File Download (Collaboration Portal)

If your shipper has uploaded documents for a freight agreement RFQ, you can check these documents and upload your response in a file.

Process

You view and respond to a freight agreement RFQ as follows:

1. Open the view that contains the details of the freight agreement RFQ
2. Download the bid structure file (`Bid_Structure.xlsx`).
3. Fill in the response file offline
4. Save the response file as `RFQ_Response.xlsx`
5. Select and upload the response file
6. Choose *Submit*

 Note

It may take a while until the freight agreement RFQ has the status *Submitted* or *Submitted with Errors* because a background report has to run first in the SAP TM back end. In the meantime the freight agreement RFQ has the status *Response Uploaded*.

End of the note.



Information for the Shipper (Collaboration Portal)

We target your carrier or logistics service provider (LSP) with the documents in the SAP Transportation Management collaboration portal (SAP TM collaboration portal) library.

If you as a shipper host the SAP TM collaboration portal for your carrier or LSP, you can use this document as a reference point for guidance about the functions in the SAP TM back-end that support the collaboration portal.

Features

Status Information

Event Handling

The SAP TM collaboration portal uses the execution status in the SAP TM back end to determine the freight orders that it displays when the carrier or LSP chooses the quick filters *Open* and *Closed*.

If you as a shipper set the life cycle status of a freight order to *Completed*, you must also finalize the execution status. If you do not finalize the execution status, the SAP TM collaboration portal displays the freight order in status *Open* although it is already completed in the back end.

The SAP TM collaboration portal uses the life cycle status in the SAP TM back end to determine the freight orders that it displays when the carrier chooses the quick filter *Canceled*.

Features Covered in Back-End Documentation

For more information about the SAP TM back-end features that support the SAP TM collaboration portal, see the following links:

Tendering

- [Freight Tendering](#)
- [Tendering](#)
- [Acceptance or Rejection of a Freight Request for Quotation](#)

Event Handling

- [Integration with SAP Event Management \[Page 1112\]](#)
- [Tracking of Freight Orders and Freight Bookings \[Page 1115\]](#)

Freight Settlement

- [Dispute Management for Freight Settlements \[Page 1041\]](#)

Freight Agreement Management

- [Strategic Freight Procurement \[Page 916\]](#)
- [Freight Agreement RFQs on the SAP TM Collaboration Portal \[Page 940\]](#)



Integration

You can integrate SAP Transportation Management (SAP TM) with the following applications:

Application	More Information
SAP ERP	<p>Integration of orders and deliveries: ERP Logistics Integration</p> <p>Integration with shipment processing: Integration with shipment processing in SAP ERP</p> <p>Integration with settlement: Forwarding Settlement [Page 1004] Freight Settlement [Page 1019]</p>
SAP Extended Warehouse Management	Direct Integration with SAP Extended Warehouse Management [Page 1123] Integration with SAP Extended Warehouse Management
SAP Event Management	Integration with SAP Event Management [Page 1112]
SAP Global Trade Services	Integration with SAP Global Trade Services [Page 1122]



Integration with SAP Event Management

This function enables you to integrate SAP Transportation Management (SAP TM) with SAP Event Management, and to track and monitor events for business objects in business processes.

Prerequisites

- You have installed SAP Event Management, and made the settings in Customizing for Event Management integration.
- You have made the necessary Customizing settings in SAP Transportation Management. For more information, see Customizing for SAP Transportation Management under **► Integration ➤ Tracking and Tracing of Processes and Documents ➤ Prerequisites for Tracking and Tracing**.
- You have maintained the system connection to SAP TM.

Features

SAP Event Management offers visibility processes to monitor transportation execution in connection with SAP TM.

The transportation execution visibility processes enable users in roles such as transportation dispatcher, shipper, or ordering party, to track and monitor planned events or to report an actual event. Tracking and tracing is provided for the following business document types in SAP TM:

- Freight units
- Freight orders
- Freight bookings
- Transportation unit
- Resources
- Instruction execution for standard operating procedures

More Information

- [Tracking of Freight Units \[Page 1113\]](#)
- [Tracking of Freight Orders and Freight Bookings \[Page 1115\]](#)
- [Tracking of Transportation Units \[Page 1116\]](#)
- [Tracking of Resources \[Page 1118\]](#)
- [Tracking of Instructions \[Page 1120\]](#)



Tracking of Freight Units

You can use this function to track freight units. This tracking process is part of the functions to monitor the transportation execution of processes managed by SAP Transportation Management (SAP TM). The visibility process integrates SAP TM and SAP Event Management. For more information, see [Integration with SAP Event Management \[Page 1112\]](#).

In transportation planning, the shipper or ordering party asks you to transport goods from one location to another location. On receiving the order, your transportation dispatcher creates a transportation requirement in SAP TM. SAP TM creates freight units to fulfill the transportation requirement. If you have connected SAP Event Management, you can monitor the execution phase of the freight units by tracking the corresponding event handlers in SAP Event Management. SAP Event Management enables the following features:

- Your shipper or ordering party can monitor the status changes of freight units.
- Your transportation dispatcher, shipper or ordering party, consignee, and carrier can monitor the expected and actual events for freight units, from loading the goods to the proof of delivery at the consignee.
- Your consignee can report the proof of delivery.
- Your carrier can report events, including unexpected events, for example, a delay.
- Your transportation dispatcher can receive an alert when an unexpected event is reported, for example, damage to an item.

Features

You can track the following expected events for freight units in SAP Event Management:

- *Scheduled*
- *Loading Begin*
- *Loading End*
- *Departure*
- *Arrival at Destination*
- *Unloading Begin*
- *Unloading End*

There are two ways of reporting the expected event:

- When your carrier sends an event message from the SAP Event Management Web user interface to SAP TM, SAP TM updates the freight unit with the information in the event message.
- When you update the freight unit directly in SAP TM, SAP TM sends an event message to SAP Event Management. SAP Event Management updates the data for the freight unit.

SAP Event Management can also track the following unexpected events. When these events occur, SAP Event Management sends an alert to SAP TM:

- *Delay*
- *Damage*



Tracking of Freight Orders and Freight Bookings

You can use this function to track freight orders and freight bookings. This tracking process is part of the functions to monitor the transportation execution of processes managed by SAP Transportation Management (SAP TM). This visibility process integrates SAP TM and SAP Event Management. For more information, see [Integration with SAP Event Management \[Page 1112\]](#).

This function enables the following features:

- Your shipper or ordering party can monitor the expected events for their freight orders and freight bookings.
- Your transportation dispatchers can monitor all events including unexpected events for freight orders and freight bookings in their organizational unit. For example, they can receive an alert if there is a delay.

Features

You can track the following expected events for freight orders and freight bookings in SAP Event Management:

- *Loading Begin*
- *Loading End*
- *Proof of Pick-up*
- *Departure*
- *Clear Customs*
- *Arrival at Destination*
- *Unloading Begin*
- *Unloading End*
- *Proof of Delivery*

There are, for example, the following ways of reporting the expected event:

- When your carrier sends an event message from the SAP Event Management Web user interface to SAP TM, SAP TM updates the freight order or freight booking with the information in this event message.
- When your carrier reports an event in the SAP TM [Collaboration Portal \[Page 1081\]](#) under ► *Freight Order Management* ► *Freight Orders for Execution* ▶.
- When you update the freight order or freight booking directly in SAP TM. SAP Event Management updates the data for the freight order or freight booking.

SAP Event Management can also track unexpected events. You can report these unexpected events for an item of a freight order or freight booking in SAP TM (*Discrepancies and Events* tab page). When delays occur, SAP Event Management issues an alert.

Your carrier can also report unexpected events in the SAP TM [Collaboration Portal \[Page 1081\]](#).



Tracking of Transportation Units

You can use this function to track transportation units. This tracking process is part of the functions to monitor the transportation execution of processes managed by SAP Transportation Management (SAP TM). The visibility process integrates SAP TM and SAP Event Management. For more information, see [Integration with SAP Event Management \[Page 1112\]](#).

In transportation planning, the shipper or ordering party asks you to transport goods from one location to another. On receiving the order, your transportation dispatcher creates a transportation requirement in SAP TM. SAP TM creates freight units to fulfill the transportation requirement. If you have connected SAP Event Management, you can monitor the execution phase of the transportation units by tracking the corresponding event handlers in SAP Event Management. SAP Event Management enables the following features:

- Your shipper or ordering party can monitor the status changes of transportation units.
- Your transportation dispatcher, shipper or ordering party, consignee, and carrier can monitor the expected and actual events for transportation units, from loading the goods to the proof of delivery at the consignee.
- Your transportation dispatcher, shipper or ordering party, consignee, and carrier can monitor the expected and actual events for transportation units.
- Your carrier can report events, including unexpected events, for example, a delay.
- Your transportation dispatcher can receive an alert when an unexpected event is reported, for example, delay of the transportation unit.

Features

You can track the following expected events for transportation units in SAP Event Management:

- *Loading Begin*
- *Loading End*
- *Coupling*
- *Departure*
- *Arrival at Destination*
- *Decoupling*
- *Unloading Begin*
- *Unloading End*

There are two ways of reporting the expected event:

- When your carrier sends an event message from the SAP Event Management Web user interface or any other external interface to SAP Event Management, SAP Event Management updates the data of the corresponding event handler and sends an update to SAP TM. Then SAP TM updates the transportation unit with the information in the

event message and if applicable propagates the event to related freight documents such as freight units.

- When you update the transportation unit directly in SAP TM, SAP TM sends an event message to SAP Event Management. SAP Event Management updates the data for the transportation unit.

SAP Event Management can also track the following unexpected events:

- *Delay*

When these events occur, SAP Event Management can send an alert to SAP TM.



Tracking of Resources

You can use this function to track resources that are defined as master data in SAP Transportation Management (SAP TM). This tracking process is part of the functions to monitor the transportation execution of processes managed by SAP TM. The visibility process integrates SAP TM and SAP Event Management. For more information, see [Integration with SAP Event Management \[Page 1112\]](#).

You can use this resource tracking visibility scenario to track resources over their entire lifecycle:

- Tracking starts when the resource is entered into the SAP TM master data with the SAP Event Management system connected. Further, you must set the resource attribute *Relevant for Event Management* and assign a *Means of Transport* that is not marked as *Multiresource*.
- Tracking ends when the attribute *Relevant for Event Management* is removed.

If you have connected SAP Event Management, you can monitor the execution events that are related to a certain resources by tracking the corresponding event handlers in SAP Event Management. SAP Event Management enables the following features:

- Your transportation dispatcher can check the availability of a certain resource or can get an overview over all available resources.
- Your carrier can report events directly for a resource, for example to update the actual position.
- Your transportation dispatcher can receive an alert when an unexpected event is reported, for example, the damage of a resource

Features

The following resource types are supported:

- Active vehicle resources such as trucks or locomotives
- Passive vehicle resources such as trailers or railcars
- Transportation units such as containers

You can track the following expected events for resources in SAP Event Management:

- *Coupling* (only relevant for vehicle resources)
- *Departure*
- *Arrival at Destination*
- *Decoupling* (only relevant for vehicle resources)

There are three ways of reporting the expected event:

- When your carrier sends an event message for the related freight document via SAP Event Management to SAP TM, SAP TM propagates this event message back to the related resource event handler(s) in SAP Event Management. SAP Event Management updates the data for the resource event handler(s) accordingly.

- When you update the execution information of a freight document directly in SAP TM, SAP TM sends an event message to the related resource event handler(s) in SAP Event Management. SAP Event Management updates the data for the resource event handler(s) accordingly.
- When your carrier sends an event message directly for the resource via SAP Event Management. SAP Event Management updates the data for the resource event handler accordingly. However there is no automatic propagation of the event to the related freight document(s) in SAP TM.

SAP Event Management can also track the following unexpected events:

- *Sighting* (to update the actual position of the resource)
- *Damage*



Tracking of Instructions

You can use this function to track and monitor the execution of instructions that are assigned to forwarding orders or freight units in SAP Transportation Management (SAP TM). Instructions are introduced with SAP TM 9.0 SP02 in what are known as standard operating procedures (SOP) in the transportation industry. The visibility process integrates SAP TM and SAP Event Management. For more information, see [Integration with SAP Event Management \[Page 1112\]](#).

Typically, instructions are pre-defined in forwarding agreements and serve as templates. Once a forwarding order is created from a forwarding agreement, the corresponding instructions are copied into the forwarding order and where applicable, also propagated to the related freight units. If you have connected SAP Event Management, you can monitor the execution of these instructions by tracking the corresponding event handlers in SAP Event Management. SAP Event Management enables the following features:

- Your transportation dispatcher can monitor the status changes of an instruction.
- If the alert framework has been set up, your transportation planner can receive an alert when the alert date of the instruction is reached before the execution of the instruction is completed

Features

You can track the one expected event for instructions in SAP Event Management:

- *Instruction Execution*

For each instruction there is an alert date and a due date, both of which are set in SAP TM. Each instruction has one of the following six statuses in SAP TM:

- Pending (initial value) – can be set manually in SAP TM
- In progress – can be set manually in SAP TM
- Completed – can be set manually in SAP TM
- Completed after Due Date – automatically set by SAP TM if completion date is after due date
- Alert – set by SAP Event Management or
- Overdue – set by SAP Event Management

The expected event date of the expected event is determined as follows:

- Until the alert date is reached, the expected event date is the alert date.
- After the alert date, the expected event date is changed to the due date.

Monitoring of the status of the instruction is done in SAP Event Management. The monitoring sequence is as follows:

- After the alert date until the due date, if the instruction has not been completed, the status of the instruction is set to alert (in SAP TM and SAP Event Management).

- After the due date if the instruction has not been completed, the status of the instruction is set to overdue (in SAP TM and SAP Event Management).

Immediately a change to the status of an instruction is made manually in SAP TM, SAP Event Management is informed, and the corresponding event handler status is updated. Similarly if the status of the instruction changes due to monitoring in SAP Event Management, the corresponding event handler status is updated and the changed status is sent to SAP TM.

 Note

There are no unexpected events supported for instructions.

End of the note.



Integration with SAP Global Trade Services

The integration of SAP Transportation Management (SAP TM) with the SAP Global Trade Services application enables you to do the following:

- Handle customs processing for SAP TM business documents in SAP Global Trade Services (see [Export Declarations by LSPs \(Automatic Customs Handling\) \[Page 1183\]](#) and [Export Declarations by Shippers \[Page 1177\]](#))
- Perform trade compliance checks for SAP TM business documents in SAP Global Trade Services (see [Trade Compliance Check \[Page 1201\]](#))

Integration

You can integrate SAP TM and SAP Global Trade Services by using SAP NetWeaver Process Integration (SAP NetWeaver PI) or a point-to-point connection (Web Services Reliable Messaging). Data is exchanged using enterprise services.

The following integration scenarios and enterprise services are available in SAP TM:

- [TM_GTSExportDeclarationIntegration](#)

The following enterprise services are available for this scenario in the [Transportation Order Processing](#) process component:

- [Request Export Declaration](#)
- [Request Export Declaration Cancellation](#)
- [Change Transportation Order Based on Export Declaration Confirmation](#)

- [TM_GTSTradeComplianceCheckIntegration](#)

The following enterprise services are available for this scenario in the [Transportation Order Processing](#) process component:

- [Request Trade Compliance Check](#)
- [Request Trade Compliance Check Cancellation](#)
- [Change Transportation Order Based on Trade Compliance Check Confirmation](#)

The following enterprise services are available for this scenario in the [Transportation Request Processing](#) process component:

- [Request Trade Compliance Check](#)
- [Request Trade Compliance Check Cancellation](#)
- [Change Transportation Order Based on Trade Compliance Check Confirmation](#)



Direct Integration with SAP Extended Warehouse Management

You can integrate SAP Transportation Management (SAP TM) with SAP Extended Warehouse Management (SAP EWM).

Prerequisites

- You have configured the following settings in your freight order type:
 - In the *Document Creation Relevance* field, you have specified that transportation activities are to be created in SAP EWM.
 - You have specified an output profile that contains actions for sending LoadingAppointment messages, for example, /SCMTMS/TOR.

For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types*.

- SAP provides the following, predefined event codes for cancelations as well as the corresponding event reason codes:

Event Code	Name	Event Reason Code	Name
CANCEL_EXEC_DOC	<i>Cancel Execution Document</i>	CANCELLED_BY_CARRIER	<i>Canceled by Carrier</i>
CANCEL_STATUS_RESET	<i>Cancel and Reset Cargo Execution Status</i>	TM_PLAN_NOT_READY	<i>TM Planning Not Yet Ready</i>
CANCEL_UNASSIGN_FUS	<i>Cancel and Unassign FUs of Current Stop</i>	STOP_CANCELLED	<i>Loading Appointment Canceled</i>

- These event codes are set as the default codes.
- You can define your own event codes and event reason codes. For each event type, you must specify at least one of your event codes as the default code.
- For more information, see Customizing for *Transportation Management* under ► *Basic Functions* ► *General Settings* ► *Define Event Reason Codes*.
- If you want to work with trailers, you have configured the following settings in your transportation unit type:
 - In the *Document Creation Relevance* field, you have specified that transportation activities are to be created in SAP EWM.
 - You have specified an output profile that contains actions for sending LoadingAppointment messages, for example, /SCMTMS/TOR.

For more information, see Customizing for *Transportation Management* under ► *Freight Order Management* ► *Transportation Unit* ► *Define Transportation Unit Types*.

Features

The following processes are supported as part of direct integration of SAP TM with SAP EWM:

- Transportation planning based on inbound deliveries (see [Inbound-Delivery-Based Transportation Planning \[Page 1127\]](#))
- Transportation planning based on outbound deliveries (see [Outbound-Delivery-Based Transportation Planning \[Page 1129\]](#))
- Order-based transportation planning (see [Order-Based Transportation Planning \(Outbound\) \[Page 1131\]](#) and [Order-Based Transportation Planning \(Inbound\) \[Page 1133\]](#))

 Note

- Deliveries to a transportation stop that originate from warehouses with different warehouse numbers are not supported by direct integration of SAP TM with SAP EWM. It is not relevant whether the warehouse numbers are from the same SAP EWM system or from different SAP EWM systems.

For more information about the supported functions and the restrictions, see SAP Note [1984252](#).

- When you define the freight unit building rule for delivery-based transportation requirements (DTR), make sure that freight units are not split for a DTR item. If a DTR item is split into two or more freight units, an error occurs when the transportation unit is generated in SAP EWM.



Example

You have defined a freight unit building rule with a split quantity of 1,500 kg. If you have a DTR item that weighs 2,000 kg, SAP TM creates two freight units: one freight unit with 1,500 kg and another with the remaining quantity of 500 kg. If a `LoadingAppointment` message is then sent to SAP EWM as part of the integration, the request cannot be executed correctly.

End of the example.

End of the note.

Displaying Data

The warehouse numbers from SAP EWM are displayed in the following locations:

- Delivery-based transportation requirement: *Locations and Dates/Times* tab page
- Freight order:  Overview  tab page

Changing Data

If you change the following data in SAP EWM, your changes are automatically replicated to SAP TM:

- Carrier
- Planned departure time and arrival time

- Gross weight of the vehicle
- Packaging material

Actual quantities from SAP EWM are automatically transferred to SAP TM. If the actual quantities and planned quantities differ, the system creates a discrepancy in SAP TM. For more information see [Discrepancies and Events](#).

Actual dates are also reported automatically to SAP TM.

If you reassign a complete delivery in SAP EWM from one transportation unit to another, SAP EWM reports the reassignment to SAP TM. In SAP TM, the delivery is automatically reassigned from the original freight order to the associated freight order.

If you assign a freight unit to a transportation unit in SAP EWM but the freight unit is not assigned to a freight order in SAP TM, this information is also transferred to SAP TM. The system then automatically assigns the freight unit to the corresponding freight order.

Updating Data

If you set the cargo execution status *Cargo Ready for Loading* for your freight order, the system automatically triggers the event *Ready for Loading*. The system transfers the event to the predecessor document (that is, the freight unit) and changes its status to *Cargo Ready for Loading*. When building the freight unit, the system checks whether this status has been set. If so, the freight unit is no longer updated from SAP ERP but from SAP EWM.

The same applies for the cargo execution status *Cargo Ready for Unloading* and the event *Ready for Unloading*.

If SAP TM receives the `LoadingAppointmentNotification` message during outbound-delivery-based transportation planning, the cargo receipt status for the item is automatically set to *Shipped*. If the item in question is to be unloaded at the next transportation stop, the handling execution status is automatically set to *Not Unloaded*. In the associated freight unit, the cargo receipt status is also set automatically to *Shipped*. As a result, the freight unit is no longer updated from the forwarding order or the delivery-based transportation requirement.

Canceling Documents

Cancelations in SAP TM

After the freight order has been created but before the loading or unloading instructions have been sent to SAP EWM, you can cancel the freight order in SAP TM without impacting SAP EWM. The cargo execution status of the container or the main item in the freight order is a decisive factor. You can cancel the freight order in SAP TM provided that you have not set the cargo execution status to *Cargo Ready for Loading* or *Cargo Ready for Unloading*. If you have set either of these statuses, you cannot cancel the freight order in SAP TM. To cancel the freight order in SAP TM, you must wait for confirmation from SAP EWM.

Cancelations in SAP EWM

If the loading or unloading instructions have already been sent to SAP EWM, you can cancel the associated transportation unit only in SAP EWM. This can affect the freight order in SAP TM in different ways, that is, the freight order is either canceled or retained. If the freight order is retained, the following options arise:

- Only the cargo execution status is reset; the assignment of the freight units is retained for the current transportation stop. This is important if you have accidentally changed the status and want to reset it.
- The cargo execution status is reset and the assignment of the freight units is removed for the current transportation stop. You can then assign these freight units to another execution document.

The impact on the freight order and associated freight units depends on the following information:

- Event codes for the cancelation and the associated event reason codes that you have defined in Customizing (see the prerequisites above)
- Event reason that is sent with the confirmation from SAP EWM to SAP TM once a cancelation has taken place in SAP EWM

More Information

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Inbound-Delivery-Based Transportation Planning

In SAP Transportation Management (SAP TM), you can plan your transportation activities based on an inbound delivery and send your freight orders to SAP Extended Warehouse Management (SAP EWM). In SAP EWM, you can carry out the steps relating to the warehouse, for example, unloading.

Prerequisites

For more information, [Direct Integration with SAP Extended Warehouse Management \[Page 1123\]](#).

Process

A sample process for *one* transportation stop is described below. If your freight order comprises several transportation stops, the process is repeated for each stop if the stop contains unloading locations relevant to SAP EWM. Note, however, that multiple pickup and multiple delivery scenarios are not supported.

Preparation in SAP ERP

1. You create a purchase order in SAP ERP.
2. You create inbound deliveries in SAP ERP and send them to SAP TM and SAP EWM. In SAP TM, a delivery-based transportation requirement is automatically created along with the associated freight units. In SAP EWM, an outbound delivery notification and an inbound delivery are created automatically.

Transportation Planning in SAP TM

1. You plan your transportation activities. When you do so, you create a freight order manually or the system creates one automatically.
2. You set the cargo execution status of the freight order to *Cargo Ready for Unloading*. The system automatically sends an unloading instruction to SAP EWM with the message `LoadingAppointmentRequest`.

Execution in SAP EWM

1. When the `LoadingAppointmentRequest` message is received from SAP TM, SAP EWM automatically creates a transportation unit.
2. When the truck arrives at the yard, the warehouse workers post its arrival.
3. The warehouse workers unload the truck.
4. The warehouse workers post the goods receipt. The inbound delivery is automatically updated in SAP ERP.
5. The warehouse workers carry out any additional steps in SAP EWM, such as putaway.

Update in SAP TM

1. When the data is updated in SAP ERP, the delivery-based transportation requirement is automatically updated in SAP TM.

More Information

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[Batch Split \[Page 1136\]](#)



Outbound-Delivery-Based Transportation Planning

In SAP Transportation Management (SAP TM), you can plan your transportation activities based on an outbound delivery and send your freight orders to SAP Extended Warehouse Management (SAP EWM). In SAP EWM, you can carry out the steps relating to the warehouse, for example, loading. Because the two systems are directly integrated with one another, SAP TM informs you that the truck in SAP EWM has been loaded and whether there are any discrepancies such as quantity deviations.

Prerequisites

For more information, [Direct Integration with SAP Extended Warehouse Management \[Page 1123\]](#).

Process

A sample process for *one* transportation stop is described below. If your freight order comprises several transportation stops, the process is repeated for each stop if the stop contains loading locations relevant to SAP EWM. Note, however, that multiple pickup and multiple delivery scenarios are not supported.

Preparation in SAP ERP

1. You create a sales order in SAP ERP.
2. You create outbound deliveries in SAP ERP and send them to SAP TM and SAP EWM. In SAP TM, a delivery-based transportation requirement is automatically created along with the associated freight units. In SAP EWM, an outbound delivery request and an outbound delivery order are created automatically.

Transportation Planning in SAP TM

1. You plan your transportation activities. When you do so, you create a freight order manually or the system creates one automatically.
2. You set the cargo execution status of the freight order to *Cargo Ready for Loading*. The system automatically sends a loading instruction to SAP EWM with the message `LoadingAppointmentRequest`.

Execution in SAP EWM

1. When the `LoadingAppointmentRequest` message is received from SAP TM, SAP EWM automatically creates a transportation unit.
2. Picking is carried out by the warehouse workers. The system can create handling units automatically.
3. When the truck arrives at the yard, the warehouse workers report its arrival and assign a door to it.
4. The warehouse workers load the truck.
5. The warehouse workers post the goods issue (optional).

6. The warehouse workers post the departure of the truck. SAP EWM sends the `LoadingAppointmentNotification` message to SAP TM. At the same time, the outbound delivery is automatically updated in SAP ERP.

Update and Further Steps in SAP TM

1. When the data is updated in SAP ERP, the delivery-based transportation requirement is automatically updated in SAP TM.
2. When the `LoadingAppointmentNotification` message is received, SAP TM updates the freight order and sets the execution status to *In Execution*. The cargo receipt status at item level is automatically set to *Shipped*. If the item in question is to be unloaded at the next transportation stop, the handling execution status is automatically set to *Not Unloaded*. The system also updates the associated freight units.
3. You complete freight order execution.

More Information

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Order-Based Transportation Planning (Outbound)

In SAP Transportation Management (SAP TM), you can plan your transportation activities based on an order and send your freight orders to SAP Extended Warehouse Management (SAP EWM). In SAP EWM, you can then carry out the steps relating to the warehouse, for example, loading. Because the two systems are directly integrated with one another, SAP TM informs you that the truck in SAP EWM has been loaded and whether there are any discrepancies such as quantity deviations.

Prerequisites

For more information, see [Direct Integration with SAP Extended Warehouse Management \[Page 1123\]](#).

Process

A sample process for *one* transportation stop is described below. If your freight order comprises several transportation stops, the process is repeated for each stop if the stop contains loading locations relevant to SAP EWM. Note, however, that multiple pickup and multiple delivery scenarios are not supported.

Preparation in SAP ERP

1. Create a sales order in SAP ERP and send it to SAP TM. In SAP TM, an order-based transportation requirement is automatically created along with the associated freight units.

Transportation Planning in SAP TM

1. Plan your transportation activities by creating a freight order based on the freight units created in the previous step.
2. Generate delivery proposals and send these to SAP ERP. Outbound deliveries are created in SAP ERP based on these delivery proposals. They are then transferred to SAP TM and the delivery reference is added automatically to the freight order. The delivery reference is displayed in the document references for the item.
3. When you have finished planning your transportation activities, set the cargo execution status of the freight order to *Cargo Ready for Loading*. The system automatically sends a loading instruction to SAP EWM with the message `LoadingAppointmentRequest`.

 Note

In this step, the system checks whether outbound deliveries have already been created. The system can change the status and send the message only if outbound deliveries have already been created.

End of the note.

Execution in SAP EWM

1. When the `LoadingAppointmentRequest` message is received from SAP TM, SAP EWM automatically creates a transportation unit.

2. Picking is carried out by the warehouse workers. The system can create handling units automatically.
3. When the truck arrives at the yard, the warehouse workers report its arrival and assign a door to it.
4. The warehouse workers load the truck. The following functions are supported:
 - The warehouse workers can load deliveries from other freight orders onto the truck if the truck has some free capacity. If an entire delivery does not fit onto a truck, you can load some of the delivery. For more information, see [Delivery Split \[Page 1135\]](#).
 - The warehouse workers can pack an item into different handling units. If the entire quantity cannot be delivered, they can split the item.
5. The warehouse workers post the goods issue (optional).
6. The warehouse workers post the departure of the truck. SAP EWM sends the `LoadingAppointmentNotification` message to SAP TM. At the same time, the outbound delivery is automatically updated in SAP ERP.

Update and Further Steps in SAP TM

1. When the data is updated in SAP ERP, the order-based transportation requirement is automatically updated in SAP TM.
2. When the `LoadingAppointmentNotification` message is received, SAP TM updates the freight order and sets the execution status to *In Execution*. The cargo receipt status at item level is automatically set to *Shipped*. If the item in question is to be unloaded at the next transportation stop, the handling execution status is automatically set to *Not Unloaded*. The system also updates the associated freight units.

If you have loaded deliveries from a different freight order as described in step 4 under "Execution in SAP EWM", the system automatically changes the assignment of the corresponding freight units. This means that these freight units are removed from the other freight order and assigned to your freight order.

If the warehouse workers have packed an item in different handling units in EWM, the items for these handling units are created automatically in SAP TM. The handling units then contain the subitems of these packaging items, which can be either product items or packaging items with subitems (nested packaging hierarchy).

3. Complete freight order execution.

More Information

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Order-Based Transportation Planning (Inbound)

In SAP Transportation Management (SAP TM), you can plan your transportation activities based on an order and send your freight orders to SAP Extended Warehouse Management (SAP EWM). In SAP EWM, you can then carry out the steps relating to the warehouse, for example, unloading. Because the two systems are directly integrated with one another, SAP TM informs you that the truck in SAP EWM has been unloaded and whether there are any discrepancies such as quantity deviations.

Prerequisites

For more information, see [Direct Integration with SAP Extended Warehouse Management \[Page 1123\]](#).

Process

A sample process for *one* transportation stop is described below. If your freight order comprises several transportation stops, the process is repeated for each stop if the stop contains unloading locations relevant to SAP EWM. Note, however, that multiple pickup and multiple delivery scenarios are not supported.

Preparation in SAP ERP

1. Create a purchase order in SAP ERP and send it to SAP TM. In SAP TM, an order-based transportation requirement is automatically created along with the associated freight units.

Transportation Planning in SAP TM

1. Plan your transportation activities by creating a freight order based on the freight units created in the previous step.
2. Generate delivery proposals and send these to SAP ERP. Inbound deliveries are created in SAP ERP based on these delivery proposals. They are then transferred to SAP TM and the delivery reference is added automatically to the freight order. The delivery reference is displayed in the document references for the item.
3. When you have finished planning your transportation activities, set the cargo execution status of the freight order to *Cargo Ready for Unloading*. The system automatically sends an unloading instruction to SAP EWM with the message `LoadingAppointmentRequest`.

Note

In this step, the system checks whether inbound deliveries have already been created. The system can change the status and send the message only if inbound deliveries have already been created.

End of the note.

Execution in SAP EWM

1. When the `LoadingAppointmentRequest` message is received from SAP TM, SAP EWM automatically creates a transportation unit.

2. When the truck arrives at the yard, the warehouse workers post its arrival.
3. The warehouse workers unload the truck.
4. The warehouse workers post the goods receipt (optional). The inbound delivery is automatically updated in SAP ERP.
5. The warehouse workers carry out any additional steps in SAP EWM, such as putaway.

Update

1. When the data is updated in SAP ERP, the order-based transportation requirement is automatically updated in SAP TM.

More Information

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Delivery Split

When goods are loaded in SAP Extended Warehouse Management (SAP EWM), warehouse workers may only be able to load a fraction of the planned quantity on to the truck. One reason for this may be that the truck is different to the one planned and has a lower capacity. This generates a delivery split in SAP ERP and also impacts the freight order in SAP Transportation Management (SAP TM).

Process

1. When loading the truck, warehouse workers can only load some of the overall quantity and have to leave an entire delivery item or freight unit.
2. The warehouse workers record the departure of the transportation unit from the yard in SAP EWM.
3. SAP EWM reports the change in quantity or the delivery items that are not included (or both) automatically to SAP TM using the message `LoadingAppointmentNotification`.
4. In SAP TM, the quantity in the freight unit is automatically reduced or the missing items are deleted. If required, the system also splits the freight unit. This means that the system reduces the quantity in the original freight unit and creates an additional freight unit with the remaining quantity. You must then reschedule this freight unit. The system assigns the new freight unit to the split delivery.

If the warehouse workers could not include an item, SAP TM sets the remaining quantity to zero. If necessary, the system splits the freight unit.



Batch Split

The direct integration between SAP Transportation Management (SAP TM) and SAP Extended Warehouse Management (SAP EWM) supports batch splits. This means that the batches do not have to come from SAP ERP but can instead be determined in SAP EWM. A delivery can also be split at the same time as a batch (see [Delivery Split \[Page 1135\]](#)).

Process

1. Create a freight order in SAP TM with items that do not have any batch numbers.
2. When the message `LoadingAppointmentRequest` is received from SAP TM, SAP EWM determines automatically whether there are any batches. If there is more than one batch and these batches need to be split, SAP EWM creates subitems.
3. When SAP EWM reports the data to SAP TM using the message `LoadingAppointmentNotification`, SAP TM automatically creates any required subitems in the freight order and in the related freight units. The batch number is then visible on the *Content Identification* tab page (details of the freight item).



Integration with SAP Customer Relationship Management

You can use service products in SAP Customer Relationship Management (SAP CRM) opportunities. This enables sales agents of carriers or logistics service providers (LSPs) to sell the products to prospective customers such as shippers or LSPs.

Procedure

1. Assign a system name to the SAP CRM logical system in Customizing for *Transportation Management* under ► *Integration* ► *Assign Logical System to System Names*. Note that you can connect only one CRM system to the SAP TM system.
2. Assign the system name and select the *Enable CRM* checkbox for the service products you want to use in a CRM opportunity in Customizing for *Transportation Management* under ► *Master Data* ► *Agreements and Service Products* ► *Define FWA and Service Product Item Types*.
3. Assign these service products to a service product catalog type in Customizing for *Transportation Management* under ► *Master Data* ► *Agreements and Service Products* ► *Define FWA and Service Product Catalog Types*.
4. Create a service product catalog from the service product catalog type in SAP NetWeaver Business Client under ► *Master Data* ► *Charge Management and Service Product Catalogs* ► *Service Product Catalogs* ► *Create Service Product Catalog*.

The system now sends the service product information to the SAP CRM system. You must enable Customizing settings in the SAP CRM system to use the service products in opportunities. For more information, see SAP Library on SAP Help Portal at <http://help.sap.com/crm>. Choose a release and under *Application Help*, choose ► *SAP Customer Relationship Management* ► *Sales* ► *Opportunity Management* ► *Integration with SAP Transportation Management*.

More Information

- For more information about SAP CRM opportunities, see SAP Library on SAP Help Portal at <http://help.sap.com/crm>. Choose a release and under *Application Help*, choose ► *SAP Customer Relationship Management* ► *Sales* ► *Opportunity Management* ► *Integration with SAP Transportation Management*.
- For more information about service products, see [Service Product Catalogs](#).



Basic Functions

This section provides information about basic functions in SAP Transportation Management (SAP TM).



Considering Dangerous Goods

The dangerous goods functions in SAP Transportation Management (SAP TM) enable you to transport dangerous goods (DG) in compliance with international regulations.

Features

When you perform dangerous goods checks for your business documents, the system bases the checks on the relevant dangerous goods data. This data is created as follows:

- Dangerous goods master data (created by shippers)

When a shipper enters a product in the product master data in SAP TM and the product is classified as dangerous goods, the shipper also creates a dangerous goods master data for the product.

- Document-based dangerous goods records (created by logistics service providers)

When a logistics service provider (LSP) receives dangerous goods data from a shipper, the LSP enters the dangerous goods data in the relevant business document by creating a document-based dangerous goods record at item level.

You can perform dangerous goods checks for the following types of business document:

- Business documents that are created as the result of ERP logistics integration (see [Dangerous Goods Checks with ERP Logistics Integration \[Page 1143\]](#))

Dangerous goods checks are performed in SAP ERP and the check results are transferred to SAP TM. If required, you can also perform dangerous goods checks in SAP TM. The system bases the checks in SAP TM on the available dangerous goods data, that is, dangerous goods master data, or document-based dangerous goods records created for freight orders.

- Business documents that are created without ERP logistics integration (see [Dangerous Goods Checks Without ERP Logistics Integration \[Page 1147\]](#))

Dangerous goods checks are performed in SAP TM. The system bases the checks on the available dangerous goods data, that is, dangerous goods master data, or document-based dangerous goods records created for forwarding orders, freight orders, or freight bookings.

Note that when you print your business documents, the system also prints the required dangerous goods information if you have made the required settings.



Configuration of Dangerous Goods Processing

The following settings enable you to use the dangerous goods functions for your business documents.

Activities

Dangerous Goods Records

- For dangerous goods master data, you have made the following settings:
 - In master data for the product in SAP TM, you have assigned an indicator profile to the product. You define indicator profiles in Customizing for *SCM Basis* under ► *EH&S Services* > *Dangerous Goods Management* > *Dangerous Goods Checks and Dangerous Goods Documents* > *Common Settings* > *Specify Indicator Profiles for Product Master* ▶.
 - You have created a dangerous goods master data record for the product in SAP NetWeaver Business Client under ► *Master Data* > *Dangerous Goods Management* > *Dangerous Goods Master* > *Create Dangerous Goods Master* ▶.
- For information about the required settings for document-based dangerous goods records, see [Document-Based Dangerous Goods Records \[Page 1154\]](#).

Note that you can load SAP EHS Regulatory Content into SAP TM and use the content as the basis for document-based dangerous goods records. For more information, see [Loading Dangerous Goods Content \[Page 1162\]](#).

General Settings

The following settings apply to dangerous goods master data and document-based dangerous goods records:

- You have specified environment parameters that control the processes in *EH&S Services*. You do this in Customizing for *SCM Basis* under ► *EH&S Services* > *Basic Services* > *Specify Environment Parameters* ▶.
- SAP TM uses the EH&S framework to extract DG information in the form of phrases for printing. To enable the EH&S framework, you have set up phrase management in *EH&S Services* and assigned a text pattern in the DG master. You have also defined phrases in phrase management.
- If you want to use the *DG Mixed Loading Check* functions, you have activated business function *SAP TM-Specific Enhancements in SCM Basis* (*SCM_SAPTM_SCMB_FND*).
- You have created a DG profile to activate DG checks. The profile defines general conditions for processing DG, such as conditions for displaying error messages. For more information, see Customizing for *Transportation Management* under ► *Basic Functions* > *Dangerous Goods* > *Define Dangerous Goods Profile* ▶.
- You have assigned the DG profile to the business document types that you use in your business processes.

You do this in Customizing for *Transportation Management* under the following:

- ► Freight Order Management ► Freight Order ► Define Freight Order Types ▶
- ► Freight Order Management ► Freight Booking ► Define Freight Booking Types ▶
- ► Planning ► Freight Unit ► Define Freight Unit Types ▶
- ► Integration ► ERP Logistics Integration ► Order-Based Transportation Requirement ► Define Order-Based Transportation Requirement Types ▶
- ► Integration ► ERP Logistics Integration ► Delivery-Based Transportation Requirement ► Define Delivery-Based Transportation Requirement Types ▶
- ► Forwarding Order Management ► Forwarding Order ► Define Forwarding Order Types ▶
- ► Forwarding Order Management ► Forwarding Quotation ► Define Forwarding Quotation Types ▶

Note that if you want to enter dangerous goods data in your business documents without performing any DG checks, you still have to assign a DG profile to the business document type.

- You have activated general settings for DG processing in Customizing for *Transportation Management* under ► Basic Functions ► Dangerous Goods ► Define Common Settings for Dangerous Goods Processing ▶.

Note that this includes the required settings for printing dangerous goods data.

- You have defined the mode of transport in Customizing for *Transportation Management* under ► Master Data ► Transportation Network ► Transportation Lane ► Define Transportation Mode ▶.
- To use the DG checks during freight unit (FU) building and vehicle scheduling and routing (VSR) optimization, you have assigned the methods FUB_DG and VSR_DG to the relevant process controller strategy . For more information, see Customizing for *SCM Basis* under ► Process Controller ► Assign Methods to a Strategy ▶.
- You have defined whether processes are blocked if errors occur during a dangerous goods check. You define which processes are blocked for block reason *Error During Dangerous Goods Check*. For more information, see Customizing for *Transportation Management* under ► Basic Functions ► General Settings ► Define Block Reason Codes ▶.

Adapting DG Processing

You can adapt dangerous goods processing to your requirements as follows:

- You can create a DG check according to your needs by creating a function module, assigning it, and specifying a dangerous goods check method. For more information, see Customizing for *SCM Basis* under ► EH&S Services ► Dangerous Goods Management ► Dangerous Goods Checks and Dangerous Goods Documents ► Dangerous Goods Checks ► Specify Dangerous Goods Check Methods ▶.

You then assign the DG check method to the check schema in Customizing for *SCM Basis* under ► EH&S Services ► Dangerous Goods Management ► Dangerous Goods Checks and Dangerous Goods Documents ► Dangerous Goods Checks ► Specify Dangerous Goods Check Schemas ▶.

- You can change, delete, or extend the input data for the dangerous goods check and for printing data. For more information, see Customizing for *Transportation Management* under ► *Business Add-Ins (BAdls) for Transportation Management* ► *Basic Functions* ► *Dangerous Goods* ► *Integration with EH&S* ► *BAdl: Definition of Data for Printing and Checking for Dangerous Goods* ▶.
- You can read template data from an external database instead of the *EH&S Services* database. For more information, see Customizing for *Transportation Management* under ► *Business Add-Ins (BAdls) for Transportation Management* ► *Basic Functions* ► *Dangerous Goods* ► *Template Data* ► *BAdl: Dangerous Goods Processing* ▶.



Dangerous Goods Checks with ERP Logistics Integration

You use this process to perform dangerous goods (DG) checks for your business documents. You check the product that you want to transport against the rules you have defined. This can be a check that takes into account certain aspects of the DG master data or the combination of the goods you want to transport. The checks reflect the national and international regulations regarding the transportation of DG. The regulations depend on the transportation mode and the countries crossed while transporting the goods. You can use standard checks or you can create customer-specific checks.

The system can perform the checks automatically, and you can also trigger the checks manually. Due to different risks involved in transporting DG, the system carries out checks in different ways and at different process steps to ensure safety precautions are observed during transportation. For example, the system can perform checks during freight unit (FU) building and vehicle scheduling and routing (VSR) optimization. This ensures the compliance of the successor documents such as FUs and freight orders (FOs). In addition, you can perform checks on all relevant business documents. If there are DG errors, you can correct the errors and perform the check again.

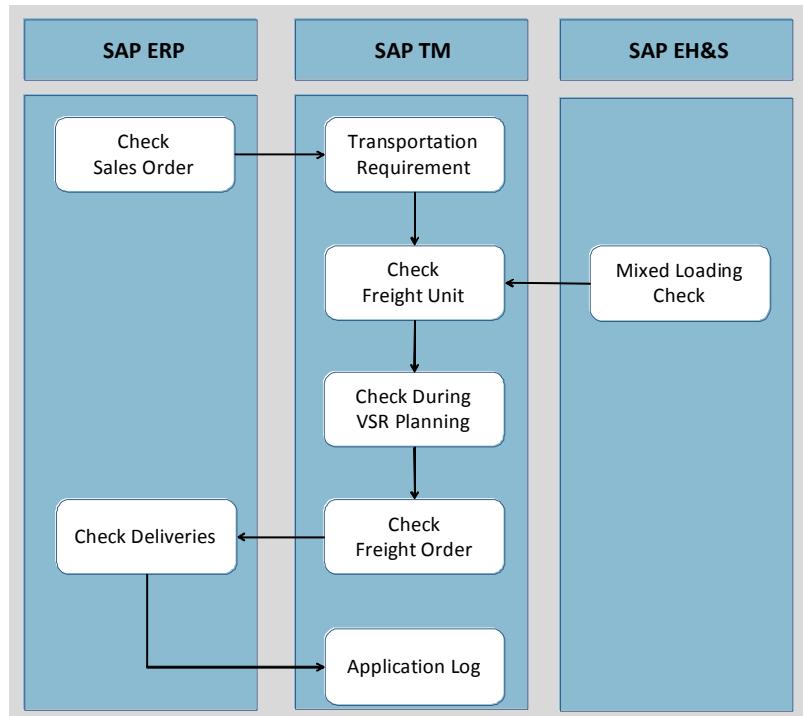
Note that you can use an EH&S text pattern to print the information in the relevant business documents.

Prerequisites

You have made the required settings for dangerous goods processing. For more information, see [Configuration of Dangerous Goods Processing \[Page 1140\]](#).

In this process, the dangerous goods checks are based on dangerous goods master data and, if required, on document-based dangerous goods records created in freight orders.

Process



Sample Process for Dangerous Goods Processing

There are different ways to perform a DG check. You can perform the check within the order integration process. If you have activated the check in the DG profile, the check starts automatically in the respective process step. To perform the check manually, choose the *Check* pushbutton or select *Check* from the menu.

It is possible to check DG compatibilities automatically during FU building and thus prevent the system from building incompatible FUs at an early phase. In addition, or if you do not use DG compatibility checks during freight unit building, you can check the FU for DG incompatibilities. In both cases, the products that are combined in one freight unit are identified as DG products and the *Dangerous Goods* checkbox is selected. If there are DG errors in the freight units, the system blocks the FU for planning and execution.

To carry out DG checks for the transit countries in the freight order, you can add these countries for certain stages on the *Transit Countries* tab page.

The integration of SAP TM is based, for example, on sales orders or deliveries.

1. During order entry in the ERP system, for example, the system carries out a DG check.

The ERP system informs SAP TM whether the order contains DG. SAP TM creates an order-based transportation requirement. Typically, a DG check is not required on the transportation requirement. If a DG check is performed on the transportation requirement and an error occurs, the business document is forwarded to Forward Error Handling and the system stops the process.

2. SAP TM creates freight units.

The system can check DG during freight unit building, for example, by using the mixed loading check. The system analyzes the items with respect to their possible combination during transportation. The system considers incompatibilities for the affected items. If the DG check returns errors, the system prevents these items from being transported in the same freight unit.

You can check the blocking status on the *Statuses* tab page in the *Blocking Information* group box. If errors occur during a DG check, the system displays block reason *Error During Dangerous Goods Check* and blocks the relevant processes according to the settings in Customizing for the block reason. In the details, you can find further information about all performed checks, including the DG check.

3. The SAP TM system checks the freight units after they are created.

This check is also carried out each time an FU is changed.

If the system identifies DG, it selects the *Dangerous Goods* checkbox. If there are DG errors, the system blocks the FU.

4. The SAP TM system can perform checks during VSR planning and it also checks the resulting FO.

- Checking the transportation proposal during VSR planning

During VSR optimization the system assigns FUs to vehicle resources and creates freight orders. When creating the transportation proposals, the system carries out the DG check and offers an alternative transportation proposal. In batch processing, the system selects the first solution that does not contain DG errors.

With the mixed-loading check, you can check incompatible FUs that should not be transported together. By setting up a freight unit vehicle check, you avoid planned FOs containing freight units with DG that are incompatible with certain resources. The system incorporates incompatibilities into the VSR optimization run. For more information about planning FOs, see [Planning \[Page Error! Bookmark not defined.\]](#).

- Checking the FO

The system checks the resulting FOs after the VSR optimization run. The system also performs this check each time the FO is changed.

During manual planning, the system checks the FO each time the FO is saved or if the check is triggered manually.

Note that at this point, you can create document-based dangerous goods records in the freight order, if required. The system includes the document-based dangerous goods records in the DG checks.

5. SAP TM triggers the creation of SAP ERP deliveries.

If errors occur during delivery creation, SAP ERP informs SAP TM. You can see the errors in the application log in SAP TM.

For more information about ERP logistics integration, see [ERP Logistics Integration](#).

Result

You can display information about DG processing on the following user interfaces:

- *Order-Based Transportation Requirement*
- *Delivery-Based Transportation Requirement*
- *Freight Unit*
- *Freight Order*
- *Transportation Proposal*

The business document contains the DG check result. You find further DG information for the related product on item level on the *Dangerous Goods* tab page. You can print freight orders with DG information.

In the application log (object /SCMTMS/TMS and subobject DG), you can display messages that occur during DG checks that are carried out during freight FU building and VSR optimization. To open the application log, on the SAP Easy Access screen, choose ► *SCM Basis* ► *Integration* ► *Application Log*.

More Information

For more information about dangerous goods management and phrase management, see SAP Library for SAP SCM Server on SAP Help Portal at <http://help.sap.com/scmserver>. In SAP Library, choose ► *SCM Basis* ► *EH&S Services in SCM Basis*.

[Error and Conflict Handler \(CA-FS-ECH\)](#)

[Interactive Planning \[Page 774\]](#)

[Creation and Editing of Freight Units \[Page 719\]](#)

[Incompatibilities \[Page 715\]](#)

[Freight Order](#)



Dangerous Goods Checks Without ERP Logistics Integration

You use this process to perform dangerous goods (DG) checks for forwarding orders, forwarding quotations, freight orders, and freight bookings. The system can perform checks automatically when you save your business documents, and you can trigger the checks manually. Due to different risks involved in transporting DG, the system carries out checks in different ways and at different process steps to ensure safety precautions are observed during transportation. For example, the system can perform checks during freight unit (FU) building and vehicle scheduling and routing (VSR) optimization. This ensures the compliance of the resulting successor documents such as FUs and freight orders (FOs).

Prerequisites

You have created dangerous goods master data for your products, or you have created document-based dangerous goods records. In addition, you have made the required settings for dangerous goods processing.

For more information, see [Configuration of Dangerous Goods Processing \[Page 1140\]](#).

Note that during planning, document-based dangerous good records created at item level in forwarding orders are automatically transferred to the relevant freight orders or freight bookings (that is, freight documents). The document-based dangerous goods records derived from forwarding orders are read-only in the freight documents. You can also create document-based dangerous goods records at item level in freight documents.

Process

1. You execute the DG check for the forwarding order.

If the system identifies DG, it selects the *Dangerous Goods* checkbox. If there are DG errors, the system blocks the forwarding order.

To perform the check manually, choose the *Check* pushbutton or select *Check* from the menu.

2. SAP TM creates freight units.

The system can check DG during freight unit building, for example, by using the mixed loading check. The system analyzes the items with respect to their possible combination during transportation. The system considers incompatibilities for the affected items. If the DG check returns errors, the system prevents these items from being transported in the same freight unit.

You can check the blocking status on the *Statuses* tab page in the *Blocking Information* group box. If errors occur during a DG check, the system displays block reason *Error During Dangerous Goods Check* and blocks the relevant processes according to the settings in Customizing for the block reason. In the details, you can find further information about all performed checks, including the DG check.

3. The SAP TM system checks the freight units after they are created.

This check is also carried out each time the FU is changed.

- The system selects the *Dangerous Goods* checkbox when it identifies DG. The system blocks the FU if there are DG errors.
4. The SAP TM system can perform checks during VSR planning and checks the resulting freight document.
 - o Checking the transportation proposal during VSR planning

During VSR optimization the system assigns FUs to vehicle resources and creates freight documents. When creating the transportation proposals, the system carries out the DG check and offers an alternative transportation proposal. In batch processing, the system selects the first solution that does not contain DG errors.

With the mixed-loading check, you can check incompatible FUs that should not be transported together. By setting up a freight unit vehicle check, you avoid planned freight documents that contain freight units with DG that are incompatible with certain resources. The system incorporates incompatibilities into the VSR optimization run. For more information about planning, see [Planning \[Page Error! Bookmark not defined.\]](#).

- o Checking the freight document

The system checks the resulting freight documents after the VSR optimization run. The system also performs this check each time the freight document is changed.

During manual planning, the system checks the freight document each time it is saved or if the check is triggered manually.

Note that at this point, you can create document-based dangerous goods records in the freight document, if required. The system includes the document-based dangerous goods records in the DG checks.

Result

You can display information about DG processing on the following user interfaces:

- *Forwarding Order*
- *Forwarding Quotation*
- *Freight Unit*
- *Freight Order*
- *Freight Booking*
- *Transportation Proposal*

The business document contains the DG check result. You find further DG information for the related product on item level on the *Dangerous Goods* tab page. You can print forwarding orders, forwarding quotations, freight orders, and freight bookings with DG information.

In the forwarding order overview, you can define a query that selects forwarding orders according to dangerous goods data. For example, all forwarding orders with dangerous goods records that contain a specific dangerous goods number and regulation.

In the application log (object /SCMTMS/TMS and subobject DG), you can display messages that occur during DG checks that are carried out during freight FU building and VSR optimization. To open the application log, on the SAP Easy Access screen, choose ► *SCM Basis* ► *Integration* ► *Application Log* ▶.

More Information

For more information about dangerous goods management and phrase management, see SAP Library for SAP SCM Server on SAP Help Portal at <http://help.sap.com/scmserver>. In SAP Library, choose ► *SCM Basis* ► *EH&S Services in SCM Basis* ▶.

[Error and Conflict Handler \(CA-FS-ECH\)](#).

[Forwarding Order Management](#)

[Interactive Planning \[Page 774\]](#)

[Creation and Editing of Freight Units \[Page 719\]](#)

[Incompatibilities \[Page 715\]](#)

[Freight Order](#)



ADR 1.1.3.6 Points Check Calculation

The European Agreement concerning the international carriage of *Dangerous Goods by Road* (ADR) is an international standard governing the transport of dangerous goods by road. Section 1.1.3.6 of the agreement describes an exemption based on the calculation of points for dangerous goods. If the points total calculated according to the method described does not exceed 1000 points, the exemption can be applied.

A new check method has been created (/SCMTMS/DG_ADR_1000_POINTS). For more information on how to assign this check method to the check schema and business context, see [Configuration of Dangerous Goods Processing \[Page 1140\]](#).

You enable the points check in Customizing for Transportation Management. For more information see Customizing for SAP Transport Management under ► *SCM Basis* ► *EH&S Services* ► *Dangerous Goods Management* ► *Dangerous Goods Checks and Dangerous Goods Documents* ► *Dangerous Goods Checks* ► *Specify Dangerous Goods Check Methods* ▶

The following business documents are involved in the calculation of points:

- Forwarding Order (FWO)
Points are the sum of the points of all assigned items.
- Forwarding Quotation (FWQ)
Points are the sum of the points of all assigned items.
- Order-Based Transportation Requirement (OTR)
Points are the sum of the points of all assigned items.
- Delivery-Based Transportation Requirement (DTR)
Points are the sum of the points of each assigned item.
- Freight Unit (FU)
Points are the maximum of the points of each stage.

You activate the ADR points check in the freight unit building rule for the relevant document type. The system considers the ADR points limit when building freight units. For example, if you have set a limit of 1000 points per freight unit and you want to transport three items each with 500 points, the system generates two freight units. For more information, see [Freight Unit Building Rule \[Page 724\]](#).

The formula for calculating points is:

Points = Relevant Quantity x Multiplication Factor

The application of the formula varies according to the following:

- Dangerous Goods Master Data
- Created by Shippers

- Document-based Dangerous Goods Records

Created by Logistics Service Providers

Determination of Relevant Quantity

Points are calculated on the basis of the relevant quantity. You can measure quantities according to one of the following:

- Dangerous Goods Master Data

Uses quantity from item level:

- Gross Weight
- Net Weight
- Gross Volume

- Document-based Dangerous Goods Records

Uses quantity from DG record level:

- Gross Weight
- Net Weight
- Nominal Volume of Receptacle

Quantity Measurement

The quantity measurement to be used is determined by the aggregate state specified for transport of the material or product:

- Dangerous Goods Master Data

For each aggregate state specified in the DG master, you must assign a relevant quantity for dangerous goods master data.

- Document-based Dangerous Goods Records

For each aggregate state specified in the DG record, you must assign a relevant quantity for document-based dangerous goods records. For more information see [Definition of UI Profiles for Document-Based DG Data \[Page 1156\]](#).

For more information see Customizing for SAP Transportation Management under
Transportation Management *Basic Functions* *Dangerous Goods* *Define Points-Relevant Quantities for ADR 1.1.3.6 DG Exemption*

Multiplication Factor

For dangerous goods master data, you specify the multiplication factor in the DG Master.

For document-based dangerous goods records, you specify the multiplication factor in the DG Record. For more information, see [Definition of UI Profiles for Document-Based DG Data \[Page 1156\]](#).

Transport Restrictions

For dangerous goods you can specify that a product or material is:

- Prohibited
 - Not eligible for consideration under ADR 1.1.3.6.
- Unlimited
 - Not considered in points calculation under ADR 1.1.3.6

If either of these flags is set, no points for this product or material will be calculated.

For dangerous goods master data, you specify these flags in the DG Master.

For document-based dangerous goods records, you specify these flags in the DG record. For more information, see [Definition of UI Profiles for Document-Based DG Data \[Page 1156\]](#).

Calculating Total Points

The system calculates points on the following levels:

- Document Item
 - The sum of points for an item in a document
- Document Header
 - The sum of points for all items in a document
- Document Stage Detail
 - The sum of points for all items assigned to a stage

VSR Optimization

To activate the ADR points check in the optimizer you should create vehicle resources, maintaining dimensions and indicating that the resource is relevant for ADR points check.

You can deactivate the points check in the optimizer settings of the planning profile or during the manual planning in the Transportation Cockpit. For more information, see [VSR Optimization \[Page 806\]](#)

If these resources are maintained in the Capacity Selection Settings of the planning profile, the VSR optimizer takes the DG ADR 1.1.3.6 points limit into account as a planning-relevant capacity for this resource. For more information see [Planning Profile \[Page 689\]](#).

Prerequisites

You have assigned a check schema to the relevant business documents and assigned the new check method to the check schema.

For more on information on this see Customizing for Transportation Management under:

- ► SCM Basis ► EH&S Services ► Dangerous Goods Management ► Dangerous Goods Checks and Dangerous Goods Management ► Common Settings ► Specify Business Context ▶

- ► *SCM Basis* ► *EH&S Services* ► *Dangerous Goods Management* ► *Dangerous Goods Checks and Dangerous Goods Management* ► *Dangerous Goods Checks* ► *Specify Dangerous Goods Check Schema* ▶



Document-Based Dangerous Goods Records

If you transport dangerous goods on behalf of customers, you may not always have the required dangerous goods master data in your SAP Transportation Management (SAP TM) system. Document-based dangerous goods records enable you to do the following:

- Enter dangerous goods data manually in a forwarding order, freight order, or freight booking. You create a document-based dangerous goods record at item level for the relevant items.
- Enter dangerous goods data automatically when SAP TM creates a forwarding order based on data received from a business partner (for example, a shipper). The relevant enterprise service creates the required document-based dangerous goods records.

Prerequisites

- You have made the required general settings for dangerous goods. For more information, see [Configuration of Dangerous Goods Processing \[Page 1140\]](#).
- You have defined a user interface (UI) profile for document-based dangerous goods records.

The UI profile controls which fields and regulations are available for entering document-based dangerous goods data. For example, logistics service providers can create UI profiles based on dangerous goods that they regularly transport for their customers.

For more information, see [Definition of UI Profiles for Document-Based DG Data \[Page 1156\]](#).

- To have the system check an individual field in a document-based dangerous goods record during a consistency check of the entire business document, you have enhanced the check methods accordingly.

You enhance the check methods in Customizing for *SCM Basis* under ► *EH&S Services* ► *Dangerous Goods Management* ► *Dangerous Goods Checks and Dangerous Goods Documents* ► *Dangerous Goods Checks* ► *Specify Dangerous Goods Check Methods* □.

You must use existing function module `/SCMTMS/DG_CHECK_WITH_CONTENT` as the item check method.

Note

The system checks the data in the document-based dangerous goods record against the available dangerous goods records in SAP TM. These records are created when you save a document-based dangerous goods record as a template. If you have not saved any template data, the system cannot perform any checks.

To enable you to perform consistency checks on document-based dangerous goods data, you can load SAP EHS Regulatory Content into SAP TM. You can use the generated dangerous goods master data records as templates for document-based dangerous goods records. For more information, see [Loading Dangerous Goods Content \[Page 1162\]](#).

End of the note.

Activities

- You create document-based dangerous goods records on the *Dangerous Goods* tab page at item level in the forwarding order, freight order, or freight booking.

For more information, see [Creation and Editing of Document-Based Dangerous Goods Records \[Page 1159\]](#).

- You can save a document-based dangerous goods record as a template and you can use a template to create a dangerous goods record.

For more information, see [Creation and Use of Dangerous Goods Templates \[Page 1161\]](#).



Definition of UI Profiles for Document-Based DG Data

To enter dangerous goods data manually in a business document, you must define a dangerous goods UI profile. A UI profile controls which fields and regulations are available on the *Dangerous Goods* tab page at item level in the business document. A UI profile also defines the layout of the information on the tab page.

A UI profile consists of a set of dangerous goods fields that are organized in UI groups and that are assigned to the relevant regulations. You can create UI profiles that contain the fields and regulations that you need on a regular basis.

Features

- Creating and editing UI profiles

When you create a UI profile or change an existing UI profile, you select the required fields from the *EH&S Services* master data. You can also select fields that you have previously defined according to your requirements.

Note

You cannot change a UI profile if it is in use (for example, if it is assigned to a forwarding order (FWO) item type and an FWO with this FWO item type has been created with dangerous goods data). However, you can create a new profile by copying an existing UI profile.

End of the note.

- Defining UI groups

You can organize the fields in a UI profile by defining UI groups. Before you insert a UI group into a profile, you must define the UI-group title (for example, “Substance Rating”). You define the position of the UI group on the user interface by specifying a column number and row number.

In addition, you can specify that all fields in a UI group are displayed as a table on the UI. Note that if you assign a phrase set to a field in the UI group, the system automatically provides a link in the table that allows you to create or change a phrase in phrase management.

After you have inserted a UI group into a profile, you assign the required fields.

- Assigning regulations

Each field in a UI profile is assigned to at least one regulation. When a user calls the *Dangerous Goods* tab page in a business document, each regulation has a separate tab page.

You assign regulations at profile level, UI-group level, or field level. For example, when you create a UI profile or UI group, you can select the required regulations. All fields that are added to the UI profile or UI group are then automatically assigned to the same regulations and are available on the relevant tab pages within the *Dangerous Goods* tab page. If required, you can change the assigned regulations at field level. If you have not assigned regulations at profile or group level, you must assign at least one regulation at field level.

- Defining field properties

You can specify the following for individual fields:

- You can specify for each regulation whether you need to edit a field separately. If you do not specify that a field is edited separately, the value entered on the first regulation tab page is automatically transferred to the other regulation tab pages.
- You can specify whether the value displayed on the user interface is an initial value.
- You can specify whether a field is displayed as a checkbox.
- You can specify whether a field appears in the table view in addition to the detail view.
- You can enter a corresponding field for a specific field. For example, you create a field for gross weight with a corresponding field for the unit of measure.
- You can enter a custom field label that is displayed on the UI instead of the default field label from the data element.
- You can specify whether a consistency check is to be performed on a specific field if the user triggers a consistency check for the entire business document or an individual dangerous goods record. Note that if you do not specify this, the system does not check the field.
- Previewing the final user interface layout

You can check the user interface layout before saving it.

- Assigning a phrase set to a field

If EH&S master data is already assigned to a phrase set, the system displays and stores this phrase set automatically. You cannot change this assignment. If there is no such assignment, you can manually select phrase sets for fields that have the same data type as fields with assigned phrase sets.

- Downloading and uploading UI profiles

This enables you to transfer UI profiles from one system client to another, for example.

Activities

- You define UI profiles for document-based dangerous goods data in SAP NetWeaver Business Client by choosing Application Administration General Settings Define UI Profile for Document-Based Dangerous Goods Data .

Note that you can generate a UI profile automatically by choosing the *Generate Inbound Profile* pushbutton. This profile can be used to create document-based dangerous goods records automatically when the system creates a forwarding order based on data received from a business partner. For more information, see [Creation and Editing of Document-Based Dangerous Goods Records \[Page 1159\]](#).

- For forwarding orders, you must assign the UI profile to the relevant forwarding order item types in Customizing for *Transportation Management* under Forwarding Order Management Define Item Types for Forwarding Order Management .

- For freight orders or freight bookings, you must assign the UI profile to the dangerous goods profile in Customizing for *Transportation Management* under ► *Basic Functions* ► *Dangerous Goods* ► *Define Dangerous Goods Profile* . You must then assign the DG profile to the relevant freight order types or freight booking types in Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* or ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types* .
- You access the phrase management functions in SAP NetWeaver Business Client by choosing ► *Master Data* ► *Dangerous Goods Management* ► *Phrase Management* .



Creation and Editing of Document-Based Dangerous Goods Records

You can use this function to manually edit, create, or delete dangerous goods (DG) records at item level in forwarding orders, freight orders, or freight bookings. The system uses the dangerous goods user interface (UI) profile that is assigned to the forwarding order item types or the freight document types in Customizing for *Transportation Management* (see [Definition of UI Profiles for Document-Based DG Data \[Page 1156\]](#)).

Prerequisites

- You have made the required settings for document-based dangerous goods records. For more information, see [Document-Based Dangerous Goods Records \[Page 1154\]](#) and [Definition of UI Profiles for Document-Based DG Data \[Page 1156\]](#).
- You use the authorization object *EHS: Phrase Item* (`C_EHSP TPP`) to control the authorizations for the phrase items. You can define whether users are permitted to carry out the following functions:
 - 02 Change
 - 03 Display
- You use the authorization object *EHS: Phrase Library and Phrase Group* (`C_SHEP TPG`) to control the authorizations for the phrase library and the phrase group. You can define whether users are permitted to carry out the following functions:
 - 01 Add or create
 - 02 Change
 - 03 Display

Features

- Creating a dangerous goods record

When you create a dangerous goods record manually, you can use a dangerous goods template. You can also create the record without a template. The system displays the relevant UI profile at the top of the *Dangerous Goods* tab page.

- Checking a dangerous goods record

You can run a consistency check on an individual dangerous goods record. The system only checks fields that are relevant for the dangerous goods check, as specified in the corresponding UI profile.

The system checks the data in the document-based dangerous goods record against the available dangerous goods records in SAP TM. These records are created when you save a document-based dangerous goods record as a template. If you have not saved any template data, the system cannot perform any checks.

To enable you to perform consistency checks on document-based dangerous goods data, you can load SAP EHS Regulatory Content into SAP TM. You can use the

generated dangerous goods master data records as templates for document-based dangerous goods records. For more information, see [Loading Dangerous Goods Content \[Page 1162\]](#).

- Saving a dangerous goods record

You save a dangerous goods record when you save the business document. If you are authorized, you can also save the dangerous goods record as a reusable dangerous goods template.

- Finding dangerous goods templates

You can search for a dangerous goods template and copy the data into a new record.

- Creating and changing phrases

You can create, change, or display a phrase text by choosing the link next to the corresponding phrase field. A dialog box appears where you either create phrases or change existing phrases in several languages.

- Selecting phrases

You can search for existing phrases and select them.

Activities

You access the dangerous goods activities in the business document at item level on the *Dangerous Goods* tab page.

Note that during planning, document-based dangerous good records created at item level in forwarding orders are automatically transferred to the relevant freight orders or freight bookings (that is, freight documents). The document-based dangerous goods records derived from forwarding orders are read-only in the freight documents. You can then create additional document-based dangerous goods records at item level in the freight documents.



Document-based dangerous goods records can be created automatically when SAP TM creates a forwarding order based on data received from a business partner (for example, a shipper). To generate the records, the system uses the UI profile that is assigned to the forwarding order item type.

You can use UI profile `DG_INBOUND_PROFILE` to create the dangerous goods records automatically. This profile contains the full set of fields that can be received from the business partner in the inbound message and that can be added to a UI profile. This is useful if you do not know which dangerous goods data will be sent, for example.

End of the note.



Creation and Use of Dangerous Goods Templates

You can use dangerous goods templates to create document-based dangerous goods records.

Prerequisites

You use the authorization object *DG Material Master: Master Data* (`M_MATE_DGM`) to control the authorizations for master data. You can define whether users are permitted to carry out the following functions:

- 01 Add or create dangerous goods master data
- 02 Change dangerous goods master data
- 03 Display dangerous goods master data

Activities

When you create a document-based dangerous goods record in a business document, you can save the record as a released or unreleased template. You can use released templates to create new dangerous goods records.

When you search for a released template, you can use the following dangerous goods key fields as filter criteria:

- *DG Number Type*
- *DG Number*
- *Packing Group*
- *Variant ID*

You can check the processing status of templates in the dangerous goods master data in SAP NetWeaver Business Client under ► *Master Data* ► *Dangerous Goods Management* ► *Dangerous Goods Master* ▶.

More Information

[Creation and Editing of Document-Based Dangerous Goods Records \[Page 1159\]](#)



Loading Dangerous Goods Content

You can use the dangerous goods content loader to load SAP EHS Regulatory Content into SAP Transportation Management (SAP TM). You download the content from SAP Service Marketplace and then load it into SAP TM using the content loader. The content comprises dangerous goods (DG) regulations, regulation texts (for example, substance names), phrases, and the required Customizing data. Based on the content, the content loader generates DG master data records in SAP TM.

The content loader is particularly useful if you do not have the required master data for dangerous goods in your SAP TM system. For example, if you are a logistics service provider (LSP) who receives dangerous goods data from shippers. You can use the generated DG master data records as templates for document-based dangerous goods records and as the basis for consistency checks (for example, to check whether a shipper has provided the correct temperature data for the corresponding UN number).

Prerequisites

- You have downloaded the SAP EHS Regulatory Content from SAP Service Marketplace. You download the content as a zip file. The zip file contains the following files:
 - CSV (comma-separated values) file for each regulation
 - CSV files for phrases
 - CSV file that maps the regulation prefix (3 characters) to the regulation name (12 characters)
- You have specified the regulations that are to be loaded into SAP TM. You do this in Customizing for *SCM Basis* under ► *EH&S Services* ► *Dangerous Goods Management* ► *Dangerous Goods Master* ► *Specify Dangerous Goods Regulations* □. You have to enter the 12-character regulation name from the CSV file.
- You have opened the content loader in SAP NetWeaver Business Client by choosing ► *Master Data* ► *Dangerous Goods Management* ► *Dangerous Goods Content Loader* □.

Procedure

1. Upload Zip File

The system uploads the file to a staging area and informs you when the upload has been completed.

2. Load Phrase Data

We recommend that you load the phrases before you load the regulations.

To check the status of the loading process, go to step 4 *Monitor Import Processes*. To check if any system messages have been generated, go to step 5 *Check Generated Messages*.

3. Load Regulation Data

The system displays a list of regulations that are specified in the CSV files. You select the regulations that you want to load. If you cannot select a regulation, make sure that the

regulation has been specified in the Customizing activity *Specify Dangerous Goods Regulations*. If errors occur during the loading process, you can repeat the process for the data with errors by selecting the corresponding load mode.

To check the status of the import, go to step 4 *Monitor Import Processes*. To check if any system messages have been generated, go to step 5 *Check Generated Messages*.

4. *Monitor Import Processes*

This contains an overview of the processes for loading phrases and regulations. You can use it to check the loading status.

5. *Check Generated Messages*

This contains an overview of system messages that have been generated while loading phrases or regulations (for example, information, warning, or error messages). You can filter the overview, for example, according to the regulation type and the required message type. You can also filter the overview according to the context in which the message was generated (for example, PHRASES_LOAD or REGULATIONS_LOAD).

6. *Summary*

This contains an overview of the processes that have been performed during the current session.

Result

For each content record, the system creates a corresponding record in the dangerous goods master data in SAP TM. Each dangerous goods master data record contains a product with a product number generated by the system. This number always contains the respective UN number (for example, UN-1993-III-0101). The UN number can therefore be used to search for the imported content in the dangerous goods master data.

You display dangerous goods master data in SAP NetWeaver Business Client by choosing
► *Master Data* ► *Dangerous Goods Management* ► *Dangerous Goods Master* ► *Display Dangerous Goods Master* ►



Shipper's Declaration

The system can create a shipper's declaration for dangerous goods in a freight booking. The International Air Transport Association (IATA) requires that all shipments tendered to air carriers and air freight forwarders classified by regulation as dangerous goods are accompanied by the IATA shipper's declaration for dangerous goods. The shipper is responsible for correctly and accurately completing the form in accordance with current IATA requirements and for ensuring that all requirements have been met including packaging, labelling, and product information.

Based on the freight booking, the system looks up the relevant dangerous goods master and generates a declaration that specifies the nature and quantity of dangerous goods. The shipper's declaration also provides information about the type of packing material.

You can view this document in the *Output Management* tab of the freight order.

In endorsing this document, you declare that all applicable air transport requirements have been met.

As the IATA shipper's declaration for dangerous goods is a complex document, SAP provides a template which must be implemented and reviewed by the shipper. The shipper must adapt the form according to its own processes, with particular attention to the packing function and to country-specific deviations. For more information see: ► <http://service.sap.com/instguides> ► SAP Business Suite Applications ► SAP TM ► Solution Manager Content Documentation ► -> Using SAP TM <release> ► Integration Guides ► Output Management Configuration Guide ▶

Integration

Shipper's declaration is integrated with SAP ERP based on the sales order business object.

Prerequisites

You have completed the necessary configuration of Output Management. For more information see: ► <http://service.sap.com/instguides> ► SAP Business Suite Applications ► SAP TM ► Solution Manager Content Documentation ► -> Using SAP TM <release> ► Integration Guides ► Output Management Configuration Guide ▶

You have specified the necessary output profile for the freight booking. For more information see Customizing for Transportation Management under ► Freight Order Management ► Freight Booking ► Define Freight Booking Types ▶

You have specified the correct action definition for post processing framework (PPF) settings. For more information see Customizing for Transportation Management under ► Cross-Application Components ► Processes and Tools for Enterprise Applications ► -> Reusable Objects and Functions for BOPF Environment ► PPF Adapter for Output Management ► Maintain PPF Settings ▶

You have specified the necessary action setting and action definition (/SCMTMS/PRINT_SHPRS_DCL) for the output agents of relevant business objects, for example transportation order. For more information see Customizing for Transportation Management under ► Cross-Application Components ► Processes and Tools for Enterprise Applications ► -> Reusable Objects and Functions for BOPF Environment ► PPF Adapter for Output Management ► Maintain Output Management Adapter Settings ▶

Example

As a shipper, you create a forwarding order and assign freight units that contain dangerous goods items. You assign the forwarding order to an air freight booking. The system assesses the contents of the freight units, determines that the freight booking contains dangerous goods and generates a shipper's declaration document that includes information on the dangerous goods from the dangerous goods master. The shipper's declaration is available to the shipper.



Sustainability

In SAP Transportation Management (SAP TM), you use this function to calculate the emissions quantity and fuel consumption for a freight order. You can also define other sustainability factors for a transportation mode or means of transportation.

Prerequisites

In Customizing for Transportation Management, you have defined sustainability factors and assigned them to a transportation mode or means of transportation. To calculate the emissions quantity and the fuel consumption, you have defined a carbon dioxide factor and an fuel consumption factor.

For more information, see [Defining Sustainability Factors \[Page 1167\]](#) and [Calculation of Sustainability Factors \[Page 1168\]](#).

Features

You make the calculation based on the distance as well as on the weight of the means of transportation and the goods to be transported.



Defining Sustainability Factors

Sustainability factors are essential for the calculation of fuel consumption and of the emissions that result from a freight order. You can define specific sustainability factors for each transportation mode and each means of transportation.

It is possible to define one of these sustainability factors as the standard factor for all transportation modes and means of transportation for which no specific assignment is made in individual cases.

Features

SAP Transportation Management (SAP TM) offers the following sustainability factors:

Carbon Dioxide Factor

You can determine the quantity of carbon dioxide emissions by defining a specific carbon dioxide factor. You define the factor with a consumption unit for each weight and distance unit.

Fuel Consumption Factor

You can determine the fuel consumption by defining a specific fuel consumption factor. You define the factor with a consumption unit for each weight and distance unit.



Note

Calculation of the quantity of carbon dioxide emissions and fuel consumption depends on the weight. You can calculate the fixed weight of the means of transportation that is to be taken into account for each freight order.

End of the note.

Fixed Weight of Means of Transport

You can define a fixed weight for the means of transport that is valid for all calculations of the sustainability factors for a specific means of transport.

Activities

You define the carbon dioxide factor, the fuel consumption factor, and the weight of the means of transport as well as the related units of measure in Customizing for Transportation Management under ► *Basic Functions* ► *Sustainability* ► *Define Distance Sustainability Factors* ▶.

You define the emission factor for a means of transport, in Customizing for Transportation Management under ► *Master Data* ► *Resources* ► *Define Means of Transport* ▶.

You define the emission factor for a transportation mode in Customizing for Transportation Management under ► *Master Data* ► *Transportation Network* ► *Transportation Lane* ► *Define Transportation Mode* ▶.



Calculation of Sustainability Factors

A number of standard calculation rules are available for calculating sustainability factors.

Features

The standard calculation rules for calculating sustainability factors and the total weight are as follows:

Carbon Dioxide Emissions

Carbon dioxide emissions for a freight order are calculated as follows:

Emission quantity = Carbon dioxide factor * distance * total weight

Fuel Consumption

Fuel consumption for a freight order is calculated as follows:

Fuel quantity = Fuel consumption factor * distance * total weight

Total Weight

The emission-relevant total weight for a freight order is calculated as follows:

Total weight = Fixed weight for the means of transport + goods weight

Note

If you want to modify the standard calculation rules, you must implement the business add-in (BAdI) *BAdI: Distance-Related Emissions Calculation*. For more information, see Customizing for Transportation Management under *Business Add-Ins (BAdIs) for Transportation Management* *Basic Functions* *Sustainability*.

End of the note.



Global Trade

The global trade functions in SAP Transportation Management (SAP TM) help you to meet the requirements for transporting customs-relevant goods. They enable you to trigger the creation of customs declarations and handle various customs procedures.

Features

- Shippers can create export declarations from [freight documents](#) that are based on deliveries received from SAP ERP. For this process, you can integrate SAP TM with SAP Global Trade Services or a similar customs management application.

For more information, see [Export Declarations by Shippers \[Page 1177\]](#).

- Logistics service providers (LSPs) can create export declarations from forwarding orders on behalf of a shipper. For this process, you can integrate SAP TM with SAP Global Trade Services or a similar customs management application. Alternatively, you can enter the data manually (for example, if the shipper has provided the data).

For more information, see [Export Declarations by LSPs \(Manual Customs Handling\) \[Page 1181\]](#) and [Export Declarations by LSPs \(Automatic Customs Handling\) \[Page 1183\]](#).

- If you need to transport bonded goods within a customs union, you can make the required entries and settings that relate to the opening and closing of the transit procedure.

For more information, see [Transit Procedure \[Page 1190\]](#).

More Information

In some cases, separate organizational units are responsible for the export and import processes. For information about creating export business documents and the corresponding import business documents (for example, export freight bookings and import freight bookings), see [Export/Import Processing](#).



Configuration of Customs Processing

Customs processing in SAP Transportation Management (SAP TM) is controlled by customs activities that are defined in Customizing. Each customs activity contains a set of parameters that defines how customs processing is carried out for a specific process (for example, export or transit). The customs activities are assigned to the business documents via a customs profile.

When you save a business document, the system checks whether a customs profile is assigned to the business document type. You can assign a customs profile to freight order types, freight booking types, and freight unit types. The system then determines which customs activities are assigned to the customs profile. Further processing depends on the settings in the customs activities. For example, which customs relevance check is to be carried out and which grouping strategy is to be used to group items into customs groups.

The customs activity also controls which customs statuses are displayed on the UI for predefined steps of a customs process. You define the customs statuses according to your requirements and assign them to the customs activity. You also define cumulated customs statuses that are displayed at header and item level in a business document.



Note

You can set an execution block in a business document based on the cumulated customs status of the business document. For more information, see [Customs Statuses and Cumulated Customs Statuses \[Page 1176\]](#).

End of the note.

Features

A customs activity contains the following settings:

- Customs relevance check that must be performed for the business document (see [Customs Relevance Check \[Page 1172\]](#))
- Customs statuses for the customs relevance check, that is, which customs status is displayed if the document is customs-relevant or not customs-relevant (see [Customs Statuses and Cumulated Customs Statuses \[Page 1176\]](#))
- Grouping strategy according to which the system builds customs groups (see [Customs Groups \[Page 1174\]](#))
- Trigger status for requesting a customs declaration, that is, the execution status that a business document must have to request a customs declaration

Note that the trigger status is not relevant for customs processing based on freight units (that is, export declarations by LSPs and the transit procedure for freight units).

- Customs statuses for customs declarations, for example, “Customs Declaration Requested” or “Customs Declaration Approved” (see [Customs Statuses and Cumulated Customs Statuses \[Page 1176\]](#))

Activities

You make the required settings in Customizing for *Transportation Management* under ► *Basic Functions* ► *Global Trade* in the following Customizing activities:

- *Define Customs Activities and Profiles*
- *Define Customs Relevance Check*
- *Define Cumulation of Customs Statuses*
- *Check Customs Statuses*



Customs Relevance Check

To determine whether a business document is relevant for a customs process (for example, export or transit), the system runs the customs relevance check that is assigned to the customs activity. The customs relevance check determines, for example, whether goods are to be transported into a country that is in a different customs union and an export declaration is therefore required.

Features

The following are examples of the available standard customs relevance checks:

- EXP_EU

This check is used for export processes in freight documents (see [Export Declarations by Shippers \[Page 1177\]](#)).

It checks whether the source and destination countries belong to the European Union. The goods are customs-relevant if the destination country is different from the source country, that is, one of the countries is not in the European Union. The relevance check identifies whether a country belongs to the European Union by checking the relevant setting in Customizing for SAP NetWeaver under ► General Settings ► Set Countries ► Specify Countries in mySAP Systems (CRM, SRM, SCM,...) ▶.

Note that if you are transporting goods between two countries outside the European Union, the EXP_EU check cannot identify whether the countries belong to different customs unions. If you want to check customs relevance in this case, you can implement the Business Add-In (BAdI) *BAdI: Change Result of Customs Relevance Check*. For more information, see Customizing for Transportation Management under ► Business Add-Ins (BAdIs) for Transportation Management ► Basic Functions ► Global Trade ► Customs Activities ► BAdI: Change Result of Customs Relevance Check ▶.

- TRA_T1

This check is used for opening the transit procedure in a freight document (see [Transit Procedure for Freight Documents \[Page 1191\]](#)).

It checks the following:

- Automatic customs handling has been specified for the corresponding forwarding order in Customizing for the forwarding order type.
- The transit procedure has been selected as the inbound customs activity for at least one of the items.
- The transit procedure has been specified for at least one stage in the actual route.
- There is at least one item without a movement reference number.

If these requirements are met, the freight document is relevant for the transit procedure.

For information about all standard customs relevance checks, see the documentation of the Customizing activity *Define Customs Relevance Check*.

Activities

You make the following settings in Customizing for *Transportation Management* under ► *Basic Functions* ► *Global Trade* ▶:

- You define customs relevance checks in the Customizing activity *Define Customs Relevance Check*.
- You assign customs relevance checks to customs activities in the Customizing activity *Define Customs Activities and Profiles*.



Customs Groups

A customs group is a group of freight unit (FU) items for which a customs declaration is required. At least one customs group must be created in order to perform a customs process.

The system creates customs groups according to the grouping strategy that is assigned to the customs activity. The strategy groups the items according to specific criteria, such as the consignee or the goods seller. Depending on the criteria, more than one customs group (and therefore more than one customs declaration) may be created for a load that is to be transported together.

Features

You can use the following standard grouping strategies:

- EXP_CONS

Groups FU items according to the consignee, goods buyer, goods seller, Incoterm, and Incoterm location

It is used for export processes in freight documents (for example, export declarations by shippers). It is assigned to standard customs activity EXP_EU.

- EXP_LSP

Groups FU items according to the movement reference number

It is used for export processes in freight units (for example, export declarations by logistics service providers). It is assigned to standard customs activity EXP_EU_FU.

- TRA_OPEN

Groups FU items according to the transit end location, previous document, and previous document type

It is used for opening the transit procedure in freight documents. It is assigned to standard customs activity TRA_T1.

- TRA_CLOSE

Groups FU items according to the consignee, goods buyer, goods seller, Incoterm, Incoterm location, previous document, and previous document type

It is used for closing the transit procedure in freight documents. It is assigned to standard customs activity TRA_T1_CL.

- TRA_OPENFU

Groups FU items according to the transit end location and movement reference number

It is used for opening the transit procedure in freight units. It is assigned to standard customs activity TRA_T1_FU.

Activities

You can define your own grouping strategy by making the required settings in Customizing for *SCM Basis* under *Process Controller* in the following Customizing activities:

- *Define Service*
- *Define Strategy*
- *Define Methods*
- *Assign Methods to Strategy*

You assign the grouping strategy to the customs activity in Customizing for *Transportation Management* under ► *Basic Functions* ► *Global Trade* ► *Define Customs Activities and Profiles* ▶.

Note that you can define and change grouping criteria. For more information, see Customizing for *Transportation Management* under ► *Business Add-Ins (BAdIs) for Transportation Management* ► *Basic Functions* ► *Global Trade* ► *Grouping* ► *BAdI: Grouping of Freight Unit Items* ▶.



Customs Statuses and Cumulated Customs Statuses

The system sets a customs status at different steps of customs processing. In Customizing for *Transportation Management*, you define which customs status the system displays for each predefined step. You also define cumulated customs statuses that are displayed at header and item level in a business document.

Features

Customs Statuses

If a customs relevance check is performed for a business document, the system displays a customs status that reflects the result of the check (that is, relevant or not relevant). If a customs activity is relevant for a business document and you perform the required customs process (for example, export or transit), the system displays a customs status that reflects the current status of the customs process (for example, "Export Declaration Requested" or "Export Declaration Approved").

Cumulated Customs Statuses

As soon as customs groups have been created in a business document, the system displays a cumulated customs status at header and item level. This is because a business document can contain more than one customs group, each with a different customs status; and each item in a business document can belong to more than one customs group.

You can assign a block reason to a cumulated customs status. As soon as the cumulated customs status is set, the system sets an execution block in the business document and displays the corresponding block reason on the *Statuses* tab page. You can use standard block reason 04 (*Cust. Decl. Check Required*) or you can define your own block reason.

Activities

You make the following settings in Customizing for *Transportation Management* under ► *Basic Functions* ► *Global Trade* ▶:

- You define customs statuses and cumulated customs statuses in the Customizing activity *Define Cumulation of Customs Statuses*. You also assign a customs status to each cumulated customs status, and you assign a level to each cumulated status. The level allows the system to determine which cumulated status is to be displayed if more than one cumulated status is relevant.

Note that you can check if the customs statuses have been configured correctly by using the report provided in the Customizing activity *Check Customs Statuses*. The report checks if each customs status has a unique description and each customs status is assigned to a cumulated customs status.

- You assign customs statuses to the customs activity in the Customizing activity *Define Customs Activities and Profiles*.

You define block reasons in Customizing for *Transportation Management* under ► *Basic Functions* ► *General Settings* ► *Define Block Reason Codes* ▶.

For more information, see the documentation of the Customizing activities.



Export Declarations by Shippers

You use this process to create export declarations for customs-relevant [freight documents](#) that contain freight units derived from delivery-based transportation requirements (DTRs). Note that export declarations are created at the pre-carriage stage of a freight document.

To communicate with the customs authorities, you can use an integrated customs management application, for example, SAP Global Trade Services. When you request an export declaration for a freight document, the customs management application automatically creates the export declaration and handles the customs processes.

Prerequisites

- You have integrated SAP TM with SAP Global Trade Services or a similar customs management application.

Note that the process below describes the integration of SAP TM with SAP Global Trade Services.

For more information, see [Integration with SAP Global Trade Services \[Page 1122\]](#).

- You have defined a customs activity that controls customs handling for export declarations and assigned the customs activity to a customs profile. You have assigned the customs profile to the relevant freight document types.

You make these settings in Customizing for *Transportation Management* as follows:

- You define activities and profiles under ► *Basic Functions* ► *Global Trade* ► *Define Customs Activities and Profiles* ▶.

For export declarations by shippers, you can use standard customs activity EXP_EU, which is assigned to standard customs profile GT_OUTBOUND.

Note that you also have to define customs statuses and cumulated customs statuses. You assign the customs statuses to the customs activity. You can also assign block reasons to cumulated customs statuses.

For more information, see [Configuration of Customs Processing \[Page 1170\]](#).

- You assign a customs profile to a freight order type under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶.
- You assign a customs profile to a freight booking type under ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types* ▶.
- SAP TM has created a delivery-based transportation requirement (DTR) based on a delivery received from SAP ERP.

For more information about ERP delivery integration, see [Integration of ERP Orders and Deliveries in Transp. Planning](#).

Process

1. You carry out transportation planning for freight units derived from a DTR.

When you save the resulting freight document, the system does the following:

1. Checks whether a customs profile is assigned to the freight document type (for example, standard customs profile for export `GT_OUTBOUND`)
2. Determines which customs activities are assigned to the customs profile (for example, standard customs activity for export `EXP_EU`)
3. Runs the customs relevance check that is assigned to the customs activity (for example, standard customs relevance check `EXP_EU`)

In the freight document, the system displays the customs activity in the *Customs Activity* group box on the *Customs* tab page. If the freight document is customs-relevant, the system selects the *Customs Relevance* checkbox for the customs activity. The system displays the corresponding customs status for the check result at header level (that is, on the *Customs* tab page and *Statuses* tab page) and at item level (on the *Customs* tab page in the item details).

Note the following:

- If you have assigned a block reason to the relevant cumulated customs status, the system sets an execution block in the freight document.
- If the freight document is not customs-relevant, you can select the *Customs Relevance* checkbox manually and then proceed with the next steps.

For information about the standard customs relevance checks, see [Customs Relevance Check \[Page 1172\]](#).

2. You create customs groups in the freight document.

You create customs groups by selecting the customs activity in the *Customs Activity* group box on the *Customs* tab page and choosing the *Build Customs Groups* pushbutton. The system groups the items in the freight document according to the grouping strategy assigned to the customs activity (for example, standard grouping strategy `EXP_CONS` that is assigned to customs activity `EXP_EU`).

For information about the standard grouping strategies, see [Customs Groups \[Page 1174\]](#).

You display the customs groups by selecting the customs activity in the *Customs Activity* group box. The system displays the customs groups in the *Item Groups* table. You display the items assigned to each customs group by selecting the customs group and choosing the *Show Assigned Items* pushbutton.

The customs status of each customs group is displayed in the *Status* field in the *Item Groups* table. At this point, each customs group has the customs status that relates to the check result (for example, "Customs-Relevant"). The system displays the relevant cumulated customs status at header and item level in the freight document. If you have assigned a block reason to the cumulated customs status, the system sets an execution block in the freight document.

3. You create an export declaration.

You trigger the creation of an export declaration for one or more customs groups by selecting the customs groups in the *Item Groups* table and choosing the *Create Export Declaration* pushbutton. When you save the freight document, the system triggers the *Request Export Declaration* (`ExportDeclarationSUITERequest_Out`) enterprise service. SAP TM sends the request to SAP Global Trade Services.

Before the system sends the request, it checks if the freight document has the required trigger status, that is, the execution status specified in the customs activity. If required, you must set the corresponding execution status and save the freight document again.

The system sets the customs status of the customs groups (for example, “Export Declaration Requested”). The system displays the relevant cumulated customs status at header and item level in the freight document. If you have assigned a block reason to the cumulated customs status, the system sets an execution block in the freight document.

SAP TM fixes the freight document. Changes to the freight document are not recommended at this point, but you can still cancel the export declaration.

4. SAP Global Trade Services creates the export declarations and submits them to the customs authorities.

When SAP Global Trade Services receives an export confirmation from the customs authorities, it sends a confirmation to SAP TM that contains the following information:

- Customs management document number
This is the document ID provided by the customs management application that you use to communicate with the customs authorities.
- Customs reference number
In the European Union, for example, this is the movement reference number (MRN).
- Indicator that shows the status of customs processing

The following values are possible:

- *Released*: Customs clearance has been obtained for a customs group.
- *Canceled*: An export declaration has been successfully canceled.
- *Fallback*: A fallback procedure is in use (for example, if the customs authorities' IT systems or processes have failed and communication has to be carried out using printouts instead of electronic messages). The status of the customs groups and freight document does not change.

5. SAP TM receives the confirmation from SAP Global Trade Services.

The *Change Transportation Order Based on Export Declaration Confirmation* (`ExportDeclarationSUITEConfirmation_In`) enterprise service receives the confirmation from SAP Global Trade Services.

If customs has approved an export declaration for a particular customs group, the system sets the corresponding customs status (for example, “Export Declaration Approved”). The system displays the relevant cumulated customs status at header and item level. If you have not assigned a block reason to the new cumulated customs status, the system resets any existing blocks.

Result

As soon as customs clearance has been obtained for all customs groups and all execution blocks have been reset, the system unfixes the freight document and the goods can be transported. The cumulated customs status, customs management document number (that is, export declaration

ID), and the customs reference number are displayed on the *Customs* tab page in the freight document.

If you subsequently want to cancel an export declaration, you select the relevant customs group on the *Customs* tab page in the freight document and choose the *Cancel Customs Declaration* pushbutton. SAP TM sends a cancellation request to SAP Global Trade Services using the *Request Export Declaration Cancellation*

(`ExportDeclarationSUITECancellationRequest_Out`) enterprise service. SAP TM sets the corresponding customs status (for example, "Export Declaration Cancellation Requested"). If you have assigned a block reason to the relevant cumulated customs status, the system sets an execution block in the freight document. As soon as SAP Global Trade Services has confirmed the cancellation, SAP TM updates the customs statuses accordingly.

Note that export declaration documents are stored in the SAP Global Trade Services system. SAP Global Trade Services can send an export declaration document by e-mail to an SAP TM user.



Export Declarations by LSPs (Manual Customs Handling)

You use this process to enter customs data for customs-relevant items in forwarding orders. You enter the customs data and set the customs statuses manually in the forwarding order (FWO).

Prerequisites

- You have specified that customs handling is manual for the relevant FWO types. You define FWO types in Customizing for *Transportation Management* under *Forwarding Order Management* *Forwarding Order* *Define Forwarding Order Types* .
- You have defined a customs activity that controls customs handling for export declarations and assigned the customs activity to a customs profile. You have assigned the customs profile to the relevant freight unit types.

You make these settings in Customizing for *Transportation Management* as follows:

- You define activities and profiles under *Basic Functions* *Global Trade* *Define Customs Activities and Profiles* .

For this process, you can use standard customs activity `EXP_EU_FU`, which is assigned to standard customs profile `GT_OUTBOUND_FU`.

Note that you also have to define customs statuses and cumulated customs statuses. You assign the customs statuses to the customs activity. You can also assign block reasons to cumulated customs statuses.

For more information, see [Configuration of Customs Processing \[Page 1170\]](#).

- You define freight unit types under *Planning* *Freight Unit* *Define Freight Unit Types* .

Note

Some of the settings in the custom activity do not apply to manual customs handling (for example, customs relevance check and grouping strategy). The most important settings are the trigger status and the assignment of the customs statuses to the customs process.

End of the note.

- You have obtained the required customs data, for example, from the shipper or by using a non-integrated customs management application.

Note that to create an export declaration, the forwarding order must contain one or more freight units (FUs). In the following process, it is assumed that automatic FU creation has been set up in Customizing for *Transportation Management*.

Process

1. You create an FWO with the required items.

You specify that the LSP is responsible for the export declaration by selecting the *Export Declaration by LSP* checkbox on the *General Data* tab page in the FWO. Note that the

- system selects this checkbox automatically if you have selected the *LSP Export Declaration* checkbox in the master data of the shipper.
2. You set the customs status of the items in the forwarding order (for example, “Customs-Relevant”).

You set the customs status on the *Customs* tab page in the item details. The system displays the relevant cumulated customs status at header level on the *Statuses* tab page.
 3. You save the FWO and the system automatically creates freight units.

If you have assigned a block reason to the cumulated customs status, the system sets an execution block in the forwarding order.
 4. You enter the following data on the *Customs* tab page at item level in the forwarding order:
 - Customs management document number

This is the export declaration ID provided by the shipper or obtained using a non-integrated customs management application.
 - Customs reference number and expiration date

In the European Union, for example, this is the movement reference number (MRN). The goods export has to take place by the expiration date.
 - Customs commodity code

This classifies the goods to be transported according to a customs tariff number.
 5. You set the customs status of the items in the forwarding order (for example, “Export Declaration Approved”) and save the forwarding order.

The system displays the relevant cumulated status at header level. If you have not assigned a block reason to the cumulated customs status, the system resets any existing blocks.

Result

When you create a freight document for the forwarding order, the freight document inherits the customs status from the forwarding order. You can view the customs status on the *Customs* tab page in the freight document. It also inherits the customs information at item level.

To cancel customs declarations manually in a forwarding order, choose the respective customs status at item level on the *Customs* tab page. If you have assigned a block to the relevant cumulated customs status, the system sets an execution block in the forwarding order.



Export Declarations by LSPs (Automatic Customs Handling)

You use this process to create export declarations on behalf of shippers for customs-relevant items in forwarding orders.

To communicate with the customs authorities, you can use an integrated customs management application, for example, SAP Global Trade Services. When you request an export declaration from the forwarding order, the customs management application automatically creates the export declaration and handles the customs processes.

Prerequisites

- You have integrated SAP TM with SAP Global Trade Services or a similar customs management application. For more information, see [Integration with SAP Global Trade Services \[Page 1122\]](#).

Note the following:

- The process below describes the integration of SAP TM with SAP Global Trade Services.
- To use your own enterprise service to request an export declaration, you must implement the Business Add-In (BAdI) *BAdI: Creation of Export Declarations on Freight Unit*. For more information, see Customizing for *Transportation Management* under ► *Business Add-Ins (BAdIs) for Transportation Management* ► *Basic Functions* ► *Global Trade* ► *Declarations* ► *BAdI: Creation of Export Declarations on Freight Unit* ▶.
- You have defined a customs activity that controls customs handling for export declarations and assigned the customs activity to a customs profile. You have assigned the customs profile to the relevant freight unit types.

You make these settings in Customizing for *Transportation Management* as follows:

- You define activities and profiles under ► *Basic Functions* ► *Global Trade* ► *Define Customs Activities and Profiles* ▶.

For this process, you can use standard customs activity `EXP_EU_FU`, which is assigned to standard customs profile `GT_OUTBOUND_FU`.

Note that you also have to define customs statuses and cumulated customs statuses. You assign the customs statuses to the customs activity. You can also assign block reasons to cumulated customs statuses.

For more information, see [Configuration of Customs Processing \[Page 1170\]](#).

- You define freight unit types under ► *Planning* ► *Freight Unit* ► *Define Freight Unit Types* ▶.
- You have specified that customs handling is automatic for the relevant FWO types. For more information, see Customizing for *Transportation Management* under ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Forwarding Order Types* ▶.

Note that to create an export declaration, the FWO must contain one or more freight units (FUs). In the following process, it is assumed that automatic FU creation has been set up in Customizing for *Transportation Management*.

Process

1. You create an FWO with the required items.

You specify that the LSP is responsible for the export declaration by selecting the *Export Declaration by LSP* checkbox on the *General Data* tab page in the FWO. Note that the system selects this checkbox automatically if you have selected the *LSP Export Declaration* checkbox in the master data of the shipper.

2. You save the FWO and the system automatically creates freight units.
3. You trigger the creation of an export declaration from the forwarding order and SAP TM sends the request to SAP Global Trade Services.

You trigger the creation of an export declaration from the forwarding order by choosing ► *Customs* ► *Create Export Declaration* and then saving the FWO. When you save the forwarding order, the system does the following:

1. Checks whether a customs profile is assigned to the freight unit type (for example, standard customs profile `GT_OUTBOUND_FU`)
2. Determines which customs activities are assigned to the customs profile (for example, standard customs activity `EXP_EU_FU`)
3. Runs the customs relevance check that is assigned to the customs activity (for example, standard customs relevance check `EXP_EU_FU`)
4. Creates custom groups

The system groups the items in the forwarding order according to the grouping strategy assigned to the customs activity (for example, standard grouping strategy `EXP_LSP`).

For more information about the standard grouping strategies, see [Customs Groups. \[Page 1174\]](#)

On the *Customs* tab page in the freight unit, you display the customs groups by selecting the customs activity in the *Customs Activity* group box. The system displays the customs groups in the *Item Groups* table. You display the items assigned to each customs group by selecting the customs group and choosing the *Show Assigned Items* pushbutton.

5. Requests an export declaration for each customs group and sets the customs status of the customs groups (for example, “Export Declaration Requested”)

The system triggers the *Request Export Declaration* (`ExportDeclarationSUITERequest_Out`) enterprise service. SAP TM sends the request to SAP Global Trade Services.

The system sets the relevant cumulated customs status at header level and item level in the forwarding order, and at header level in the freight unit. If you have assigned a block reason to the cumulated status, the system sets an execution block in the forwarding order and the freight units.

4. SAP Global Trade Services creates the export declarations and submits them to the customs authorities.

When SAP Global Trade Services receives an export confirmation from the customs authorities, it sends a confirmation to SAP TM that contains the following information:

- Customs management document number

This is the document ID provided by the customs management application that you use to communicate with the customs authorities.

- Customs reference number

In the European Union, for example, this is the movement reference number (MRN).

- Indicator that shows the status of customs processing

The following values are possible:

- *Released*: Customs clearance has been obtained for a customs group.
- *Canceled*: An export declaration has been successfully canceled.
- *Fallback*: A fallback procedure is in use (for example, if the customs authorities' IT systems or processes have failed and communication has to be carried out using printouts instead of electronic messages). The status of the customs groups and forwarding order does not change.

5. SAP TM receives the confirmation from SAP Global Trade Services.

The *Change Transportation Order Based on Export Declaration Confirmation* (`ExportDeclarationSUITEConfirmation_In`) enterprise service receives the confirmation from SAP Global Trade Services.

If customs has approved an export declaration for a particular customs group, the system sets the corresponding customs status (for example, "Export Declaration Approved"). The system displays the relevant cumulated customs status at header and item level. If you have not assigned a block reason to the new cumulated customs status, the system resets any existing blocks.

Result

When you create a freight document for the forwarding order, the freight document inherits the customs status from the forwarding order. You can view the customs status on the *Customs* tab page in the freight document. The freight document also inherits the customs information at item level. You can display this information on the *Customs* tab page in the item details.

To cancel an export declaration in the forwarding order, choose *Customs* *Cancel Customs Declaration*. SAP TM sends a cancellation request to SAP Global Trade Services using the *Request Export Declaration Cancellation*

(`ExportDeclarationSUITECancellationRequest_Out`) enterprise service. SAP TM sets the corresponding customs status (for example, "Export Declaration Cancellation Requested"). If you have assigned a block reason to the relevant cumulated customs status, the system sets an execution block in the forwarding order and the freight units. As soon as SAP Global Trade Services has confirmed the cancellation, SAP TM updates the customs statuses accordingly.

Note that export declaration documents are stored in the SAP Global Trade Services system. SAP Global Trade Services can send an export declaration document by e-mail to an SAP TM user.



Import Declarations by LSPs

You use this process to create import declarations on behalf of shippers for customs-relevant items in forwarding orders. You enter the customs data and set the customs statuses manually in the forwarding order (FWO).

Prerequisites

- You have defined a customs activity that controls customs handling for import declarations and assigned the customs activity to a customs profile. You have assigned the customs profile to the relevant freight unit types. You make these settings in Customizing for Transportation Management as follows:
 - You define activities and profiles under ► *Basic Functions* ► *Global Trade* ► *Define Customs Activities and Profiles* □.

For this process, you can use standard customs activity `IMP_FU`, which is assigned to standard customs profile `GT_IMPORT`.

Note that you also have to define customs statuses and cumulated customs statuses. You assign the customs statuses to the customs activity. You can also assign block reasons to cumulated customs statuses.

For more information, see [Configuration of Customs Processing \[Page 1170\]](#).

- You define freight unit types in Customizing for Transportation Management under ► *Transportation Management* ► *Planning* ► *Freight Unit* ► *Define Freight Unit Types* □.
- You have specified that customs handling is automatic for the relevant FWO types and that setting the Traffic Direction to “Import” leads to an import order. For more information, see Customizing for Transportation Management under ► *Transportation Management* ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Forwarding Order Types* □.

Note

Note that to create an import declaration, the FWO must contain one or more freight units (FUs). In the following process, it is assumed that automatic FU creation has been set up in Customizing for Transportation Management.

End of the note.

Process

1. You create an FWO with the required items.

You specify in the Traffic Direction attribute of the forwarding order type that the FWO is an import order.

You specify that the LSP is responsible for the import declaration by selecting the *Import Decl. by LSP* checkbox on the *General Data* tab page in the FWO. Note that the system selects this checkbox automatically if you have selected the *LSP Import Declaration* checkbox in the master data of the shipper.

2. You save the FWO and the system automatically creates freight units.

You trigger the creation of an import declaration from the forwarding order by choosing and then saving the FWO. When you save the forwarding order, the system does the following:

1. Checks whether a customs profile is assigned to the freight unit type (for example, standard customs profile `GT_IMPORT`)
2. Determines which customs activities are assigned to the customs profile (for example, standard customs activity `IMP_FU`)
3. Runs the customs relevance check that is assigned to the customs activity (for example, standard customs relevance check `IMP_FU`)
4. Creates custom groups

The system groups the items in the forwarding order according to the grouping strategy assigned to the customs activity (for example, standard grouping strategy `IMP_FU`).

For more information about the standard grouping strategies, see [Customs Groups \[Page 1174\]](#).

On the *Customstab* page in the freight unit, you display the customs groups by selecting the customs activity in the *Customs Activity* group box. The system displays the customs groups in the *Item Groups* table. You display the items assigned to each customs group by selecting the customs group and choosing the *Show Assigned Items* button.

5. Requests an import declaration for each customs group and sets the customs status of the customs groups (for example, “Import Declaration Requested”)

The system sets the relevant cumulated customs status at header level and item level in the forwarding order, and at header level in the freight unit. If you have assigned a block reason to the cumulated status, the system sets an execution block in the forwarding order and the freight units.

3. You enter the following data (supplied by the customs authority) on the Customs tab page at item level in the forwarding order:

- Customs management document number

This is the import declaration ID provided by the shipper or obtained using a non-integrated customs management application.

- Customs reference number and expiration date

In the European Union, for example, this is the movement reference number (MRN). The goods import has to take place by the expiration date.

4. If customs has approved an import declaration for a particular customs group, you set the corresponding customs status (for example, “Import Declaration Approved”). The system displays the relevant cumulated customs status at header and item level. If you have not assigned a block reason to the new cumulated customs status, the system resets any existing blocks.

Result

When you create a freight document for the forwarding order, the freight document inherits the customs status from the forwarding order. You can view the customs status on the *Customs* tab page in the freight document. The freight document also inherits the customs information at item level. You can display this information on the *Customs* tab page in the item details.



Transit Procedure

The transit procedure enables you to transport duty-unpaid goods within a customs union. To transport duty-unpaid goods, you have to open the transit procedure so that the customs authorities can grant permission to transport the goods. You close the transit procedure so that the customs authorities can grant permission to unload the goods.

SAP Transportation Management (SAP TM) enables you to make the required entries and settings that relate to the opening and closing of the transit procedure.



Note

For the transit procedure, SAP TM does not provide functions for integrating a customs management application. You can make the required entries and settings that relate to the transit procedure in the relevant business documents, but you cannot trigger any follow-on processes in a connected customs management application. If required, however, you can implement a Business Add-In (BAdI) in order to call an outbound service for a transit declaration. For more information, see Customizing for *Transportation Management* under ► *Business Add-Ins (BAdIs)* for *Transportation Management* ► *Basic Functions* ► *Global Trade* ► *Declarations* ► *BAdI: Creation of Transit Declarations on Freight Document* ▶.

End of the note.

More Information

[Transit Procedure for Freight Documents \[Page 1191\]](#)

[Transit Procedure for Freight Units \[Page 1198\]](#)



Transit Procedure for Freight Documents

You use this process to make the required entries and settings in a [freight document](#) that are related to the opening and closing of the transit procedure.



Note

For the transit procedure, SAP TM does not provide functions for integrating a customs management application. You can make the required entries and settings that relate to the transit procedure in the relevant business documents, but you cannot trigger any follow-on processes in a connected customs management application. If required, however, you can implement a Business Add-In (BAdI) in order to call an outbound service for a transit declaration. For more information, see *Customizing for Transportation Management* under ► *Business Add-Ins (BAdIs)* for *Transportation Management* ► *Basic Functions* ► *Global Trade* ► *Declarations* ► *BAdI: Creation of Transit Declarations on Freight Document* ▶.

End of the note.

The following is an example of the transit procedure for freight documents. Variants of this process are possible.

Prerequisites

- You have defined customs activities for opening the transit procedure and for closing the transit procedure. You have assigned the customs activities to a customs profile. You have assigned the customs profile to the relevant freight document types.

You make these settings in Customizing for *Transportation Management* as follows:

- You define activities and profiles under ► *Basic Functions* ► *Global Trade* ► *Define Customs Activities and Profiles* ▶.

You can use standard customs activity `TRA_T1` for opening the transit procedure and `TRA_T1_CL` for closing the transit procedure. These activities are assigned to standard customs profile `GT_INBOUND`.

Note that you also have to define customs statuses and cumulated customs statuses. You assign the customs statuses to the customs activity. You can also assign block reasons to cumulated customs statuses.

For more information, see [Configuration of Customs Processing \[Page 1170\]](#).

- You assign a customs profile to a freight order type under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶.
- You assign a customs profile to a freight booking type under ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types* ▶.
- You have defined that customs handling is automatic in the relevant forwarding order types. You define forwarding order types in *Customizing for Transportation Management* under ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Forwarding Order Types* ▶.
- You have created a forwarding order with the required items, and you have made the following settings in the forwarding order:

- On the *Customs* tab page at item level, you have entered the required customs data (for example, commodity code and previous documents) and you have set the inbound customs activity to *Transit Procedure*.
- On the *Stages* tab page, you have set the inbound customs activity to *Transit Procedure* for the relevant stages in the actual route.

You have saved the forwarding order and the system has created freight units. Note that the system automatically sets the inbound customs activity to *Transit Procedure* in the freight units.

- To open the transit procedure, the goods have arrived at the point of entry into the customs union or the goods have been stored in a bonded warehouse.
- To close the transit procedure, the following requirements have been met:
 - The goods have arrived at the transit end location.
 - The transit procedure has been opened and approved.

Process

1. You make the required entries and settings for opening the transit procedure (see [Transit Procedure: Open Transit in Freight Documents \[Page 1193\]](#)).
2. You make the required entries and settings for closing the transit procedure (see [Transit Procedure: Close Transit in Freight Documents \[Page 1196\]](#)).
3. You make the required entries and settings for canceling the transit procedure (optional).

You cancel a transit procedure by selecting the customs activity on the *Customs* tab page in the freight document and choosing the *Cancel Customs Declaration* pushbutton.

In the freight document, the system sets the customs status of the customs groups as specified in the customs activity (for example, “Open Transit Canceled” or “Close Transit Canceled”). In the freight document and the corresponding forwarding order, the system sets the relevant cumulated customs status at header and item level. If you have assigned a block reason to the cumulated customs status, the system sets an execution block in the freight document.



Transit Procedure: Open Transit in Freight Documents

You use this process to make the required entries and settings related to opening the transit procedure in a [freight document](#).

Note that the following is an example of the transit procedure for freight documents. Variants of this process are possible.

Prerequisites

You have made the required settings in Customizing for *Transportation Management*, and you have created a forwarding order with the required freight units.

For more information, see [Transit Procedure for Freight Documents \[Page 1191\]](#).

Process

1. You perform transportation planning for freight units in which the inbound customs activity *Transit Procedure* has been specified.

When you save the resulting freight document, the system does the following:

1. Checks whether a customs profile is assigned to the freight document type (for example, standard customs profile for transit `GT_INBOUND`)
2. Determines which customs activities are assigned to the customs profile (for example, standard customs activity `TRA_T1`)
3. Runs the customs relevance check that is assigned to each customs activity (for example, standard customs relevance check `TRA_T1`)

In the freight document, the system displays the customs activities in the *Customs Activity* group box on the *Customs* tab page and selects the *Customs Relevance* checkbox for the customs activities. The system displays the customs status for the check result (for example, “Customs-Relevant”) at header level in the freight document (that is, on the *Customs* tab page and *Statuses* tab page) and at item level (on the *Customs* tab page for the item).

Note the following:

- If you have assigned a block reason to the relevant cumulated customs status, the system sets an execution block in the freight document.
- If a freight document is not customs-relevant, you can select the *Customs Relevance* checkbox manually and then proceed with the next steps.

For information about the standard customs relevance checks, see [Customs Relevance Check \[Page 1172\]](#).

2. You open the transit procedure in the freight document by choosing ► *Customs* ► *Open Transit*.

The system automatically groups the items in the freight document according to the grouping strategy assigned to the customs activity (for example, standard grouping strategy TRA_OPEN that is assigned to customs activity TRA_T1).

For information about the standard grouping strategies, see [Customs Groups \[Page 1174\]](#).

Before the system continues, it checks if the freight document has the required trigger status, that is, the execution status specified in the customs activity. If required, you must set the corresponding execution status and save the freight document again.

You display the customs groups by selecting the customs activity in the *Customs Activity* group box. The system displays the customs groups in the *Item Groups* table. You can display the items assigned to each customs group by selecting the customs group and choosing the *Show Assigned Items* pushbutton.

The customs status of each customs group is displayed in the *Status* field in the *Item Groups* table. At this point, each customs group has the customs status for requesting the opening of the transit procedure, as defined in the customs activity (for example, “Open Transit Requested”). At header level in the freight document (on the *Customs* tab page and on the *Statuses* tab page) and at item level (on the *Customs* tab page for the item), the system displays the relevant cumulated customs status. If you have assigned a block reason to the cumulated customs status, the system sets an execution block in the freight document.

3. You inform the customs authorities that you want to open the transit procedure for the customs groups (for example, by using a non-integrated customs management application).

You cannot transport the goods to the transit end location until the customs authorities have approved the transit procedure.

4. You manually change the customs status of the customs groups to the relevant status (for example, “Open Transit Approved”).

You also enter the information provided by the customs authorities for each customs group:

- Customs management document number

This is the unique document number that the customs management system assigns to a customs procedure that you have triggered.

- Customs reference number

In the European Union, for example, this is the movement reference number (MRN).

- Expiration date

This is the date by which the transit procedure must be completed.

Based on the customs status of each customs group, the system sets the relevant cumulated customs status at header level and item level in the freight document and the corresponding forwarding order. In addition, the system transfers the customs reference number, customs management document number, and expiration date to the items in the forwarding order (displayed on the *Customs* tab page at item level). If you have not

assigned a block reason to the new cumulated status, the system resets any existing execution blocks.

Result

You can now transport the goods to the transit end location. When they arrive, you close the transit procedure by requesting permission to unload the goods.

More Information

[Transit Procedure: Close Transit in Freight Documents \[Page 1196\]](#)



Transit Procedure: Close Transit in Freight Documents

You use this process to make the required entries and settings related to closing the transit procedure in a freight document.

Note that the following is an example of the transit procedure for freight documents. Variants of this process are possible.

Prerequisites

- You have made the required settings in Customizing for *Transportation Management* (see [Transit Procedure for Freight Documents \[Page 1191\]](#)).
- You have opened the transit procedure in the freight document (see [Transit Procedure: Open Transit in Freight Documents \[Page 1193\]](#)) or the freight unit (see [Transit Procedure for Freight Units \[Page 1198\]](#)).

Process

1. You request permission to unload the goods by choosing *Customs > Request Unload* for the corresponding unloading location in the freight document.

The system automatically groups the items in the freight document according to the grouping strategy assigned to the customs activity for the unloading procedure (for example, standard grouping strategy `TRA_CLOSE`).

For information about the standard grouping strategies, see [Customs Groups \[Page 1174\]](#).

Before the system continues, it checks if the freight document has the required trigger status, that is, the execution status specified in the customs activity. If required, you must set the corresponding execution status and save the freight document again.

At this point, each customs group has the customs status for requesting permission to unload, as defined in the customs activity (for example, “Transit Unload Requested”). At header level in the freight document (on the *Customs* tab page and on the *Statuses* tab page) and at item level (on the *Customs* tab page for the item), the system displays the relevant cumulated customs status. If you have assigned a block reason to the cumulated customs status, the system sets an execution block in the freight document.

2. You inform the customs authorities that you want to unload the goods at the transit end location.

You cannot unload the goods until the customs authorities have granted permission to unload.

3. You manually change the customs status of the customs groups to the relevant status (for example, “Transit Unload Approved”).

Based on the customs status of each customs group, the system sets the relevant cumulated customs status at header level and item level in the freight document and the corresponding forwarding order. If you have not assigned a block reason to the new cumulated status, the system resets any existing execution blocks.

4. You unload the goods.



Transit Procedure for Freight Units

You use this process to make the required entries and settings related to opening the transit procedure for a freight unit in a forwarding order. This process can be used, for example, if you need to add a package to a truck at the last minute. In this case, you open the transit procedure in the freight unit before you assign the freight unit to the relevant freight document. However, you still close the transit procedure from the freight document (see [Transit Procedure: Close Transit in Freight Documents \[Page 1196\]](#)).



Note

For the transit procedure, SAP TM does not provide functions for integrating a customs management application. You can make the required entries and settings that relate to the transit procedure in the relevant business documents, but you cannot trigger any follow-on processes in a connected customs management application. If required, however, you can implement a Business Add-In (BAdI) in order to call an outbound service for a transit declaration. For more information, see Customizing for *Transportation Management* under ► *Business Add-Ins (BAdIs)* for *Transportation Management* ► *Basic Functions* ► *Global Trade* ► *Declarations* ► *BAdI: Creation of Transit Declarations on Freight Document*.

End of the note.

Note that the following is an example of the transit procedure for freight units. Variants of this process are possible.

Prerequisites

- You have defined a customs activity for opening the transit procedure and you have assigned the customs activity to a customs profile. You have assigned the customs profile to the relevant freight unit types.

You make these settings in Customizing for *Transportation Management* as follows:

- You define activities and profiles under ► *Basic Functions* ► *Global Trade* ► *Define Customs Activities and Profiles*.

You can use standard customs activity TRA_T1_FU for opening the transit procedure in freight units. This activity is assigned to standard customs profile GT_INBOUND_FU.

Note that you also have to define customs statuses and cumulated customs statuses. You assign the customs statuses to the customs activity. You can also assign block reasons to cumulated customs statuses.

For more information, see [Configuration of Customs Processing \[Page 1170\]](#).

- You assign the customs profile to the freight unit types under ► *Planning* ► *Freight Unit* ► *Define Freight Unit Types*.
- You have defined that customs handling is automatic in the relevant forwarding order types. You define forwarding order types in Customizing for *Transportation Management* under ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Forwarding Order Types*.
- The goods have arrived at the point of entry into the customs union.

Process

1. You create a forwarding order with the required items.

When you save the forwarding order, the system generates freight units.

2. On the *Customs* tab page at item level in the forwarding order, you enter the required customs data (for example, commodity code and previous documents) and you set the inbound customs activity to *Transit Procedure*.
3. On the *Stages* tab page in the forwarding order, you set the inbound customs activity to *Transit Procedure* for the first stage of the actual route.
4. You save the forwarding order.

On the *Customs* tab page at item level, the inbound customs activity is automatically set to *Transit Procedure*.

5. At item level in the forwarding order, you select the items that have been flagged as relevant for the transit procedure and you choose the *Open Transit* pushbutton.

The system does the following:

1. Checks whether a customs profile is assigned to the freight unit type (for example, standard customs profile `GT_INBOUND_FU`)
2. Determines which customs activities are assigned to the customs profile (for example, standard customs activity `TRA_T1_FU`)
3. Runs the customs relevance check that is assigned to the customs activity (for example, standard customs relevance check `TRA_T1_FU`)
4. Creates customs groups according to the grouping strategy assigned to the customs activity (for example, standard grouping strategy `TRA_OPENFU`).

For more information about the standard grouping strategies, see [Customs Groups \[Page 1174\]](#).

6. You save the forwarding order.

7. You open the freight unit.

In the freight unit, the system displays the customs activity in the *Customs Activity* group box on the *Customs* tab page. The system selects the *Customs Relevance* checkbox for the customs activity.

You display the customs groups by selecting the customs activity in the *Customs Activity* group box. The system displays the customs groups in the *Item Groups* table. You can display the items assigned to each customs group by selecting the customs group and choosing the *Show Assigned Items* pushbutton.

The customs status of each customs groups is displayed in the *Status* field in the *Item Groups* table. At this point, the customs groups have the customs status for requesting the opening of the transit procedure, as defined in the customs activity (for example, "Open Transit Requested").

At header level in the freight unit (that is, on the *Statuses* tab page and at the top of the *Customs* tab page), the system displays the relevant cumulated customs status. The

system also displays the cumulated customs status at header level in the forwarding order (on the *Statuses* tab page) and at item level (on the *Customs* tab page for the item).

If you have assigned a block reason to the cumulated customs status, the system sets an execution block in the freight unit and the forwarding order.

8. You inform the customs authorities that you want to open the transit procedure for the customs groups (for example, by using a non-integrated customs management application).

You cannot transport the goods to the transit end location until the customs authorities have approved the transit procedure.

9. In the freight unit, you manually change the customs status of the customs group to the relevant status (for example, "Open Transit Approved").

You enter the information provided by the customs authorities for the customs group:

- Customs management document number

This is the unique document number that the customs management system assigns to a customs procedure that you have triggered.

- Customs reference number

In the European Union, for example, this is the movement reference number (MRN).

- Expiration date

This is the date by which the transit procedure must be completed.

The system transfers the customs reference number, customs management document number, and expiration date to the items in the forwarding order (displayed on the *Customs* tab page at item level).

Based on the customs status of each customs group, the system sets the relevant cumulated customs status at header level in the freight unit (that is, at the top of the *Customs* tab page). It also sets the cumulated customs status in the forwarding order at header level (*Status* tab page) and item level (*Customs* tab page for the item). If you have not assigned a block reason to the cumulated status, the system resets any existing execution blocks.

Result

After opening the transit procedure, you must assign the freight unit to the relevant freight document. This enables you to close the transit procedure in the freight document.

More Information

[Transit Procedure for Freight Documents \[Page 1191\]](#)



Trade Compliance Check

You can use this process to perform a trade compliance check for new or changed business documents in SAP Transportation Management (SAP TM). The check is performed in the SAP Global Trade Services application.

Prerequisites

- You have set up the integration scenario [TM_GTSTradeComplianceCheckIntegration](#) in SAP NetWeaver® Process Integration, and you have implemented the required enterprise services.

For more information, see [Integration with SAP Global Trade Services \[Page 1122\]](#).

Note that the integration with SAP Global Trade Services is designed for a system landscape in which there is only one global trade services (GTS) system connected to each SAP TM system.

- You have enabled the compliance check for the relevant business document types in SAP TM by selecting the *Enable Compliance Check* checkbox in Customizing for the document types. You can enable the compliance check for the following document types in Customizing for *Transportation Management*:
 - *Forwarding Order Management* *Forwarding Order* *Define Forwarding Order Types*
 - *Forwarding Order Management* *Forwarding Quotation* *Define Forwarding Quotation Types*
 - *Freight Order Management* *Freight Order* *Define Freight Order Types*
 - *Freight Order Management* *Freight Booking* *Define Freight Booking Types*
- You have defined whether processes are blocked if SAP TM sets the following block reasons:
 - *Compliance Check Required*: A compliance check is required for a business document, but the result has not been received from the global trade services (GTS) system.
 - *Compliance Check Failed*: The business document is not compliant according to the check performed by the GTS system.

You define which processes are blocked in Customizing for *Transportation Management* under *Basic Functions* *General Settings* *Define Block Reason Codes* .



Note

- The trade compliance check in SAP Global Trade Services consists of sanctioned party list screening and an embargo check. During sanctioned party list screening, the GTS system compares business partner addresses with the addresses on the relevant sanctioned party list. During the embargo check, the GTS system determines whether a business partner involved in a business transaction is subject to an embargo situation due to the location of the business partner's company.

For more information, see SAP Library for SAP Global Trade Services on SAP Help Portal at <http://help.sap.com/grc> under ► SAP Global Trade Services ► Compliance Management.

- For sanctioned party list screening, the GTS system checks address data that is derived only from business partner master data. It does not check address data derived from locations. In addition, it does not check addresses that a user enters in the *Printing Address* field on the *Business Partner* tab page in the forwarding order.
- For the embargo check, the GTS system checks the countries in the transportation route.

End of the note.

Process

1. You save a new or changed business document in SAP TM, and the system automatically determines if the compliance check has been enabled for the corresponding document type.

If the compliance check has been enabled, SAP TM proceeds as follows:

- It sets the compliance check status of the business document to *Not Checked* and displays the status on the *Statuses* tab page. Note that the compliance check status is displayed only if the compliance check has been enabled for the document type.
- If you have activated blocking for the block reason *Compliance Check Required*, it blocks the relevant processes (for example, planning or execution).
- It makes sure that only compliance-relevant data entered in a new document or changed in an existing document is checked; that is, business partner data for sanctioned party list screening, or the countries in the transportation route for the embargo check.
- It requests a trade compliance check for the business document in the GTS system.

SAP TM sends the request using the enterprise service *Request Trade Compliance Check* (*TradeComplianceCheckSUITERequest_Out*) in the *Transportation Order Processing* process component.

2. The GTS system performs the trade compliance check on the data received from SAP TM.

If the check fails, the business document is blocked in the GTS system. Note that a compliance manager can manually override the result of a failed check in the GTS system and unblock the business document.

3. The GTS system returns the result of the trade compliance check to SAP TM, which proceeds as follows:

- If the business document is not compliant, SAP TM sets the compliance check status to *Not Compliant* and sets the blocks that you have assigned to block reason *Compliance Check Failed*.
- If the business document is compliant, it sets the compliance check status to *Compliant* and cancels any blocks that were set for block reason *Compliance Check Required*.

In SAP TM, the result of the check is received by the enterprise service *Change Transportation Document Based on Trade Compliance Check Confirmation* (`ChangeTradeComplianceCheckSUITEConfirmation_In`).

4. SAP TM requests the cancellation of the trade compliance check for the business document.

Regardless of the result of the trade compliance check, the GTS system continues to check the business document periodically until it receives a cancellation request. SAP TM sends a cancellation if the transportation activities have been completed (life cycle status *Executed*) or if the business document has been canceled (life cycle status *Canceled*). The business document that was created in the GTS system is canceled accordingly.

SAP TM requests the cancellation using the enterprise service *Request Trade Compliance Check* (`TradeComplianceCheckSUITECancellationRequest_Out`).



Management of Instructions

An instruction is an individual step in a procedure that a user must carry out in the execution process. You can gather together instructions in instruction sets and display them in a list of tasks on the user interface (UI).

For example, you can create an instruction set for a fumigation service. The set can include the following individual instructions:

- Clean the container
- Fumigate the container
- Seal the container

The system displays the list of instructions on the *Instructions* tab page of the business document. You can edit and delete the instructions that the system adds automatically. You can insert instructions that suit your own business requirements. You can also specify the priority of a set of instructions by editing the sequence field.

You can specify the following settings for an individual instruction:

- Task or for information purposes
- Due date and alert date
- Status of pending, in progress, or completed

If you set the status of an instruction to completed, the system automatically enters the current date as the completion date. You can also manually enter the completion date after you have set the status to completed.

Integration

If SAP Transportation Management (SAP TM) is integrated with SAP Event Management, the SAP Event Management system automatically enters the following statuses for an instruction task:

- *Alert* when the alert date has passed
- *Overdue* when the due date has passed
- *Completed After Due Date* if you set the status of the instruction to *Completed* after the due date has passed

Prerequisites

You have defined instructions and assigned them to an instruction set in Customizing for *Transportation Management* under ► *Basic Functions* ► *Instructions* ► *Define Instructions and Instruction Sets* ▶.

You have assigned instruction sets to one or more object types in Customizing for *Transportation Management* under ► *Basic Functions* ► *Instructions* ► *Assign Instruction Sets* ▶.

Features

Instructions enable you to use the following features:

- Specify general instructions in Customizing that you can reuse in multiple business documents for multiple customers. This decreases duplication and work effort. You do not need to recreate instructions for each business document.
- Include specific instructions for a customer in a particular business document
- Reduce the need for the user to make unplanned decisions during execution
- Ensure uniformity and compliance when you execute similar tasks

Each instruction contains the following information:

- What must be done
- Who performs the task
- When must the task be completed

You can assign instructions sets to particular object types in Customizing. This enables the system to automatically include the relevant instructions when you use an object type to create a business document. For example, you assign an instruction set to a stage type in Customizing. When you create a forwarding order that includes the relevant stage type, the system automatically includes the relevant instruction set for the stage.

You can assign instruction sets to the following object types in Customizing:

- Services
- Stages
- Forwarding order items, such as container, product, and package
- Forwarding order types

In Customizing, you can also specify that the instructions flow to the forwarding order and freight unit business documents. In the application, the system only displays the relevant instructions in the relevant business document. In this way, the user can only work on instructions that are relevant for a particular part of the execution process.

For example, when you create a forwarding agreement, the system displays all the relevant instructions. When you create a follow-on forwarding order from the agreement, the system only makes the instructions that are relevant for the forwarding order available to the user. Similarly, when you create a follow-on freight unit from the forwarding order, the system only makes the instructions that are relevant for the freight unit available to the user.

More Information

[Service Product Catalogs](#)

[Determination of the Route](#)

[Creation of Forwarding Order Items or Forwarding Quotation Items](#)

[Creation of a Forwarding Order](#)

[Freight Unit \[Page 728\]](#)



Text Collection

An object that is used to store texts that are related to a business document.

You use this object in SAP Transportation Management (SAP TM) to create and store texts that are related to a business document, for example a freight order or a forwarding order.

Structure

The text collection stores text that is categorized according to its text type, the language it is written in, and the type of use (internal or external). For example, the text may be of the type *Special Note*, it may have been written in *English* and it may be for internal use only.

You define text types in Customizing.

Text types can be assigned to text schemas. When assigning the text type to text schemas, you can specify attributes that are automatically inherited by all texts created using this text type. You assign text types to text schemas in Customizing.

You define a text schema and you assign it to a business document in Customizing.

For more information, see Customizing for *Transportation Management* under ► *Basic Functions* ▶ *Text Collection* ▶ *Define Settings for Text Collection*.

On the user interface, you can identify the text collection by the name *Notes*.

Integration

In the standard system, a standard text schema is assigned to certain business documents.

You can enhance this assignment by defining your own text types and text schemas and by assigning the text schemas to business documents.



Attachment Folder

An object that is used to store attachments that are related to a business document, for example a freight order or a forwarding order.

You use this object in SAP Transportation Management (SAP TM) to store attachments that are related to a business document. To store the attachments, you can create a hierarchy of folders.

In each folder, you can store the following attachment types:

- Files

You can upload any kind of files that contain binary content.

- Links

You can store links to external content to which you can navigate using a uniform resource locator (URL). For example, links to content on the World Wide Web or links to files stored on a server.

To be able to use the attachment folder, you must do the following:

1. You define a content repository in Customizing. For more information, see the *Customizing for SAP NetWeaver* under ► *Application Server* ► *Basic Services* ► *Knowledge Provider* ► *Content Management Service* ► *Define Content Repositories* ▶.
2. You link the content repository to the *ATF* document area by defining a content category in Customizing. For more information, see *Customizing for SAP NetWeaver* under ► *Application Server* ► *Basis Services* ► *Knowledge Provider* ► *Content Management Service* ► *Define Content Categories* ▶.

Note

The *ATF* document area is part of the standard system. You must use this document area to configure the attachment folder.

End of the note.

3. You define an attachment type schema. For more information, see *Customizing for Cross-Application Components* under ► *Processes and Tools for Enterprise Applications* ► *Reusable Objects and Functions for BOPF Environment* ► *Dependent Object Attachment Folder* ► *Maintain Attachment Type Schema* ▶.

Structure

You can find the attachment folder on the user interface, in the maintenance view for a business document. The attachment folder displays the hierarchical structure of the folders that you create and the files and links that you store in each folder.



Display Settings

You can use this function in SAP NetWeaver Business Client to make the following settings in SAP Transportation Management (SAP TM):

- Time Zone for the Display of Date and Time
- Unit of Measure for Distances
- List Header (Disable Text Wrapping in Column Headers)

Features

Time Zone

The following options are available to you for configuring the time zone:

- *User Time Zone*

This is your local time zone, in other words, the time zone of the location in which your computer is situated. If you choose this option, the date and time you entered for the local time zone in your user profile are valid.

- *Individual Time Zone*

This is any time zone that you can define yourself. If you choose this option, the date and time you entered for this time zone are valid.

- *Location-Dependent Time Zone*

If you choose this option, the system automatically determines the time zone for the location entered (for example, from the location master data). If no time zone is available for a location, the system uses either the user time zone or the individual time zone, depending on the option selected. Therefore, this option takes priority over the other two options.

The system takes the location-dependent time zone by default. If no time zone is available for a location, the system uses the user time zone.



Note

If you change the settings of the time zones, the system converts a date and a time that have already been entered to the date and time of the new time zone. However, if you have selected the option *Location-Dependent Time Zone* and you change a previously entered location to a location with a different time zone, the system keeps the date and time. The system does not convert it to the date and time of the new time zone.

End of the note.

Unit of Measure

To define the unit of measure for the display of distances (for example, kilometers or miles), you have the following options:

- *Standard Unit of Measure*

The standard unit of measure is *Kilometer*.

- *Individual Unit of Measure*

This is any unit of measure that you can define yourself.

- *Location-Dependent Unit of Measure*

If you choose this option, the system automatically determines the unit of measure for the geographical region of the location entered (for example, from the location master data).

If no unit of measure is available for a location, the system uses either the standard unit of measure or the individual unit of measure, depending on the option selected.

List Header (Disable Text Wrapping in Column Headers)

The system tries to wrap longer column headers in up to three lines if the column header text is longer than the possible content of the corresponding cells. You can deactivate this function.

Activities

In SAP NetWeaver Business Client, you choose (*Settings*). A dialog box appears in which you can make the settings. Changes to settings have an immediate effect.

Note

The changes only have an effect on Web Dynpro-based screens.

End of the note.



Condition

You use conditions to determine dependent values, for example, in the following areas:

- Filtering freight units
- Determining freight unit building rules (FUB rules) (see [Determination of Freight Unit Building Rules \[Page 723\]](#))
- Incompatibilities (see [Incompatibilities \[Page 715\]](#))
- Determining the sales organization
- Determining rate tables and agreements with charge calculation rules (see [Rules and Conditions for Charge Management and SP Catalogs](#))
- Change controller (see [Change Controller \[Page 1220\]](#))

Features

You define input values for each condition. You can use the following to do so:

- Business object fields including user-specific fields
- Values determined in external determination classes
- Input values that you have defined in the data crawler (see [Use of Data Crawler Input Values \[Page 1218\]](#))

The input values that are available each time depend on the condition type that was chosen. The condition type defines the area in which the system is to take the condition into account. SAP delivers a number of condition types in the standard system.

The output values are determined by the condition type. For example, the FUB rule results from FUB rule determination.

The system generates a BRFplus decision table (BRFplus = Business Rule Framework plus) from input and output values. The system then processes this table from top to bottom during determination. As soon as the system finds a row in the BRFplus decision table whose input values match the current input values, it copies the corresponding output values and processes them in the area that made the call. For more information about BRFplus, see [Business Rule Framework plus \(BRFplus\)](#).

Activities

You can define conditions in SAP NetWeaver Business Client by choosing ► *Application Administration* ► *General Settings* ► *Conditions* ► *Create Condition* ▶.

You can use the *Transport* pushbutton to transport your conditions.

You can use the *Reset BRFplus* pushbutton to reset data objects that you have changed in BRFplus.

More Information

[Definition of Conditions \[Page 1213\]](#)

[Definition of a Condition for Time Windows \[Page 1216\]](#)



Definition of Conditions

You can use this function to define conditions.

Prerequisites

SAP delivers the following in the standard system:

- Condition types
- Customer condition types
- Data access definitions
- Assignments of data access definitions to condition types (including specification of which data access definitions are used by default for a condition type)

If you need additional fields for the condition types delivered as standard or you want to use customer condition types, you have to create new data access definitions and extend the assignments in Customizing, as required. You can also change or add to the data access definitions used by default.

For more information about creating data access definitions, see Customizing for *Transportation Management* under ► *Basic Functions* ► *Conditions* ► *Data Access Definition*.

For more information about assigning data access definitions to condition types, see Customizing for *Transportation Management* under ► *Basic Functions* ► *Conditions* ► *Assign Condition Type to Data Access Definition*.

You can define your own condition types in Customizing. For more information, see Customizing for *Transportation Management* under ► *Basic Functions* ► *Conditions* ► *Define Condition Types*.

Features

Definition of General Data and Decision Table

First, you define the condition type and specify the origin of the condition:

- The system adopts these values (direct business object access).
- The system uses the values as input values for a BRFplus decision table (BRFplus = Business Rule Framework plus).
- The system creates a condition based on BRFplus expressions.

If you have specified that the condition is based on a BRFplus decision table, the system automatically creates a decision table on the basis of the standard data access definitions assigned in Customizing. You can now process this decision table by entering specific values. For more information about BRFplus, see [Business Rule Framework plus \(BRFplus\)](#).

Use *Data Access Definition* to change the data access definition. In the data access definition, you define which values the system adopts directly or uses as input values for a decision table, and where it determines this data.



Note

However, you can also define the data source independently of the data access definition, for example, if you have particularly special values. Note that, for such assignments, the system can only use data that is available when the condition is evaluated.

End of the note.

When the system checks the condition, it processes the decision table starting from the top. As soon as the system finds a row that contains the required value for each column, it uses the values defined in the output.

Since the sequence of the rows in the decision table is important, make sure that you decide before inserting new rows whether you want to append the new rows or whether you want to insert them between two existing rows. You can change the sequence of the rows.

If you have specified that you want to create a condition based on BRFplus expressions, the system automatically creates a function and signature in BRFplus when you create the condition. In BRFplus, you then use corresponding expressions to define how the values are determined. For more information, see [Business Rule Framework plus \(BRFplus\)](#).

Definition of Data Access Definitions

In the standard system, SAP delivers data access definitions as well as assignments of data access definitions to condition types. In Customizing, you can create additional data access definitions, for example, to take into account fields that you have added to a node. Moreover, you can make additional assignments or delete existing assignments in Customizing. Once you have added an assignment, you can choose the corresponding data access definitions for the input values. Define only those values that you want to be available when you call the condition. When doing so, you can use the data access definitions delivered with the standard system for orientation purposes. Other fields from data access definitions that are assigned by default to the condition type are available. This is also true of other nodes in the hierarchy if they are above or below the nodes that are predefined in the data access definition assigned by default. You can check the hierarchical relationship of the nodes in transaction /BOBF/CONF_UI.

Definition of Customer Condition Types

To determine conditions in a flexible way, you can use the customer condition types delivered with the standard system. You assign data access definitions to these customer condition types in Customizing. You can also define your own customer condition types in Customizing. We recommend that you only use your own customer condition types if these are called from your enhancement coding.

Example

You want to define a condition with which you can specify the determination of freight unit building rules (FUB rules) when using dangerous goods.

In this case, you define a condition with the condition type /SCMTMS/FUBR based on a decision table.

Input value: Specifies whether the business document item of the business document of forwarding order management (forwarding order, forwarding quotation, order-based or delivery-based transportation requirement) contains dangerous goods.

Output value: FUB rule that the system uses

You enter a data access definition that identifies the dangerous goods. In the decision table, you specify that FUB rule 1 is used when dangerous goods are involved, and FUB rule 2 is used when no dangerous goods are involved.

Depending on whether dangerous goods are involved or not, the system determines the relevant FUB rule based on the condition.

More Information

[Definition of a Condition for Time Windows \[Page 1216\]](#)



Definition of a Condition for Time Windows

This example shows how you define a condition for a time window depending on the freight unit type.

In this case, you define a condition with the condition type /SCMTMS/TOR_TIMEWIND based on a decision table.

As the data access definition, enter /SCMTMS/TOR_TYPE (business document type of freight order management).

Depending on the freight order type, you specify in the decision table which durations and rounding rules the system is to use when calculating the times for the time window.

In the *Earliness* and *Delay* fields, you specify whether the system is to treat an earliness or delay as a constraint and, if yes, as which sort of constraint:

- As a soft constraint
- As a hard constraint
- As a soft and hard constraint

If you have entered *soft constraint* or *soft and hard constraint*, in the *Prem. Stay* (premature stay) field and the *Del. Stay* (delayed stay) field, enter the required time period in the format HH:MM.

If you entered *hard constraint* or *soft and hard constraint*, in the *EarlStStay* (earliest stay) field and the *Lat. Stay* (latest stay) field, enter the required offset in the format HH:MM.

In addition, you can specify whether the system is to round to complete days.

You can enter different values for the delivery and the pickup. To do so, enter a second data access definition /SCMTMS/TOR_STOP_CAT.

In the decision table, specify the following values for pickup:

Stop Type	Earliness	Delay	EarlStStay (earliest stay)	Round
<input type="radio"/> (pickup)	2 (hard constraint)	0 (no consideration as constraint)	0	True

This means that the pickup may not take place earlier than agreed. A delay is acceptable. The system is to round the pickup date.

You specify the following values for the delivery:

Stop Type	Earliness	Delay	Lat. Stay (latest stay)	Round
<input type="radio"/> (delivery)	0 (no consideration as constraint)	2 (hard constraint)	0	False

This means that the delivery may not take place later than agreed. An early delivery is acceptable.

Since the time of the delivery date defined by the customer is to be adhered to, specify that the system is not to round it to full days.



Use of Data Crawler Input Values

When you are defining conditions, you can use data crawler input values. Using data crawler input values is advantageous in the following cases:

- The data that you want to use as input values is in a different business object. For example, you might want to use fields from a forwarding order for a determination in a freight unit or a freight order.
- You want to use specific associations within a business object, for instance, in order to use data of the first stop for a freight order.

Prerequisites

- You have defined a data crawler profile in Customizing. For more information, see *Customizing for Transportation Management* under ► *Basic Functions* ► *Conditions* ► *Define Data-Crawler Profile*.
- In Customizing in the data access definition, you have assigned the following in the *Data Crawler* area:
 - Data Crawler Profile
 - Step (defines the node that you want to use as an input value)
 - Field

In addition, you have also specified a data element for F4 helps.

For more information, see *Customizing for Transportation Management* under ► *Basic Functions* ► *Conditions* ► *Data Access Definition*.

- You have assigned your condition type for the data access definition in Customizing. For more information, see *Customizing for Transportation Management* under ► *Basic Functions* ► *Conditions* ► *Assign Condition Type to Data Access Definition*.

Features

In accordance with your settings in Customizing, the system uses the input values that you have defined with the data crawler profile for the determination of values with your condition.

Example

You want to determine the ERP order type for a freight unit from the TRQ root (`TRQ_ROOT`). To do this, you have defined a data crawler value profile `DC_FU_TO_TRQ_ROOT` with the following values:

Attribute	Value
Step	10
BO Name	/SCMTMS/TOR
Association	BO_TRQ_ROOT_ALL

Attribute	Value
Target Node	TRQ_ROOT

In addition, you have defined data access defintion DAD_FU_TO_TRQ_ROOT with the following values:

Attribute	Value
Data Crawler Profile	DC_FU_TO_TRQ_ROOT
Step	10
Field Name	BASE_BTD_TCO
Data Element for F4 Helps	/SCMTMS/BASE_BTD_TCO (Basis document type for business transaction)



Change Controller

You can use this function to check whether the following business documents have changed and how the system is to process these changes:

- Freight order (see [Freight Order](#))
- Freight unit (see [Freight Unit \[Page 728\]](#))
- Freight booking (see [Freight Booking](#))
- Transportation unit (see [Trailer Unit](#) and [Railcar Unit](#))
- Service order (see [Service Order](#))

Prerequisites

You have made the settings for the change controller. For more information, see [Settings for the Change Controller \[Page 1227\]](#).

Features

The change controller can react to the following planning-relevant changes:

- Quantity changes

You can use a quantity tolerance determination condition to determine the tolerances for a quantity change in a business document. This means that in case of a quantity change, the change controller evaluates this condition to dynamically determine if this quantity change can be classified as relevant or if it can be ignored. You assign this quantity tolerance determination condition to your business document type (for example, freight unit type). For more information, see the corresponding field help in the Customizing activity for defining the business document type, for example freight unit type.
- Changes to dates/times

You can use a date tolerance determination condition to determine the tolerances for a date change in a business document. This means that in case of a date change, the change controller evaluates this condition to dynamically determine if this date change can be classified as critical or uncritical or if it can be ignored. You assign this date tolerance determination condition to your business document type (for example, freight unit type). For more information, see the corresponding field help in the Customizing activity for defining the business document type, for example freight unit type.
- Changes to source locations, intermediate stops, and destination locations
- Changes to the transportation service level
- Reported execution information
- Additional or deleted freight unit or location in the context of one of the following associated business documents:
 - Forwarding order

- Forwarding quotation
- Order-based transportation requirement
- Delivery-based transportation requirement

The change controller can react to changes by performing the following actions for example:

- Remove corresponding freight units from the transportation plan
- Invalidate successor business documents such as freight orders
- Stop the current associated tendering processes
- Stop and restart the current associated tendering processes
- Issue alerts

You can also define your own actions.

You can use the process controller (see [Process Controller Configuration \[Page 1229\]](#)) and conditions (see [Condition \[Page 176\]](#)) to define the parameters for regulating the change controller. SAP delivers process-controller-relevant and condition-relevant objects for the change controller. For more information, see [Objects Delivered by SAP for the Change Controller \[Page 1222\]](#).

If the system could not process a change controller strategy due to a locking issue, you can use the background program /SCMTMS/PROCESS_TRIGGER_BGD to reprocess the strategy. For more information, see [Processing of Triggers \[Page 1268\]](#).

 Note

- This chapter mainly describes how the change controller is to react to changes. But you can also define strategies that are executed by the change controller each time a business document is saved or when a business document is created or deleted.
- The strategies delivered by SAP are templates that you can enhance or change. For example, in the strategies delivered by SAP, the system always unfixes the business documents for which the strategies are executed to allow the strategies to perform changes on these business documents. If you do not want the business documents to be unfix during execution of the strategy, you have to create your own strategy without using the following methods:
 - UNFIX_TORC
 - UNFIX_TORS
 - UNFIX_TORU

End of the note.

Activities

The change controller is executed automatically whenever the situation that you have defined in Customizing occurs. If, for example, you have assigned a certain change strategy to a certain freight unit type, the change controller executes that strategy whenever a freight unit of that type is changed.



Objects Delivered by SAP for the Change Controller

SAP delivers the objects for the change controller that are described in this document.

Process-Controller-Relevant Objects

- Service Types
 - TOR_CHACO (asynchronous processing)
Service type that you can use for change strategies.
 - TOR_CHACOS (synchronous processing)
Service type that you can use for change strategies.
 - TOR_CREATE (asynchronous processing)
Service type that you can use for creation strategies.
 - TOR_CREA_S (synchronous processing)
Service type that you can use for creation strategies.
 - TOR_SAVE (asynchronous processing)
Service type that you can use for save strategies.
 - TOR_SAVE_S (synchronous processing)
Service type that you can use for save strategies.
 - TOR_DELETE
Service type that you have to use for deletion strategies.
-  Note
 - Strategies of service types TOR_CHACO, TOR_CREATE, and TOR_SAVE are processed asynchronously in a separate task, whereas strategies of service types TOR_CHACOS, TOR_CREA_S, and TOR_SAVE_S are processed synchronously. If strategy processing is to trigger the execution of determinations and validations, use asynchronous strategies; otherwise use synchronous strategies to optimize the overall performance.
 - The change strategies, create strategies, and save strategies mentioned below are only delivered for the service types for asynchronous processing. For more information about synchronous and asynchronous processing, see SAP Note [1674629](#).
 - End of the note.
 - Change Strategies
 - CANCEL_FOR
Current tendering processes are stopped and the associated freight orders are canceled.

- DEF_CHACO

Default reaction to changes in location, date, or quantity:

- Location changes

Involved business documents are removed from the transportation plan.

- Date changes

A rescheduling is performed. In case of time conflicts, the freight orders are blocked for execution.

- Quantity changes

A capacity check is performed. In case of an overload, the freight orders are blocked for execution.

- NO_ACTION

No follow-up action is processed.

- REM_CANC

The business document is deleted from the transportation plan and the former follow-up documents are canceled or deleted if no other predecessor documents exist for it.

- RESET_TORS

Current tendering processes are stopped and the business document is deleted from the transportation plan.

- START_TEND

Current tendering processes are stopped and automatically restarted.

- STOP_TEND

Current tendering processes are stopped.

- Creation Strategies

- CARR_SEL

Carrier selection is performed for this business document based on the default carrier selection settings that you indicated in the business document type in Customizing.

- CHARG_TEND

Charge calculation is performed for this business document and an automatic tendering process is started.

- PUBL_CREA

The *Published* status is set for the air freight booking after you created it.

- TEND_START

An automatic tendering process is started.

- **Deletion Strategies**

- CANCEL_CAP

Current tendering processes are stopped and the associated freight orders are canceled.

- **Save Strategies**

- CALC_CHARG

Calculates charges at every save.

- SRO_DELETE

Deletes empty service orders when you save your freight order or freight booking.

- TOR_CANCEL

Cancels freight orders without requirements assigned to them.

- **Change Strategy Methods**

- CANCELCAPA

Associated freight orders and freight bookings are canceled if no freight unit is assigned to them anymore.

- CANCEL_FOR

Associated freight orders and freight bookings are canceled.

- CHACOALERT

Alert is issued.

- CHECK_CAPA

Capacity check is done for all involved business documents.

- DEF_REACT

Default reaction to changes in location, date, or quantity:

- Location changes

Involved business documents are removed from the transportation plan.

- Date changes

A rescheduling is performed. In case of time conflicts, the freight orders are blocked for execution.

- Quantity changes

A capacity check is performed. In case of an overload, the freight orders are blocked for execution.

- REBUILD_FU

Freight unit building is retriggered for the related transportation requests. This method is only relevant for unplanned and unfixed freight units.

- REBUILDFUH

Freight unit building is retriggered for the related transportation requests.

- START_TEND

Current tendering processes are stopped and automatically restarted.

- STOP_TEND

Current tendering processes are stopped.

- TOR_DELAY

Involved business documents are determined if a delay has been reported.

- TOR_REM_PL

Involved business documents are removed from the transportation plan.

- UNFIX_TORU

Unfixes the business document to enable a change strategy to perform changes.

- REFIX_TORU

Refixes business documents for the change strategy.

- REDET_PO

Redetermines the purchasing organization.

- Creation Strategy Methods

- CALC_CHARG

Calculates charges after creation of a business document.

- STARTATEND

Automatic start of tendering process.

- UNFIX_TORC

Unfixes the business document to enable a strategy for creation to perform changes

- CARR_SEL

Carrier selection is performed for this business document based on the default carrier selection settings that you indicated in the business document type in Customizing.

- PUBL_CREA

The Published status is set for the air freight booking after you created it.
 - REFIX_TORC

Refixes business documents for the creation strategy.
- Deletion Strategy Methods
 - CANCTORDEL

Associated freight orders and freight bookings are canceled.
- Save Strategy Methods
 - CALCCHARG

Calculates charges when saving a business document.
 - UNFIX_TORS

Unfixes the business document to enable a save strategy to perform changes.
 - TOR_CANCEL

Cancels freight orders without requirements assigned to them.
 - REFIX_TORS

Refixes business documents for the save strategy.
 - SRO_DELETE

Deletes empty service orders when you save your freight order or freight booking.

Condition-Relevant Objects

- Condition type /SCMTMS/CC_QUAN_TOL

Condition to dynamically determine quantity tolerances.
- Condition type /SCMTMS/CC_DATE_TOL

Condition to dynamically determine date tolerances.
- Condition type /SCMTMS/CC_TOR_STRAT

Condition to dynamically determine the change controller strategy for reacting to a change.
- Condition type /SCMTMS/CC_TOR_STR_M

Condition to dynamically determine multiple change controller strategies for reacting to a change. Note that the strategies returned by the system must be independent. The system does not take into account the sequence of the strategies.



Settings for the Change Controller

To use the change controller, you must make the Customizing settings described in this document.

Features

Process Controller Settings

If you do not want to use the strategies delivered by SAP, you must define your own strategies for the change controller, and assign them the change controller service TOR_CHACO. You can then assign to the strategies either change controller methods delivered by SAP, or methods created by you. For more information, see [Process Controller Configuration \[Page 1229\]](#) and [Objects Delivered by SAP for the Change Controller \[Page 1222\]](#).

Condition Settings

Define a data access and assign to it one of the condition types delivered by SAP for the change controller. For more information, see [Condition \[Page 176\]](#) and [Objects Delivered by SAP for the Change Controller \[Page 1222\]](#).

Business Document Settings

Specify the following change controller settings for the business document types in Customizing for SAP Transportation Management (SAP TM):

- Default change strategy
- Strategy determination condition
- Quantity tolerance determination condition
- Date tolerance determination condition

If you indicate a strategy determination condition, the system uses the change strategy found via the condition. If you do not indicate a condition or if the condition does not return a strategy, the system automatically uses the default change strategy.

There are three other types of strategies:

- Strategy for saving (service type TOR_SAVE)
This strategy is executed each time you save a business document.
- Strategy for creation (service type TOR_CREATE)
This strategy is executed each time a business document is created (by you or the system).
- Strategy for deletion (service type TOR_DELETE)
This strategy is executed each time a business document is deleted (by you or the system).

SAP delivers strategies that you can select. You can also define your own strategies.

For more information, see Customizing for SAP TM under the following nodes:

- ► *Transportation Management* ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶
- ► *Transportation Management* ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types* ▶
- ► *Transportation Management* ► *Freight Order Management* ► *Transportation Unit* ► *Define Transportation Unit Types* ▶
- ► *Transportation Management* ► *Freight Order Management* ► *Service Order* ► *Define Service Order Types* ▶
- ► *Transportation Management* ► *Planning* ► *Freight Unit* ► *Define Freight Unit Types* ▶

Business Add-In (BAdI)

If you want to enhance the standard logic of the change controller for determining changes to business documents, you must make the settings for the BAdI *BAdI: Determination of Changes for Change Controller*. For more information, see Customizing for SAP TM under
► *Transportation Management* ► *Business Add-Ins (BAdIs) for Transportation Management* ▶ *Basic Functions* ► *Change Controller* ▶.



Process Controller Configuration

You use this process to configure the process controller. The process controller is a framework with which you can define your own strategies and methods, and in doing so, the way in which your planning process is executed, for example:

- Strategies

You use strategies to define complete processes. By assigning a service, you define the area in which the process is to be used, for example, transportation charge management, freight unit building, or VSR optimization.

We provide a number of standard strategies.

- Methods

Methods define the individual process steps of a strategy. You assign a service to each method.

SAP Transportation Management uses the process controller to define the following strategies:

- Planning strategies (see [Planning Strategies \[Page 1231\]](#))
- External strategies (see [External Strategies \[Page 1232\]](#))

You use strategies in SAP Transportation Management in the following areas, for example:

- Freight unit building (see [Creation and Editing of Freight Units \[Page 719\]](#))
- Carrier selection (see [Carrier Selection \[Page 863\]](#))
- VSR optimization (see [VSR Optimization \[Page 806\]](#))
- Load optimization (see [Load Planning \[Page 825\]](#))
- Manual planning (see [Manual Planning \[Page 785\]](#))
- Change controller (see [Change Controller \[Page 1220\]](#))
- Definition of customer-specific functions (see [Customer-Specific Functions \[Page 913\]](#))

Process

1. You define a service for the required area.
2. You define a strategy.
3. You define one or more methods.
4. You assign these methods to your strategy. The sequence in which you assign the methods to the strategy determines the sequence in which the system processes the methods. Strategies and methods must have the same service. You can also assign one method to multiple strategies.



Note

You define strategies and methods in Customizing for *SCM Basis* under  *Process Controller*. Choose the following Customizing activities:

- *Define Service*
- *Define Strategy*
- *Define Methods*
- *Assign Methods to a Strategy*

You can use the other Customizing activities under the *Process Controller* Customizing node to define parameters to further adjust your strategy.

End of the note.

More Information

[Process Controller](#)



Planning Strategies

You use planning strategies to define the planning steps that the system is to perform and the sequence in which it is to perform them. Each planning strategy comprises one or more methods that represent the individual planning steps.

Features

We deliver multiple standard planning strategies with methods. You can change these by adding or replacing methods.

You define planning strategies and methods in Customizing. For more information about the process controller configuration, see [Process Controller Configuration \[Page 1229\]](#).

Activities

To use standard planning strategies, you have to specify them in the corresponding profiles and settings for the relevant area. For manual planning, specify the standard planning strategies in the planning profile, for example (see [Manual Planning \[Page 785\]](#)). For carrier selection, specify them in the carrier selection settings (see [Carrier Selection \[Page 863\]](#)). For load optimization, specify them in the load planning settings (see [Automatic Load Planning \[Page 831\]](#)).



External Strategies

You can use external strategies to change the standard behavior of certain areas of your system in accordance with your requirements.

In the external strategy, you define the steps that the system is to perform and the sequence in which it is to perform them. Each external strategy comprises one or more methods that represent the individual steps.

Features

You use external strategies, for example, for incompatibilities (see [Incompatibilities \[Page 715\]](#)) and in transportation charge management (see [Agreement \[Page 970\]](#)).

You define external strategies in Customizing. For more information, see [Process Controller Configuration \[Page 1229\]](#).



Map Display

You can use this function to display business documents, such as freight orders, on a map, perform an address search, and determine a route display.

Prerequisites

You have activated the map display in Customizing and made any additional settings for the map required. For more information, see Customizing for Transportation Management under ► *Basic Functions* ➤ *Geographical Map* ▶.

For more information, see [Map Functions \[Page 1234\]](#).

Features

The business document that is selected first is displayed on the map. The transportation stop sequence for this business document is displayed on the map, and the transportation stops are connected by arrows showing the direction. If you have not selected a business document, only the map is displayed.

You can use various standard functions for navigating and zooming on the map.

For more information about the address search and route display, see [Map Functions \[Page 1234\]](#).



Map Functions

You can perform various actions on the map.

Prerequisites

You have installed SAP Visual Business. For more information about SAP Visual Business, see SAP Library for SAP Visual Business on SAP Help Portal under ► <http://help.sap.com> ► SAP NetWeaver ► SAP Visual Business 2.1 ▶.

You have activated the map display in Customizing and, if necessary, made further settings for the map. For more information, see Customizing for Transportation Management under ► *Basic Functions* ► *Geographical Map* ► *Define Settings for Geographical Map* ▶.

Features

Address Search

You can use the context menu of the map to start the address search and display the search results on the map. The address search is based on the geocoding of the location. For more information, see [Geocoding](#).

This allows you to perform several address searches and display the search results simultaneously on the map. You can use the context menu of the map to hide the search results individually or completely.

Route Display

You can use the context menu of a connection line to determine a route display along real street routes (georoutes). This function is dependent on the geographical information system available in the system.



Background Processing

Background processing enables you to use functions to perform mass processing tasks and background jobs. A mass processing function enables you to work flexibly with a large number of business documents, with immediate results. A background job function enables you to run a program in the background at a specific time or at the occurrence of a specific regular event.

The table explains how background processing functions are used:

Function	Use	Program
Forwarding Order Management Preparation [Page 1238]	This function automates steps to create freight units and define the route based on forwarding orders.	/SCMTMS/TRQ_PREP_PLNG_BATCH
Planning Run [Page 1240]	This function starts a planning run.	/SCMTMS/PLN_OPT
Selection of Carriers [Page 1241]	This function automates the carrier, which can also include the trigger of the tendering process.	/SCMTMS/TSPS_OPT_BGD
Tendering [Page 1242]	This function triggers the tendering process independent of carrier selection.	/SCMTMS/TOR_TENDERING_BATCH
Creation of Schedule-Based Freight Documents [Page 1243]	This function creates freight documents based on the departures of one or more schedules.	/SCMTMS/SCH_CRT_DOC
Offline Workflow for Sending and Approving Work Items [Page 1255]	These functions send work items for freight agreement RFQ masters, agreements, and validity periods in rate tables by e-mail to users for offline approval, and process inbound work item e-mails.	/SCMTMS/WI_NOTIFICATION_OFFAPP /SCMTMS/WI_OFFLINE_EVAL_REPORT
Processing of FQs and Overdue RFQs [Page 1245]	This function evaluates freight quotations and detects that the maximum response time for a request for quotation (RFQ) is over.	SCMTMS/TEND_CONT_PROCESS
Confirmation of Forwarding Orders [Page 1246]	This function automates steps to confirm forwarding orders.	/SCMTMS/TRQ_CONF_BATCH
Creation of Deliveries in SAP ERP [Page 1247]	This function creates delivery proposals for order-based transportation requirements.	/SCMTMS/DLV_BATCH

Function	Use	Program
Processing of FUs for Direct Shipment [Page 1249]	This function converts freight units for which the system has determined direct shipment options into freight orders for direct shipment or assigns them to freight orders.	/SCMTMS/DIRECT_SHIPMENT_BATCH
Processing of Freight Bookings [Page 1251]	This function automates actions for freight bookings.	/SCMTMS/TOR_BO_PROC_BATCH
Processing of Freight Orders [Page 1253]	This function automates actions for freight orders.	/SCMTMS/TOR_FO_PROC_BATCH
Communication of Settlements with SAP ERP [Page 1258]	This function processes actions for communication with SAP ERP.	RSPPFPROCESS
Creation and Transfer of Forwarding Settlement Documents [Page 1260]	This function automates the creation and transfer of forwarding settlement documents.	/SCMTMS/CFIR_CREATE_BATCH /SCMTMS/CFIR_TRANSFER_BATCH
Creation and Transfer of Freight Settlement Documents [Page 1263]	This function automates the creation and transfer of freight settlement documents.	/SCMTMS/SFIR_CREATE_BATCH /SCMTMS/SFIR_TRANSFER_BATCH
Publication of Freight Settlement Dispute Cases [Page 1267]	This function enables you to publish freight settlement dispute cases in batches in the background.	/SCMTMS/SET_CARRIER_RELEVANCE

You can also use the following function for background processing. It can be used before or after any of the above functions.

Function	Use	Program
Processing of Triggers [Page 1268]	This function reprocesses BOPF actions and function modules for which processing failed during the previous attempt.	/SCMTMS/PROCESS_TRIGGER_BGD



By using a parallel processing profile, you can improve the performance of background processing. To define parallel processing profiles, in SAP NetWeaver Business Client choose **Application Administration > General Settings > Define Parallel Processing Profile**.

For more information, see [Definition of Parallel Processing Profiles \[Page 1269\]](#).

End of the note.

Activities

You can use a program in the following ways:

- To run a mass processing function in SAP NetWeaver Business Client

For example, you can process a large number of inbound tendering e-mails at the same time with an immediate result.

You can use different criteria to process objects. For example, you can process freight orders by document ID, shipper, or consignee. You can also specify variants, to make it easier to enter the selection criteria that you use regularly.

To use these functions, in SAP NetWeaver Business Client choose Application Administration > Background Processing.

- To create a background job using the *Define Background Job* (SM36) transaction

For example, you can specify that the system creates forwarding settlement documents at certain times during the working day.

To run the transaction, enter the program name and the appropriate variant on the *Create Step* screen. Enter the start criteria on the *Job Selection* screen.



Forwarding Order Management Preparation

This function automates steps to create freight units and to determine the route on the basis of forwarding orders. You can use this function instead of executing the steps manually in the personal object worklist (POWL) of SAP NetWeaver Business Client. You can use background processing if you want to process many forwarding orders simultaneously.

Integration

For more information about the integration of this function into the overall background processing, see [Background Processing \[Page 1235\]](#).

Prerequisites

- You have created forwarding orders in the system.
- You have optionally defined a selection profile. For more information, see [Selection Profile \[Page 684\]](#).
- You have optionally defined a planning profile. For more information, see [Planning Profile \[Page 689\]](#).
- You have defined a freight unit building rule. For more information, see [Freight Unit Building Rule \[Page 724\]](#).

We recommend that you define automatic freight unit building in Customizing for Transportation Management. For more information, see [Forwarding Order Management](#) [Forwarding Order](#) [Define Forwarding Order Types](#) .

Features

This function executes the following activities:

- Creating freight units

For more information, see [Creation and Editing of Freight Units \[Page 719\]](#).

- Determining the route

For more information, see [Generation of Transportation Proposals \[Page 861\]](#).

Activities

To use this function, you must run the program /SCMTMS/TRQ_PREP_PLNG_BATCH.

Proceed as follows:

- Select a selection profile or manually enter the selection criteria
- Choose one of the following options:
 - *Create Freight Units Only*
 - *Define Route*

You also have the following options:

- Select a freight unit building rule
- Fix freight units
- Define whether the forwarding order is processed in parallel (transaction /SCMTMS/PPRF)
- Select a planning profile (only required for the option *Define Route*)

The system considers only those forwarding orders that have not yet been completed or canceled.

The system selects the forwarding order items on the basis of the selection profile. The system performs the selected option for the corresponding forwarding orders and saves the results. The system logs all messages that it creates when executing the function in the application log under object /SCMTMS/TMS and subobject BP.

To call the application log, on the *SAP Easy Access* screen, choose ► *Application Administration* ► *General Settings* ► *Display Application Log* ▶. In SAP NetWeaver Business Client, choose ► *Application Administration* ► *Log* ► *Log Display* ▶.



Planning Run

This function starts a planning run. You can use this function instead of starting the Vehicle Scheduling and Routing optimizer (VSR optimizer) from interactive planning in SAP NetWeaver Business Client. You can start this function in simultaneous parallel sessions only if you have indicated a parallel processing profile in your planning profile. We recommend that you use background processing if you want to process freight units simultaneously. For more information, see [Interactive Planning \[Page 774\]](#) and [Freight Unit \[Page 728\]](#).

Integration

For more information about the integration of this function into overall background processing, see [Background Processing \[Page 1235\]](#).

Prerequisites

You have created selection profiles and planning profiles, which determine the input for the VSR optimizer (for freight unit selection and resource selection). For more information, see [Selection Profile \[Page 684\]](#) and [Planning Profile \[Page 689\]](#).

Features

This function starts the planning process according to the planning strategy for the VSR optimizer that you maintained in the optimizer settings. For more information, see [Planning Profile \[Page 689\]](#).

Activities

To use this function, you must run program /SCMTMS/PLN_OPT. You must specify the following settings:

- Selection profile
- Planning profile
- Checkbox to determine whether the run is a test run. This selection prevents the result of the planning run from being saved.

Based on the chosen profiles, the system selects freight units and resources. The system calls the VSR optimizer according to the planning strategy. The system logs all messages that it issues when executing the function in the application log under object /SCMTMS/TMS. If you run the function in the background, the system uses the subobject *BP* for logging. If you run the function manually, the system logs the messages under subobjects according to the business object that created the message.



Selection of Carriers

This function automates carrier selection, which can include the trigger of the tendering process. You can use this function instead of manually executing the steps of the automatic carrier selection in SAP NetWeaver Business Client. For more information, see [Carrier Selection \[Page 863\]](#).

Integration

For more information about the integration of this function into overall background processing, see [Background Processing \[Page 1235\]](#).

Prerequisites

- You have a set of freight orders stored in the system.
- You have defined selection profiles (optional). For more information, see [Selection Profile \[Page 684\]](#).

Features

This function automatically does the following:

- Finds the available carriers for each business document based on the specified carrier selection settings and creates the ranking list
- Assigns the best carrier if you requested it
- Triggers the tendering process if you requested it and no carrier is assigned

Activities

To use this function, you must run program /SCMTMS/TSPS_OPT_BGD. You must perform the following tasks:

- Select the carrier settings.
- Select a selection profile or define a set of freight order IDs.

Based on the chosen selection profile or the defined set of freight order IDs (or both), the system selects freight orders. The explicitly listed freight order IDs will be included. The system executes the process controller strategy defined by the carrier selection settings, which corresponds to manually executing the steps of the automatic carrier selection in SAP NetWeaver Business Client. If you have selected the corresponding checkbox in the function, the system logs all messages that it creates during execution of the function in the application log under object /SCMTMS/TMS, subobject SCT.



Tendering

You can use this function to perform tendering separately in the background, in other words, independently of carrier selection. This can be advantageous for reasons of performance and memory consumption. Moreover, you can use this function to control whether you want to only start tendering in the background and then publish it manually, or whether you want to start and publish the tendering in the background.

If you want to execute tendering together with carrier selection in the background, you can use the relevant function for carrier selection. For more information, see [Selection of Carriers \[Page 1241\]](#).

Integration

For more information about the integration of this function into the overall background processing, see [Background Processing \[Page 1235\]](#).

Prerequisites

- You have a set of freight orders stored in the system.
- The prerequisites for automatic tendering have been fulfilled. For more information, see [Freight Tendering](#).
- You have optionally defined a selection profile. For more information see [Selection Profile \[Page 684\]](#).

Features

You have the following options:

- *Start Tendering*

When you start tendering, all released freight orders are given the status *In Tendering*. You can also define that the tendering plan is created and started automatically. When you start tendering manually, you have to manually set up and start the tendering plan after executing this function.

- *Stop Active Tenderings*

You can define that freight orders that are already in the tendering process are canceled.

Activities

To use this function, you must run the program /SCMTMS/TOR_TENDERING_BATCH.

The system processes the selected steps for the selected freight requests and saves the results.



Creation of Schedule-Based Freight Documents

This function creates freight documents based on the departures of one or more schedules.

Integration

For more information about the integration of this function into overall background processing, see [Background Processing \[Page 1235\]](#).

Prerequisites

You have created schedules and departures. For more information, see [Creating Schedules](#).

Activities

To use this function, you must run program /SCMTMS/SCH_CRT_DOC.

On the entry screen, you can choose to create the following freight documents:

- Air bookings
- Ocean bookings
- Road freight orders
- Rail freight orders

For the different freight document types, you can select the respective departures by entering one or more of the following selection criteria:

Selection Criteria	Air Bookings	Ocean Bookings	Freight Orders
Schedules	x	x	x
Gateways	x	x	-
Airports	x	-	-
Ports	-	x	-
Locations	-	-	x
Airline codes	x	-	-
Flight numbers	x	-	-
Carriers	x	x	x
Vessels	-	x	-
Voyages	-	x	-
Start date/time	x	x	x

Selection Criteria	Air Bookings	Ocean Bookings	Freight Orders
End date/time	x	x	x
Time zone	x	x	x

In addition, you can generate the master air waybill number for your air bookings.

 Note

By default, if a freight document already exists for a specific date, an additional freight document is not created.

End of the note.

Logging

All departures that match the selection criteria and all freight documents that have been created are written to the log. If you select the *Display Selected Departures* checkbox on the *Technical Settings* screen, you can display the selected departures before you create the freight documents. All log entries are stored in the application log (object: /SCMTMS/TMS, subobject: PLN).

We recommend that you delete obsolete log entries at regular intervals. For more information, see system documentation for the *Application Log: Delete Expired Logs* transaction (SLG2).

Error Handling

There are two different types of errors or messages:

- Errors or messages during departure selection

In the first step, the system selects departures based on the selection criteria. It displays these departures, for example, if you have selected the *Display Selected Departures* checkbox on the *Technical Settings* screen. On this screen, you can also select the *Cancel if Selection Error Occurs* checkbox to specify that the system does not create any freight bookings and cancels processing if errors occur during selection.

- Errors during freight booking creation

In the second step the system creates the freight bookings based on the selected departures in a master flight schedule. If you have selected the *Cancel if Creation Error Occurs* checkbox on the *Technical Settings* screen, the system cancels processing if errors occur.



Processing of FQs and Overdue RFQs

You can use this function to evaluate freight quotations (FQs) and to detect that the maximum response time for a request for quotation (RFQ) is over. If you do not use the function, the tendering process does not continue. The status of the RFQ remains open and the system does not send RFQs to the next carrier in the tendering plan.

To use this function, you must run the program /SCMTMS/TEND_CONT_PROCESS.

Integration

For more information about the integration of this function into the overall background processing, see [Background Processing. \[Page 1235\]](#)

More Information

[Freight Tendering](#)



Confirmation of Forwarding Orders

This function automates steps to confirm forwarding orders. You can use this function instead of executing the steps manually in the personal object worklist (POWL) of SAP NetWeaver Business Client. We recommend that you use background processing if you want to process and confirm multiple forwarding orders simultaneously.

Integration

For more information about the integration of this function into the overall background processing, see [Background Processing \[Page 1235\]](#).

Prerequisites

- You have created forwarding orders in the system.
- You have optionally defined a selection profile. For more information, see [Selection Profile \[Page 684\]](#).

Activities

To use this function, you must run the program /SCMTMS/TRQ_CONF_BATCH.

You can select a selection profile or enter the selection criteria manually. Additionally, you can specify whether the forwarding orders are to be processed in parallel. The system considers only those forwarding orders that have not yet been completed or canceled.

The system selects forwarding order items from the planning data on the basis of the selection profile or the selection criteria that you entered. The system processes the forwarding order and saves the results. The system logs all messages that it creates while executing this function in the application log under object /SCMTMS/TMS and subobject BP.

To call the application log, on the *SAP Easy Access* screen, choose ► *Application Administration* ► *General Settings* ► *Display Application Log* ▶. In SAP NetWeaver Business Client, choose ► *Application Administration* ► *Log* ► *Log Display* ▶.

More Information

[Freight Unit \[Page 728\]](#)



Creation of Deliveries in SAP ERP

This function creates delivery proposals for order-based transportation requirements. Based on the selection criteria or selection profiles specified in the function, SAP Transportation Management (SAP TM) creates delivery proposals to cover the demand. A proposal consists of groups of freight units or directly created freight orders that can be delivered together. SAP TM sends the proposals to SAP ERP to create deliveries.

If the SAP ERP returns that the creation of a delivery failed, for example, because the corresponding sales order is blocked, this report allows you to retry the process. You select one or more order-based transportation requirements and start the process. The report processes only those OTRs for which the SAP ERP has returned a failure.

After the delivery proposals have been created and sent to SAP ERP, the system creates an entry in the application log. The application log entry includes the delivery proposals that were sent to SAP ERP. Furthermore, the system sets a send timestamp in freight units or directly created freight orders for which a delivery proposal was sent to SAP ERP.

Note that if the user specified a delivery profile that requires the planning results to be fixed for planned freight units, directly created freight orders, freight orders, or freight bookings, the system fixes the planning results during delivery proposal creation. Otherwise, the system does not fix the planning results.

Integration

For more information about the integration of this function into overall background processing, see [Background Processing \[Page 1235\]](#).

Prerequisites

- You have made settings for order integration. For more information, see [Configuring Integration of Orders and Deliveries](#).
- The order-based transportation requirements for which you want to create deliveries exist in SAP TM.
- Freight units, directly created freight orders, freight orders, or freight bookings exist for the order-based transportation requirements.
- If you want to use a selection profile when using this function, you have defined a selection profile. For more information, see [Profiles and Settings \[Page 682\]](#).
- If you want to use a delivery profile when using this function, you have defined a delivery profile. For more information, see [Delivery Profile](#).

Features

When you run the program /SCMTMS/DLV_BATCH, you can either specify selection profiles that are used to select the documents for which deliveries are to be proposed, or you can manually enter selection criteria. You can also specify a delivery profile.

You can choose to retry a failed previous attempt to create delivery proposals.

Further options are available for how the function handles selected data; for example, how freight units are handled if a freight unit that is determined is not completely assigned to a selected document. For more information, see the field help in the function.

Activities

To access this report in SAP NetWeaver Business Client, choose  *ERP Logistics Integration*  *Background Reports*  *Create Deliveries in ERP* .



Processing of FUs for Direct Shipment

The system converts freight units for which it has determined direct shipment options into freight orders for direct shipment. It also assigns these freight units to freight orders that meet the requirements in terms of the source location, carrier, and pick-up date.

We recommend that you schedule this function to run periodically in the background and that you use the pick-up date as selection criterion.

Integration

For more information about the integration of this function into the overall background processing, see [Background Processing \[Page 1235\]](#).

Prerequisites

In case you do not want to use the default freight order type, you have assigned a freight order type either directly or via condition to the freight unit type in Customizing. For more information, see Customizing for Transportation Management under ► *Planning* ► *Freight Unit* ► *Define Freight Unit Types* ▶.

Activities

To use this function, you must run the program /SCMTMS/DIRECT_SHIPMENT_BATCH. You must specify one of the following settings:

- Define a pick-up date for selection.
- Select a selection profile.
- Define a set of freight units.
- Combine the different selection criteria.

If you want the system to assign freight units to freight orders, you can restrict the selection to those freight units for which you have defined a corresponding *DSO result rule* in Customizing for freight unit types.

Depending on either the selection criteria specified in this function or the selection profile, the system selects those freight units for conversion or assignment that have previously identified direct shipment options and for which one of the options has been selected. The conversion of a freight unit into a freight order encompasses the following:

- Change of the document category from FU to TO
- Determination of a new document ID
- Assignment of the selected carrier
- Adaptation of the transportation stops according to the scheduled pick-up and delivery times of the selected direct shipment option

If the system selects freight units to be assigned to freight orders, it identifies suitable freight orders that match the requirements of the source location, carrier, and pick-up date. If the system

cannot find a suitable freight order, it creates a new one. In this case, it transfers the data from the freight unit and the direct shipment option to the new freight order.

If you have activated tracking of execution with SAP Event Management for the freight unit type and freight order type, the system deletes the event handler for the freight unit and creates a new event handler for the freight order.

The system logs all messages that it creates while executing the function in the application log under object /SCMTMS/TMS, subobject DSO.

More Information

[Determination of Direct Shipment Options \[Page 856\]](#)



Processing of Freight Bookings

This function automates the different actions for freight bookings.

Integration

For more information about the integration of this function into the overall background processing, see [Background Processing \[Page 1235\]](#).

Prerequisites

- Freight bookings exist that are ready to be sent to the business partner using EDI (Electronic Data Interchange) or print document (for example, a carrier was assigned).
- You have specified the following output options in the freight booking type in Customizing:
 - Output Profile /SCMTMS/TOR_PRINT_SEA
 - Additional Output Profile /SCMTMS/TOR
- You have optionally defined a selection profile. For more information see [Selection Profile \[Page 684\]](#).

Activities

To use this function, you must run the program /SCMTMS/TOR_BO_PROC_BATCH.

You can select a selection profile or enter the selection criteria manually. Additionally, you can specify whether the freight bookings are to be processed in parallel (see [Definition of Parallel Processing Profiles \[Page 1269\]](#)).

Based on the selection profile or the selection criteria you entered, the system chooses freight bookings and executes the action you choose:

- The system sends the freight bookings to the shipping company, for example, and updates the confirmation status.
- The system sends shipping instructions and updates the confirmation status.
- The system sends the freight bookings to the ERP system and updates the status of the transfer to ERP. Shipments are created or changed automatically in the ERP system.
- The system sets the execution status to *Ready for Transportation Execution* or *MAWB Closed* (air freight scenario). This ensures that all prerequisites are fulfilled with the result that the relevant print documents can be printed. For more information about print documents, see [Printing \[Page 1273\]](#).
- The system fixes the freight bookings.
- The system sets the life cycle status of the freight bookings to *Completed*.

The system saves the results.

By selecting the corresponding checkbox, you can ensure that the system executes the requested action only for the unprocessed business documents. This means that the system only executes the action for the selected freight bookings if it has not already executed the action once (for example, as a result of a user action on the user interface).

If you have selected the corresponding checkbox, all messages that the system creates while executing this function are saved in the application log under object /SCMTMS/TMS and subobject BP.

To call the application log, on the SAP Easy Access screen, choose ► *Application Administration* ► *General Settings* ► *Display Application Log* ▶. In SAP NetWeaver Business Client, choose ► *Application Administration* ► *Log* ► *Log Display* ▶.

More Information

[Freight Booking](#)



Processing of Freight Orders

This function automates the different actions for freight orders.

Integration

For more information about the integration of this function into the overall background processing, see [Background Processing \[Page 1235\]](#).

Prerequisites

- Freight orders exist that are ready to be sent to the business partner using EDI (Electronic Data Interchange) or print document (for example, a carrier was assigned).
- You have specified the following output options in the freight order type in Customizing:
 - Output Profile /SCMTMS/TOR_PRINT_ROAD
 - Additional Output Profile /SCMTMS/TOR
- You have optionally defined a selection profile. For more information see [Selection Profile \[Page 684\]](#).

Activities

To use this function, you must run program /SCMTMS/TOR_FO_PROC_BATCH.

You can select a selection profile or enter the selection criteria manually. Additionally, you can specify whether the freight orders are to be processed in parallel (see [Definition of Parallel Processing Profiles \[Page 1269\]](#)).

Based on the selection profile or the selection criteria you entered, the system chooses freight orders and executes the action you choose:

- The system checks whether the selected freight orders have to be updated. The system sends the freight orders to the carrier and updates the subcontracting status.
- The system sends the freight orders to the ERP system and updates the status of the transfer to ERP. Shipments are created or changed automatically in the ERP system.
- The system sets the execution status to *Ready for Transportation Execution*. This ensures that all prerequisites are fulfilled with the result that the relevant print documents can be printed. For more information about print documents, see [Printing \[Page 1273\]](#).
- The system fixes the freight orders.
- The system sets the life cycle status of the freight orders to *Completed*.

The system saves the results.

By selecting the corresponding checkbox, you can ensure that the system executes the requested action only for the unprocessed business documents. This means that the system only executes the action for the selected freight orders if it has not already executed the action once (for example, as a result of a user action on the user interface).

If you have selected the corresponding checkbox, all messages that the system creates while executing this function are saved in the application log under object /SCMTMS/TMS and subobject BP.

To prevent freight orders that have already been sent to the SAP ERP system from being sent again, you can use the report to check whether the freight order is relevant for transfer. New freight orders are relevant for transfer. The system transfers freight orders with this status, creates a transport in the SAP ERP system, and the processed freight order is no longer relevant for transfer. If the freight order is changed in the SAP TM system, it is relevant again for transfer. If the corresponding freight order is not changed in the SAP TM system, it remains not relevant for transfer. Services that are triggered by the SAP ERP system do not change this status.

To call the application log, on the *SAP Easy Access* screen, choose  *Application Administration*  *General Settings*  *Display Application Log*. In SAP NetWeaver Business Client, choose  *Application Administration*  *Log*  *Log Display*.

More Information

[Freight Order](#)



Offline Workflow for Sending and Approving Work Items

SAP Transportation Management (SAP TM) can send work items for the following objects by e-mail, to the Microsoft Outlook inbox of a user:

- Freight agreement RFQ masters
- Agreements
- Validity periods in rate tables

The user can accept or reject the work item and update the system from their inbox. This capability gives a user the flexibility to process work items for the objects without logging on to SAP TM.



Note

- For freight agreement RFQ masters, the system only e-mails work items that are in a ready status in your Business Workplace inbox. For example, it does not e-mail work items that are in process.
- Work items sent for offline approval remain in the approver's Business Workplace inbox until SAP TM receives and processes the reply e-mails that contain the decisions.
- If the user processes the work items online before the system receives and processes the reply e-mails, the system ignores the reply e-mails.

End of the note.

Integration

For more information about the integration of this function into the overall background processing, see [Background Processing \[Page 1235\]](#).

Prerequisites

General

- You have specified the prerequisites required to enable the approval workflow. For more information, see [Approval Check](#).
- You have specified the following information for the user in the appropriate position (for example, *Customer Agent*) in your organization:
 - User name of WF-BATCH
 - E-mail address on the *Address* tab page
 - User type of *Dialog* on the *Logon Data* tab page

You can specify the information in SAP NetWeaver Business Client under *Application Administration* *General Settings* *User Maintenance (SU01)* .

- You have specified the necessary settings for sending and receiving e-mails for SAP TM. For more information, see [External Sending in the SAP System](#).

Individual Objects

- For work items for freight agreement RFQ masters, you have specified the prerequisites for freight agreement RFQ masters. For more information, see [Requesting of Quotations for Transportation Services \[Page 928\]](#).
- For working with work items for agreements, you have specified the prerequisites for agreements. For more information, see [Agreement Maintenance \[Page 974\]](#).
- For working with work items for validity periods in rate tables, you have specified the prerequisites for rate tables. For more information, see [Rate Definition and Maintenance](#).

Features

Sending Work Items by E-mail

You use program /SCMTMS/WI_NOTIFICATION_OFFAPP to send work items by e-mail to users for offline approval.

You create a variant of the program in which you specify the selection parameters you want to use to send the work items. You specify the following settings in the variant:

- The time from which the work items are created
- WF-BATCH, the user to whom you want to send the e-mails
- The language of the e-mail
- The job suffix to specify a unique run of the function

In transaction *Define Background Job* (SM36) you use the variant to create a background job. You enter the name of the program and the variant in the *ABAP Program* screen area of the *Create Step 1* screen. You can schedule the program under the start conditions.

You execute the background job in transaction *Simple Job Selection* (SM37).

The system sends an e-mail with a short standard text that contains the main details from the work item. The e-mail also contains an accept hyperlink and a reject hyperlink. When the user chooses one of the hyperlinks, the function automatically creates a reply e-mail.



Caution

We do not recommend that users forward the reply e-mail to third parties. For security reasons, SAP TM only accepts reply e-mails from the e-mail address of the original recipient.

End of the caution.

Inbound Processing

In the *Create Step 1* screen of SM36, you enter the following information:

- User WF-BATCH
- Program /SCMTMS/WI_OFFLINE_EVAL_REPORT in the *ABAP Program* screen area

You schedule the program under the start conditions.

You execute the program in `SM37`. In the *Job Overview* screen, you can check the work items that the user has processed from the inbox.

The system only processes an e-mail if the sender is user `WF-BATCH`. If the object is locked by another user when the system receives the reply e-mail, or if immediate processing fails for any other reason, the system displays a failure message in the *Job Overview* screen.

You can check the received status of inbound e-mails in transaction *SAP Connect: Inbound Send Requests (SMTP)* (`SOIN`). To display e-mails received, ensure that you specify *Always Save* in the *Incoming E-mails* screen area under *Utilities* *MIME Settings* .



Communication of Settlements with SAP ERP

You can use this function to process actions for the background communication with SAP ERP of the following objects:

- Freight, forwarding, and internal settlements, and credit memos
- Credit management updates from SAP Transportation Management (SAP TM) to SAP Credit Management

The system uses the Post Processing Framework (PPF) to communicate with SAP ERP. For example, the system uses the PPF action profile /SCMTMS/CFIR to communicate forwarding settlements to SAP ERP. The profile /SCMTMS/CFIR uses the following action definitions:

- /SCMTMS/SEND_CFIR_CANCELLATION
- /SCMTMS/SEND_CFIR_REQUEST
- /SCMTMS/SEND_CREDIT_UPDATE

Integration

For more information about the integration of this function into the overall background processing, see [Background Processing \[Page 1235\]](#).

Prerequisites

- You have specified the action profiles /SCMTMS/TOR_INV_PREP and /SCMTMS/CFIR in the customizing activities *Maintain PPF Settings* and *Maintain Output Management Adapter Settings*. For more information, see *Cross-Application Components* under ► *Processes and Tools for Enterprise Applications* ► *Reusable Objects and Functions for BOPF Environment* ► *PPF Adapter for Output Management* □.
- You have entered *Processing when saving document* in the field *Processed At* for all action definitions contained in the /SCMTMS/TOR_INV_PREP and /SCMTMS/CFIR action profiles.

Note

For the business object *Supplier Freight Invoice Request* (SFIR), Customizing contains the action profile /SCMTMS/TOR_INV_PREP. For the business object *Customer Freight Invoice Request* (CFIR), Customizing contains the action profile /SCMTMS/CFIR.

You assign these profiles in the *Output Profile* field of the *Define Forwarding Settlement Document Types* and *Define Freight Settlement Document Types* Customizing activities. For more information, see Customizing for *Transportation Management* under ► *Settlement* □. Choose *Freight Settlement* or *Forwarding Settlement*, as appropriate.

End of the note.

- The settlement documents that are processed in the background using this function have the status *Transferred for Accruals*.

Features

This function automatically executes the following actions:

- For action profile /SCMTMS/TOR_INV_PREP, it does the following:
 - Requests the preparation of a freight settlement document (FSD)
 - Requests the cancellation of an FSD
- For action profile /SCMTMS/CFIR, it does the following:
 - Requests a forwarding settlement document (FWSD)
 - Requests the cancellation of an FWSD
 - Request an update to SAP Credit Management

For more information, see the system documentation for program RSPPFPROCESS.

Activities

To use this function, you must run the program RSPPFPROCESS. You must specify the following settings:

- Select application /SCMTMS/TRANSPORTATION.
- Choose the corresponding action profile and action definition.
- Select *Processing When Saving Document* in the *Time of Processing* field.

Based on the selection criteria, the system selects the actions and executes them automatically in the background. If you run the function in a dialog, the system selects the actions according to the selection criteria and displays them in the SAP List Viewer (ALV). In the ALV, you can select individual actions or all actions and process them.



Creation and Transfer of Forwarding Settlement Documents

This function enables you to automate the creation of forwarding settlement documents (FWSDs). Run the program /SCMTMS/CFIR_CREATE_BATCH. If you want the system to automatically transfer the settlement documents to SAP ERP after creation, select the *Immediate Transfer to ERP* checkbox. If you do not automatically transfer settlement documents after creation, you must run the program /SCMTMS/CFIR_TRANSFER_BATCH to transfer the settlement documents. For example, you create settlement documents but then you want to transfer the settlement documents to SAP ERP in a structured way, twice a day. You schedule the program /SCMTMS/CFIR_TRANSFER_BATCH to run in the background. This makes sure the system transfers all settlements that are not blocked to SAP ERP.

The *Creation and Transfer of Forwarding Settlement Documents* function does not create forwarding settlement documents with a zero value. For example, the function does not create a settlement where you have not entered calculation details in an agreement because you have agreed with a customer that you enter charges manually in the settlement for each individual forwarding order. Also, the function automatically excludes forwarding orders that are already completely invoiced.

Integration

For more information about the integration of this function into the overall background processing, see [Background Processing \[Page 1235\]](#).

Prerequisites

Forwarding Settlement Document Types

- You have specified the FWSD type, including the appropriate FWSD category in Customizing for *Transportation Management* under ► *Settlement* ► *Forwarding Settlement* ► *Define Forwarding Settlement Document Types* ▶.
- You have assigned the FWSD type to an appropriate forwarding order (FWO) type in Customizing for *Transportation Management* under ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Forwarding Order Types* ▶.
- You have specified a number range interval for FWSDs in Customizing for *Transportation Management* under ► *Settlement* ► *Forwarding Settlement* ► *Define Number Range Intervals for Forwarding SDs* ▶.

Settlement Profiles

- You have specified a settlement profile in Customizing for *Transportation Management* under ► *Settlement* ► *Define Settlement Profile* ▶.
- You can assign the defined settlement profile to an organizational unit for charge calculation in Customizing for *Transportation Management* under ► *Basic Functions* ► *Charge Calculation* ► *Basic Settings for Charge Calculation* ► *Define General Settings* ▶. You can also assign the settlement profile to a business partner in the *BP - Maintain Business Partner* transaction under the SAP Easy Access screen ► *Transportation Management* ► *Master Data* ▶.

Internal Settlement

You have specified the appropriate settings for internal settlements (see [Internal Settlement Management \[Page 1074\]](#)).

Features

Forwarding Settlements

To create forwarding settlements, you enter a settlement document category of *Forwarding Settlement Document*. You enter either a selection profile or the appropriate forwarding order document settings to specify the forwarding orders that the system uses to create the settlements.

Internal Settlements

To create internal settlements, you enter a settlement document category of *Internal Settlement Document*. You enter the appropriate freight order or freight booking settings. The system uses the forwarding orders that are linked to these freight orders or freight bookings to create the settlements.

Selection Profile

You can define a selection profile to work with a subset of the settlements that need to be created and transferred. You can create and edit profiles in NWBC under  *Application Administration*  *Planning*  *Selection Profiles*.

Message Display

- Detailed Messages

The system displays the following information after you create and transfer settlement documents:

- List of orders for which it did not create settlement documents, and the reasons why it did not create the settlements
- Number of settlement documents created
- List of settlement documents created

If you select the *Detailed Messages* checkbox, the system displays additional details on-screen. For example, it displays the input parameters you entered, the service date for each settlement, and the orders included in the settlements. The system includes the additional details in the *Analyze Application Log* transaction (SLG1) regardless of whether you select the *Detailed Messages* checkbox. The system creates the application log when you create and transfer settlement documents in production mode (when you do not select the *Test Mode* checkbox).

- Log Messages About Transportation Charge Calculation (TCC)

If you select the *Log TCC Messages* checkbox, the system displays the relevant messages for each charge item in the *Charge Analysis Log* tab page of the settlement document. The system only displays these messages if charges have been calculated for the settlement document.

Parallel Processing Profile

You can specify the technical processing conditions the system uses to process the function, such as application server usage and queue time. You can create and edit profiles in NWBC

under ► *Application Administration* > *General Settings* > *Define Parallel Processing Profile* (/SCMTMS/PPRF).

Package Size

You can group settlements in defined package sizes for parallel processing. For example, if you can have 500 settlements in a run and you enter a package size of 100, the system creates and transfers your settlements in 5 parallel sessions that each contain 100 settlements.



Creation and Transfer of Freight Settlement Documents

You can automate the creation of freight settlement documents (FSDs). You can use this function instead of manually creating FSDs in the personal object worklist (POWL) of SAP NetWeaver Business Client (NWBC).

Run the program `/SCMTMS/SFIR_CREATE_BATCH`. If you want the system to automatically transfer the settlement documents to SAP ERP after creation, select the *Immediate Transfer to ERP* checkbox. If you do not automatically transfer settlement documents after creation, you must run the program `/SCMTMS/SFIR_TRANSFER_BATCH` to transfer the settlement documents. For example, you create settlement documents but then you want to transfer the settlement documents to SAP ERP in a structured way, twice a day. You schedule the program `/SCMTMS/SFIR_TRANSFER_BATCH` to run in the background. This makes sure the system transfers all settlements that are not blocked to SAP ERP.

Integration

For more information about the integration of this function into the overall background processing, see [Background Processing \[Page 1235\]](#).

Prerequisites

Freight Settlement Document Types

- You have specified the FSD type, including the appropriate FSD category in Customizing for *Transportation Management* under ► *Settlement* ► *Freight Settlement* ► *Define Freight Settlement Document Types* ▶.
- You have assigned the FSD type to an appropriate freight order (FO) type in Customizing for *Transportation Management* under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* ▶.
- You have specified a number range interval for FSDs in Customizing for *Transportation Management* under ► *Settlement* ► *Freight Settlement* ► *Define Number Range Intervals for Freight SDs* ▶.

Settlement Profiles

You have specified the appropriate settings for settlement profiles (see [Creation and Transfer of Forwarding Settlement Documents \[Page 1260\]](#)).

Internal Settlements

You have specified the appropriate settings for using resources with internal settlements (see [Internal Settlement for Resources \[Page 1077\]](#)).

Settlement Groups

You have specified settlement groups in Customizing for *Transportation Management* under ► *Settlement* ► *Define Settlement Groups and Settlement Rules* ▶.

Features

Freight Settlement Documents

To create freight settlements, you specify *Freight Settlement Document* as the settlement document category. To specify the freight orders that the system uses to create the settlements, you can enter either a selection profile or the document settings.

Internal Settlement Documents

To create internal settlements, you specify *Internal Settlement Document* as the settlement document category. You can enter either a selection profile or the document settings.

Dispute Cases

You can include, exclude, or include only the freight orders or freight bookings for which all dispute cases are resolved.

Different Invoicing Carrier for Each Stage

This feature gives you the flexibility to create separate freight settlement documents for each of the invoicing carriers in a rail freight document, where you have a different invoicing carrier for each stage in the document. For example, this enables you to work with rule 11 business situations in North America.

If you enter a carrier in the *Carrier/Service Provider* field, the system selects the freight documents where the specified carrier is the header carrier in the freight document. The header carrier is the carrier you specify in the ► *General Data* ► *Transportation* ▶ screen area of the freight document. In rule 11 situations, the header carrier receives the order from the customer and can execute one or more of the stages.

If you enter a carrier in the *Invoicing Carrier for Stage* field, the system selects freight documents for the stages that have been executed by the specified carrier.

If you enter a carrier in both the *Carrier/Service Provider* and the *Invoicing Carrier for Stage* fields, the system first chooses the freight documents in which the carrier you specify in the *Carrier/Service Provider* field matches the header carrier in the freight document. The system then creates freight settlement documents for the stages in the freight documents where the carrier you enter in the *Invoicing Carrier for Stage* field matches the invoicing carrier. In rule 11 situations, the invoicing carrier is the carrier who bills the customer for the shipment. This is the carrier you specify at stage level in the rail freight document. For more information on rail freight documents, see [Rail Transportation](#).

Excluded Freight Documents

The system does not automatically create settlement documents in the following circumstances:

- If more than one settlement already exists for a freight document and you need to process a change in the freight document
 - You create and transfer more than one freight settlement document for a freight document. Your carrier creates a dispute case against some charge types or logistics quantities in the freight order that results in a change to the charge information in the freight document.

The system does not know which of the existing settlement documents it should update in the automatic background process. It displays an error. You must manually choose the

appropriate settlement on the user interface (UI) and calculate charges again. You can then create the settlement.

- If an existing freight settlement document has a lifecycle status of *Transferred for Accruals* or *Cancellation Requested in SAP ERP*

When a settlement document has one of these statuses, SAP Transportation Management (SAP TM) is awaiting a response from SAP ERP. SAP TM does not know whether the transfer or cancellation have been successful, and cannot create a settlement document.

Invoice Date

You can specify the date the system uses as the invoice date for freight settlement documents. If you do not enter an invoice date, the system uses today's date as the default. You can use *BAdI: Determination of the Invoice Date for Freight Orders* to manually override the date you enter in this background processing function and the default system settings. For more information, see Customizing for *Transportation Management* under ► *Business Add-Ins (BAdIs) for Transportation Management* ► *Settlement* ► *Freight Settlement* □.

Selection Profile

You can define a selection profile to work with a subset of the settlements that need to be created and transferred. You can create and edit profiles in NWBC under ► *Application Administration* ► *Planning* ► *Selection Profiles* □.

Message Display

- *Detailed Messages*

The system displays the following information after you create and transfer settlement documents:

- List of orders for which it did not create settlement documents, and the reasons why it did not create the settlements
- Number of settlement documents created
- List of settlement documents created

If you select the *Detailed Messages* checkbox, the system displays additional details on-screen. For example, it displays the input parameters you entered, the service date for each settlement, and the orders included in the settlements. The system includes the additional details in the *Analyze Application Log* transaction (SLG1) regardless of whether you select the *Detailed Messages* checkbox. The system creates the application log when you create and transfer settlement documents in production mode (when you do not select the *Test Mode* checkbox).

- *Log Messages About Transportation Charge Calculation (TCC)*

If you select the *Log TCC Messages* checkbox, the system displays the relevant messages for each charge item in the *Charge Analysis Log* tab page of the settlement document. The system only displays these messages if charges have been calculated for the settlement document.

Parallel Processing Profile

You can specify the technical processing conditions the system uses to process the function, such as application server usage and queue time. You can create and edit profiles in NWBC under **Application Administration** **General Settings** **Define Parallel Processing Profile (/SCMTMS/PPRF)**.

Package Size

You can group settlements in defined package sizes for parallel processing. For example, if you can have 500 settlements in a run and you enter a package size of 100, the system creates and transfers your settlements in 5 parallel sessions that each contain 100 settlements.



Publication of Freight Settlement Dispute Cases

This function enables you to publish freight settlement dispute cases in batches in the background. Run the program `/SCMTMS/SET_CARRIER_RELEVANCE`.

You are a shipper and you allow your carriers to create dispute cases in the collaboration portal. To reduce your administration commitments, you have specified tolerance settings so that the system automatically accepts some dispute cases.

This function protects you against the carrier guessing and exploiting your tolerance settings. For example, without this function the carrier submits a dispute case where the dispute case falls inside the tolerance limits. The system checks the tolerance settings when it creates the dispute case and approves and publishes the case immediately. The carrier can then see the result immediately on the portal. Over time they can guess your tolerance settings, as they can compare the cases that were approved immediately against the cases that took longer to manually approve.

You must enable this function when you set up your freight settlement dispute management process.

Integration

For more information about the integration of this function into the overall background processing, see [Background Processing \[Page 1235\]](#).

Prerequisites

You have enabled the following settings for a freight settlement profile in Customizing for *Transportation Management* under ► *Settlement* ► *Define Settlement Profile* ▶:

- Self-billing verification
- Dispute tolerance group
- ERP update strategy
- Dispute item profile

You have used this freight settlement profile to create the relevant freight orders for your carrier.

You have specified the following dispute case settings in Customizing for *Transportation Management* under ► *Settlement* ► *Freight Settlement* ► *Freight Settlement Dispute Management* ▶:

- Dispute case reason codes and types
- Tolerance rules
- Item types and item profiles

Features

You can enter a range of freight dispute cases or freight orders, or both freight dispute cases and freight orders.



Processing of Triggers

You can use this function to start the reprocessing of Business Object Processing Framework (BOPF) actions and function modules for which the system set a trigger the last time these objects were processed. The system sets a trigger if the processing fails due to a locking issue.

Integration

For more information about the integration of this function into overall background processing, see [Background Processing \[Page 1235\]](#).

Features

The triggers are stored in the database table /SCMTMS/D_TRIGHD. The trigger IDs are registered in database table /SCMTMS/I_TRIG.

The system processes every object for which a trigger has been set separately. If the processing fails again due to a locking issue, the trigger remains in table /SCMTMS/D_TRIGHD and the system tries to process the object again the next time you execute the function. If the system processes the object successfully, the trigger is deleted.

To use this function, you must run the program /SCMTMS/PROCESS_TRIGGER_BGD.

More Information

SAP Note [1747234](#)



Definition of Parallel Processing Profiles

You can use this function to define parallel processing profiles. You can specify these profiles for background processing, for example, and by doing so improve performance. To do this, the system groups the data in packages. The system can assign each package to a separate parallel work process. You can perform background processing using a parallel processing profile both in the background and interactively.

Features

In the parallel processing profile, you define the following, for example:

- Server group
 - Resource on which you perform background processing
- Maximum number of work processes
 - Maximum number of work processes that the system is allowed to use for background processing
- Package size
 - Maximum number of objects in a package that is processed by a work process
- Wait time
 - Time (in seconds) that the system waits until resources are available for further processing

Activities

You can define parallel processing profiles in SAP NetWeaver Business Client by choosing *Application Administration* *General Settings* *Define Parallel Processing Profile* .



Output Management

You can use output management to print, fax, and email documents such as order, delivery, and billing information. You can also execute application-to-application or business-to-business actions. You can use output management features in the following business documents:

- Forwarding orders
- Forwarding quotations
- Freight orders
- Freight bookings
- Freight units
- Forwarding agreements
- Forwarding agreement quotations
- Freight agreements
- Freight agreement RFQ masters
- Freight settlements
- Forwarding settlements
- Internal settlements you have created using forwarding settlement types

The following are the main output management features:

- Display an action such as a settlement document
- Choose the output method such as print, fax, and email
- Preview a document
- Enter an attachment
- Enter a note
- Enter a recipient
- Execute the action, such as printing and faxing a settlement document

You can also regenerate and execute an action that you have already executed. For example, you can reprint a business document that you have already printed. When you regenerate an action, you can change the attributes, for example, the recipients.

The system also displays the status of an action after execution. If a particular action was not processed successfully, the system displays the cause of the error.

In the *Output Management* tab page of the *Maintain Business Partner* transaction (transaction *BP*), you can disable the features such as external communication, method calls, alerts and workflows of an action definition for a business partner.

Prerequisites

In Customizing for *Cross-Application Components* under ► *Processes and Tools for Enterprise Applications* ► *Reusable Objects and Functions for BOPF Environment* ► *PPF Adapter for Output Management*, you have specified the following settings:

1. Defined actions and assigned them to action profiles in the Customizing activity *Maintain PPF Settings*
2. Assigned action profiles to business objects, such as forwarding orders and forwarding quotations, in the Customizing activity *Maintain Output Management Adapter Settings*. These action profiles are available to the user in the output management tab page of a business document.

In addition to the action profile you have assigned to a business object, you can also assign action profiles to a document type of a business document. You enter the action profiles in the *Output Profile* and *Additional Output Profile* fields for the following business document types in Customizing for *Transportation Management*:

- Forwarding orders under ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Forwarding Order Types*
- Freight orders under ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types*
- Forwarding settlements under ► *Settlement* ► *Forwarding Settlement* ► *Define Forwarding Settlement Document Types*
- Freight settlements under ► *Settlement* ► *Freight Settlement* ► *Define Freight Settlement Document Types*
- Forwarding quotations under ► *Forwarding Order Management* ► *Forwarding Quotation* ► *Define Forwarding Quotation Types*
- Freight Units under ► *Planning* ► *Define Freight Unit Types*
- Freight Bookings under ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types*

Example

1. In the Customizing activity *Maintain PPF Settings* you have performed the following steps:
 - Created action A and B, and assigned it to action profile X
 - Created action C and D, and assigned it to action profile Y
2. In the Customizing activity *Maintain Output Management Adapter Settings*, you have assigned action profile X to the business object of forwarding order.
3. In the Customizing activity *Define Forwarding Order Types*, you have entered action profile Y in the *Output Profile* field for the forwarding order type M.

When you create a forwarding order with forwarding order type M, the action profile X with actions A and B, and the action profile Y with actions C and D are available in the output management tab page.

More Information

[Printing \[Page 1273\]](#)

SAP Library for SAP Supply Chain Management on SAP Help Portal at <http://help.sap.com/scm>. Under SAP SCM Server application help, open SAP Library and choose *Processes and Tools for Enterprise Applications* *Reusable Objects and Functions for the BOPF Environment (CA-EPT-BRC)*



Printing

In SAP Transportation Management (SAP TM), you can print the following documents:

Business Document	Print Document
Freight booking	<ul style="list-style-type: none"> • Cargo manifest (with addresses) • Cargo manifest (without addresses) • Security manifest • Master air waybill label • House sea bill of lading • Master air waybill • Combined label (for air freight bookings only)
Freight order	<ul style="list-style-type: none"> • Road waybill (with your own trucks, Europe) • Road waybill (with your own trucks, USA) • Transportation labels • FIATA forwarding instructions • Shipping manifest
Forwarding order	<ul style="list-style-type: none"> • House air waybill label • Forwarding order • Forwarding order confirmation • House air waybill
Forwarding quotation	<ul style="list-style-type: none"> • Forwarding quotation
Freight settlement document	<ul style="list-style-type: none"> • Pro-forma supplier freight invoice request
Forwarding settlement document	<ul style="list-style-type: none"> • Pro-forma customer freight invoice request
Freight agreement	<ul style="list-style-type: none"> • Freight agreement
Forwarding agreement	<ul style="list-style-type: none"> • Forwarding agreement
Internal agreement	<ul style="list-style-type: none"> • Internal agreement
Credit memo	<ul style="list-style-type: none"> • Credit memo

Features

Automated Output

Automated output of print documents is scheduled and executed according to the business scenarios and life cycle status of the corresponding business documents. When a business document has the required status and the user saves the document, the system automatically creates an entry on the *Output Management* tab and prints the relevant print document. Note that if the user changes the business document and it still has the relevant status, the system prints the required document again. You can change the status that triggers the automated output of a print document by changing the Post Processing Framework (PPF) profile.

In the standard system, you can use automated output for print documents that are based on freight orders, freight bookings, forwarding orders, and forwarding quotations. The relevant statuses are as follows:

- Forwarding orders:
 - Forwarding order: Life cycle status *New*
 - Forwarding order confirmation: Confirmation status *Confirmed*
- Forwarding quotations: Life cycle status *Submitted*.

Immediate Printing

Immediate printing enables you to print a document manually from the *Output Management* tab. You can manually print the following documents regardless of their status:

- Forwarding agreements, freight agreements, and internal agreements
- Forwarding settlement documents and freight settlement documents
- Credit memos

You can manually print documents based on freight orders, freight bookings, forwarding orders, and forwarding quotations only if the relevant business document has the required status. The status required for immediate printing is the same as the status required for automated output.

Custom Print Forms

The system generates a print document using a print form. If required, you can adapt the standard print forms to your requirements or create your own print forms.

For more information, see [Creating Custom Print Forms \[Page 1277\]](#).



Configuration of Printing

The printing of documents in SAP Transportation Management (SAP TM) is controlled by settings in the Post Processing Framework (PPF) and by Customizing settings in the SAP TM system. These settings are provided for the standard print documents. In addition, the following action profiles are provided, including the assignment of the action profiles to the relevant print documents:

Action Profile	Print Document
/SCMTMS/TOR_PRINT_AIR	<ul style="list-style-type: none">• Cargo manifest• Cargo manifest with addresses• Security manifest• Master air waybill• Master air waybill label
/SCMTMS/TOR_PRINT_ROAD	<ul style="list-style-type: none">• Road waybill (with your own trucks, Europe)• Road waybill (with your own trucks, USA)• Transportation labels• FIATA forwarding instructions• Shipping manifest
/SCMTMS/TOR_PRINT_SEA	House sea bill of lading
/SCMTMS/TRQ_FWO_PRINT	Forwarding order and forwarding order confirmation
/SCMTMS/TRQ_FWQ_PRINT	Forwarding quotation
/SCMTMS/SFIR_PRINT	Pro-forma supplier freight invoice request
/SCMTMS/CFIR_PRINT	Pro-forma customer freight invoice request
/SCMTMS/FAG_PRINT	Forwarding agreement, freight agreement, and internal agreement
/SCMTMS/CM_PRINT	Credit memo
/SCMTMS/TOR_PRINT_AIR_FU	House air waybill House air waybill label
/SCMTMS/TRQ_PRINT_AIR	None

Activities

To ensure that the configuration is correct, check the following:

- The required output management settings have been made in Customizing for *Cross-Application Components* under ► *Processes and Tools for Enterprise Applications* ► *Reusable Objects and Functions for BOPF Environment* ► *PPF Adapter for Output Management* ► *Maintain PPF Settings* □ and *Maintain Output Management Adapter Settings*.
- The relevant action profiles have been assigned to the document types in Customizing for *Transportation Management*.
 - Forwarding order: ► *Forwarding Order Management* ► *Forwarding Order* ► *Define Forwarding Order Types* □
 - Forwarding quotation: ► *Forwarding Order Management* ► *Forwarding Quotation* ► *Define Forwarding Quotation Types* □
 - Freight order: ► *Freight Order Management* ► *Freight Order* ► *Define Freight Order Types* □
 - Freight booking: ► *Freight Order Management* ► *Freight Booking* ► *Define Freight Booking Types* □
 - Freight settlement document: ► *Settlement* ► *Freight Settlement* ► *Define Freight Settlement Document Types* □
 - Forwarding settlement document: ► *Settlement* ► *Forwarding Settlement* ► *Define Forwarding Settlement Document Types* □
 - Credit memos for forwarding orders: ► *Settlement* ► *Forwarding Settlement* ► *Define Credit Memo Reason Codes and Types for Forwarding SDs* □
 - Credit memos for freight orders: ► *Settlement* ► *Freight Settlement* ► *Define Credit Memo Reason Codes and Types for Freight SDs* □

More Information

For information about adapting the standard print forms to your requirements, see [Creating Custom Print Forms \[Page 1277\]](#).



Creating Custom Print Forms

You can adapt a standard print form to your requirements, or create a new print form.

Prerequisites

If you are creating a new print form, you have created and activated a form using the Form Builder (transaction `SFP`).

Procedure

1. Create a custom ABAP class for the print form (see [Creation of an ABAP Class for a Print Form \[Page 1278\]](#)).
2. Create a custom ABAP class for the Post Processing Framework (PPF) service (see [Creation of an ABAP Class for the PPF Service \[Page 1280\]](#)).
3. Define an action profile and an action in the Post Processing Framework (PPF).
An action controls the point at which a document is to be printed (for example, when a user saves a document). When you define an action, you have to specify the name of the print document. You also specify that the document is a PDF document, and you enter a standard BAdl. Alternatively, you can use an existing action profile and action.
4. Create the required schedule conditions in Customizing for *Cross-Application Components* under ► *Processes and Tools for Enterprise Applications* ► *Reusable Objects and Functions for BOPF Environment* ► *PPF Adapter for Output Management* ► *Maintain PPF Settings*.
5. Assign the ABAP class for the PPF service created in step 2 to the relevant business object (BO) nodes.

The new PPF service class must be assigned to the relevant business object node as an output agent. You do this in Customizing for *Cross-Application Components* under ► *Processes and Tools for Enterprise Applications* ► *Reusable Objects and Functions for BOPF Environment* ► *PPF Adapter for Output Management* ► *Maintain Output Management Adapter Settings*.

More Information

For more information about output management and the Post Processing Framework (PPF), see SAP help portal at <http://help.sap.com> ► *SAP Business Suite* ► *SAP Supply Chain Management* ► *SAP SCM Server*. Select an SAP enhancement package for SAP SCM 7.0. In *SAP Library* choose ► *Processes and Tools for Enterprise Applications* ► *Reusable Objects and Functions for the BOPF Environment (CA-EPT-BRC)*. For information about actions, conditions, and output agents, see the following sections:

- Actions: [Setting Up Post Processing Framework for Output Management](#)
- Conditions: [Creating Conditions for a Post Processing Framework Application](#)
- Output agents: [Developing Decisions and Processing Logic in ABAP](#)



Creation of an ABAP Class for a Print Form

Each print form is processed by a separate ABAP class (that is, a printout class). To adapt a print form to your requirements, you have to create a custom printout class based on the original printout class that is provided for a print form. The original printout class is then the superclass of the custom printout class.

The printout class contains methods that fill the required content into the printout structure. Each method fills a specific part of the printout structure. This content is later printed on the print document.

Note that the technical name of a printout structure is always as follows:

CS_PRINTOUT_<abbreviation of the print form name>. For example, the technical name of the printout structure for the road waybill (USA) is CS_PRINTOUT_VICS.



Example

The /SCMTMS/CL_PRINTOUT_VICS printout class contains the FILL_PARTY method for printout structure CS_PRINTOUT_VICS. This method fills those parts of the road waybill (USA) document that are related to the different parties involved in the transportation of the goods (for example, ship-to party and ship-from party).

End of the example.

Activities

To change the content that is filled into the printout structure, you have to create a custom printout class based on the original printout class. The appropriate method in the custom class has to re-implement the corresponding method in the superclass. The original coding of the superclass can still be used by calling the method of the superclass first (for example, CALL METHOD super->FILL_PARTY). The custom coding for filling the printout structure can be placed after the call (or instead of the call) of the method in the superclass.

Note that the custom class must only re-implement the methods that fill those parts of the printout structure that are to be changed.



Example

The FILL_PARTY method in the /SCMTMS/CL_PRINTOUT_VICS printout class is re-implemented by the custom printout class. If the original coding is to be used, the custom method has to be designed as follows:

End of the example.



Syntax

```
1.  METHOD fill_party.
2.      CALL METHOD super->fill_party
3.          EXPORTING
4.              is_tor_root      = is_tor_root
5.              it_party        = is_party
6.          CHANGING
7.              cs_printout_vics = cs_printout_vics.
8.      * customer specific coding
9.      cs_printout_vics-carrier_type_code = lv_type_code.
```

10. ENDMETHOD.
End of the code.



Creation of an ABAP Class for the PPF Service

The connection between a print request in the dialog and the corresponding printout class is carried out by agent classes for business object nodes. These are called using the Post Processing Framework (PPF).

When a document is printed, the following occurs:

1. The Post Processing Framework (PPF) calls the relevant agent class for the business object node.
2. The agent class calls the relevant printout class (see [Creation of an ABAP Class for a Print Form \[Page 1278\]](#)).
3. The printout class fills the content into the print form.



Example

A road waybill (USA) can be printed for a Transportation Order business object at root level. When a printout is requested, the corresponding agent class `/SCMTMS/CL_PPF_SERV_FOR_TOR` calls printout class `/SCMTMS/CL_PRINTOUT_VICS`.

End of the example.

Activities

To print a custom print form, you have to derive a new custom agent class from the existing agent class for the relevant print form. Within the custom agent class, you have to re-implement the `PERSONALIZE_DOC_BY_ABAP` method. This method calls the printout functions. In the newly implemented `PERSONALIZE_DOC_BY_ABAP` method, you have to replace the original printout class with the custom printout class. All other coding in the new method must be the same as the coding in the original method.



Example

The `/SCMTMS/CL_PRINTOUT_VICS` printout class occurs once in the `PERSONALIZE_DOC_BY_ABAP` method in the `/SCMTMS/CL_PPF_SERV_FOR_TOR` agent class.

You create a custom agent class based on the `/SCMTMS/CL_PPF_SERV_FOR_TOR` agent class. When you re-implement the `PERSONALIZE_DOC_BY_ABAP` method in the custom agent class, you have to replace the name of the original printout class with the name of your custom printout class.

End of the example.



Syntax

The following shows the original coding of the `PERSONALIZE_DOC_BY_ABAP` method:

```
1. CASE is_ppf_act-ppf_action.
2.     WHEN mc_ad_print_vics.
3.     *         Create instance of class for document to be printed.
4.             CREATE OBJECT lo_printout TYPE /scmtms/cl_printout_vics.
```

End of the code.



Syntax

The following shows the re-implementation of the PERSONALIZE_DOC_BY_ABAP method:

1. CASE is_ppf_act-ppf_action.
2. WHEN mc_ad_print_vics.
3. * Create instance of class for document to be printed.
4. CREATE OBJECT lo_printout TYPE zz_customer_specific_vics.

End of the code.



Authorizations

SAP Transportation Management (SAP TM) uses the ABAP authorization concept (see [AS ABAP Authorization Concept](#)) to control the access to applications. For more information about the authorization function, see [Central User Administration](#) and [Checking Authorizations](#).

Features

In SAP TM, you can define and activate authorization checks that the system carries out at business object level with transaction *Maintain Authorization Objects* (SU21). You can find authorization objects that are delivered by SAP for SAP TM under the object class SCTS.



SAP Transportation Management Monitoring with CCMS

You can use the monitoring architecture of the Computing Center Management System (CCMS) to monitor a system landscape. The CCMS monitoring architecture is an SAP NetWeaver framework into which monitoring and administration functions can be added.

SAP delivers the predefined monitor set *SAP TM Monitor Templates* for SAP Transportation Management (SAP TM), with which you can monitor your SAP TM system landscape. The *SAP TM Monitor Templates* include the following monitors:

- *Event Manager Monitor*

This monitor allows you to monitor events created in SAP Event Management. For more information about the *Event Manager Monitor*, see SAP Library for SAP Event Management on SAP Help Portal at <http://help.sap.com/scm>. In SAP Library, choose ► *SAP Event Management* ► *SAP Event Management Infrastructure* ► *Monitoring and Evaluating Processes* ► *Connection to the Computing Center Management System* ▶.

- *SCM Optimizer Monitor*

This monitor allows you to monitor your optimizers within SAP TM using the Remote Control and Communication Framework (RCCF). For more information, see [Remote Control and Communication Framework](#).



Note

You cannot change the monitors delivered by SAP. To use a monitor as a template for your own monitor, copy the required monitor and adapt it to meet your needs. For more information, see [Editing Monitors and Monitor Sets](#).

End of the note.

Prerequisites

- If you run CCMS from a central system to monitor your system landscape, you have set up system connections to your systems. For more information about setting up CCMS, see [Configuring the Monitoring Architecture](#).
- You can only make use of the *Event Manager Monitor* if SAP Event Management is installed on the same server as SAP TM.

Features

You can use the *SCM Optimizer Monitor* to monitor the following:

- Optimizer runs

The *SCM Optimizer Monitor* displays the percentage of optimizer runs that have been completed without error per optimizer, such as VSR optimizer or carrier selection optimizer, and per client.

- Destinations

The *SCM Optimizer Monitor* displays whether a destination is available or not as well as its current status.

- Hosts

The *SCM Optimizer Monitor* displays the hosts, that is, optimizer servers, on which your optimizers run.

You can change the default values for the severity and the frequency of the check. To do this, in the *CCMS Monitor Sets* transaction, select the node in the alert monitoring tree for which you want to change the settings, and then choose the *Properties* pushbutton.

Activities

To call the *SAP TM Monitor Templates* in CCMS, on the *SAP Easy Access* screen, choose
► Tools ► CCMS ► Control/Monitoring ► CCMS Monitor Sets ▶.

More Information

[Alert Monitor](#)



Archiving in SAP Transportation Management (SAP TM)

You can use transaction `AOBJ` to create archiving objects. You can specify archiving objects for preprocessing, writing, and deleting activities. For more information, see Customizing for SAP NetWeaver under `Application Server` `System Administration` `Data Archiving` `Archiving Object-Specific Customizing` .

We provide the following archiving objects with the appropriate settings as standard:

Business Object	Archiving Object
Forwarding Settlement Documents	SCMTMSCFIR [Page 1296]
Freight Settlement Documents	SCMTMSSFIR [Page 1298]
Agreements	SCMTMSFAG [Page 1300]
Calculation Sheets	SCMTMSTCCS [Page 1303]
Rate Tables	SCMTMSTCRR and /SCMTMS/RA [Page 1306] (partially)
Scales	SCMTMSTCSC [Page 1309]
Business Documents for Forwarding Order Management	SCMTMSTRQ [Page 1311]
Business Documents for Freight Order Management	SCMTMSTOR [Page 1314]
Transportation Allocations	SCMTMSTAL [Page 1316]
Business Shares	SCMTMSBS [Page 1318]
Waybill Stocks	SCMTMSWBILL [Page 1320]

You can also extend these standard archiving objects to suit your own business requirements. You can specify the database tables from which the system archives the information for the archiving object.

You can use transaction `SARA` to schedule when the system executes the preprocessing, writing, and deleting activities for an archiving object. For more information, see `SAP Easy Access` `Tools` `Administration` `SARA - Data Archiving` .

You can use the following features in transaction `SARA`:

- Preprocessing

We provide each business object with separate selection criteria to identify the instances of the business object that are ready for archiving. We provide each query with the same logic. The query selects the instances that are ready and calls the `CHECK_ARCHIVABILITY` action. The action checks the retention period and sets the archiving status to *Archiving in Process*. The action only runs across the relevant business object.

- Writing

The system selects all instances of a business object that have the archiving status *Archiving in Process*. It transfers the instances to the archiving database.

- Deleting

The system deletes all records that are archived from the registered database tables.

You can load archived documents into the standard SAP Transportation Management (SAP TM) screens. The system uses only the display mode for these archived documents. We provide each business object in SAP TM with the following settings:

- Individual archiving object
- Archiving status
Statuses include *Not Archived*, *Archiving in Process*, and *Archived*.
- CHECK_ARCHIVABILITY action
- Programs for each of the preprocessing, write, and delete steps
- Individual query to select business objects for the preprocessing step

For more information about the prerequisites you must specify before you can begin archiving, see [Prerequisites for Archiving \[Page 1288\]](#).

Features

Why Archive?

Archiving data from the production database makes the production database faster as it is carrying less unproductive data. When you request an object that the system has archived, the system first searches the production database for the object and then searches the archive database. The system reads the object from the archive database and does not create the object again in the production database.

Archiving Dependent Objects

The system archives charge information and information from texts when you archive an instance of a business object. It also archives other objects that are used in business objects for tendering. It does not archive master data objects and files such as attachments and addresses. For example, for attachments, the system archives the hyperlink between the object and the file, but does not archive the file itself.

Index Criteria

You can specify database indexes to enable a query to search for data records efficiently. Ideally, you should have no more than 8 indexes defined for a database table; otherwise the performance of the query decreases. The database indexes in SAP TM improve the performance of active business queries, and not archiving queries. For example, you usually do not search the database table for a product ID in forwarding order items for business reasons. For this reason, we do not provide database indexes for archiving. The system always performs a full table scan in the preprocessing step.

More Information

For more information about the Archive Information System, see SAP Library for SAP NetWeaver on SAP Help Portal at <http://help.sap.com/nw>. Under Application Help for *Function-Oriented View*, open SAP Library and choose ► *Solution Life Cycle Management* ► *Data Archiving* ► *Data Archiving in the ABAP Application System* ► *Data Archiving with Archive Development Kit (ADK)* ► *Archive Information System* ▶.

For more information about tables and archiving objects, see SAP Library for SAP NetWeaver on SAP Help Portal at <http://help.sap.com/nw>. Under Application Help for *Function-Oriented View*, open SAP Library and choose ► *Solution Life Cycle Management* ► *Data Archiving* ► *Data Archiving in the ABAP Application System* ► *Data Archiving with Archive Development Kit (ADK)* ► *Archive Administration* ► *Tables and Archiving Objects* ▶.

[Prerequisites for Archiving \[Page 1288\]](#)

[Archiving for Master Data Objects \[Page 1290\]](#)



Prerequisites for Archiving

To be considered for the preprocessing step in archiving, a business document must be closed for business (for example, the life cycle status must be *Completed* or *Canceled*). In addition, the residence period for a business document must be over. The residence period is the minimum time in days between the date you closed a document and the date the system considers the document for archiving.

You can specify the residence period for the following documents in Customizing for *Cross-Application Components* under ► *Processes and Tools for Enterprise Applications* ► *Reusable Objects and Functions for BOPF Environment* ► *Archiving Adapter* ► *Maintain BO-Specific Residence Periods* ▶:

- Agreements
- Calculation sheets
- Rate tables
- Scales
- Transportation allocations
- Business shares

You must specify the residence period for remaining business documents in the Customizing activity for the individual business object type. The following table describes these Customizing activities:

Business Object	Customizing Activity
Forwarding Settlement Documents	► <i>Transportation Management</i> ► <i>Settlement</i> ► <i>Forwarding Settlement</i> ► <i>Define Forwarding Settlement Document Types</i> ▶
Freight Settlement Documents	► <i>Transportation Management</i> ► <i>Settlement</i> ► <i>Freight Settlement</i> ► <i>Define Freight Settlement Document Types</i> ▶
Business Documents for Forwarding Order Management	► <i>Transportation Management</i> ► <i>Forwarding Order Management</i> ► <i>Forwarding Order</i> ► <i>Define Forwarding Order Types</i> ▶
Business Documents for Freight Order Management	► <i>Transportation Management</i> ► <i>Freight Order Management</i> ► <i>Freight Order</i> ► <i>Define Freight Order Types</i> ▶

The system only uses the residence period in the specific Customizing activity listed here and ignores a residence period you specify in any other activity. For example, the system ignores a residence period setting you enter for the *Forwarding Settlement Documents* business object in the *Maintain BO-Specific Residence Periods* Customizing activity.

We enable all the business objects in SAP Transportation Management (SAP TM) for archiving as standard. You can review the archiving objects that we have assigned to the business objects as standard in Customizing for *Cross-Application Components* under ► *Processes and Tools for Enterprise Applications* ► *Reusable Objects and Functions for BOPF Environment* ► *Archiving Adapter* ► *Maintain BO-Specific Archiving Objects* ▶.

To work with archived objects, you must assign the parameter /BOFU/ARCH_DAC to your user in the *Parameters* tab page of transaction SU01. For more information, see ► SAP Easy Access ➤ Tools ➤ Administration ➤ User Maintenance ➤ SU01 - Users ▶.

To archive a master data object, the system must verify that the master data object is not used in an active business document. The system uses the where-used framework (WUF) to verify this. For more information, see [Archiving for Master Data Objects \[Page 1290\]](#).

More Information

[Archiving in SAP Transportation Management \(SAP TM\) \[Page 1285\]](#)

[Archiving for Master Data Objects \[Page 1290\]](#)



Archiving for Master Data Objects

When the system archives a business document, it also archives the identifiers of any master data objects used in the business document.

It is not critical if an active business document references a business document that has been archived. The fact that the object has been archived usually only impacts a small number of business documents, and the system can read the archived data from the archive database. A master data object can be used many times across different business documents. Because of this, you must perform additional checks before you archive a master data object.

Where-Used Framework

You can use the where-used framework (WUF) to identify the master data objects that are no longer being used. Because of the limitation in the number of database indexes, there are only limited WUF searches available for SAP Transportation Management (SAP TM). For more information, see [Archiving in SAP Transportation Management \(SAP TM\) \[Page 1285\]](#). As a result, only a limited number of master data objects can be archived in SAP TM as standard. For more information about the WUF, see [Using the WUF to Check Where an Object is Used \[Page 1291\]](#).

Deleting Master Data Objects

You can specify master data objects as obsolete before you archive or delete the objects. The system displays a warning if you try to assign a master data object to a business document, when the master data object has been specified as obsolete. This enables you to phase out the use of obsolete master data objects. You can also delete the master data objects that you cannot archive. This maximizes the speed of your queries in the production database. For more information, see [Permanent Deletion of Master Data Objects \[Page 1293\]](#).

More Information

[Archiving in SAP Transportation Management \(SAP TM\) \[Page 1285\]](#)

[Using the WUF to Check Where an Object is Used \[Page 1291\]](#)

[Permanent Deletion of Master Data Objects \[Page 1293\]](#)



Using the WUF to Check Where an Object is Used

You can use transaction `WUF_OBJCUST` to review the objects that the where-used framework (WUF) includes in its where-used check. The system checks if the object (for example `/SCMTMS/TC_RATES`) is used in another master data object (for example `/SCMTMS/TCCS`). If it finds a use (for example, the rate is used in the calculation sheet), it displays an error. If it does not find a use, it archives the object when the residence period is reached.

The following are the business and master data objects that the WUF includes as standard in its where-used search, and the master data object in which the WUF searches:

Master Data Object	Other Object in Which the WUF Searches
Rate (<code>/SCMTMS/TC_RATES</code>)	Calculation sheet (<code>/SCMTMS/TCCS</code>)
Scale (<code>/SCMTMS/TC_SCALE</code>)	Rate (<code>/SCMTMS/TC_RATES</code>)
Route (<code>/SCTM/ROUTE</code>)	Any other route (<code>/SCTM/ROUTE_SOBJ</code>)
Location (<code>APOLOC</code>)	Schedule (<code>/SCMTMS/FO_SCHEDULE</code>) Transportation document (<code>/SCMTMS/TRQ</code>) Zone (<code>/SCTM/ZONE_SOBJ</code>) Product (<code>APOPROD</code>) Resource (<code>APORES</code>) Transportation lane (<code>APOTLANE</code>)
Product (<code>APOPROD</code>)	Transportation document (<code>/SCMTMS/TRQ</code>) Resource (<code>APORES</code>)
Resource (<code>APORES</code>)	Transportation document (<code>/SCMTMS/TRQ</code>) Location (<code>APOLOC</code>) Resource (<code>APORRES</code>)
Schedule (<code>SCHEDULE</code>)	Allocation (<code>ALLOCATION</code>) Freight booking (<code>BOOKING</code>) Default route (<code>DEFAULT_ROUTE</code>) Freight order (<code>FREIGHT_ORDER</code>) Schedule (<code>SCHEDULE</code>)

Performing a Where-Used Check

You can perform a where-used check for most master data objects. This includes the following master data objects:

- Locations
- Products
- Rates
- Scales
- Routes
- Resources
- Schedules

Business partners are not included in the WUF searches. For more information, see [Archiving for Master Data Objects \[Page 1290\]](#).

The following table describes how you can run a where-used check:

Step	Description
1	Under the SAP Easy Access screen, choose SAP Transportation Management SCM Basis Master Data General Master Data Functions WUF – Where-Used List .
2	On the <i>Where-Used List</i> Screen, enter the object you want to check. On the <i>Selection Criteria</i> screen area, enter the object value you want to check. For example, enter a location ID in a location check.
3	Under <i>Object Name</i> on the left hand side of the screen, select the object you want to check. On the right hand side of the screen, choose the appropriate hosting object. For example, choose <i>Transportation Document</i> or <i>Model</i> for a location. The system displays the where-used information for the hosting object you select.

More Information

[Archiving for Master Data Objects \[Page 1290\]](#)



Permanent Deletion of Master Data Objects

When you archive a data record, you move it from the production database to the archive database. This process creates a record in the archive database and then deletes the record from the production database. To improve the performance of your system and to keep your master data records clean, you can permanently delete different types of master data objects. Permanent deletion is where you specify a particular master data object for deletion from the production database, regardless of whether the object has been archived.

Selecting Master Data Objects for Deletion

You can select master data objects such as locations, products, business partners, resources (vehicles, transportation units, calendars, and handling resources), transportation zones, and transportation lanes.

Selecting a master data object for deletion also has the effect of excluding the object from active queries in the production database (for example, the system does not include a product that you specify for deletion in a personal object worklist). This improves the speed of the query.

However, you can still use a master data object that is selected for deletion in planning and in a business document (for example, you can use a product that you select for deletion in a forwarding order. The system displays a warning when you enter the product in the order, but you can still use it).

The following table describes how you can select a location, product, and business partner for deletion.

Master Data Object	Procedure
Location	<ol style="list-style-type: none">Under SAP Easy Access, choose ► <i>SAP Transportation Management</i> ► <i>Transportation Management</i> ► <i>Master Data</i> ► <i>Transportation Network</i> ► /SCMTMS/LOC3 – Location □.On the <i>General</i> tab page, in the <i>Administration</i> screen area, choose <i>Deletion Flag</i>.
Product	<ol style="list-style-type: none">Under SAP Easy Access, choose ► <i>SAP Transportation Management</i> ► <i>Transportation Management</i> ► <i>Master Data</i> ► /SAPAPO/MAT1 – Product □.Enter the product in the <i>Product Master: Initial Screen</i>. Choose ► <i>Product</i> ► <i>Flag for Deletion</i> □.
Business partner	<ol style="list-style-type: none">Under SAP Easy Access, choose ► <i>SAP Transportation Management</i> ► <i>Transportation Management</i> ► <i>Master Data</i> ► <i>BP – Maintain Business Partner</i> □.On the <i>Status</i> tab page, in the <i>Archiving Flags</i> screen area, choose <i>Archiving Flag</i>.

Using the WUF to Check Where an Object is Used

You can only delete master data objects that are included in a where-used framework (WUF) search if the object is not being used by a business object. In other words, the master data object must not have any dependent objects. To ensure there are no dependent objects, you can

generate a where-used list for the object. For more information, see [Using the WUF to Check Where an Object is Used \[Page 1291\]](#).

Deleting Objects Permanently

For location and product master data objects, you must run a background function to delete all the objects you have selected. The following table describes how you can run the background function for locations and products (note that business partners are not included in a WUF search. For more information, see [Archiving for Master Data Objects \[Page 1290\]](#)):

Master Data Object	Procedure
Location	<ol style="list-style-type: none">Under SAP Easy Access choose ► SAP Transportation Management ► SCM Basis ► Master Data ► Location ► /SAPAPO/LOC3 – Location ▶.On the <i>Location Master Data: Initial Screen</i>, enter the location you want to delete. Under <i>Extras</i>, choose <i>Delete Locations</i>.To run the background function immediately, choose <i>Immediate</i>. To run the function at a particular time, choose <i>Date/Time</i>, and enter a date and time in the <i>Scheduled Start</i> fields. Choose <i>Save</i>. <p>The background function to permanently delete a master data object is scheduled.</p>
Product	<ol style="list-style-type: none">Under SAP Menu, choose ► SAP Transportation Management ► Transportation Management ► Master Data ► /SAPAPO/MAT1 – Product ▶.On the <i>Product Master: Initial Screen</i>, enter the location you want to delete. Under <i>Extras</i>, choose <i>Delete Products</i>.To run the background function immediately, choose <i>Immediate</i>. To run the function at a particular time, choose <i>Date/Time</i>, and enter a date and time in the <i>Scheduled Start</i> fields. Choose <i>Save</i>. <p>The background function to permanently delete a master data object is scheduled</p>

More Information

[Archiving for Master Data Objects \[Page 1290\]](#)



Archiving Objects for Business Objects

The following are the archiving object and business object combinations you can use as standard in SAP Transportation Management (SAP TM). You can use transaction SARA (*Archive Administration*) to perform the archiving. For more information see [Archiving in SAP Transportation Management \(SAP TM\) \[Page 1285\]](#).

Business Object	Archiving Object
Forwarding Settlement Documents	SCMTMSCFIR [Page 1296]
Freight Settlement Documents	SCMTMSSFIR [Page 1298]
Agreements	SCMTMSFAG [Page 1300]
Calculation Sheets	SCMTMSTCCS [Page 1303]
Rate Tables	SCMTMSTCRR and /SCMTMS/RA [Page 1306] (partially)
Scales	SCMTMSTCSC [Page 1309]
Business Documents for Forwarding Order Management	SCMTMSTRQ [Page 1311]
Business Documents for Freight Order Management	SCMTMSTOR [Page 1314]
Transportation Allocations	SCMTMSTAL [Page 1316]
Business Shares	SCMTMSBS [Page 1318]
Waybill stocks	SCMTMSWBILL [Page 1320]

More Information

For more information about data archiving, see SAP Library for SAP NetWeaver on SAP Help Portal at <http://help.sap.com/nw>. Under Application Help for *Function-Oriented View*, open SAP Library and choose ► *Solution Life Cycle Management* ► *Data Archiving* ► *Data Archiving in the ABAP Application System* ► *Data Archiving with Archive Development Kit (ADK)* ► *Archive Information System* ▶.



Archiving Forwarding Settlement Documents (TM-FWS)

You can use the archiving object SCMTMSCFIR to archive and delete forwarding settlement documents (FWSDs).

Structure

Tables

SAP Transportation Management (SAP TM) uses the archiving object SCMTMSCFIR to archive data from different tables.

Programs

The following programs are available for SCMTMSCFIR:

Program	Function
/SCMTMS/ARCH_CFIR_WRI	<i>Write</i>
/SCMTMS/ARCH_CFIR_DEL	<i>Delete</i>
/SCMTMS/ARCH_CFIR_PRE	<i>Preprocessing</i>

Prerequisites for Writing Forwarding Settlement Documents

If the following prerequisites are met, the system can archive an FWSD:

- The document was in the database for the entire residence period.
- The document has a life cycle status of *Invoiced* or *Canceled*.
- The document has an archiving status of *Not Archived* or *Archiving in Process*.

Functions

The *Preprocessing* and *Write* functions use the QU_FOR_CHECK_ARCHIVABILITY query to identify objects that have not yet been archived.

The *Preprocessing* function uses the CHECK_ARCHIVABILITY action to check firstly whether the nonarchived objects are completed and secondly whether their residence period has been reached. The archiving objects are given the archiving status *Archiving in Process* if they fulfill these prerequisites.

The *Write* function saves all archiving objects that have the status *Archiving in Process* in an archiving document.

You can perform the following tasks on the NWBC screens under ► *Forwarding Settlement Worklist* ► *Overview Forwarding Settlement Documents* ► *Archived Documents* ▶:

- Review details from archived documents in a table format
- Review an individual archived document

You cannot edit an archived document on the NWBC screens.

Integration

Dependencies

The system sets the archiving status *Archiving in Process* for FWSDs during preprocessing.

You can use the field catalog /SCMTMS/CFIR to access archived business documents for forwarding settlements using the Archive Information System. The system archives settlements that have a life cycle status of *Canceled* or *Invoiced in SAP ERP*.

For more information about the Archive Information System, see SAP Library for SAP NetWeaver on SAP Help Portal at <http://help.sap.com/nw>. Under Application Help for *Function-Oriented View*, open SAP Library and choose ► *Solution Life Cycle Management* ► *Data Archiving* ► *Data Archiving in the ABAP Application System* ► *Data Archiving with Archive Development Kit (ADK)* ► *Archive Information System* ▾.



Archiving Freight Settlement Documents (TM-FRS)

You can use the archiving object SCMTMSSFIR to archive and delete freight settlement documents (FSDs).

Structure

Tables

SAP Transportation Management (SAP TM) uses the archiving object SCMTMSSFIR to archive data from different tables.

Programs

The following programs are available for SCMTMSSFIR:

Program	Function
/SCMTMS/ARCH_SFIR_WRI	<i>Write</i>
/SCMTMS/ARCH_SFIR_DEL	<i>Delete</i>
/SCMTMS/ARCH_SFIR_PRE	<i>Preprocessing</i>

Prerequisites for Writing Freight Settlement Documents

If the following prerequisites are met, the system can archive an FSD:

- The document was in the database for the entire residence period.
- The document has a life cycle status of *Invoiced* or *Canceled*.
- The document has an archiving status of *Not Archived* or *Archiving in Process*.

Functions

The *Preprocessing* and *Write* functions use the QU_FOR_CHECK_ARCHIVABILITY query to identify objects that have not yet been archived.

The *Preprocessing* function uses the CHECK_ARCHIVABILITY action to check firstly whether the nonarchived objects are completed and secondly whether their residence period has been reached. The archiving objects are given the archiving status *Archiving in Process* if they fulfill these prerequisites.

The *Write* function saves all archiving objects that have the status *Archiving in Process* in an archiving document.

You can perform the following tasks on the NWBC screens under ► *Freight Settlement* ► *Worklist* ► *Overview Freight Settlement Documents* ► *Archived Documents* :

- Review details from archived documents in a table format
- Review an individual archived document

You cannot edit an archived document on the NWBC screens.

Integration

Dependencies

The system sets the archiving status *Archiving in Process* for FSDs during preprocessing.

You can use the field catalog /SCMTMS/SFIR to access archived business documents for freight settlement using the Archive Information System. For more information about the Archive Information System, see SAP Library for SAP NetWeaver on SAP Help Portal at <http://help.sap.com/nw>. Under Application Help for *Function-Oriented View*, open SAP Library and choose ► *Solution Life Cycle Management* ► *Data Archiving* ► *Data Archiving in the ABAP Application System* ► *Data Archiving with Archive Development Kit (ADK)* ► *Archive Information System* ►.



Archiving Agreements and RFQ Masters (TM-MD-CM-AG)

Archiving object SCMTMSFAG for archiving and deleting agreements and freight agreement RFQ masters.

Note

When you preprocess and write in the archiving transaction SARA, the system treats a version of the agreement or freight agreement RFQ master as a separate document. When you do not specify a version, the system archives all versions of the agreement or freight agreement RFQ master. If you specify a version, the system archives just that particular version.

When you archive forwarding agreements, the system automatically archives the instructions.

End of the note.

Structure

Tables

SAP Transportation Management (SAP TM) uses the archiving object SCMTMSFAG to archive data for the following tables:

Table	Description
/SCMTMS/D_FAGROT	<i>Freight Agreement Root Node</i>
/SCMTMS/D_FAGACC	<i>Freight Agreement: Acceptance Rules</i>
/SCMTMS/D_FAGBUY	<i>Buyer</i>
/SCMTMS/D_FAGCLC	<i>Calculation Rules</i>
/SCMTMS/D_FAGCTR	<i>Contractors</i>
/SCMTMS/D_FAGDTM	<i>Periods</i>
/SCMTMS/D_FAGIDT	<i>Item Periods</i>
/SCMTMS/D_FAGITM	<i>Item Details</i>
/SCMTMS/D_FAGLIM	<i>Freight Agreement: Limits</i>
/SCMTMS/D_FAGPAY	<i>Freight Agreement: Payment Rules</i>
/SCMTMS/D_FAG_PI	<i>Payment Instructions</i>
/SCMTMS/D_FAGPTY	<i>Party</i>
/SCMTMS/D_FAGTAR	<i>Ref to Tariff</i>

Programs

The following programs are available for SCMTMSFAG:

Program	Function
/SCMTMS/ARCH_FAG_WRI	<i>Write</i>
/SCMTMS/ARCH_FAG_DEL	<i>Delete</i>
/SCMTMS/ARCH_FAG_PRE	<i>Preprocessing</i>

Prerequisites for Writing Agreements and Freight Agreement RFQ Masters

If the following prerequisites are met, the system can archive an agreement or a freight agreement RFQ master and the relevant associated versions:

- The document has existed in the database for longer than the configured residence period. You configure the residence period for the /SCMTMS/FREIGHTAGREEMENT business object in Customizing for *Cross-Application Components* under *Processes and Tools for Enterprise Applications* *Reusable Objects and Functions for BOPF Environment* *Archiving Adapter* *Maintain BO-specific Residence Periods*.
- The document has the status *Deactivated* or *Completed*.

Functions

The *Preprocessing* and *Write* functions use the QU_FOR_CHECK_ARCHIVABILITY query to identify objects that have not yet been archived.

The *Preprocessing* function uses the CHECK_ARCHIVABILITY action to check firstly whether the nonarchived objects are completed and secondly whether their residence period has been reached. The archiving objects are given the archiving status *Archiving in Process* if they fulfill these prerequisites.

The *Write* function saves all archiving objects that have the status *Archiving in Process* in an archiving document.

Integration

Dependencies

Before archiving, the system does *not* check for any references to master data objects used for charge calculation in business documents such as forwarding orders, freight orders, and settlement documents.

All calculation sheets, rate tables, and scales that are created from within an agreement or an agreement version are automatically marked for archiving when archiving begins for the agreement or version. However, the calculation sheets, rate tables, and scales created independently of the agreement or version and referenced in the agreement or version are not marked for archiving.

If you archive freight agreement RFQ masters, the system archives all the individual freight agreement RFQs that are contained in the RFQ master.

You cannot edit or delete an agreement or freight agreement RFQ master when the archiving status is *Archiving in Process* or *Archived*.

Displaying Archived Agreements or Freight Agreement RFQ Masters

You can access archived agreements or freight agreement RFQ masters and their associated versions in the relevant *Archived Documents* personal object worklist. You can also use the archive information structure /SCMTMS/FAG to access archived agreements or freight agreement RFQ masters using the Archive Information System. Note that you must add parameter /BOFU/ARCH_DAC to your user profile to access archived objects and the archive information structure /SCMTMS/FAG should be active.

For more information about the Archive Information System, see SAP Library for SAP NetWeaver on SAP Help Portal at <http://help.sap.com/nw>. Under Application Help for *Function-Oriented View*, open SAP Library and choose *Solution Life Cycle Management* *Data Archiving* *Data Archiving in the ABAP Application System* *Data Archiving with Archive Development Kit (ADK)* *Archive Information System* .



Archiving Calculation Sheets (TM-MD-CM-CS)

Archiving object SCMTMSTCCS for archiving and deleting calculation sheets.

Structure

Tables

SAP Transportation Management (SAP TM) uses the archiving object SCMTMSTCCS to archive data from the following tables:

Table	Description
/SCMTMS/D_TCCSRT	<i>Calculation Sheet Header (Root)</i>
/SCMTMS/D_TCCSIT	<i>Calculation Sheet Item</i>
/SCMTMS/D_PRECAR	<i>Contract and Carriage Codes</i>
/SCMTMS/D_PRECGO	<i>Cargo Class</i>
/SCMTMS/D_PREDSL	<i>Destination Location</i>
/SCMTMS/D_PREDSZ	<i>Destination Zone</i>
/SCMTMS/D_PRELVL	<i>Transport Service Level Codes</i>
/SCMTMS/D_PREMEA	<i>Transportation Means</i>
/SCMTMS/D_PREMOD	<i>Transportation Modes</i>
/SCMTMS/D_PREPTY	<i>PARTY</i>
/SCMTMS/D_PREROT	<i>TCM Usage Precondition Root</i>
/SCMTMS/D_PRESRL	<i>Source Location</i>
/SCMTMS/D_PRESRV	<i>Transport Service Requirement Codes</i>
/SCMTMS/D_PRESRZ	<i>Source Zone</i>
/SCMTMS/D_TCCSTX	<i>TCCS Texts</i>

Programs

The following programs are available for SCMTMSTCCS:

Program	Function
/SCMTMS/ARCH_TCCS_WRI	<i>Write</i>
/SCMTMS/ARCH_TCCS_DEL	<i>Delete</i>

Program	Function
/SCMTMS/ARCH_TCCS_PRE	<i>Preprocessing</i>

Prerequisites for Writing Calculation Sheets

The system can archive a calculation sheet if the document has existed in the database for longer than the configured residence period. You configure the residence period for the /SCMTMS/TCCS business object in Customizing for *Cross-Application Components* under ► *Processes and Tools for Enterprise Applications* ► *Reusable Objects and Functions for BOPF Environment* ► *Archiving Adapter* ► *Maintain BO-specific Residence Periods*.

Functions

The *Preprocessing* and *Write* functions use the QU_FOR_CHECK_ARCHIVABILITY query to identify objects that have not yet been archived.

The *Preprocessing* function uses the CHECK_ARCHIVABILITY action to check firstly whether the nonarchived objects are completed and secondly whether their residence period has been reached. The archiving objects are given the archiving status *Archiving in Process* if they fulfill these prerequisites.

The *Write* function saves all archiving objects that have the status *Archiving in Process* in an archiving document.

Integration

Dependencies

Before archiving a calculation sheet, the system checks that the calculation sheet is not referenced in a forwarding agreement or freight agreement.

All rate tables and scales that are created from within a calculation sheet are automatically marked for archiving when archiving begins for the calculation sheet.

Calculation sheets that are created from within an agreement are automatically marked for archiving when archiving begins for the agreement.

Before archiving, the system does *not* check for any references to master data objects used for charge calculation in business documents such as forwarding orders, freight orders, and settlement documents.

You cannot edit or delete a calculation sheet when the archiving status is *Archiving in Process* or *Archived*.

You cannot reference a calculation sheet in an agreement if the calculation sheet is marked for archiving.

Displaying Archived Calculation Sheets

You can access archived calculation sheets in the relevant *Archived Documents* personal object worklist. You can also use the archive information structure /SCMTMS/TCCS to access archived calculation sheets using the Archive Information System. Note that you must add parameter /BOFU/ARCH_DAC to your user profile to access archived objects and the archive information structure /SCMTMS/TCCS should be active.

For more information about the Archive Information System, see SAP Library for *SAP NetWeaver* on SAP Help Portal at <http://help.sap.com/nw>. Under Application Help for *Function-Oriented View*, open SAP Library and choose ► *Solution Life Cycle Management* ► *Data Archiving* ► *Data Archiving in the ABAP Application System* ► *Data Archiving with Archive Development Kit (ADK)* ► *Archive Information System* ▶.



Archiving Rate Tables (TM-MD-CM-RA)

Archiving object SCMTMSTCRR for archiving and deleting rate tables. Archiving object /SCMTMS/RA for partially archiving rate tables. You can partially archive rate tables based on validity periods.

Structure

Tables

SAP Transportation Management (SAP TM) uses the archiving object SCMTMSTCRR and /SCMTMS/RA to archive data from the following tables:

Archiving Object	Table	Description
SCMTMSTCRR only	/SCMTMS/D_TC RATE	<i>Rate Table Header (Root)</i>
SCMTMSTCRR only	/SCMTMS/D_TC RTSR	<i>Rate Scale Reference</i>
SCMTMSTCRR and /SCMTMS/RA	/SCMTMS/D_TC RTTX	<i>Rate Texts</i>
SCMTMSTCRR and /SCMTMS/RA	/SCMTMS/D_TC RTPP	<i>Validity Period for Rate</i>
SCMTMSTCRR and /SCMTMS/RA	/SCMTMS/D_TC RT1D	<i>One Dimensional Rates</i>
SCMTMSTCRR and /SCMTMS/RA	/SCMTMS/D_TC RT2D	<i>Two Dimensional Rates</i>
SCMTMSTCRR and /SCMTMS/RA	/SCMTMS/D_TC RT3D	<i>Three Dimensional Rates</i>
SCMTMSTCRR and /SCMTMS/RA	/SCMTMS/D_TC RT4D	<i>Four Dimensional Rates</i>
SCMTMSTCRR and /SCMTMS/RA	/SCMTMS/D_TC RT5D	<i>Five Dimensional Rates</i>
SCMTMSTCRR and /SCMTMS/RA	/SCMTMS/D_TC RT6D	<i>Six Dimensional Rates</i>
SCMTMSTCRR and /SCMTMS/RA	/SCMTMS/D_TC RT7D	<i>Seven Dimensional Rates</i>
SCMTMSTCRR and /SCMTMS/RA	/SCMTMS/D_TC RT8D	<i>Eight Dimensional Rates</i>
SCMTMSTCRR and /SCMTMS/RA	/SCMTMS/D_TC RT9D	<i>Nine Dimensional Rates</i>
SCMTMSTCRR and /SCMTMS/RA	/SCMTMS/D_TC RTNT	<i>Notes for Rate Table</i>
SCMTMSTCRR and /SCMTMS/RA	/SCMTMS/D_TC RTCR	<i>Calc Rule Def of Rate for Validity Period</i>
SCMTMSTCRR only	/SCMTMS/D_TC RTUC	<i>Rate Scale Ref: UsageInCalcMethod</i>

Programs

The following programs are available for SCMTMSTCRR:

Program	Function
/SCMTMS/ARCH_TCRATES_WRI	<i>Write</i>
/SCMTMS/ARCH_TCRATES_DEL	<i>Delete</i>
/SCMTMS/ARCH_TCRATES_PRE	<i>Preprocessing</i>

The following programs are available for /SCMTMS/RA:

Program	Function
/SCMTMS/ARCH_TCRATEP_WRI	<i>Write</i>
/SCMTMS/ARCH_TCRATEP_DEL	<i>Delete</i>
/SCMTMS/ARCH_TCRATEP_PRE	<i>Preprocessing</i>

Prerequisites for Writing Rate Tables

The system can archive a rate table if the document has existed in the database for longer than the configured residence period. You configure the residence period for the /SCMTMS/TC_RATES business object in Customizing for *Cross-Application Components* under ► *Processes and Tools for Enterprise Applications* ► *Reusable Objects and Functions for BOPF Environment* ► *Archiving Adapter* ► *Maintain BO-specific Residence Periods* ▶.

To partially archive a rate table, the validity period also has to be released.

Functions

The *Preprocessing* and *Write* functions use the QU_FOR_CHECK_ARCHIVABILITY query to identify objects that have not yet been archived.

The *Preprocessing* function uses the CHECK_ARCHIVABILITY action to check firstly whether the nonarchived objects are completed and secondly whether their residence period has been reached. The archiving objects are given the archiving status *Archiving in Process* if they fulfill these prerequisites.

The *Write* function saves all archiving objects that have the status *Archiving in Process* in an archiving document.

When partially archiving a rate table, the *Preprocessing* and *Write* functions use the QU_FOR_CHECK_PARTIAL_ARCHIVABILITY query to identify objects that have not yet been archived. The *Preprocessing* function uses the CHECK_PARTIAL_ARCHIVABILITY action to check firstly whether the nonarchived objects are completed and secondly whether their residence period has been reached.

Integration

Dependencies

Before archiving a rate table, the system checks that the rate table is not referenced in a calculation sheet.

All scales that are created from within a rate table are automatically marked for archiving when archiving begins for the rate table.

Rate tables that are created from within a calculation sheet are automatically marked for archiving when archiving begins for the calculation sheet.

Before archiving, the system does *not* check for any references to master data objects used for charge calculation in business documents such as forwarding orders, freight orders, and settlement documents.

You cannot edit or delete a rate table when the archiving status is *Archiving in Process* or *Archived*.

You cannot reference a rate table in a calculation sheet if the rate table is marked for archiving.

Displaying Archived Rate Tables

You can access archived rate tables in the relevant *Archived Documents* personal object worklist. You can also use the archive information structure /SCMTMS/RATES to access archived rate tables using the Archive Information System. Note that you must add parameter /BOFU/ARCH_DAC to your user profile to access archived objects the archive information structure /SCMTMS/RATES should be active.

For more information about the Archive Information System, see SAP Library for SAP NetWeaver on SAP Help Portal at <http://help.sap.com/nw>. Under Application Help for *Function-Oriented View*, open SAP Library and choose ► *Solution Life Cycle Management* ► *Data Archiving* ► *Data Archiving in the ABAP Application System* ► *Data Archiving with Archive Development Kit (ADK)* ► *Archive Information System* ▶.



Archiving Scales (TM-MD-CM-SC)

Archiving object SCMTMSTCSC for archiving and deleting scales.

Structure

Tables

SAP Transportation Management (SAP TM) uses the archiving object SCMTMSTCSC to archive data from the following tables:

Table	Description
/SCMTMS/D_SCAH1	<i>Scales: Header (Root)</i>
/SCMTMS/SCAIT2	<i>Scale Item</i>
/SCMTMS/D_TCSCTX	<i>Scale Texts</i>

Programs

The following programs are available for SCMTMSTCSC:

Program	Function
/SCMTMS/ARCH_TCSCALE_WRI	<i>Write</i>
/SCMTMS/ARCH_TCSCALE_DEL	<i>Delete</i>
/SCMTMS/ARCH_TCSCALE_PRE	<i>Preprocessing</i>

Prerequisites for Writing Scales

The system can archive a scale if the document has existed in the database for longer than the configured residence period. You configure the residence period for the /SCMTMS/TC_SCALE business object in Customizing for Cross-Application Components under *Processes and Tools for Enterprise Applications* *Reusable Objects and Functions for BOPF Environment* *Archiving Adapter* *Maintain BO-specific Residence Periods*.

Functions

The *Preprocessing* and *Write* functions use the QU_FOR_CHECK_ARCHIVABILITY query to identify objects that have not yet been archived.

The *Preprocessing* function uses the CHECK_ARCHIVABILITY action to check firstly whether the nonarchived objects are completed and secondly whether their residence period has been reached. The archiving objects are given the archiving status *Archiving in Process* if they fulfill these prerequisites.

The *Write* function saves all archiving objects that have the status *Archiving in Process* in an archiving document.

Integration

Dependencies

Before archiving a scale, the system checks that the scale is not referenced in a rate table.

Scales that are created from within a rate table are automatically marked for archiving when archiving begins for the rate table.

Before archiving, the system does *not* check for any references to master data objects used for charge calculation in business documents such as forwarding orders, freight orders, and settlement documents.

You cannot edit or delete a scale when the archiving status is *Archiving in Process* or *Archived*.

You cannot reference a scale in a rate table if the scale is marked for archiving.

Displaying Archived Scales

You can access archived scales in the relevant *Archived Documents* personal object worklist. You can also use the archive information structure /SCMTMS/SCALE to access archived scales using the Archive Information System. Note that you must add parameter /BOFU/ARCH_DAC to your user profile to access archived objects and the archive information structure /SCMTMS/SCALE should be active.

For more information about the Archive Information System, see SAP Library for SAP NetWeaver on SAP Help Portal at <http://help.sap.com/nw>. Under Application Help for *Function-Oriented View*, open SAP Library and choose ► *Solution Life Cycle Management* ► *Data Archiving* ► *Data Archiving in the ABAP Application System* ► *Data Archiving with Archive Development Kit (ADK)* ► *Archive Information System* ▶.



Archiving Business Documents for FWM (TM-FWM)

Archiving object SCMTMSTRQ for archiving and deleting the following business documents for forwarding order management and ERP logistics integration:

- Forwarding order
- Forwarding quotation
- Delivery-based transportation requirement
- Order-based transportation requirement

Note

When you archive the business document, the system automatically archives the instructions in the document.

End of the note.

Structure

Tables

SAP Transportation Management (SAP TM) uses the archiving object SCMTMSTRQ to archive data from different tables.

Programs

The following programs are available for SCMTMSTRQ:

Program	Function
/SCMTMS/ARCH_TRQ_PRE	Preprocessing
/SCMTMS/ARCH_TRQ_WRI	Write
/SCMTMS/ARCH_TRQ_DEL	Delete

Prerequisites for Writing Business Documents for Forwarding Order Management:

When you set the life cycle status of a business document in Forwarding Order Management or ERP Logistics Integration to *Completed* or *Canceled*, the system uses the residence period that you specify in the Customizing activity for the type of business document to calculate the exact time from when the system can archive the business document. The system stores this archiving time in the background.

For example, you specify a residence period of 30 days in the *Define Forwarding Order Types* Customizing activity. You set the status of a forwarding order to *Completed* at a particular time on a particular date. The system adds 30 days to the time at which you completed the business document and assigns this time as the archiving time. It stores this archiving time in the background.

If you do not enter a residence period in the Customizing activity for the type of business document, the system archives that type of business document immediately after the life cycle status of the business document changes to *Completed* or *Canceled*.

To calculate the residence period for a forwarding quotation, the system adds the residence period you specify for the relevant forwarding quotation type to the date you enter in the *Quotation Valid To* field of the freight quotation.

Functions

The *Preprocessing* and *Write* functions use the QU_FOR_CHECK_ARCHIVABILITY query to identify objects that meet the criteria for archiving. You can create a variant for each of the *Preprocessing* and *Write* functions. In the variant, you can specify the following additional selection criteria for the business document for forwarding order management:

- Document number
- Document type
- Category

In the background, the system adds the selection criteria archiving_time (with the condition that archiving time is less than the current system time) to determine all instances that the system archives.

The *Preprocessing* function uses the CHECK_ARCHIVABILITY action to set the *Archiving in Process* status.

The *Write* function saves all documents that have the status *Archiving in Process* in an archiving file.

The *Delete* function uses the archiving file and deletes all documents that are archived. The system automatically executes the *Delete* function when you execute the *Write* function. To delete all the archived documents in a separate step to the *Write* step, you can select *Delete with Test Variant* under *Processing Options* on the selection screen of the variant for the *Write* function.

For example, you can delete in a separate step if you want to simulate a deletion run, to check the archiving objects that the system includes in the deletion run. You can work in a test mode in all programs. When you choose *Test Mode*, the system does not change the information in the archiving database. Instead, the system simulates the effect that running the program has on the information in the database.

Integration

Displaying Archived Business Documents for Forwarding Order Management

You can use the following field catalog and archive information structure to access archived business documents for forwarding order management and ERP logistics integration using the Archive Information System:

- Field catalog /SCMTMS/TRQ
- Archive information structure /SCMTMS/TRQ

More Information

Subject	More Information
Archive Information System	SAP Library for SAP NetWeaver on SAP Help Portal at http://help.sap.com/nw . Under Application Help for <i>Function-Oriented View</i> , open SAP Library and choose ► <i>Solution Life Cycle Management</i> ► <i>Data Archiving</i> ► <i>Data Archiving in the ABAP Application System</i> ► <i>Data Archiving with Archive Development Kit (ADK)</i> ► <i>Archive Information System</i> ▶
<i>Define Forwarding Order Types</i> Customizing activity	Customizing for <i>Transportation Management</i> under ► <i>Forwarding Order Management</i> ► <i>Forwarding Order</i> ► <i>Define Forwarding Order Types</i> ▶
<i>Define Forwarding Quotation Types</i> Customizing activity	Customizing for <i>Transportation Management</i> under ► <i>Forwarding Order Management</i> ► <i>Forwarding Quotation</i> ► <i>Define Forwarding Quotation Types</i> ▶



Archiving Business Documents for FOM (TM-FRM)

Archiving object SCMTMSTOR for archiving and deleting the following business documents for Freight Order Management (FOM):

- Freight unit
- Freight order
- Freight booking
- Transportation unit



Note

When you archive the business document, the system automatically archives the instructions in the document.

End of the note.

Structure

Tables

SAP Transportation Management (SAP TM) uses the archiving object SCMTMSTOR to archive data from different tables.

Programs

The following programs are available for SCMTMSTOR:

Program	Function
/SCMTMS/ARCH_TOR_WRI	<i>Write</i>
/SCMTMS/ARCH_TOR_DEL	<i>Delete</i>
/SCMTMS/ARCH_TOR_PRE	<i>Preprocessing</i>

Prerequisites for Writing Business Documents for Freight Order Management:

If the following prerequisites are met, the system can archive a business document for Freight Order Management:

- The document has a lifecycle status of *Completed* or *Canceled*.
- Since required lifecycle status has been set for the document, the entire residence period has passed.

Functions

The *Preprocessing* function uses the *QU_FOR_CHECK_ARCHIVABILITY* query and the *Write* function uses the *QU_SELECT_ARCHIVABLE_TORS* query to identify objects that are not archived.

The *Preprocessing* function uses the *CHECK_ARCHIVABILITY* action firstly to check whether the non-archived objects are completed or canceled and secondly to check whether their residence period has been reached. The archiving objects are given the archiving status *Archiving in Process* if they fulfill these prerequisites.

The *Write* function saves all archiving objects that have the status *Archiving in Process* in an archiving document.

The *Delete* function uses the archiving file and deletes all documents that are archived.

In all programs you can work in a test mode.

Integration

Displaying Archived Business Documents for Freight Order Management

You can use the following field catalog and archive information structure to access archived business documents for Freight Order Management using the Archive Information System:

- Field catalog /SCMTMS/TOR
- Archive information structure /SCMTMS/TOR

For more information about the Archive Information System, see SAP Library for SAP NetWeaver on SAP Help Portal at <http://help.sap.com/nw>. Under Application Help for *Function-Oriented View*, open SAP Library and choose ► *Solution Life Cycle Management* ► *Data Archiving* ► *Data Archiving in the ABAP Application System* ► *Data Archiving with Archive Development Kit (ADK)* ► *Archive Information System* ▶.



Archiving Transportation Allocations (TM-PLN)

Archiving object SCMTMSTAL for archiving and deleting transportation allocations.

Structure

Tables

SAP Transportation Management (SAP TM) uses the archiving object SCMTMSTAL to archive data from different tables.

Programs

Program	Function
/SCMTMS/ARCH_TAL_WRI	<i>Write</i>
/SCMTMS/ARCH_TAL_DEL	<i>Delete</i>
/SCMTMS/ARCH_TAL_PRE	<i>Preprocessing</i>

Prerequisites for Writing Business Shares

If the following prerequisites are met, the system can archive a transportation allocation:

- The last bucket of the transportation allocation is in the past and was in the database for the entire residence period.
- The document has an archiving status of *Not Archived* or *Archiving in Process*.

Functions

The *Preprocessing* and *Write* functions use the QU_FOR_CHECK_ARCHIVABILITY query to identify objects that are not archived.

The *Preprocessing* function uses the CHECK_ARCHIVABILITY action to check firstly whether the nonarchived objects are completed and secondly whether their residence period has been reached. The archiving objects are given the archiving status *Archiving in Process* if they fulfill these prerequisites.

The *Write* function saves all archiving objects that have the status *Archiving in Process* in an archiving document.

Integration

Dependencies

The system sets the archiving status *Archiving in Process* for transportation allocations during preprocessing.

More Information

For more information about data archiving, see SAP Library for SAP NetWeaver on SAP Help Portal at <http://help.sap.com/nw>. Under Application Help for *Function-Oriented View*, open SAP

Library and choose ► *Solution Life Cycle Management* ► *Data Archiving* ► *Data Archiving in the ABAP Application System* ► *Data Archiving with Archive Development Kit (ADK)* ► *Archive Information System* □.



Archiving Business Shares (TM-PLN)

Archiving object SCMTMSBS for archiving and deleting business shares.

Structure

Tables

SAP Transportation Management (SAP TM) uses the archiving object SCMTMSBS to archive data from different tables.

Programs

Program	Function
/SCMTMS/ARCH_BS_WRI	<i>Write</i>
/SCMTMS/ARCH_BS_DEL	<i>Delete</i>
/SCMTMS/ARCH_BS_PRE	<i>Preprocessing</i>

Prerequisites for Writing Business Shares

If the following prerequisites are met, the system can archive a business share:

- The end of the business share validity is in the past and was in the database for the entire residence period.
- The document has an archiving status of *Not Archived* or *Archiving in Process*.

Functions

The *Preprocessing* and *Write* functions use the QU_FOR_CHECK_ARCHIVABILITY query to identify objects that are not archived.

The *Preprocessing* function uses the CHECK_ARCHIVABILITY action to check firstly whether the nonarchived objects are completed and secondly whether their residence period has been reached. The archiving objects are given the archiving status *Archiving in Process* if they fulfill these prerequisites.

The *Write* function saves all archiving objects that have the status *Archiving in Process* in an archiving document.

Integration

Dependencies

The system sets the archiving status *Archiving in Process* for business shares during preprocessing.

More Information

For more information about data archiving, see SAP Library for SAP NetWeaver on SAP Help Portal at <http://help.sap.com/nw>. Under Application Help for *Function-Oriented View*, open SAP

Library and choose ► *Solution Life Cycle Management* ► *Data Archiving* ► *Data Archiving in the ABAP Application System* ► *Data Archiving with Archive Development Kit (ADK)* ► *Archive Information System* □.



Archiving Waybill Stocks (TM-MD-WB)

Archiving object SCMTMSWBIL for archiving and deleting waybill stocks.

Structure

Tables

SAP Transportation Management (SAP TM) uses the archiving object SCMTMSWBIL to archive data from the following tables:

Table	Description
/SCMTMS/D_WBNROT	<i>Waybill Number Range: Table for ROOT Node</i>
/SCMTMS/D_WBNCON	<i>Waybill Number Consumed</i>

Programs

The following programs are available for SCMTMSWBIL:

Program	Function
// SCMTMS/ARCH_WAYBILL_NUM_WRI	<i>Write</i>
// SCMTMS/ARCH_WAYBILL_NUM_DEL	<i>Delete</i>
// SCMTMS/ARCH_WAYBILL_NUM_PRE	<i>Preprocessing</i>

Prerequisites for Writing Waybill Stock

The system can archive a waybill stock when you have drawn all the numbers of the stock in business documents.

Functions

The *Preprocessing* and *Write* functions use the QU_FOR_CHECK_ARCHIVABILITY query to identify objects that have not yet been archived.

The *Preprocessing* function uses the CHECK_ARCHIVABILITY action to check whether you have drawn all the numbers of a waybill stock. The archiving objects are given the archiving status *Archiving in Process* if they fulfill these prerequisites.

The *Write* function saves all archiving objects that have the status *Archiving in Process* in an archiving document.

The *Delete* function uses the archiving file and deletes all documents that are archived.

You can work in test mode in all programs.

More Information

For more information about data archiving, see SAP Library for SAP NetWeaver on SAP Help Portal at <http://help.sap.com/nw>. Under Application Help for *Function-Oriented View*, open SAP

Library and choose ► *Solution Life Cycle Management* ► *Data Archiving* ► *Data Archiving in the ABAP Application System* ► *Data Archiving with Archive Development Kit (ADK)* ► *Archive Information System* □.



Message Settings

You use this function to specify filters for messages displayed on the user interface (UI) or stored in the application log for a user or a role.

Integration

Once the maximum number of messages that you have specified for the application log has been reached, the system saves all subsequent messages in the message store (see [Message Store \[Page 1323\]](#)).

Prerequisites

- For user-specific message settings, the user must exist in the system.
- For role-specific message settings, the role must exist in the system.

Features

You can specify the following settings for a message type (UI or application log message) and either a user or a role:

- Severity
The severity of a message specifies if the message is a warning or an error message, for example.
- Detail level
The detail level can range between 1 (least detailed level) and 9 (most detailed level).
- Problem class
The problem class can range between 1 (*Very Important*) and 4 (*Additional Information*).
- Maximum number of messages for application log
This is the maximum number of messages that the system stores in the application log.

For more information about these settings, see the corresponding field help.

Activities

To make the message settings, in Customizing for *SAP Transportation Management*, choose **Transportation Management > Basic Functions > User Interface > Define Message Settings**.



Message Store

You use this report to list the messages contained in the message store.

Integration

The system saves messages to the message store if the maximum number of messages that can be stored in the application log has been reached. You specify the maximum number of messages in the message settings (see [Message Settings \[Page 1322\]](#)).

Features

The message store contains all messages issued on the user interface or saved in the application log.

You use this report to do the following:

- Display messages

The system displays all messages from the message store that correspond to your selection criteria (user, or date on which the messages were issued, for example).

The message header information is displayed in an SAP List Viewer (ALV); the content of individual messages is displayed as an XML file.

- Delete messages

The system deletes all messages from the message store that exceed the retention period that you have specified.

Note

We recommend that you schedule a recurring batch job to delete messages periodically.

End of the note.

- Export messages

You can export the displayed messages to an XML file using the standard ALV function for exporting data.

Activities

To access this report, on the *SAP Easy Access* screen, choose ► *Transportation Management* ► *Administration* ► *Display Message Store* ▾.



Roles

The following roles are available in SAP Transportation Management (SAP TM):

Role Name	Technical Name	Description
Customer service agent	/SCMTMS/CUSTOMER_SERVICE_AGENT	<p>You assign this role to an employee who processes orders. A customer service agent can perform the following tasks, for example:</p> <ul style="list-style-type: none"> • Create forwarding orders, manage quotations, and propose planning routes • Calculate carrier costs and customer pricing • Enter dangerous goods data, and trigger customs checks and dangerous goods checks • Manually create forwarding settlement documents • Display relevant documents (for example, freight orders and bills of lading) and access SAP Event Management data for different types of orders
Transportation planner	/SCMTMS/PLANNER	<p>You assign this role to an employee who is responsible for planning and tendering. A transportation planner can perform the following tasks, for example:</p> <ul style="list-style-type: none"> • Carry out planning activities (for example, load building) • Select carriers and run the tendering process • Manage the total capacity of the company for a specific geographical location • Check that orders with dangerous goods items are planned correctly and trigger customs checks • Access SAP Event Management data for different types of orders

Role Name	Technical Name	Description
Capacity manager	/SCMTMS/CAPACITY_MANAGER	<p>You assign this role to an employee who is responsible for monitoring contracted capacity in freight bookings. A capacity manager can perform the following tasks, for example:</p> <ul style="list-style-type: none"> • View capacity and adjust capacity information in freight bookings • View details of all forwarding orders using specific personal object worklists, based on the organization interaction status • Create new freight bookings and update the booking execution status • Issue load planning documents and assign booking items to unit load devices in cargo management • Issue master air waybill documents (for example, labels, house air waybills, and shipping manifests) • Create or change freight orders for the transfer of cargo to carriers
Dispatcher	/SCMTMS/DISPATCHER	<p>You assign this role to an employee who is responsible for the execution of all planned activities. A dispatcher can perform the following tasks, for example:</p> <ul style="list-style-type: none"> • Manage the execution of all outgoing and incoming orders, including the required paperwork (for example, bills of lading and export declarations) • Check the status of customs-relevant freight orders, and trigger customs checks and dangerous goods checks • Run the tendering process and manage continuous moves, working in conjunction with the transportation manager

Role Name	Technical Name	Description
Booking specialist	/SCMTMS/BOOKING_AGENT	You assign this role to an employee who is responsible for booking freight space. A booking specialist can also create deliveries, monitor shipping, and organize carrier payment, for example.
Carrier settlement specialist	/SCMTMS/CARRIER_SETTLEMENT_SP	You assign this role to an employee who manages the settlement of carrier and supplier invoices. A carrier settlement specialist can generate freight settlement documents for freight orders and trigger invoice verification prior to settlement, for example.
Customer settlement specialist	/SCMTMS/CUSTOMER_SETTLEMENT_SP	You assign this role to an employee who manages customer invoicing. A customer settlement specialist can create forwarding settlement documents for forwarding orders, trigger invoicing, and monitor customer payments, for example.
Freight contract specialist	/SCMTMS/FREIGHT_CONTRACT_SPEC	You assign this role to an employee who is responsible for negotiating contracts with suppliers, carriers, and customers. A freight contract specialist can create and update freight agreements, forwarding agreements, and rates in the system based on negotiated contracts.
Process administrator	/SCMTMS/PROCESS_ADMINISTRATOR	You assign this role to an employee who is responsible for system administration (for example, system configuration and master data setup). The SAP_ALL authorization profile is assigned to this role. The employee can also access SAP NetWeaver Business Warehouse applications in the SAP NetWeaver Business Client user interface under Analytics. For more information, see Strategic Freight Procurement Analytics [Page 921] .
Transportation manager	/SCMTMS/TRANSPORTATION_MGR_V2	You assign this role to an employee who manages the profitability of all transportation activities within a company. A transportation manager can perform the following tasks, for example: <ul style="list-style-type: none">• Periodic reporting

Role Name	Technical Name	Description
		<ul style="list-style-type: none"> Monitoring using tools such as SAP NetWeaver Business Warehouse (for example, monitoring of budgets and resource utilization) <p>The transportation manager has access to all components of the SAP TM system (for example, forwarding orders, freight orders, and so on).</p> <p> Note</p> <p>This role is the successor of the obsolete role <code>/SCMTMS/TRANSPORTATION_MANAGER.</code> End of the note.</p>
Internet user for carriers	<code>/SCMTMS/SERVICE_PROVIDER</code>	<p>You assign this role to an employee who receives and responds to freight requests for quotation via the Internet. It enables a carrier to access the tendering worklist for carriers, from which he or she can perform the following tasks:</p> <ul style="list-style-type: none"> View freight requests for quotation Display a copy of the freight order for which a quotation is to be submitted Submit quotations
Display user	<code>/SCMTMS/DISPLAY</code>	<p>You assign this role to users who need read access to all transactions. You can assign this role to auditors, for example.</p>
User for SAP TM collaboration portal	<code>/SCMTMS/COLL_PORTAL</code>	<p>You assign this role to a user from a business partner who uses the SAP TM collaboration portal to work on collaborative processes.</p> <p>For example, the user from your business partner can perform the following tasks:</p> <ul style="list-style-type: none"> View freight requests for quotation Submit freight quotations Submit rates in response to

Role Name	Technical Name	Description
		<p>freight agreement RFQs</p> <ul style="list-style-type: none"> Submit dispute cases against freight orders in a self-billing process <p>This role contains all required authorization objects for the back-end application. There are two different deployment options for the SAP TM collaboration portal:</p> <ul style="list-style-type: none"> SAP NetWeaver Gateway deployed in the same system as SAP TM SAP NetWeaver Gateway deployed on a separate system <p>You must always deploy this role along with the SAP TM back end.</p>
Demo user for SAP TM collaboration portal	/TMUI/COLL_PORTAL_DEMO	<p>You assign this role to a demo business partner who works with predefined sample data in the SAP TM collaboration portal.</p> <p>You must assign this role in the system in which the software component SAPTMUI is deployed.</p>
User for Gateway services in SAP TM collaboration portal	/TMUI/COLL_PORTAL	<p>You assign this role to a user from a business partner who uses the SAP TM collaboration portal to work on collaborative processes. The role grants access to SAP NetWeaver Gateway services that are needed when performing collaborative processes.</p> <p>For example, the user from your business partner can perform the following tasks:</p> <ul style="list-style-type: none"> View freight requests for quotation Submit freight quotations Submit rates in response to freight agreement RFQs Submit dispute cases against freight orders in a self-billing process

Role Name	Technical Name	Description
		<p>There are two different deployment options for the SAP TM collaboration portal:</p> <ul style="list-style-type: none"> • SAP NetWeaver Gateway deployed in the same system as SAP TM • SAP NetWeaver Gateway deployed on a separate system <p>In this case, you must additionally assign all users the standard role <code>SAP_S_RFCACL</code>.</p> <p>You must always deploy this role along with the installation of SAP NetWeaver Gateway.</p>