

## Integration Guide

CUSTOMER

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# Basic Settings and Integration for SAP ERP and S/4 HANA

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# Legal Disclaimer

## Caution

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# 1 Basic Settings and Integration for SAP ERP and S/4 HANA

## Use

This guide provides information about the settings that you must make to enable integration of SAP Transportation Management (SAP TM) with

- SAP ERP
- S/4 HANA

## Change History







Version	Date	Description
1.0	December 2010	Initial version
2.0	September 2012	Revised for SAP TM 9.0
3.0	December 2013	Revised for SAP TM 9.1
4.0	October 2015	Revised for S/4 HANA integration

## Important SAP Notes

You must read the following SAP Notes before you start using this test scenario. These SAP Notes contain the most recent corrections required to test the scenario.

Make sure that you have the up-to-date version of each SAP Note, which you can find on SAP Service Marketplace at <http://service.sap.com/notes>.

SAP Note Number	Description	EhP4	EhP5	EhP6	EhP7	S/4 HANA
<a href="#">1629726</a>	Mismatch in Settlement amount between TM and ERP	x	x	x		
<a href="#">1602687</a>	Cleanup of ERS err msgs, Sold to, Bill to/from party mapping	x	x			

SAP Note Number	Description	EhP4	EhP5	EhP6	EhP7	S/4 HANA
<a href="#">1614197</a> 	CLC:FSCM update during FI posting for TM documents	x	x			
<a href="#">1603236</a> 	Credit Segment information FWSD outbound structure		x			
<a href="#">1636327</a> 	Amount conversion problem in service entry sheet	x	x	x		
<a href="#">1758480</a> 	TM Integration: EOIO queues missing for ODP/IDP	x				
<a href="#">1760192</a> 	No EOIO for Order services in ERP	x				
<a href="#">2229144</a> 	Solution Manager Content Updates for SAP TM 9.3					X

## Prerequisites

You have set up the system landscape. This includes the following steps:

- You have completed the technical installation of SAP TM, SAP Integration Engine, SAP Event Management, SCM Optimizer, and SAP ERP enhancement package 5.
- You have set up the connection to the System Landscape Directory (SLD) for all systems.
- You have configured the settings that are required to connect a business system to an Integration Engine.
- You have configured the settings that are required to use the Core Interface (CIF) for master data transfer.
- You have set up a trusted connection between the SAP ERP and SAP TM systems.
- You have defined all required RFC users, RFC connections, logical system names, technical system names, and business system names.
- You have set up the required workflows.

## More Information

For information about setting up SAP ERP, see the following:

- SAP ERP installation documentation on SAP Service Marketplace at <http://service.sap.com/instguides>  
▶ *SAP Business Suite Applications* ▶ *SAP ERP* ▶ *SAP ERP 6.0* ▶ *SAP Enhancement Packages for SAP ERP 6.0* (quick link: [service.sap.com/erp-inst](http://service.sap.com/erp-inst))
- Information about IDES installation on SAP Service Marketplace at <http://service.sap.com/ides>. See also SAP Note [799639](#).
- SAP Note [1530240](#) FAQ for ERP-TM Integration

For information about setting up SAP Event Management, see the Master Guide and Installation Guide for SAP Event Management on SAP Service Marketplace at <http://service.sap.com/instguides>  
▶ *SAP Business Suite Applications* ▶ *SAP SCM* ▶ *SAP Event Management* ▶ *Using SAP Enhancement Package 1 for SAP Event Management 7.0*.

For information about setting up SAP TM, see the Master Guide for SAP TM on SAP Service Marketplace at <http://service.sap.com/instguides>  
▶ *SAP Business Suite Applications* ▶ *SAP TM* ▶ *Using SAP TM <release>*. See also the following SAP Notes:

- SAP Note [1850848](#): Installation/Delta Upgrade note for TM 9.1
- SAP Note [1686825](#): Implementing the SCM Optimizer Version 9.0
- SAP Note [1552355](#): ERP Integration: System Connection between ERP and TM
- SAP Note [1588450](#): FAQ for ERP – TM Logistics Integration

For information about setting up workflows, see SAP Library for SAP NetWeaver 7.3 Including Enhancement Package 1 on SAP Help Portal at <http://help.sap.com/netweaver>. In SAP NetWeaver Library: Function-Oriented View, choose ▶ *Application Server Platform* ▶ *Application Server ABAP* ▶ *Other Services* ▶ *Services for Application Developers* ▶ *SAP Business Workflow* ▶ *Role Documentation* ▶ *Roles in Workflow* ▶ *Workflow System Administrator* ▶ *Automatic Workflow Customizing*.

For information about setting up SAP NetWeaver Process Integration, see the following:

- SAP NetWeaver Process Integration installation documentation on SAP Service Marketplace at <http://service.sap.com/instguides>  
▶ *SAP NetWeaver* ▶ *SAP NetWeaver PI 7.1* (quick link: <http://service.sap.com/instguidesNWPI71>)
- Configuration Guide for SAP NetWeaver PI at <http://help.sap.com/netweaver>  
▶ *SAP NetWeaver Process Integration*. In the Configuration Guide, choose ▶ *Configuration of SAP NetWeaver Systems* ▶ *Process Integration*.

For information about setting up the Core Interface (CIF), see the following:

- SAP Library for SAP Supply Chain Management at <http://help.sap.com/scm>. In SAP Library for SAP SCM 7.0 Including Enhancement Package 2, choose ▶ *SAP Advanced Planning and Optimization (SAP APO)* ▶ *Integration via Core Interface (CIF)*.  
In particular, see the section *Checklist for Setting Up the System Infrastructure* under ▶ *Technical Integration* ▶ *Core Interface (CIF)* ▶ *Setting Up the System Infrastructure*.
- Best practices document on SAP Service Marketplace at <http://service.sap.com/solutionmanagerbp>  
▶ *Manage APO Core Interface in SAP APO (3.x) / SAP SCM (4.x, 5.x)*.



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## 2 Basic Settings in SAP ERP

You use this process to configure basic settings in SAP ERP that enable you to integrate SAP ERP with SAP Transportation Management (SAP TM).

### 2.1 Activating Business Functions

#### Use

Business functions are individual standard applications and industry solutions in your ABAP-based SAP system. SAP provides new features and enhancements in self-contained units via these business functions for your existing SAP installations.

#### Procedure

1. On the *SAP Easy Access* screen, call transaction **SFW5**.
2. Activate the business functions listed below.

#### Caution

The changes that you make in this step are critical. Once you have activated a business function, you can no longer cancel the enhancements it makes in the system.

Technical Name	Description	Valid for ERP				Valid for S4/HANA
		EHP4	EHP5	EHP6	EHP7	
LOG_TM_IV_INT	<p><i>TMS-ERP: Invoice Integration</i></p> <p>You use this business function to create, enter, process, or display invoices that refer to documents in SAP Transportation Management. This allows you to carry out invoice processing for the connected SAP TM system in SAP ERP and use the main ERP invoice processing functions in MM and SD.</p>	X	X	X	X	No

Technical Name	Description	Valid for ERP				Valid for S4/HANA
		EHP4	EHP5	EHP6	EHP7	
LOG_TM_ORD_INT	<p><b>ERP-TMS: Order Integration</b></p> <p>You can use this business function to integrate order processing in SAP ERP with transportation planning in SAP TM. It enables you to optimize order processing and transportation planning by exchanging information about orders and deliveries between SAP ERP and SAP TM.</p> <p><b>i Note</b></p> <p>You can activate either this business function or LOG_TM_ORD_INT_TRQ. You cannot activate both of these business functions.</p>	-	X	X	X	No

Technical Name	Description	Valid for ERP				Valid for S4/HANA
		EHP4	EHP5	EHP6	EHP7	
LOG_TM_ORD_INT_RQ	<p><b>ERP-TMS: Basic Order Integration</b></p> <p>You can also use this business function to integrate order and delivery processing in SAP ERP with transportation planning in SAP TM. It provides the same functions as the <b>ERP-TMS: Order Integration</b> (LOG_TM_ORD_INT) business function, but without sales order scheduling.</p>	X	(X)	(X)	X	No
SD_01 or ESOA_OPS01	<p><b>Logistics: S&amp;D Simplification or Operations, Enterprise Services</b></p> <p>Activate if you want to send sales orders to SAP Transportation Management. For more information, see SAP Note <a href="#">1530240</a>.</p>	X	X	X	X	No

Technical Name	Description	Valid for ERP				Valid for S4/HANA
		EHP4	EHP5	EHP6	EHP7	
LOG_ESOA_OPS_2	<p><i>Operations, Enterprise Services 2</i></p> <p>Activate if you want to send purchase orders and stock transport orders to SAP Transportation Management.</p>	X	X	X	X	X
OPS_ADVRETURNS_1	<p><i>Advanced Returns Management</i></p> <p>Activate if you want to send returns to SAP Transportation Management.</p>	X	X	X	X	No
FND_SOA_REUSE_1	<p><i>Improvements for SOA Reuse Functions</i></p> <p>Activate if you want to use <i>Web Services Reliable Messaging (WS-RM)</i>.</p> <p>Note that WS-RM has not been fully released yet. As a result, communication using WS-RM is currently not supported.</p>	-	X	X	X	X
LOG_SCM_CUSTVEND_INT	<p><i>SCM, Customer and Vendor Master Data Integration into BP</i></p>	X	X	X	X	No

Technical Name	Description	Valid for ERP				Valid for S4/HANA
		EHP4	EHP5	EHP6	EHP7	
LOG_TM_ORD_INT_I	Activate if you want to use delivery splits or update functions, or if you want to view the SAP TM business document flow and SAP TM status information in SAP ERP documents	-	-	X	X	No
LOG_TM_ORD_INT_III	Activate if you want to use confirmed quantities, shipping types or a handover location for an external purchase order in SAP TM or if you want to transfer shipment blocking reasons to SAP TM in order to control the blocking of DTRs.	-	-	-	X	No
LOG_SC_ME_QUI_FUN_CLO_C_INT	Activate if you want to use the integration of plant maintenance from SAP ERP to resource master data in SAP TM via CIF.	-	-	-	X	No

Technical Name	Description	Valid for ERP				Valid for S4/HANA
		EHP4	EHP5	EHP6	EHP7	
LOG_TM_ORD_INT_IV	Activate if you want to maintain shipment condition for PO and interface this to TM and / or want to use handover date for PO confirmations and want to use this in TM				X	No
LOG_TM_SAG_INT_I	Activate if you want to integrate SD scheduling agreements and / or MM scheduling agreements into TM and create transportation requirements for these.				X	No

If you want to use cost distribution, which is included in the *Domestic Outbound Transportation* scenario, you also have to activate the following business functions (besides LOG\_TM\_ORD\_INT\_II):

Technical Name	Description	Valid for ERP Release				Valid for S/4HANA
		EHP 4	EHP 5	EHP 6	EHP 7	
LOG_TM_ORD_INT_II	Activate if you want to use cost distribution.	-	-	X	X	No

Technical Name	Description	Valid for ERP Release				Valid for S/4HANA
		EHP 4	EHP 5	EHP 6	EHP7	
ISR_RET_AGENCY	Activate if you want to use additional features of Agency Business (such as Credit Management or Configuration and Collection Invoices) to implement your business processes more flexibly.	X	X	X	X	No
ISR_RET_AGENCY_2	Activate if you want to use additional functions in the Agency Business area. You can create extended remuneration lists from FI documents, differing partner roles, payment documents without business partners in agency documents, and agency documents without tax codes. New reports are also available for mass processing.	X	X	X	X	No



Technical Name	Description	Valid for ERP Release				Valid for S/4HANA
		EHP 4	EHP 5	EHP 6	EHP7	
ISR_RET_AGEN CY_3	Activate if you want to implement the following new or extended business processes: <ul style="list-style-type: none"> <li>• Extended Complaints Processing</li> <li>• Clearing Processing</li> </ul>	X	X	X	X	No

Technical Name	Description	Valid for ERP Release				Valid for S/4HANA
		EHP 4	EHP 5	EHP 6	EHP7	
ISR_APPL_AGENCY_4	Activate if you want to implement new business models for agency business processes, support the allocation of any types of expenses, improve cost transparency, and increase process flexibility and efficiency. This business function allows you to create Intra-stat declarations using agency documents on behalf of your company and, as an additional service offering, on behalf of your customers. Furthermore, a new B2B outbound service allows customers and partners to leverage enterprise service-oriented architecture to exchange invoices.	-	X	X	X	No

Technical Name	Description	Valid for ERP Release				Valid for S/4HANA
		EHP 4	EHP 5	EHP 6	EHP7	
ISR_APPL_AGENCY_5	Activate if you want to implement new business models for agency business processes, support the allocation of any types of expenses, improve cost transparency, and increase process flexibility and efficiency.	-	-	X	X	No

## More Information

For more information about the business functions, see SAP Library for SAP Enhancement Package 5 for SAP ERP 6.0 at <http://help.sap.com/erp>. In SAP Library, choose ► *Business Functions (SAP Enhancement Package 5 for SAP ERP 6.0)* ► *Business Functions in SAP ERP* ► *Enterprise Business Functions* ►.

For more information about the use of the following business functions for order and delivery integration, see SAP Note [1530240](#):

- SD\_01
- ESOA\_OPS01
- LOG\_ESOA\_OPS\_2
- FND\_SOA\_REUSE\_1

### **i** Note

Business function EA-RETAIL is not required to integrate SAP TM with SAP ERP.

## 2.2 Configuration Settings for Core Interface (CIF)

This section describes how to set up the core interface (CIF).

For more information about CIF, see the following:

- SAP Library for SAP Enhancement Package 2 for SAP SCM 7.0 at <http://help.sap.com/scm> ► *SAP SCM Server* ► In SAP Library, choose ► *SAP Advanced Planning and Optimization (SAP APO)* ► *Integration via Core Interface (CIF)* ►.  
In particular, see the section *Checklist for Setting Up the System Infrastructure*, under ► *Technical Integration* ► *Core Interface (CIF)* ► *Setting Up the System Infrastructure* ►.
- Best-practice document on SAP Service Marketplace at <http://service.sap.com/solutionmanagerbp> ► *Manage APO Core Interface in SAP APO /3.x) / SAP SCM (4.x, 5.x)* ►

### **i** Note

If you also want to create business partners when you transfer shipping points via CIF, you must activate the corresponding BAAdI. For more information, see SAP Note [1410353](#).

## 2.2.1 Activating Error and Conflict Handler

### Context

You use this component to control the system response in case of errors and conflicts in service operations. You can define whether service operations are executed again or terminated after errors and conflicts.

### Procedure

1. In Customizing for SAP ERP, choose ► *Cross-Application Components* ► *Processes and Tools for Enterprise Applications* ► *Enterprise Services* ► *Error and Conflict Handler* ► *Activate Error and Conflict Handler* ►.
2. Select the *Activated* checkbox and save.

### Next Steps

For more information, see SAP Library for SAP Enhancement Package 5 for SAP ERP 6.0 at <http://help.sap.com/erp>. In SAP Library, choose ► *Processes and Tools for Enterprise Applications* ► *Error and Conflict Handler (CA-FS-ECH)* ►.

## 2.2.2 Creating an SAP TM Release

### Procedure

1. In the SAP ERP system, in Customizing for *Integration with Other SAP Components*, choose ► *Advanced Planning and Optimization* ► *Basic Settings for Setting Up the System Landscape* ► *Specify SAP APO Release (transaction NDV2)* ⌵.
2. Enter the data as shown in the table below.

Field	Sample Entry
<i>Logical System</i>	<TM SID>CLNT<TM CLNT>
<i>System Type</i>	SAP_SCMB
<i>Release</i>	702 or higher

3. Save your entries.

## 2.2.3 Assigning Logical System and CIF Application to RFC Destination

### Context

In this step, you maintain the assignment of a logical system and CIF application to an RFC destination.

### Procedure

1. In the SAP ERP system, in Customizing for *Integration with Other SAP Components*, choose ► *Advanced Planning and Optimization* ► *Basic Settings for Setting Up the System Landscape* ► *Assign RFC Destination to Different Application Cases (transaction CFC7)* ⌵.
2. Enter the data as shown in the table below.

Field	Sample Entry
Logical System	<TM SID>CLNT<TM CLNT>
Appl.	AC
RFC Destination	<TM SID>CLNT<TM CLNT>

3. Save your entries.

## 2.2.4 Defining Target System and Queue Types

### Context

To enable communication between SAP ERP and SAP TM, the relevant target system for this data channel must be installed in addition to the definition of the RFC destination. Install a valid operation mode at the same time.

You assign a queue type to the connection to the selected system. Set the *Outbound Queue* queue type as standard.

Choose *Inbound Queues* if you are expecting large amounts of data during the transfer from the source system to the target system and you want to ensure that the target system is not overloaded. With this setting, queue processing is controlled by the target system.

If you choose *Inbound Queues* in the source system, you have to set up the QIN (queue in) scheduler in the qRFC monitor in the target system. Queues that are to be automatically processed by the target system must be registered in the QIN scheduler.

### Procedure

1. In the SAP ERP system, in Customizing for *Integration with Other SAP Components*, choose **Advanced Planning and Optimization** > *Basic Settings for Setting Up the System Landscape* > *Set Target System and Queue Type* (transaction **CFCL**).
2. If the following data does not exist, enter it as shown in the table below.

Field	Sample Entry
Logical System	<TM SID>CLNT<TM CLNT>
Operating Mode	T (filled automatically after CIF has been executed)

Field	Sample Entry
Q-Type	I

3. Save your entries.

## 2.2.5 Activating Online Transfer Using BTE

### Context

You can use this procedure to activate business transaction events (BTEs) in the ERP system. By activating BTEs, the system replicates changes to master data in the ERP system to the target system.

### Procedure

1. In the SAP ERP system, in Customizing for *Integration with Other SAP Components*, choose ► *Advanced Planning and Optimization* ► *Basic Settings for Data Transfer* ► *Change Transfer* ► *Change Transfer for Transaction Data* ► *Activate Online Transfer Using BTE* ►.

The *SAP Business Framework: Business Transaction Events* screen appears.

#### **i** Note

This is a cross-client activity.

2. Confirm the message.
3. For the entries *ND-APO* and *NDI*, select the *Application Active* checkbox.
4. Save your entries.

## 2.2.6 Configuring Change Transfers for Master Data

### Prerequisites

You have activated the business transaction events in the ERP system. For more information, see [Activating Online Transfer Using BTE \[page 23\]](#).

## Context

You can use this procedure to ensure that the system landscape reflects all changes to the master data in the ERP system.

## Procedure

1. In the SAP ERP system, in Customizing for *Integration with other SAP Components*, choose **► Advanced Planning and Optimization ► Basic Settings for Data Transfer ► Change Transfer for Master Data ► Configure Change Transfer for Master Data**.
2. Enter the value **2** in the following fields:
  - *Material Master Change Transfer*
  - *Change Transfer for Customers*
  - *Change Transfer for Vendors*
3. Select the following checkboxes:
  - *Immediate Transfer*
  - *Re-Read Stock*
  - *Filter Obj. Req. Reduc.*
4. Choose *Save*.

## Results

The system landscape reflects the changes done to the master data in the ERP system.

## Next Steps

For more information, see the Customizing activity documentation.

## 2.2.7 Activating ALE Change Pointers for Message Types

### Context

You can use this procedure to activate ALE change pointers for specific message types so that changes to master data are tracked.



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## Procedure

1. In the SAP ERP system, in Customizing for *Integration with other SAP Components*, choose ► *Advanced Planning and Optimization* ► *Basic Settings for Data Transfer* ► *Change Transfer for Master Data* ► *Activate ALE Change Pointers for Message Types* ⌵.
2. Select the *active* checkbox for the following message types:
  - CIFICUS
  - CIFMAT
  - CIFVEN

## Next Steps

For more information, see the Customizing activity documentation.

## 2.2.8 Registering the Queue Display

### Context

Use transaction **SMQE** to register display program CIFQEV02.

### Procedure

1. In the SAP ERP system, call transaction **SMQE**.
2. Choose ► *Edit* ► *Register Display Program* ⌵.
3. For the queue type, enter **CF\***.
4. For the program name, enter **CIFQEV02**.
5. Choose *Enter*.

## 2.3 Creating ISO Units

1. In the SAP ERP system, in Customizing for *SAP NetWeaver*, choose ► *General settings* ► *Check Units of Measurement* ⌵.

2. Choose *ISO codes* and then *New Entries*.
3. Create a new ISO code with the following data:

Field	Value
<i>ISO code</i>	<b>TEU</b>
<i>ISO code text</i>	<b>20-Foot Container</b>

### **i** Note

You must create ISO units in the same way in both SAP ERP and SAP TM. Otherwise, problems will arise when messages are exchanged between these systems.

## 2.4 Creating Units of Measurement

1. In the SAP ERP system, in Customizing for *SAP NetWeaver*, choose **General settings** > *Check Units of Measurement*.
2. Enter **AAAADL (no dimensions)** and choose *Units of measurement*.
3. Create a new unit of measurement as follows:

Field	Value
<i>Int. meas. unit</i>	<b>TEU</b>
<i>Display</i> screen area and <i>Measurement unit text</i> screen area	
<i>Commercial</i>	<b>TEU</b> <b>20-Foot Container</b>
<i>Technical</i>	<b>TEU</b> <b>20-Ft Cont</b>
<i>Decimal places</i>	Leave this field empty
<i>float. point exp.</i>	Leave this field empty
<i>ALE/EDI</i> screen area	
<i>ISO code</i>	<b>TEU</b>
<i>Primary code</i>	Select this checkbox
<i>Conversion</i> screen area	
<i>Decimal pl. rounding</i>	Leave this field empty

Field	Value
<i>Unit of meas.family</i>	Leave this field empty
<i>Application Parameters</i> screen area	
<i>Commercial meas. unit</i>	Select this checkbox
<i>Value-based-commt</i>	Do not select this checkbox

### **i** Note

You must create ISO units in the same way in both SAP ERP and SAP TM. Otherwise, problems will arise when messages are exchanged between these systems. In particular, the ISO code must be maintained in both systems for the same unit of measurement.

## 2.5 Changing Units of Measurement

1. In the SAP ERP system, in Customizing for SAP NetWeaver, choose ► *General Settings* ► *Check Units of Measurement* ►.
2. In the dropdown box, select *MASS Mass* and choose *Units of measurement*.
3. Select the **LB** unit and assign the ISO code **LBR**.
4. Return to the initial screen.
5. In the dropdown box, select *VOLUME volume* and choose *Units of measurement*.
6. Select the **FT3** unit and assign the ISO code **FTQ**.

### **i** Note

You must create ISO units in the same way in both SAP ERP and SAP TM. Otherwise, problems will arise when messages are exchanged between these systems.

## 2.6 Creating the Maximum Model

### Use

You can use this procedure to set the maximum runtime of the active integration model. We recommend that you make this setting before creating an integration model.

## Procedure

1. In the SAP ERP system, on the *SAP Easy Access* screen, choose **Tools** > **ABAP Workbench** > **Development** > **ABAP Editor** (transaction **SE38**).
2. In the *Program* field, enter **RCIFIMAX** and choose *Execute*.
3. In the *Action to Execute* frame, choose *Generation*.
4. In the *Selection Criteria for Consistency Check* frame, enter the following data:

Field	Value
<i>Object Types</i>	*
<i>Logical Target Systems</i>	<TM SID>CLNT<TM CLNT>

5. Choose *Execute*.

### **i** Note

If the logical target system is not available in the input help, enter the system manually and choose *Execute*.

## Result

The system displays the following success message: *Runtime version (table CIF\_IMAX) was generated successfully: A consistency check was not carried out.*

## 2.7 Creating an Integration Model

### Use

This procedure allows you to create an integration model in the SAP ERP system for transferring a plant, shipping points, and a business partner for the plant.

## Procedure

1. In the SAP ERP system, on the *SAP Easy Access* screen, choose **Logistics** > **Central Functions** > **Supply Chain Planning Interface** > **Core Interface Advanced Planner and Optimizer** > **Integration Model** > **Create**. Alternatively, call transaction **CFM1**.
2. In the *Model Name* field, enter a name for the integration model, for example, **IMTM1**.

3. In the *Logical System* field, enter the name of the target system, for example, **SCMCLINT001**.
4. In the *APO Application* field, enter **SAP TM**, for example.
5. Select the required options as follows:
  1. In the *Material Dependent Objects* frame, select the *Plants* checkbox.
  2. In the *General Selection Options for Materials* frame, enter the name of the plant in the *Plnt* field, for example, **0001**.
  3. In the *Material Independent Objects* frame, select the *Vendors* checkbox.
  4. Choose *Special Restrictions* and enter a name for the business partner in the *Vendors* field (for example, **BP0001**); then enter number **2** in the *Create Loc/BP* field.
  5. In the *Material Independent Objects* frame, select the *Customer* checkbox.
  6. Choose *Special Restrictions* and enter a name for the business partner in the *Customer* field; then enter number **2** in the *Create Loc/BP* field.
  7. In the *Material Independent Objects* frame, select the *Shipping Points* checkbox.
  8. Choose *Special Restrictions* and enter a name for the shipping points in the *Shipping Point* field.
6. Save your integration model as a variant for future reuse, for example, **VIMTM1**.
7. Choose *Execute*.
8. Choose *Generate IM*.

#### ➔ Recommendation

Activate BADIs before you transfer master data to SAP TM so that the system adds prefixes and suffixes to locations and materials when they are transferred via CIF. For more information, see SAP Note [458914](#).

## 2.8 Activating the Integration Model

### Context

You can use this procedure to activate the integration model in the SAP ERP system.

#### ➔ Recommendation

Activate BADIs before you transfer master data to SAP TM so that the system adds prefixes and suffixes to locations and materials when they are transferred via CIF. For more information, see SAP Note [458914](#).

## Procedure

1. In the SAP ERP system, on the *SAP Easy Access* screen, choose **Logistics** > *Central Functions* > *Supply Chain Planning Interface* > *Core Interface Advanced Planning and Optimization* > *Integration Model* > *Activate*. Alternatively, call transaction **CFM2**.
2. In the *Selection Criteria* frame, enter the following:
  1. The name of the integration model in the *Model Name* field, for example, **IMTM1**.
  2. The name of the target system in the *Logical System* field, for example, **SCMCLNT001**.
  3. The name of the APO application in the *APO Application* field, for example, **TM**.
3. In the *Special CIF Settings* frame, select the *Do Not Issue Warning in Case of Parallel CIF Load* checkbox.
4. Choose *Execute*.

The *Activate or Deactivate Integration Model* screen appears.
5. In the frame on the left, choose the APO Application, for example, **TM**.

Your integration model appears in the frame on the right.
6. In the frame on the right, choose the relevant line and choose *Active/Inactive*.

The status of your integration model is displayed in the *New Status* field.
7. In the frame on the right, choose the relevant line and choose *Start*.

When you do this for the first time, a dialog box appears asking for an interval to be created. In this case, choose *Yes*.
8. In the *Application log messages* dialog box, choose *No*.
9. Choose *Continue*.

## 2.9 Checking Data Transfer via the Core Interface (CIF)

At this point of the configuration process, it is important that you check that the data for the plant, the business partner, and the shipping points has been transferred to SAP TM. For handling the business partners, see SAP Note [1410353](#).

In SAP TM the transferred data is stored as follows:

Data in the ERP System	Data in SAP TM
Plant	Locations
Shipping Points	Locations
Customer or Vendor	Location

## 2.10 Deactivating BAdIs: Special Settings for ERP IDES

### Context

If you have installed an IDES system as an ERP system in your system landscape, you have to deactivate a Business Add-In (BAdI) that prevents XML messages from being created when a purchase order is saved.

### Procedure

1. Call transaction **SE18**.
2. Enter BAdI name `PUR_SE_PO_INTERFACE_OUT_SELECT` and choose *Display*.
3. In the *BAdI Definitions* screen area, expand the node for BAdI definition `PUR_SE_PO_INTERFACE_OUT_SELECT` and double-click *Implementations*.
4. Double-click enhancement implementation `Z_IDES_PUR_SE_PO_INTERFACE_O`.
5. Change to edit mode.
6. Deselect *Implementation is active*.
7. Activate your changes.

## 2.11 Deleting Shipping Point Assignments

### Procedure

1. In Customizing for SAP ERP, choose **Logistics > Logistics Execution > Shipping > Basic Shipping Functions > Shipping Point and Goods Receiving Point Determination > Assign Shipping Points**.
2. On the *Change View "Shipping Point Determination": Overview* screen, select the following entry:

Plnt	PrShP
3100	3101

3. Delete this entry.
4. Check whether the following entry exists and if not, create it:

---

Plnt	PrShP	MShPt
3100	3100	3100

5. Save your entries.



# 3 Configuration Settings for Invoice Integration

You use this process to configure the settings in SAP ERP that enable you to integrate invoice processing in SAP ERP with SAP Transportation Management (SAP TM).

## 3.1 Invoice Integration

You can transfer a freight settlement document (FSD) and a forwarding settlement document (FWSD) to SAP ERP.

### 3.1.1 Message Flow for Invoice Integration

The following table describes the message flow for forwarding settlement requests and customer invoices in invoice integration:

Message	Description
CustomerFreightInvoiceRequestSUITERequest_Out_V1	Send create or change requests for forwarding settlements from SAP TM
CustomerFreightInvoiceRequestSUITERequest_In_V1	Receive create or change requests for customer invoices in SAP ERP
CustomerFreightInvoiceRequestSUITEConfirmation_Out_V1	Send confirmations for customer invoices from SAP ERP
CustomerFreightInvoiceRequestSUITEConfirmation_In_V1	Receive confirmations for forwarding settlements in SAP TM
CustomerFreightInvoiceRequestSUITECancellationRequest_Out_V1	Send cancel requests for forwarding settlements from SAP TM
CustomerFreightInvoiceRequestSUITECancellationRequest_In_V1	Receive cancel requests for customer invoices in SAP ERP
CustomerFreightInvoiceRequestSUITEsimulate_Out	Send forwarding settlements from SAP TM for invoice preview and receive PDF of SAP ERP billing
CustomerFreightInvoiceRequestSUITEsimulate_In	Receive forwarding settlements from SAP TM for invoice preview and send PDF of SAP ERP billing

The following table describes the message flow for freight settlement requests and supplier invoices in invoice integration:

Message	Description
TransportationOrderSUITEInvoicingPreparationRequest_Out	Send create or change requests for freight settlements from SAP TM
TransportationOrderSUITEInvoicingPreparationRequest_In	Receive create or change requests for supplier invoices in SAP ERP
TransportationOrderSUITEInvoicingPreparationConfirmation_Out	Send confirmations for supplier invoices from SAP ERP
TransportationOrderSUITEInvoicingPreparationConfirmation_In	Receive confirmations for freight settlements in SAP TM
TransportationOrderSUITEInvoicingPreparationCancellationRequest_Out	Send cancel requests for freight settlements from SAP TM
TransportationOrderSUITEInvoicingPreparationCancellationRequest_In	Receive cancel requests for supplier invoices in SAP ERP

The following table describes the invoice notification messages in invoice integration:

Message	Description
InvoiceNotification_Out	Send invoice notification from SAP ERP
InvoiceNotification_In	Receive invoice notifications in SAP TM

## 3.1.2 Billing

You can specify the relevant Customizing settings for *SAP ERP* under [Integration with Other SAP Components](#) > [Transportation Management](#) > [Invoice Integration](#).

To integrate forwarding settlement documents with sales and distribution (SD) billing documents, you must specify the following settings:

- Category codes, subcategory codes, and charge types in SAP ERP for the charge types from SAP TM. You can specify the settings in the following Customizing activities under [Definition of Transportation Charge Elements](#):
  - [Define Category Codes](#)
  - [Define Subcategory Codes](#)
  - [Define Charge Types](#)

- Role codes in SAP ERP for the SAP TM currency and amount. You can specify the settings in the following activities under [▶ Definition of Transportation Management Role Codes ▶](#):
  - [Define Role Codes \(Currency\)](#)
  - [Define Role Codes \(Amount\)](#)
- Condition types in SAP ERP for SAP TM charge types in the [Assign Condition Types](#) activity under [▶ Assignment of Transportation Charge Elements ▶](#).
- Under [▶ Mapping of Organizational Units ▶](#), you must specify the following settings:
  - Sales organization, type, and document type for the SAP TM sales organization and sales group in the [Assign Organizational Units for Sales and Distribution](#) activity
  - Credit segments for accounts receivable accounting (FI-AR) and sales and distribution in the [Define Credit Segment](#) activity
  - Credit segment that SAP TM uses. Also, assign a credit segment to the credit control area used in FI-AR in the [Assign Credit Segment to Credit Control Area](#) activity.
  - Internal order and cost center in SAP ERP for the sales organization unit in SAP TM in the [Assign TM Sales Org. Unit to Internal Order/Cost Center](#) activity

You must assign the following codes and types:

- A credit memo reason code from SAP TM to an order reason code in SAP ERP in the [Assign SAP TM Credit Memo Reason Code to Order Reason Code](#) activity.
- A transportation charge type in SAP TM to a primary cost element mapping for intracompany settlement processing in *SAP ERP*, under [▶ Intracompany Settlement ▶ Assign Transportation Charges to Cost Elements ▶](#).

### 3.1.3 Invoicing

You can specify the relevant Customizing settings for SAP ERP under [▶ Integration with Other SAP Components ▶ Transportation Management ▶ Invoice Integration ▶](#).

To integrate freight settlement documents with service purchase order and service entry sheet documents, you must specify the following settings:

- Category codes, subcategory codes, and charge types in SAP ERP for the charge types from SAP TM. You can specify the settings in the following Customizing activities under [▶ Definition of Transportation Charge Elements ▶](#):
  - [Define Category Codes](#)
  - [Define Subcategory Codes](#)
  - [Define Charge Types](#)
- Role codes in SAP ERP for the SAP TM currency and amount. You can specify the settings in the following activities under [▶ Definition of Transportation Management Role Codes ▶](#):
  - [Define Role Codes \(Currency\)](#)
  - [Define Role Codes \(Amount\)](#)

You must assign the following attributes:

- Transportation charge item categories, item subcategories, and items in SAP TM to service master data records and account assignment categories in SAP ERP. You can specify the settings under [▶ Assignment of Transportation Charge Elements ▶ Assign Service Master Record and Account Assignment Category ▶](#).

- Under ► *Mapping of Organizations Units* ►, you must assign the following attributes:
  - Purchasing business areas from SAP TM to the organizational units in purchasing in SAP ERP in the *Assign Organizational Units for Purchasing* activity
  - Purchasing organization unit in SAP TM to an internal order and cost center account in SAP ERP in the *Assign TM Purchase Org. Unit to Internal Order/Cost Center* activity

### 3.1.3.1 Defining Category Codes for Invoice Integration

#### Procedure

1. In the SAP ERP system, in Customizing for *Integration with Other SAP Components* choose ► *Transportation Management* ► *Invoice Integration* ► *Invoicing* ► *Definition for Transportation Charge Elements* ► *Define Category Codes.* ►
2. Check and create new entries with the following data, if not available:

Charge Category	Short Description
001	All Charges
002	Additional Charges
003	Transport Charges & Additional Charges
004	Basic Freight
005	Destination Haulage Charges
006	Disbursement
007	Destination Port Charges
008	Miscellaneous Charges
009	Transport Charges up to a Specified Loc.
010	Origin Port Charges
011	Origin Haulage Charges
012	Other Charges
013	Specific Amount Payabale
014	Transport Costs (Carriage Charges)

Charge Category	Short Description
015	All Costs up to a Specified Loc.
016	Weight Charge
017	All Costs
018	Valuation Charges
019	Supply of Certificate of Shipment
020	Supply of Consular Formalities
021	Supply of Non-Categorized Documentation
022	Supply of Customs Formalities, Export
023	Supply of Customs Formalities, Transit
024	Supply of Customs Formalities, Import
025	Already Invoiced Amount
026	Adjustment / Quotation Amount

### 3.1.3.2 Defining Subcategory Codes for Invoice Integration

#### Procedure

1. In the SAP ERP system, in Customizing for *Integration with Other SAP Components*, choose **► Transportation Management ► Invoice Integration ► Invoicing ► Definition for Transportation Charge Elements ► Define Subcategory Codes. ►**
2. Check and create new entries with the following data, if not available:

Charge Item Subcategory	Short Description
100000	Freight Charges
101000	Basic Freight
101021	Sea Freight

Charge Item Subcategory	Short Description
103001	Bunker Adjustment Factor
103008	Fuel Surcharge
103009	Surcharge
104000	Toll Fee Fix
104007	Terminal Handling Charges
104012	Destination Port Additional
104013	Origin Port Additional
104130	Destination Port Service Charge
104131	Origin Port Service Charge
104132	Detention Charges
609102	Stop in Transit
710000	Discount

### 3.1.3.3 Defining Charge Types for Invoice Integration

#### Procedure

1. In the SAP ERP system, in Customizing for *Integration with Other SAP Components*, choose **► Transportation Management ► Invoice Integration ► Invoicing ► Definition for Transportation Charge Elements ► Define Charge Types. ►**
2. Check the charge types and create the following entries, if not available:

Charge Type Code	Category Code	Subcategory Code	Short Description
FB00	004	100000	Basic Freight
LMPR	002	104132	Lumper Charges
FUEL	003	103008	Fuel Surcharge

Charge Type Code	Category Code	Subcategory Code	Short Description
STOP	002	609102	Stop Off Charges
DISC	004	710000	Freight discount
ZS01	011	100000	Inland Transport
ZS02	004	101021	Long Haul
ZS03	012	101021	Handling
ZS04	012	101021	Customs
ZS05	012	101021	Port Fees
ZS06	012	101021	Other Charges
ZV01	011	101021	Trucking
ZV02	012	101021	Other Charges
BSF	003	101021	Base Sea Freight
IPSD	002	104007	Int. Port Security Destination
IPSO	002	104007	Int. Port Security Origin
THCD	007	104130	Terminal Handling Charge (THC) Destination
THCO	010	104131	Terminal Handling Charge (THC) Origin
RAIL	003	100000	Rail Transportation Charge
HAUF	003	101000	FTL Haulage
ADJ	026	Leave this field empty	Adjustment / Quotation Amount
BASE	004	100000	Base freight
BAF	012	103001	Bunker Adj. Factor
THC	014	104007	Terminal Handl.Charg
PEAK	008	103009	Peak Season Charge
LSFS	008	103009	Low Sulphur Surcharge
PRE	014	100000	Land Pre Carriage

Charge Type Code	Category Code	Subcategory Code	Short Description
TOLL	002	104000	Toll Fee Fix
BLAD	002	104000	B/L Fee Fix
CAF	012	103009	CAF
PRS	012	103009	Piracy Risk Surcharge
EBAF	002	103001	E-BAF (emergency Bunker Adj. Factor)
ON	014	100000	On Carriage
AMS	002	104000	AMS-Fee

### 3.1.3.4 Assigning Service Master to Transportation Charge Elements

#### Procedure

1. In the SAP ERP system, in Customizing for *Integration with Other SAP Components*, choose **► Transportation Management ► Invoice Integration ► Invoicing ► Assignment of Transportation Charge Elements ► Assign Service Master Record and Account Assignment Category. ►**
2. Check and create the following entries, if not available:

Category Code	Subcategory Code	Charge Type Code	Activity Number	Account Assignment Category	Service Short Text
004	100000	FBO0	TM_FBO0	K	Base Freight
002	104132	LMPR	TM_LMPR	K	Detention Charges
003	103008	FUEL	TM_FUEL	K	Fuel Surcharge
002	609102	STOP	TM_STOP	K	Stop Off Charges
004	710000	DISC	TM_DISC	K	Freight discount
011	100000	ZS01	TM_HAUF	K	Haulage FTL



Category Code	Subcategory Code	Charge Type Code	Activity Number	Account Assignment Category	Service Short Text
004	101021	ZS02	TM_OCEAN	K	Ocean Freight
012	101021	ZS03	TM_LMPR	K	Detention Charges
012	101021	ZS04	TM_TOLL	K	Toll
012	101021	ZS05	TM_PORTD	K	Port Charges Destination
012	101021	ZS06	TM_LMPR	K	Detention Charges
011	101021	ZV01	TM_HAUF	K	Haulage FTL
012	101021	ZV02	TM_LMPR	K	Detention Charges
003	101021	BSF	TM_OCEAN	K	Base Sea Freight
002	104012	IPSD	TM_PORTD	K	Port Charges Destination
002	104013	IPSO	TM_PORTO	K	Port Charges Origin
007	104007	THCD	TM_PORTD	K	Port Charges Destination
010	104007	THCO	TM_PORTO	K	Port Charges Origin
003	100000	RAIL	TM_RAIL	K	Rail Transportation Charge
003	101000	HAUF	TM_HAUF	K	Haulage FTL
026	Leave this field empty	ADJ	TM_ADJ	K	Adjustment / Quotation Amount
004	100000	BASE	TM_FB00	K	Base Freight
012	103001	BAF	TM_HAUL	K	Haulage LTL
014	104007	THC	TM_HAUL	K	Haulage LTL
008	103009	PEAK	TM_FUEL	K	Fuel Surcharge
008	103009	LSFS	TM_FUEL	K	Fuel Surcharge
002	104000	TOLL	TM_TOLL	K	Toll

Category Code	Subcategory Code	Charge Type Code	Activity Number	Account Assignment Category	Service Short Text
014	100000	PRE	TM_FB00	K	Base Freight
002	104000	BLAD	TM_HAUF	K	Haulage FTL
012	103009	CAF	TM_HAUL	K	Haulage LTL
012	103009	PRS	TM_HAUL	K	Haulage LTL
002	103001	EBAF	TM_HAUL	K	Haulage LTL
002	104000	AMS	TM_HAUL	K	Haulage LTL
014	100000	ON	TM_HAUL	K	Haulage LTL

### 3.1.4 Cost Distribution

The role you have in the transportation process determines how you should use the cost distribution feature. You can have the role of shipper or logistics service provider (LSP).

#### Cost Distribution for Shippers

You create a freight settlement document to transfer the transportation costs from SAP TM to SAP ERP for verification. You must perform cost distribution at the level of ERP item in the freight settlement document. You use service entry sheets and agency business documents to post the distributed costs in SAP ERP.

To integrate cost distribution in freight orders and freight settlement documents with SAP ERP, you must assign the transportation charge type in SAP TM to a condition type in SAP ERP for cost distribution. You can do this in Customizing for *SAP ERP* under [Integration with Other SAP Components](#) > [Transportation Management](#) > [Invoice Integration](#) > [Mapping for Cost Distribution](#) > [Assign Transportation Charge Elements to Condition Types](#).

To use agency business documents to post distributed costs in SAP ERP, you must specify the following settings under [Mapping for Cost Distribution](#) > [Posting via Agency Business](#):

- Application type and posting types in [Define Application and Posting Type](#)
- Data used in agency business document creation in [Basic Settings for Creation of Agency Documents](#)

#### Cost Distribution for LSPs

You create a forwarding order that is based on a freight order to transport goods to a customer. You must perform cost distribution at the level of forwarding order. The purchasing organization in your company that executes the

freight order or freight booking and pays the freight cost uses the distributed costs to perform an internal settlement with the sales organizations in the forwarding orders.

You must assign the sales organization unit in SAP TM to an internal order and cost center in SAP ERP. You can do this under [► Integration with Other SAP Components](#) [► Transportation Management](#) [► Invoice Integration](#) [► Mapping for Cost Distribution](#) [► Assign TM Sales Org. Unit to Internal Order/Cost Center](#) [►](#).

## 3.1.5 Integration Business Add-Ins

You can access the following Business Add-Ins (BADIs) on the *SAP Easy Access* screen under [► Tools](#) [► ABAP Workbench](#) [► Utilities](#) [► Business Add-Ins](#) [► Implementation](#) [►](#):

- *BAdI: FSD Invoicing Preparation: Data Modify* (TCM\_SE\_TORINVPREPREQ\_PROC)
- *BAdI: Inbound/Outbound Processing for FSD Invoicing Preparation* (TCM\_SE\_TORINVPREPREQ\_ASYN)
- *BAdI: Inbound/Outbound Processing for FSD Invoicing Cancellation CNC* (TCM\_SE\_TORINVPREPCNCLN\_ASYN)
- *BAdI: Creation of SD Billing Document* (TCM\_SE\_CFIRSUITE\_RQ)
- *BAdI: Cancellation of SD Billing Document* (TCM\_SE\_CFIRSUITE\_CNCLNRQ)
- *Implementation: Activation of Correction Postings* (WZRE\_TMS\_IV)

If you have a charge correction, the SAP ERP system updates the agency business document during invoice verification. If you want to use this feature in SAP ERP, you must activate this BAdI. We provide the coding as standard.

## 3.2 User Settings for Invoice Verification Based on SAP TM

### Context

To enable a user to perform invoice verification in SAP ERP, you have to assign profile parameter `TM_INVOICE_CLERK` to the user's profile in the SAP ERP system.

### Procedure

1. In the SAP ERP system, call transaction **SU01**.
2. Enter the user and choose *Change*.
3. Choose the *Parameters* tab.
4. In the *Parameter ID* column, enter `TM_INVOICE_CLERK`.
5. Save your entries.

### 3.3 Defining Default Account Assignment of Cost Element

#### Procedure

1. In the SAP ERP system, in Customizing for *Controlling*, choose ► *Cost Center Accounting* ► *Actual Postings* ► *Manual Actual Postings* ► *Edit Automatic Account Assignment* ►
2. Create a new entry with the following data:

<i>Company Code</i>	<b>1000</b>
<i>Cost Element</i>	<b>415002</b>
<i>Cost Center</i>	<b>9030</b>

### 3.4 Defining Service Master for Invoice Integration

#### Procedure

1. In the SAP ERP system, on the *SAP Easy Access* screen, choose ► *Logistics* ► *Materials Management* ► *Service Master* ► *Service* ► *Service Master* ►.
2. Choose *Create New Service*.
3. Enter the following data:

Activity Number	Service Short Text	Service Category	Base Unit of Measure	Material / Service Group	Valuation Class
TM_ADJ	Adjustment / Quotation Amount	Service Purchasing	AU	007	3215
TM_DISC	Freight discount	Service Purchasing	AU	007	3212
TM_FB00	Base Freight	Service Purchasing	AU	007	3212

Activity Number	Service Short Text	Service Category	Base Unit of Measure	Material / Service Group	Valuation Class
TM_FUEL	Fuel Surcharge	Service Purchasing	AU	007	3212
TM_HAUF	Haulage FTL	Service Purchasing	AU	007	3212
TM_HAUL	Haulage LTL	Service Purchasing	AU	007	3212
TM_LMPR	Detention Charges	Service Purchasing	AU	007	3215
TM_OCEAN	Ocean Freight	Service Purchasing	AU	007	3216
TM_PORTD	Port Charges Destination	Service Purchasing	AU	007	3211
TM_PORTO	Port Charges Origin	Service Purchasing	AU	007	3211
TM_RAIL	Rail Transportation Charge	Service Purchasing	AU	007	3212
TM_STOP	Stop Off Charges	Service Purchasing	AU	007	3212
TM_TOLL	Toll	Service Purchasing	AU	007	3211

## 3.5 Creating Event Type Linkages

### Context

In this step, you activate workflow `WS53800006` for incoming invoices and activate event linkage for the events `POSTED` and `CANCELLED`. The workflow triggers the `InvoiceNotification_Out` message when an incoming invoice is posted or canceled. The message informs SAP TM about the posted or canceled invoice.

## Procedure

1. In the SAP ERP system, on the *SAP Easy Access* screen, choose **Tools > ABAP Workbench > Development > SAP Business Workflow > Definition Tools > Events > Event Linkages > Type Linkages**.
2. Make the following entries and select the *Type linkage active* checkbox:

Object Category	Object Type	Event	Receiver Type	Linkage Activated	Receiver Function Module
BOR Object	BUS2081	CANCELLED	WS53800006	Select this checkbox	SWW_WI_CREATE_VIA_EVENT_I BF
BOR Object	BUS2081	POSTED	WS53800006	Select this checkbox	SWW_WI_CREATE_VIA_EVENT_I BF

3. Save your entries.
4. In the SAP ERP system, on the *SAP Easy Access* screen, choose **Tools > ABAP Workbench > Development > SAP Business Workflow > Utilities > Automatic Workflow Customizing**.
5. Choose *Perform Automatic Workflow Customizing* (**F9**).

## 3.6 Configuration Settings for SAP NetWeaver Process Integration

### Context

In the SAP NetWeaver Process Integration (SAP NetWeaver PI) system, you have to set up a business system, communication channel, and a configuration scenario for the `TM_ERPInvoiceIntegration` integration scenario.

For more information, see [Configuring SAP NetWeaver PI for Order and Invoice Integration \[page 83\]](#).

## 3.7 Invoice Preview Enhancement

### Use

You can preview a final invoice in SAP Transportation Management (SAP TM) as it would appear in SAP ERP. The preview merges information from the relevant forwarding settlement document and tax information from SAP ERP.

You can also add information to the standard invoice preview, to suit your individual business requirements, as follows:

1. Enhancing structures in SAP TM and SAP ERP
2. Implementing a Business Add-In (BAI) in SAP TM to pass the enhanced data from SAP TM to SAP ERP
3. Implementing a BAI in SAP ERP to consume the enhanced SAP ERP data and the enhanced data sent from SAP TM

SAP ERP calls a function module to generate a PDF, and sends the PDF to SAP TM. The system displays the PDF when the user chooses the *Preview Invoice* button in SAP TM.

### Process

1. Implement Structural Enhancements

#### SAP TM Structural Enhancements

SAP TM converts internal ABAP tables to XML in a process called serialization. SAP TM uses the `/SCMTMS/T_CFIR_PRINT_DATA` structure to serialize data. The structure has the `/SCMTMS/S_CFIR_PRINT_DATA` line type.

#### SAP ERP Structural Enhancements

SAP ERP converts XML to internal ABAP tables in a process called deserialization. SAP ERP uses the `TCM_T_CFIR_PRINT_DATA` table type to deserialize the data. The structure has the `TCM_S_CFIR_PRINT_DATA` line type.

#### **i** Note

We provide the fields and components in the structures as standard. You can use the append structure feature to enhance the standard structure with data that suits your business requirements.

When you enhance the standard structures, you must use identical names and compatible types for the enhanced fields in SAP TM and SAP ERP. You must use identical values for the type, length, and decimal place of the currency and quantity fields.

2. Implement SAP TM BAI

To get the required data for the additional fields in the enhanced structure, you use the Invoice Preview (`/SCMTMS/BADI_FWSD_PRINT_SIM`) BAI in SAP TM.

Input the following information in the `UPDATE_CFIR_PRINT_DATA` interface method:

- CFIR key
- Table of language keys
- Changing parameter type `/SCMTMS/T_CFIR_PRINT_DATA`

The system fills the SAP TM data into the print structure as standard. The system provides the changing parameter with the standard SAP TM data. You specify the additional SAP TM data that you need for the invoice preview, and for which you used the append structure feature in the BAdI implementation.

The system serializes the output of the BAdI implementation and uses the proxy structure to transfer the output to SAP ERP.

### 3. Implement SAP ERP BAdI

You implement a BAdI in SAP ERP to consume the enhanced SAP ERP and SAP TM data. For more information, see [SAP ERP BAdI Implementation to Enable the Invoice Preview \[page 48\]](#).

## 3.7.1 SAP ERP BAdI Implementation to Enable the Invoice Preview

### Use

To enable the invoice preview for enhanced information, you must implement a Business Add-In (BAdI) in SAP ERP to consume the enhanced SAP ERP data and the enhanced data sent from SAP TM.

You must also have enhanced the structures in SAP TM and SAP ERP, and implemented a Business Add-In (BAdI) in SAP TM to pass the enhanced data from SAP TM to SAP ERP. For more information, see [Invoice Preview Enhancement \[page 47\]](#).

### Process

1. Create a BAdI enhancement using the following information:
  - Enhancement spot `BADI_SD_BIL_PRINT01`
  - BAdI implementation `BADI_SD_BIL_PRINT01`
2. If you want to reuse the same PDF form interface, copy the `TM_INVOICE_FORM01` PDF form to a customer namespace. You can copy the form as, for example, `ZTM_INVOICE_FORM01`. You can also create a new form, for example `ZTM_INVOICE_FORM02`, in your own interface.
3. Change the filter value from `TM_INVOICE_FORM01` to `ZTM_INVOICE_FORM01` (or `ZTM_INVOICE_FORM02` if appropriate) in the `ZTM_BIL_IMPL01` enhancement implementation.
4. Implement the `IF_BADI_SD_BIL_PRINT01~PRINT_DATA` method in the class created in the enhancement Implementation. The enhancement implementation implements the `IF_BADI_SD_BIL_PRINT01` BAdI interface.

Use one of the following options to implement method `IF_BADI_SD_BIL_PRINT01~PRINT_DATA`:

1. Copy the standard PDF form or use the same interface provided as standard  
We deliver the `TM_INVOICE_FORM01` PDF form as standard. The form associated with the new enhancement implementation is a copy of the standard form. This means you use the same PDF form interface for the new PDF form as that delivered as standard.  
The standard PDF form interface `TM_INVOICE_INTERFACE` contains the `BIL_PRT_COM` component. The `INV_S_PRT_TM_ERP_INTERFACE` structure is associated with the component. You can use the append structure feature to facilitate the display of the enhanced data according to your particular business requirements.



---

In the method implementation, copy the contents of `IF_BADI_SD_BIL_PRINT01~PRINT_DATA` method in `CL_TM_INVOICE` class. You do not change the code logic before the call for the function module to generate the PDF. The output of the `BUILD_DATA_FOR_PRINT` method contains the data the system feeds to the PDF form interface that we deliver as standard.

You can use the output from the `BUILD_DATA_FOR_PRINT` and `GET_CFIR_DATA` methods to fill the enhanced fields in the PDF form interface.

2. Create a new PDF form interface, different to the standard

The PDF form for the new enhancement implementation is a new form, for example

`ZTM_INVOICE_FORM02`, created with a new PDF form interface. This means the interface for the newly created PDF form is different from the interface we deliver as standard.

In the method implementation, copy the contents of `IF_BADI_SD_BIL_PRINT01~PRINT_DATA` method in `CL_TM_INVOICE` class.

Remove the call for the `BUILD_DATA_FOR_PRINT` method from the code logic, because the method that we provide as standard fills the data to the fields in the standard PDF form interface.

Implement your own logic to fill the new print structure that the system displays on the PDF form. Adjust the call to the function module, so that the call passes the valid exporting parameters. The call then works as it does for the components associated with the PDF form interface.

## 4 Configuration Settings for SAP Credit Management Integration

You can integrate SAP ERP with SAP Credit Management. You can subsequently use the integrated features to enable credit limit check functionality in SAP Transportation Management (SAP TM).

Checking credit limits is important for logistic service providers (LSPs). The feature enables you to manage the risk of credit exposure in your business. The creditworthiness and payment behavior of your business partners can have an immediate effect on your business results. The credit limit check functionality enables you to perform the following tasks:

- Determine the risk of losses on receivables from a business partner early
- Make credit decisions efficiently
- Take advantage of partially automated features

•For more information on how to configure SAP Credit Management, see SAP Service Marketplace for SAP Financial Supply Chain Management under <http://service.sap.com/fscm> ► [Credit Management](#) ► [Media Library](#) ► [Other](#) ► [Configuration Guide – Multiple Back Ends](#) ►

### 4.1 Message Flow for SAP Credit Management

The following table describes the message flow for SAP Credit Management integration:

Message	Description
CreditCommitmentNotification_Out	Send forwarding settlement amount for a business partner to update credit exposure in SAP Credit Management
CreditWorthinessQuery_Out	Receive credit worthiness of a business partner from SAP Credit Management

### 4.2 Specification of Customizing Settings in SAP Credit Management

#### Use

You must specify Customizing settings in SAP Credit Management to integrate with SAP ERP, and to subsequently use the integrated features to enable credit limit check functionality in SAP Transportation Management (SAP TM).

## Process

1. Specify the standard settings

As standard, SAP Credit Management checks all the credit segments to which you have assigned a business partner. For example, if you assign the same business partner to two credit segments, and one segment is the main segment (0000), the system checks both credit segments.

If you do not want the system to check a segment, including the main segment, you must specify this in Customizing for *Financial Supply Chain Management* under ► *Credit Management* ► *Credit Risk Monitoring* ► *Master Data* ► *Create Credit Segments* ►. For example, you assign a business partner to segments 0000 and 0001, where 0000 is the main segment. If you only want to check segment 0001, you must deselect the *Add. Contribution to Main Credit Segment* field in segment 0001.

2. Define the check rules

You must specify check rules in Customizing for *Financial Supply Chain Management* under ► *Credit Management* ► *Credit Risk Monitoring* ► *Credit Limit Check* ► *Define Checking Rules* ►.

3. Assign the credit control area and credit segment

You must assign a credit control area and credit segment in Customizing for *Financial Supply Chain Management* under ► *Credit Management* ► *Integration with Accounts Receivable Accounting and Sales and Distribution* ► *Integration with Accounts Receivable Accounting* ► *Assign Credit Control Area and Credit Segment* ►.

Enter the credit control area, credit segment, and currency. Enter *Open order value on time axis, delivery and bill. doc. value* in the *Update* field.

In the *Assign Permitted Credit Control Areas to Company Code* Customizing activity, assign the credit control area to the relevant company code.

4. Assign the credit segment to the credit control area

You must assign the relevant credit segment to the credit control area in Customizing for *Integration with Other SAP Components* under ► *Transportation Management* ► *Invoice Integration* ► *Billing* ► *Mapping of Organizational Units* ► *Assign Credit Segment to Credit Control Area* ►.

## 4.3 Specification of Business Partner in Synchronization Cockpit

### Use

The synchronization cockpit enables you to use existing customer or vendor master data to create a business partner.

### Process

1. In SAP ERP, enter transaction `MDS_LOAD_COCKPIT` to open the synchronization cockpit.
2. Choose the synchronization process with a source object of *Business Partner*, and a target object of *Customer*.

- 
3. In the *Select Criteria for Source Object* area, enter the details of the customer for whom you want to create a business partner. Choose *Start Synchronization*.

## 4.4 Specifying Credit Profile in SAP Credit Management

### Context

You must specify the credit profile of the relevant business partner in SAP Credit Management. This enables you to check the credit limits of the partner.

### Procedure

1. In SAP Credit Management, enter transaction **BP** to open the *Maintain Business Partner* transaction. Select the relevant partner.
2. In the *Change in BP Role* field, enter *SAP Credit Management*.
3. In the *Credit Profile* tab page, enter the appropriate information in the following fields:
  - Rules
  - Risk class
  - Check rule
  - Customer group
4. Choose the *Credit Segment Data* button, and enter the appropriate credit segment.
5. In the *Credit Limit and Control* tab page, enter the following information, as appropriate:
  - Limit
  - Valid to date

You can also select the *Blocked in Credit Management* field to ensure a business partner does not pass a credit limit check. You can also enter a reason for why you block the business partner.

# 5 Configuration Settings for Order and Delivery Integration

You use this process to configure the settings in SAP ERP that enable you to integrate order and delivery processing in SAP ERP with SAP Transportation Management (SAP TM).

## Caution

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 to ensure that the SAP TM system cannot create duplicate transportation requirements.

## 5.1 Defining Control Keys for Document Transfer

### Use

In this procedure, you define the control keys that determine which documents or document chains are to be transferred to SAP TM. You can define as many control keys as required with different combinations of documents. For sales orders, you can also specify whether sales order scheduling is to take place in SAP TM.

### Procedure

1. In the SAP ERP system, in Customizing for *Integration with Other SAP Components*, choose  *Transportation Management*  *Order Integration* .
2. Choose *Define Control Keys for Document Transfer*.
3. Make sure that one or more control keys are maintained that cover one or more combinations of documents to be transferred to SAP TM. You use the control keys in the configuration steps to activate document transfer to SAP TM.

If you require additional control keys, you can create them in this Customizing activity.

## More Information

For more information, see the system documentation for this Customizing activity.

## 5.2 Order and Delivery Integration

### Use

The following documents can be transferred to SAP Transportation Management (SAP TM): sales orders, purchase orders, stock transport orders, returns orders (such as sales returns, vendor returns, and store returns), outbound deliveries, and inbound deliveries.

Before you can transfer the documents, you have to define the control keys in the respective Customizing activity and activate the transfer of documents to SAP TM. The settings that you have to configure depend on the scenario that you want to set up. You also have to configure output determination for the documents.

#### Integration of Sales Orders, Customer Returns and Corresponding Deliveries

To configure this integration scenario in your SAP ERP system, you configure the settings for sales documents such that corresponding deliveries are also sent to SAP TM. You configure the settings as follows:

- *Defining Control Keys for Document Transfer*  
You must select the *SO to TMS* checkbox and the *Outbd Del.* checkbox for the control key. If you want to schedule sales orders in SAP TM synchronously, select the *SO Sched* checkbox.
- *Activating Transfer of Sales Documents*  
You assign the control key to your sales document types.

#### Integration of Purchase Orders, Stock Transport Orders, Return Purchase Orders, Return Stock Transport Orders, and Corresponding Deliveries

To configure this integration scenario in your SAP ERP system, you configure the settings for purchase documents such that corresponding deliveries are also sent to SAP TM. You configure the settings as follows:

- *Defining Control Keys for Document Transfer*  
You must select the *PO to TMS* checkbox and the *Inbd Del.* checkbox for the control key.  
If you want to transfer confirmation data of external purchase orders to SAP TM as confirmed quantities you must select the *PO Conf.* checkbox as well
- *Activating Transfer of Purchase Orders*  
You assign the control key to your purchase document types.

#### Integration of ERP Orders Without Sending Deliveries to SAP TM

To configure this integration scenario in your SAP ERP system, you configure the settings for orders such that the corresponding deliveries are not sent to SAP TM. You configure the settings as follows:

- *Defining Control Keys for Document Transfer*  
You must select the *SO to TMS* checkbox for the control key, but you do **not** select the *Outbd Del.* checkbox. In the same way, you select the *PO to TMS* checkbox for the control key for purchase documents, but you do **not** select the *Inbd Del.* checkbox.
- *Activating Transfer of Sales Documents*

You assign the control key for sales documents to your sales document types.

- [Activating Transfer of Purchase Orders](#)

You assign the control key for purchase documents to your purchase document types.

### Integration of ERP Deliveries Without Sending Orders to SAP TM

To configure this integration scenario in your SAP ERP system, you configure settings for deliveries such that the preceding order documents are not sent to SAP TM. You configure the settings as follows:

- [Defining Control Keys for Document Transfer](#)

You must select the *Outbd Del.* checkbox for the control key for outbound deliveries and the *Inbd Del.* checkbox for the control key for inbound deliveries. The control keys must **not** have the *SO to TM* checkbox or the *PO to TM* checkbox selected.

- [Activating Transfer of Delivery Documents](#)

You assign the control key to your delivery document types.

For information about the necessary message control settings in SAP ERP, see SAP Library for *SAP Enhancement Package 5 for SAP ERP 6.0* on 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** > **Integration: Order and Delivery Processing – SAP TM** > **Prerequisites for Order and Delivery Integration**.

### Integration Business Add-Ins (BADIs)

The following BADIs are available in Customizing for *Integration with Other SAP Components* under

**SAP Transportation Management** > **Order Integration** > **Business Add-Ins (BADIs)**:

- [BAdI: Sales Document Integration with TM](#)
- [BAdI: Purchase Order Integration with TM](#)
- [BAdI: Delivery Integration with TM](#)

You can use these BADIs to define the control key and the technical settings for transportation management according to your own logic, overriding the Customizing settings. The BADIs are called when a document is saved for the first time.

## More Information

To improve understanding and provide a better overview, the following tables show the different messages that are used to transfer order-related and delivery-related data between SAP ERP and SAP TM.

### Message Flow Order Integration

ERP Orders and Order-Based Transportation Requirements	
Message	Description
SIO_TransportationRequestSuiteRequest_Out	Send created or changed sales orders from SAP ERP to SAP TM

ERP Orders and Order-Based Transportation Requirements	
Message	Description
POP_TransportationRequestSuiteRequest_Out	Send created or changed purchase and stock transport orders and their returns from SAP ERP to SAP TM
CRP_TransportationRequestSuiteRequest_Out	Send created or changed customer returns from SAP ERP to SAP TM
IntracompanyTransportationRequestRequest_In	Receive creation or change requests for order-based transportation requirements in SAP TM
SLO_TransportationRequestSuiteCancellationRequest_Out	Send cancellation requests for sales orders from SAP ERP to SAP TM
POP_TransportationRequestSuiteCancellationRequest_Out	Send cancellation requests for purchase and stock transport orders and their returns from SAP ERP to SAP TM
CRP_TransportationRequestSuiteCancellationRequest_Out	Send cancellation requests for customer returns from SAP ERP to SAP TM
IntracompanyTransportationRequestCancellationRequest_In	Cancel requests for order-based transportation requirements in SAP TM

Simulation of Sales Orders	
Message	Description
TransportationRequestSuiteSimulateRequestConfirmation_Out	Send simulation requests for created or changed sales orders from SAP ERP to SAP TM
IntracompanyTransportationRequestSimulateRequestConfirmation_In	Receive creation or change requests for simulation-based order-based transportation requirements in SAP TM

ERP Deliveries and Delivery-Based Transportation Requirements	
Message	Description
OutboundDeliveryBulkCreateRequest_Out	Send creation requests for outbound deliveries from SAP TM to SAP ERP
OutboundDeliveryBulkCreateRequest_In	Receive creation requests for outbound deliveries in SAP ERP
OutboundDeliveryBulkConfirmation_Out	Send confirmations of requests for outbound deliveries from SAP ERP to SAP TM
OutboundDeliveryBulkConfirmation_In	Receive confirmations of requests for outbound deliveries in SAP TM



## ERP Deliveries and Delivery-Based Transportation Requirements

Message	Description
ODP_TransportationRequestSuiteRequest_Out	Send created or changed outbound deliveries from SAP ERP to SAP TM
ODP_TransportationRequestSuiteCancellationRequest_Out	Send cancellation requests for outbound deliveries from SAP ERP to SAP TM
InboundDeliveryCreateRequest_Out	Send creation requests for inbound deliveries from SAP TM to SAP ERP
InboundDeliveryCreateRequest_In	Receive creation requests for inbound deliveries in SAP ERP
InboundDeliveryConfirmation_Out_V1	Send confirmations of requests for inbound deliveries from SAP ERP to SAP TM
InboundDeliveryConfirmation_In_V1	Receive confirmations of requests for inbound deliveries in SAP TM
IDP_TransportationRequestSuiteRequest_Out	Send created or changed inbound deliveries from SAP ERP to SAP TM
IDP_TransportationRequestSuiteCancellationRequest_Out	Send cancellation requests for inbound deliveries from SAP ERP to SAP TM
IntracompanyTransportationRequestRequest_In	Receive creation or change requests for delivery-based transportation requirements in SAP TM
IntracompanyTransportationRequestCancellationRequest_In	Receive cancellation requests for delivery-based transportation requirements in SAP TM
OutboundDeliveryERPSplitRequest_Out_V1	Send split requests for outbound deliveries from SAP TM to SAP ERP
OutboundDeliveryERPSplitRequest_In_V1	Receive split requests for outbound deliveries in SAP ERP
OutboundDeliveryERPSplitConfirmation_Out_V1	Send confirmations of split requests for outbound deliveries from SAP ERP to SAP TM
OutboundDeliveryERPSplitConfirmation_In_V1	Receive confirmations of split requests for outbound deliveries in SAP TM
OutboundDeliveryUpdateRequest_Out	Send update requests for outbound deliveries from SAP TM to SAP ERP
OutboundDeliveryUpdateRequest_In	Receive update requests for outbound deliveries in SAP ERP
OutboundDeliveryConfirmation_Out_V1	Send confirmations of update requests for outbound deliveries from SAP ERP to SAP TM

## ERP Deliveries and Delivery-Based Transportation Requirements

Message	Description
OutboundDeliveryConfirmation_In_V1	Receive confirmations of update requests for outbound deliveries in SAP TM

## SAP TM Document Flow in SAP ERP

Message	Description
BusinessDocumentFlowTMInformationbyBusinessObjectReferenceQueryResponse_Out	Send request for TM business document flow from SAP ERP to SAP TM
BusinessDocumentFlowTMInformationbyBusinessObjectReferenceQueryResponse_In	Receive requests for TM business document flow in SAP TM

## 5.2.1 Defining Control Keys for Document Transfer

### Use

In this procedure, you define the control keys that determine which documents or document chains are to be transferred to SAP TM. You can define as many control keys as required with different combinations of documents. For sales orders, you can also specify whether sales order scheduling is to take place in SAP TM.

### Procedure

1. In the SAP ERP system, in Customizing for *Integration with Other SAP Components*, choose **► Transportation Management ► Order Integration ►**.
2. Choose *Define Control Keys for Document Transfer*.
3. Make sure that one or more control keys are maintained that cover one or more combinations of documents to be transferred to SAP TM. You use the control keys in the configuration steps to activate document transfer to SAP TM.

If you require additional control keys, you can create them in this Customizing activity.

### More Information

For more information, see the system documentation for this Customizing activity.

---

## 5.2.2 Activating Transfer of Sales Documents

### Prerequisites

You have defined the necessary control keys.

### Context

In this procedure, you define the sales documents that you want to transfer from SAP ERP to SAP TM. You define the control key that is to be used and the number of the SAP TM system to which you want to transfer the sales documents. This information is dependent on the sales area, sales document type, and shipping condition. You can also specify a technical transportation management number that distinguishes the receiving SAP TM system in SAP NetWeaver PI (condition).

The control key determines which documents in the document chain are to be transferred to SAP TM.

### Procedure

1. In Customizing for SAP ERP, choose ► [Integration with Other SAP Components](#) ► [Transportation Management](#) ► [Order Integration](#) ► [Activate Transfer of Sales Documents](#) ✎.
2. Make sure that an entry exists for the sales organization, distribution channel, division, sales document type, and shipping condition you need, and that the control key matches. If necessary, specify the technical number of the SAP TM system as well.

### Next Steps

For more information, see the documentation for the Customizing activity.

## 5.2.3 Activating Transfer of Purchase Orders

### Prerequisites

You have defined the necessary control keys.

---

## Context

In this procedure, you define the purchase orders that you want to transfer from SAP ERP to SAP TM. You define the control key that is to be used and the number of the SAP TM system to which you want to transfer the purchase orders. This information is dependent on the purchasing organization, purchasing group, and purchasing order type. You can also specify a technical transportation management number that distinguishes the receiving SAP TM system in SAP NetWeaver PI (condition).

The control key determines which documents in the document chain are to be transferred to SAP TM.

## Procedure

1. In Customizing for SAP ERP, choose ► *Integration with Other SAP Components* ► *Transportation Management* ► *Order Integration* ► *Activate Transfer of Purchase Orders* ✎.
2. Make sure that an entry exists for the purchasing organization, purchasing group, and purchase order type you need, and that the control key matches. If necessary, specify the technical number of the SAP TM system as well.

## Next Steps

For more information, see the documentation for the Customizing activity.

## 5.2.4 Activating Transfer of Delivery Documents

### Prerequisites

You have defined the necessary control keys.

### Context

In this procedure, you define the delivery documents that you want to transfer from SAP ERP to SAP TM. You define the control key that is to be used and the number of the SAP TM system to which you want to transfer the delivery documents. This information is dependent on the shipping point, the delivery type, and the shipping condition. You can also specify a technical transportation management number that distinguishes the receiving SAP TM system in SAP NetWeaver PI (condition).

The control key determines which delivery documents are to be transferred to SAP TM.

### **i** Note

You can also activate the transfer of delivery documents using the control key that is assigned to the preceding document in the document chain (for example, a sales order or a purchase order). In this case, the delivery inherits the control key from the preceding document and the system ignores any settings that you configure in this procedure.

## **Procedure**

1. In Customizing for SAP ERP, choose ► *Integration with Other SAP Components* ► *Transportation Management* ► *Order Integration* ► *Activate Transfer of Delivery Documents*. ►
2. Make sure that an entry exists for the shipping point, delivery type, and shipping condition you need, and that the control key matches. If necessary, specify the technical number of the SAP TM system as well.

## **Next Steps**

For more information, see the documentation for the Customizing activity.

## **5.3 Maintain Output Determination for Sales Documents**

The following settings must be configured to send sales documents from SAP ERP to SAP TM. Output determination is used to create XML messages, which are then sent to SAP TM.

### **5.3.1 Maintaining Condition Tables (SD)**

#### **Use**

In this step, you define the combination of fields for which you want to create output condition records in a condition table. This enables you to control output determination depending on your specific field combination. Alternatively, you can check whether the data you need is already available.

## Procedure

Check whether the required fields are assigned to the condition table, as follows:

1. In the SAP ERP system, in Customizing for *Sales and Distribution*, choose ► *Basic Functions* ► *Output Control* ► *Output Determination* ► *Output Determination Using the Condition Technique* ► *Maintain output Determination for Sales Documents* ► *Maintain Condition Tables*. ►
2. Choose *Maintain Output Condition Table for Sales Documents*.
3. Ensure that the *Sales Document Type* field is assigned to condition table *007 Order Type*.

If this is not the case, create a new condition table for output control, as follows:

1. In Customizing for *Sales and Distribution*, choose ► *Basic Functions* ► *Output Control* ► *Output Determination* ► *Output Determination Using the Condition Technique* ► *Maintain output Determination for Sales Documents* ► *Maintain Condition Tables*. ►
2. Choose *Maintain Output Condition Table for Sales Documents*.
3. Choose ► *Condition* ► *Create* ►.
4. In the *Table* field, enter a name (3-digit number) for the new condition table that is to be created. Note that you can only choose names between 900 and 999.
5. Choose *Enter*.
6. Enter a description for the new condition table, for example, **Order Type**.
7. Select the required fields for the condition table from the list of allowed fields, for example, *Sales Document Type*.
8. Generate the new condition table.

## Result

You have defined a new condition table for which you can maintain condition records.

## 5.3.2 Maintaining Output Types (SD)

### Procedure

1. In the SAP ERP system, in Customizing for *Sales and Distribution*, choose ► *Basic Functions* ► *Output Control* ► *Output Determination* ► *Output Determination Using the Condition Technique* ► *Maintain output Determination for Sales Documents* ► *Maintain Output Types*. ►
2. Make sure that output types **TRSO** (order to external TMS) and **TRRO** (returns to external TMS) have been entered.

3. Select output type **TRSO** and choose *Details*.
4. Enter the following data on the *General data* tab:

Field	Value
<i>Access Sequence</i>	<b>0002</b>
<i>Access to Conditions</i>	Select this checkbox
<i>Multiple Issuing</i>	Select this checkbox
<i>Partner-Indep. Output</i>	Select this checkbox
<i>Program</i>	<b>OPS_SE_SOC_SEND_MESSAGE</b>
<i>FORM Routine</i>	<b>CHECK_REPEAT</b>

5. Enter the following data on the *Default values* tab page:

Field	Value
<i>Dispatch Time</i>	<b>Send Immediately (when saving the application)</b>
<i>Transmission Medium</i>	<b>8 Special function</b>

6. Repeat steps 3 to 6 for output type **TRRO**.

### 5.3.3 Maintaining Access Sequences (SD)

#### Use

In this step, you can check whether the required access sequences are available, or you can create access sequences that you can use to determine the following:

- Which condition tables are used to access condition records
- The sequence of these condition tables
- With which field contents they are read

#### Prerequisites

You have already defined the necessary condition tables.

## Procedure

Check the available access sequences as follows:

1. In the SAP ERP system, in Customizing for *Sales and Distribution*, choose **Basic Functions** > *Output Control* > *Output Determination* > *Output Determination Using the Condition Technique* > *Maintain Output Determination for Sales Documents* > *Maintain Access Sequences*.
2. In the overview area, select access sequence *0002 Order Type*.
3. Choose *Accesses*.  
Condition table 7 is displayed in the *Overview Accesses* table.

If the right access sequence is not available, create it as follows:

1. In the SAP ERP system, in Customizing for *Sales and Distribution*, choose **Basic Functions** > *Output Control* > *Output Determination* > *Output Determination Using the Condition Technique* > *Maintain Output Determination for Sales Documents* > *Maintain Access Sequences*.
2. In change mode, choose *New Entries*.
3. In *Access Sequences*, create an access sequence by defining an alphanumeric key (with a maximum of four characters) and enter a description.
4. In *Source*, select one of the following sources: *Other system* (for example, ERP) or *Local*.
5. Select a row in the *Access Sequences* table, and in the left frame, choose *Fields*.  
You can define the accesses by defining the sequence of accesses in the access sequence and choosing the corresponding condition tables.
6. Choose *Save*.

### **i** Note

In the *Determine Work Area: Entry* dialog box, you can enter a direct value so that the system overwrites the value transferred from the calling application. You can also set an initial indicator.

## 5.3.4 Maintaining Output Determination Procedure (SD)

1. In the SAP ERP system, in Customizing for *Sales and Distribution*, choose **Basic Functions** > *Output Control* > *Output Determination* > *Output Determination Using the Condition Technique* > *Maintain output Determination for Sales Documents* > *Maintain Output Determination Procedure*.
2. Make sure that procedure **v10000** has been entered.
3. In the dialog structure, select *Control Data*.
4. Make sure that the following entries have been made for procedure **v10000**:

Reference Step Overview

Step	Condition Counter	Condition Type	Requirement
<Any available step number>	1	TRSO	27



Step	Condition Counter	Condition Type	Requirement
<Any available step number>	1	TRR0	28

## 5.3.5 Assigning Output Determination Procedures (SD)

### Use

In this step, you assign output determination procedures to document types. You can also specify an output type that is to be displayed when the relevant document is displayed or changed.

### Prerequisites

- Output determination procedures are defined.
- Output types are defined.

### Procedure

1. In the SAP ERP system, in Customizing for *Sales and Distribution*, choose [Basic Functions](#) > [Output Control](#) > [Output Determination](#) > [Output Determination Using the Condition Technique](#) > [Maintain output Determination for Sales Documents](#) > [Assign Output Determination Procedure.](#)
2. Choose *Allocate Sales Document header*.
3. In the overview, assign the output determination procedures as follows:

#### Assignments

Sales Document Type	Output Determination Procedure	Output Type
OR Standard Order	V10000	TRS0
ODOT Standard Order	V10000	TRS0
OTTL Standard Order	V10000	TRS0
ZOR Standard Order	V10000	TRS0
RE Returns	V10000	TRR0

### **i** Note

It is sufficient to assign an output determination procedure (such as `V10000`) to a sales order type (such as `OR`) in this Customizing activity. The output type may differ from that specified here, but must be defined for the corresponding output determination procedure. As long as the relevant output type (`TRSO` or `TRR0`) is maintained for the output determination procedure, it will be taken into account by the system at processing time.

`OR` and `RE` are standard order types that are delivered as part of the standard SAP ERP Customizing. `ODOT` is required for the *Domestic Outbound Transportation* scenario and `OTTL` is required for the *Outsourced Transportation* scenario. `ZOR` is required for integration with SAP Extended Warehouse Management (SAP EWM). If you do not intend to implement these scenarios, you can ignore these entries and also those in the following Customizing settings.

## 5.3.6 Creating Output Condition Records (SD)

### Use

In this step, you link the order type of your sales document with an output type that is configured for the data transfer to SAP TM. You define the message attributes, for example, the processing time or the language. From a technical point of view, you create condition records.

### Procedure

#### Output Type TRSO

1. On the *SAP Easy Access* screen for SAP ERP, choose **Logistics** > **Sales and Distribution** > **Master Data** > **Output** > **Sales Document** > **Create** or call transaction `VV11`.
2. Choose **Output Type TRSO**.
3. Choose **Enter**.
4. On the following screen, enter the data as shown in the following table:

SD Type	Name	Medium	Date/Time	Language
OR	Standard Order	8 Special Function	4 Send immediately (when saving the application)	EN
ODOT	DOT Standard Order	8 Special Function	4 Send immediately (when saving the application)	EN

SD Type	Name	Medium	Date/Time	Language
OTTL	OT Standard Order	8 Special Function	4 Send immediately (when saving the application)	EN
ZOR	OT Standard Order	8 Special Function	4 Send immediately (when saving the application)	EN

5. Note the following:
  - Leave the *Funct.* and *Partner* fields blank.
  - OR and is a standard order type that is delivered as part of standard ERP Customizing. ODOT is required for the *Domestic Outbound Transportation* scenario and OTTL is required for the *Outsourced Transportation* scenario. ZOR is required for integration with SAP EWM. If you do not intend to implement these scenarios, you can ignore these entries.
6. Save your entries.

#### Output Type TRRO

1. On the *SAP Easy Access* screen of SAP ERP, choose **Logistics** > **Sales and Distribution** > **Master Data** > **Output** > **Sales Document** > **Create** or call transaction `VV11`.
2. Choose **Output Type TRRO**.
3. Choose **Enter**.
4. On the following screen, enter the data as shown in the following table:

SD Type	Name	Medium	Date/Time	Language
RE	RE Returns	8 Special Function	4 Send immediately (when saving the application)	EN

5. Note the following:
  - Leave the *Funct.* and *Partner* fields blank.
  - RE is a standard order type that is delivered as part of standard ERP Customizing.
6. Save your entries.

## 5.4 Maintaining Workflow Event Type Linkages for Purchase Orders

### Use

In this step, you maintain purchase orders and stock transport orders. In contrast to sales documents and deliveries, which are processed using output control, purchase orders and stock transport orders are processed using workflow technology.

## Procedure

1. On the *SAP Easy Access* screen of your SAP ERP system, choose **Tools > ABAP Workbench > Development > SAP Business Workflow > Definition Tools > Events > Event Linkages > Type Linkages**.
2. Create the following entries:

Field	Value
Object Category	<b>ABAP Class</b>
Object Type	<b>CL_SE_PUR_PO_WF_OUT</b>
Event	<b>CHANGED</b>
Receiver Type	<b>WS53800008</b>
Receiver Call	<b>Function Module</b>
Receiver Function Module	<b>SWW_WI_CREATE_VIA_EVENT_IBF</b>
Linkage Activated	Selected

Field	Value
Object Category	<b>ABAP Class</b>
Object Type	<b>CL_SE_PUR_PO_WF_OUT</b>
Event	<b>Created</b>
Receiver Type	<b>WS53800008</b>
Receiver Call	<b>Function Module</b>
Receiver Function Module	<b>SWW_WI_CREATE_VIA_EVENT_IBF</b>
Linkage Activated	Selected

3. Save your entries.
4. On the *SAP Easy Access* screen of your SAP ERP system, choose **Tools > ABAP Workbench > Development > SAP Business Workflow > Utilities > Automatic Workflow Customizing**.
5. Choose *Perform Automatic Workflow Customizing* (F9).

### **i** Note

If you experience problems with workflow Customizing, see SAP Note [1530240](#).

## 5.5 Maintain Output Determination for Outbound Deliveries

You must configure the following settings to send outbound deliveries from SAP ERP to SAP TM. Output determination is used to create XML messages, which are sent to SAP TM.

### 5.5.1 Maintaining Condition Tables (Outbound Delivery)

#### Use

In this step, you define the combination of fields for which you want to create output condition records in a condition table. This enables you to control output determination depending on your specific field combination. Alternatively, you can check whether the data that you need is already available.

#### Procedure

1. In the SAP ERP system, in Customizing for *Logistics Execution*, choose **Shipping** > *Basic Shipping Functions* > *Output Control* > *Output Determination* > *Maintain Output Determination for Outbound Deliveries* > *Maintain Condition Tables*. **▶**
2. Choose *Maintain Output Condition Table for Deliveries*.
3. Make sure that the field *Delivery Type* is assigned to condition table 009.

If that is not the case, create a new condition table for output control (shipments):

1. In the SAP ERP system, in Customizing for *Logistics Execution*, choose **Shipping** > *Basic Shipping Functions* > *Output Control* > *Output Determination* > *Maintain Output Determination for Outbound Deliveries* > *Maintain Condition Tables*. **▶**
2. Choose *Maintain Output Condition Table for Deliveries*.
3. Choose **Condition** > *Create*. **▶**
4. In the *Table* field, enter a name (3-digit number) for the new condition table that is to be created. Note that you can only choose names between 900 and 999.
5. Choose *Enter*.
6. Enter a description for the new condition table, for example, **Delivery Type**.
7. Select the required fields for the condition table from the list of allowed fields, for example, *Delivery Type*.
8. Generate the new condition table.

## 5.5.2 Maintaining Access Sequences (Outbound Delivery)

### Use

In this procedure, you check whether the required access sequences are available or you create access sequences that you can use to determine the following:

- The condition tables that are used to access condition records
- The sequence of these condition tables
- The field contents with which they are read

### Prerequisites

You have defined the necessary condition tables.

### Procedure

Check the available access sequences as follows:

1. In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose ► *Shipping* ► *Basic Shipping Functions* ► *Output Control* ► *Output Determination* ► *Maintain Output Determination for Outbound Deliveries* ► *Maintain Access Sequences* ►.
2. In the overview, choose access sequence *0001 Delivery Type*.
3. Choose *Accesses*.
4. The *Accesses Overview* area contains condition table *9*.

If the correct access sequence is not available, create it as follows:

1. In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose ► *Shipping* ► *Basic Shipping Functions* ► *Output Control* ► *Output Determination* ► *Maintain Output Determination for Outbound Deliveries* ► *Maintain Access Sequences* ►.
2. Switch to change mode.
3. Choose *New Entries*.
4. In *Access Seq*, create an access sequence by defining an alphanumeric key (with a maximum of four characters) and enter a description.
5. In *Description*, enter a description.
6. In *Source*, select one of the following sources: *Other system* (for example, ERP) or *Local*.
7. Select a row in the *Access Sequences* table, and in the left frame, choose *Fields*.  
You can define the accesses by defining the sequence of accesses in the access sequence and choosing the corresponding condition tables.
8. Choose *Save*.

### **i** Note

In the *Determine Work Area: Entry* dialog box, you can enter a value directly so that the system overwrites the value transferred from the calling application. You can also set an initial indicator.

## 5.5.3 Maintaining Output Types (Outbound Delivery)

### Procedure

1. In the SAP ERP system, in Customizing for *Logistics Execution*, choose **Shipping** > *Basic Shipping Functions* > *Output Control* > *Output Determination* > *Maintain Output Determination for Outbound Deliveries* > *Maintain Output Types*.
2. Make sure that output type **TRD0** (delivery to external TMS) has been entered.

If not, enter **TRD0** with the following data:

Output Types

<i>Output Type</i>	<b>TRD0</b>
<i>Description</i>	<b>Cr./Chg TM Int. ODLV</b>
<i>General Data</i> tab	
<i>Access sequence</i>	<b>0001</b>
<i>Access to conditions</i>	Select this checkbox
<i>CannotBeChanged</i>	Do not select this checkbox
<i>Multiple issuing</i>	Select this checkbox
<i>Partner-indep.output</i>	Select this checkbox
<i>do not write processing log</i>	Do not select this checkbox
<i>Program</i>	<b>OPS_SE_SHP_SEND_MESSAGE</b>
<i>FORM routine</i>	<b>CHECK_REPEAT</b>
<i>Default values</i> tab	
<i>Dispatch Time</i>	<b>4 Send immediately (when saving the application)</b>

<i>Transmission Medium</i>	<b>8 Special function</b>
<i>Partner Function</i>	Leave this empty
<i>Communication Strategy</i>	Leave this empty

- In the dialogue structure, select *Processing Routines*.
- Make sure that the following entries have been made for the output types:

Processing Routines

Field	Entry
<i>Transmission Medium</i>	<b>8</b>
<i>Program</i>	<b>OPS_SE_SHP_SEND_MESSAGE</b>
<i>Form Routine</i>	<b>PROCESS</b>

## 5.5.4 Maintaining Output Determination Procedure (Outbound Delivery)

- In the SAP ERP system in Customizing for *Logistics Execution*, choose **Shipping** > *Basic Shipping Functions* > *Output Control* > *Output Determination* > *Maintain Output Determination for Outbound Deliveries* > *Maintain Output Determination Procedure*.
- Make sure that procedure **v10000** has been entered.
- In the dialogue structure, select *Control Data*.
- Make sure that the following entries have been made for procedure **v10000**:

Reference Step Overview

Step	Condition Counter	Condition Type	Requirement
<b>&lt;Any available step number&gt;</b>	<b>4</b>	<b>TRD0</b>	<b>440</b>

## 5.5.5 Assigning Output Determination Procedures (Outbound Delivery)

### Use

In this step, you assign output determination procedures to document types. You can also specify an output type that is to be displayed when the relevant document is displayed or changed.



## Prerequisites

- Output determination procedures are defined.
- Output types are defined.

## Procedure

1. In the SAP ERP system in Customizing for *Logistics Execution*, choose ► *Shipping* ► *Basic Shipping Functions* ► *Output Control* ► *Output Determination* ► *Maintain Output Determination for Outbound Deliveries* ► *Assign Output Determination Procedures*. ►
2. Choose *Assign deliveries (header)*.
3. In the overview, assign the output determination procedure as follows:

Assignments

Delivery Type	Output Determination Procedure	Output Type
<b>LF Outbound Delivery</b>	<b>V10000</b>	<b>TRD0</b>

### **i** Note

It is sufficient to assign an output determination procedure (such as V10000) to a delivery type (such as LF) in this Customizing activity. The output type may differ from that specified here, but must be defined for the corresponding output determination procedure. As long as the relevant output type (for example, TRD0) is maintained for the output determination procedure, it will be taken into account by the system at processing time.

LF is a standard delivery type that is delivered as part of SAP ERP Customizing.

## 5.5.6 Creating Output Condition Records (Outbound Delivery)

### Context

In this step, you link the relevant delivery type with an output type that is configured for the data transfer to SAP TM. You define the message attributes, for example, processing time or language. From a technical point of view, you create condition records.

## Procedure

1. In the SAP ERP system on the *SAP Easy Access* screen, choose ► *Logistics* ► *Logistics Execution* ► *Master Data* ► *Output* ► *Shipping* ► *Outbound Deliveries* ► *Create* ► or call transaction `VV21`.
2. Choose *Output Type* **TRD0**.
3. Choose *Enter*.
4. On the following screen, enter the data as shown in the table below.

Delivery Type	Name	Medium	Date/Time	Language
LF	Outbound Delivery	8 Special Function	4 Send immediately (when saving the application)	EN

5. Note the following:
  - Leave the *Funct.* and *Partner* fields blank.
  - `LF` is a standard delivery type that is delivered as part of SAP ERP Customizing.
6. Save your entries.

## 5.5.7 Assigning Processing Class

### Prerequisites

You have defined output types.

### Context

In this step you assign the output type to a processing class. This enables the system to send a message as a repeat message when you delete a delivery.

## Procedure

1. In the SAP ERP system in Customizing for *Logistics Execution*, choose ► *Shipping* ► *Basic Shipping Functions* ► *Output Control* ► *Assign Processing Class* ►.
2. Check that the following entry exists, or create it, if necessary:

Field	Value
Application	V2
Output Type	TRD0
Class	CL_SHP_XI_MESSAGE_TRD0

## 5.6 Maintain Output Determination for Inbound Deliveries

You must configure the following settings to send inbound deliveries from SAP ERP to SAP TM. Output determination is used to create XML messages, which are sent to SAP TM.

### 5.6.1 Maintaining Condition Tables (Inbound Delivery)

#### Use

In this procedure, you define the combination of fields for which you want to create output condition records in a condition table. This enables you to control output determination depending on your specific field combination.

#### Procedure

1. In Customizing for SAP ERP, choose [Logistics Execution](#) > [Shipping](#) > [Basic Shipping Functions](#) > [Output Control](#) > [Output Determination](#) > [Maintain Output Determination for Inbound Deliveries](#) > [Define Condition Table for Inbound Delivery](#) > [Create Condition Table for Inbound Delivery](#).
2. Choose [Condition](#) > [Display](#).
3. In the *Table* field, enter condition table **009**.
4. Make sure that the condition table *009 Delivery Type* exists.
5. Make sure that the field *Delivery Type* is assigned to condition table *009*.

If that is not the case, create a new condition table for output control as follows:

1. In Customizing for SAP ERP, choose [Logistics Execution](#) > [Shipping](#) > [Basic Shipping Functions](#) > [Output Control](#) > [Output Determination](#) > [Maintain Output Determination for Inbound Deliveries](#) > [Define Condition Table for Inbound Delivery](#) > [Create Condition Table for Inbound Delivery](#).
2. Choose [Condition](#) > [Create](#).
3. In the *Table* field, enter a name (3-digit number) for your new condition table. Note that you can only choose names between 900 and 999.

4. Choose *Enter*.
5. Enter a description for the new condition table, for example, *Delivery Type*.
6. Select the required fields for the condition table from the list of allowed fields, for example, *Delivery Type*.
7. Generate the new condition table.

## 5.6.2 Maintaining Output Types (Inbound Delivery)

### Procedure

1. In Customizing for SAP ERP, choose **Logistics Execution** > **Shipping** > **Basic Shipping Functions** > **Output Control** > **Output Determination** > **Maintain Output Determination for Inbound Deliveries** > **Define Output Types for Inbound Delivery**.
2. Make sure that output type TRD0 (Delivery to external TMS) has been created. Otherwise, proceed with the remainder of this procedure.
3. Enter TRD0 with the following data:

Header Area	
<i>Output Type</i>	<b>TRD0</b>
<i>Description</i>	<b>Cr./Chg TM Int. IDLV</b>
General Data tab page	
<i>Access sequence</i>	<b>0001</b>
<i>Access to conditions</i>	Selected
<i>CannotBeChanged</i>	Not selected
<i>Multiple issuing</i>	Selected
<i>Partner-indep.output</i>	Selected
<i>do not write processing log</i>	Not selected
<i>Program</i>	<b>OPS_SE_SHP_SEND_MESSAGE</b>
<i>FORM routine</i>	<b>CHECK_REPEAT</b>
Default values tab page	
<i>Dispatch Time</i>	<i>4 Send immediately (when saving the application)</i>

Header Area	
<i>Transmission Medium</i>	<i>8 Special function</i>
<i>Partner Function</i>	Blank
<i>Communication Strategy</i>	Blank

- In the dialogue structure, select *Processing Routines*.
- Make sure that the following entries have been made for the output types:

Processing Routines	
Field	Entry
<i>Transmission Medium</i>	8
<i>Program</i>	OPS_SE_SHP_SEND_MESSAGE
<i>Form Routine</i>	PROCESS

## 5.6.3 Maintaining Access Sequences (Inbound Delivery)

### Use

In this procedure, you check whether the required access sequences are available or you create access sequences that you can use to determine the following:

- Which condition tables are used to access condition records
- The sequence of these condition tables
- With which field contents they are read

### Prerequisites

You have defined the necessary condition tables.

## Procedure

Check the available access sequences as follows:

1. In Customizing for SAP ERP, choose ► [Logistics Execution](#) ► [Shipping](#) ► [Basic Shipping Functions](#) ► [Output Control](#) ► [Output Determination](#) ► [Maintain Output Determination for Inbound Deliveries](#) ► [Define Access Sequence for Inbound Delivery](#) ►.
2. In the overview, select access sequence *0001 Delivery Type*.
3. Double-click *Accesses*.
4. Condition table *9* is displayed in the *Overview Accesses* table and requirement *432* is assigned in the *Requirement* column.

If the correct access sequence is not available, create it as follows:

1. In Customizing for SAP ERP, choose ► [Logistics Execution](#) ► [Shipping](#) ► [Basic Shipping Functions](#) ► [Output Control](#) ► [Output Determination](#) ► [Maintain Output Determination for Inbound Deliveries](#) ► [Define Access Sequence for Inbound Delivery](#) ►.
2. Switch to edit mode and choose *New Entries*.
3. In the *Access Sequences* area, create an access sequence by specifying an alphanumeric key (with a maximum of four characters) and a description.
4. In *Description*, enter a description.
5. In *Source*, select one of the following sources: *Other system* (for example, ERP) or *Local*.
6. Select the row in the *Access Sequences* table and choose *Fields* from the dialog structure.  
You can define accesses by specifying the access sequence and choosing the corresponding condition tables.
7. Save your entries.

### **i** Note

In the *Determine Work Area: Entry* dialog box, you can enter a direct value so that the system overwrites the value transferred from the calling application. You can also set an initial indicator.

## 5.6.4 Maintaining Output Determination Procedure (Inbound Delivery)

### Procedure

1. In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose ► [Shipping](#) ► [Basic Shipping Functions](#) ► [Output Control](#) ► [Output Determination](#) ► [Maintain Output Determination for Inbound Deliveries](#) ► [Maintain Output Determination Procedure](#) ►.
2. Check that procedure *E10001 - Inbound Delivery* exists and select it. If the procedure does not exist, create it.

- In the dialog structure, select *Control Data*.
- Check that the following entries have been made for procedure E10001:

Step	Condition Counter	Condition Type	Requirement
<Any available step number>	<Any available condition counter>	TRD0	441

## 5.6.5 Assigning Output Determination Procedures (Inbound Delivery)

### Use

In this procedure, you assign output determination procedures to document types. You can also specify an output type that is to be displayed when the relevant document is displayed or changed.

### Prerequisites

- You have defined output determination procedures.
- You have defined output types.

### Procedure

- In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose **Shipping** > *Basic Shipping Functions* > *Output Control* > *Output Determination* > *Maintain Output Determination for Outbound Deliveries* > *Assign Output Determination Procedures*.
- In the overview, assign the output determination procedure as follows:

Delivery Type	Output Determination Procedure	Output Type
<b>EL Inbound Delivery</b>	<b>E10001</b>	<b>TRD0</b>

#### **i** Note

It is sufficient to assign an output determination procedure (such as E10000) to a delivery type (such as EL) in this Customizing activity. The output type may differ from that specified here, but must be defined for the corresponding output determination procedure. As long as the relevant output type (for example, TRD0) is maintained for the output determination procedure, it will be taken into account by the system at processing time.

Note that **EL** is a standard delivery type that is delivered as part of SAP ERP Customizing.

## 5.6.6 Creating Output Condition Records (Inbound Delivery)

### Context

In this procedure, you link the relevant delivery type with an output type that is configured for the data transfer to SAP TM. You define the message attributes, for example, the processing time or language. From a technical point of view, you create condition records.

### Procedure

1. On the *SAP Easy Access* screen of SAP ERP, choose **Logistics > Logistics Execution > Master Data > Output > Shipping > Inbound Deliveries > Create** or call transaction **MN24**.
2. Enter output type **TRD0** and press **ENTER**.
3. On the following screen, enter the data as shown in the table below.

Delivery Type	Name	Medium	Date/Time	Language
<b>EL</b>	<b>Inbound Delivery</b>	<b>8 Special Function</b>	<b>4 Send immediately (when saving the application)</b>	<b>EN</b>

4. Note the following:
  - Leave the *Funct.* and *Partner* fields blank.
  - **EL** is a standard delivery type that is delivered as part of SAP ERP Customizing.
5. Save your entries.



## 5.6.7 Assigning Processing Class

### Prerequisites

You have defined output types.

### Context

In this step you assign the output type to a processing class. This enables the system to send a message as a repeat message when you delete a delivery.

### Procedure

1. In the SAP ERP system in Customizing for *Logistics Execution*, choose **Shipping** > *Basic Shipping Functions* > *Output Control* > *Assign Processing Class*.
2. Check that the following entry exists, or create it, if necessary:

Field	Value
<i>Application</i>	<b>E1</b>
<i>Output Type</i>	<b>TRD0</b>
<i>Class</i>	CL_SHP_XI_MESSAGE_TRD0

## 5.7 Configuration Settings for SAP NetWeaver Process Integration

### Use

You have to make settings in the SAP ERP system and the SAP NetWeaver Process Integration (PI) system.

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## Prerequisites

- You have configured your SAP PI system as the integration server for your SAP ERP and SAP TM systems.
- Your systems are correctly set up and registered in the system landscape directory.
- You have established communication channels.
- You have installed the latest SAP TM PI content package.

## Process

1. Make sure that you have defined control keys for document transfer.  
In the SAP ERP system, in Customizing for *Integration with Other SAP Components*, choose ► *Transportation Management* ► *Order Integration* ► *Define Control Keys for Document Transfer* ►.
2. Make sure that you have activated the transfer of purchase orders, sales documents, and delivery documents.  
In the SAP ERP system, in Customizing for *Integration with Other SAP Components*, choose ► *Transportation Management* ► *Order Integration* ► *Activate Transfer of Purchase Orders (Sales Documents, Delivery Documents)* ►.
3. Make the required settings in the SAP NetWeaver Process Integration system.

## More Information

- For more information about the Customizing settings in the SAP ERP system, see [Order and Delivery Integration \[page 54\]](#).
- For more information about the SAP NetWeaver PI settings, see [Configuring SAP NetWeaver PI for Order and Invoice Integration \[page 83\]](#).

# 6 Configuring SAP NetWeaver PI for Order and Invoice Integration

## Use

In the SAP NetWeaver Process Integration (SAP NetWeaver PI) system, you have to set up a business system, a communication channel, and a configuration scenario for the required integration scenarios. You can create configuration scenarios for the following integration scenarios:

- Order integration: `TM_ERPOrderIntegration`
- Sales order scheduling: `TM_ERPSalesOrderScheduling`
- Invoice integration: `TM_ERPInvoiceIntegration`

### **i** Note

The following steps for configuring scenarios are described for SAP NetWeaver PI Releases 7.0, 7.10, 7.11, 7.31, and 7.4.

## Procedure

### Procedure for Release 7.0

1. Start the *Integration Directory* in the SAP NetWeaver PI system by choosing **Start Integration Builder: Integration Builder Configuration > Integration Directory** (transaction `SXMB_IFR`).  
Note that the Integration Builder opens in a separate Web Dynpro session.
2. Create a new integration scenario as follows:
  1. Choose the *Scenarios* tab page and then choose *Create Object*.
  2. In the *Configuration Objects* section, choose *Configuration Scenario*.
  3. Choose an integration scenario from the integration repository (for example, `TM_ERPOrderIntegration`) by using the input help (`F4`). If more than one option is available for the same scenario, select the scenario with the latest software version.
  4. Enter a name for the configuration scenario in the format `TM_ERPOrderIntegration_<ERP SID>_<ERP Client>_<TM SID>_<TM Client>` (for example, `TM_ERPOrderIntegration_ERP_500_TM1_750`).
  5. Choose *Create*.
3. Define configuration scenario objects as follows:
  1. In edit mode, choose *Integration Scenario Configurator* to start the configurator.
  2. Choose *Select Component View*.
  3. Select the component view with the correct release level or enhancement package level of your SAP ERP system, together with the correct release level or enhancement package level of the SAP TM system you plan to integrate.

4. Choose *Apply* to save your selection.
  5. Choose *Assign Services*.
  6. Choose *Insert Line* and select your SAP ERP system (for example, ERP\_500).
  7. Choose the right arrow in the top-right of the screen to navigate to the next role. The system changes the role from SAP ERP to SAP TM.
  8. Choose *Insert Line* and select your SAP TM system (for example, TM1\_750).
  9. Choose *Assign* to save your selection
  10. Choose *Configure Connections*.
  11. In the *Communication Channel* field, select channel *GeneratedReceiverChannel\_XI* and choose *OK*.
  12. Choose the right arrow in the top-right of screen to navigate to the next connection. The "From Action – To Action" combination changes. Choose *Insert Line* and select the communication channel. Repeat this step for all "From Action – To Action" combinations (until the communication channel is specified for each service assignment).
  13. Choose *Apply* to save your settings.
  14. Choose *Generate*.
  15. In the *General* section, select *Generation*.
  16. In the *Scope of Generation* section, activate each *Received Determination*, *Interface Determination*, and *Sender/Receiver Agreement*.
  17. Choose *Start* to trigger the generation process.
  18. Check that the line *Error when creating or changing configuration objects* in the log does not contain any entries.
  19. Close the log screen without saving.
  20. In the *Integration Scenario Configurator* menu, choose **Settings > Apply Changes and Save Configuration Settings**.
  21. Close the Scenario Configurator by choosing **Settings > Close**.
  22. *Apply* changes to save.
4. Activate your integration scenario as follows:
1. Choose the *Scenarios* tab page.
  2. Right-click the integration scenario your created above (for example, TM\_ERPOrderIntegration\_ERP\_500\_TM1\_750).
  3. Choose *Activate* from the menu.
  4. Close the window.

Also create an integration scenario for TM\_ERPSalesOrderScheduling and TM\_ERPInvoiceIntegration.

#### Procedure for Release 7.10

1. Start the *Integration Directory* in the SAP NetWeaver PI system by choosing **Start Integration Builder: Configuration > Integration Directory** (transaction SXMB\_IFR).
2. Assign business systems as follows:
  1. In the object list, choose **Service Without Party > Business System**.
  2. In the context menu for *Assign Business System*, choose the relevant systems for your system landscape. You can create the communication channels automatically while assigning a business system. For the scenarios described in this section, you have to create the channel for the **XI adapter**.
3. Create a configuration scenario by transferring an integration scenario from the *Integration Repository*.

Proceed as follows:

1. In the *Integration Builder: Configuration*, choose ► *Tools* ► *Transfer Integration Scenario from the Integration Repository* .
2. Select one of the configuration scenarios delivered by SAP from the list (TM\_ERPOrderIntegration, TM\_ERPSalesOrderScheduling, or TM\_ERPInvoiceIntegration) and follow the steps in the application.
3. Assign the service (business system) to all application components.
4. Carry out the *Configure Connections* step.  
Assign the generated communication channel for the XI adapter for each step.
5. Carry out the *Generate* step by choosing the *START* pushbutton.  
In this step, you create all configuration objects that you require for your integration scenario. You can also perform a simulation for testing purposes. When you choose the *START* pushbutton, the system creates all required configuration objects.  
The system displays the result of the generation process in a log. You do not have to save the log.  
Assign all objects to your created configuration scenario.
6. Activate all changes.  
For example, in the context menu for the integration scenario, choose *Activate*. The system displays a screen on which you can select and activate all changes.

#### Procedure for Release 7.11, 7.31, and 7.4

1. Start the *Integration Directory* in the SAP NetWeaver PI system by choosing ► *Start Integration Builder: Configuration* ► *Integration Directory* (transaction SXMB\_IFR).
2. Assign business systems as follows:
  1. In the object list, choose ► *Communication Component Without Party* ► *Business System* .
  2. In the context menu for *Assign Business System*, choose the relevant systems for your system landscape.
3. Create a configuration scenario by transferring an integration scenario from the *Integration Repository*.  
Proceed as follows:
  1. Start the Integration Directory in the SAP NetWeaver PI system by choosing *Start Integration Builder: Configuration Integration Directory* (transaction SXMB\_IFR).
  2. In the object list, choose *Configuration Scenario*.
  3. In the context menu, choose *New*.
  4. Enter a name for the configuration scenario, in which you specify the SID and Client for both the ERP and the TM systems that you are connecting, for example, TM90\_ERPOrderIntegration\_Q7Q\_501\_C2T\_710
  5. Choose Process Integration Scenario as the type of ES Repository Model.
  6. Select one of the configuration scenarios delivered by SAP from the list (TM\_ERPOrderIntegration, TM\_ERPSalesOrderScheduling, or TM\_ERPInvoiceIntegration) as ES Repository Model Reference and click *Create*.
  7. Assign the communication component for each system from the list by clicking the left pushbutton above the swimlane.  
In the *Communication Component* selection, choose *All Business System Components*.
  8. Choose the *Configure Connection* pushbutton.
  9. Assign the communication channel for the receiver system for each step on the *Connections from Component Assignment* tab and then save your entries.
  10. Repeat step 6 on the *Configuration Scenario Object* tab.
  11. Create configuration objects by choosing the *START* pushbutton.

In this step, you create all configuration objects that you require for your integration scenario. You can also perform a simulation for testing purposes. When you choose the **START** pushbutton, the system creates all required configuration objects.

The system displays the result of the generation process in a log. You do not have to save the log.

Assign all objects to your created configuration scenario.

12. Activate all changes.

For example, in the context menu for the integration scenario, choose **Activate**. The system displays a screen on which you can select and activate all changes.

### Caution

Clear your cache. Since all configuration data is stored in the main memory, you have to delete the main memory cache, otherwise SAP NetWeaver PI will not use the settings.

### Note

If you use multiple SAP TM systems together with one SAP ERP system, you can evaluate the SAP TM destination in the SAP PI system by using the technical transportation management number as a condition.

## More Information

- For more information about communication channels, see SAP Library for SAP NetWeaver 7.0 Including Enhancement Package 2 at <http://help.sap.com/netweaver>. In SAP Library, choose ► **SAP NetWeaver** ► **SAP NetWeaver by Key Capability** ► **Process Integration by Key Capability** ► **SAP NetWeaver Exchange Infrastructure** ► **Design and Configuration Time** ► **Configuration** ► **Configuring Integration Scenarios** ► **Configuring Connections** ► **Assigning Communication Channels** ▶.
- For more information about configuring integration scenarios, see SAP Library for SAP NetWeaver 7.0 Including Enhancement Package 2 at <http://help.sap.com/netweaver>. In SAP Library, choose ► **SAP NetWeaver** ► **SAP NetWeaver by Key Capability** ► **Process Integration by Key Capability** ► **SAP NetWeaver Exchange Infrastructure** ► **Design and Configuration Time** ► **Configuration** ► **Configuring Integration Scenarios** ▶.

# 7 Configuration Settings for Shipment Integration

You use this process to configure the settings in SAP ERP that enable you to integrate ERP shipment processing with SAP Transportation Management (SAP TM). You can integrate ERP shipment processing as follows:

- Outbound integration enables you to carry out transportation execution in SAP ERP for freight orders or freight bookings created in SAP TM. SAP ERP creates shipments based on freight orders or freight bookings received from SAP TM.
- Inbound integration enables you to carry out tendering in SAP TM for shipments created in SAP ERP. SAP TM creates freight orders based on shipments received from SAP ERP.

## Caution

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 to ensure that the SAP TM system cannot create duplicate transportation requirements.

The shipment integration can be configured using two different alternatives:

- IDoc Mapping in SAP PI  
An IDoc is sent from SAP ERP to SAP PI. In SAP PI, the IDoc is mapped to a service and sent to SAP TM. If a service is sent to SAP PI from SAP TM, it is mapped to an IDoc that is subsequently transferred to SAP ERP. In both cases, mapping is carried out in SAP PI.
- SOA2IDOC / IDOC2SOA Mapping  
An IDoc is created in SAP ERP. The system uses a special port to map the IDoc to an SAP TM service on the ERP side. The service is then sent to SAP TM via SAP PI without using SAP PI mapping. When a service is sent from SAP TM to SAP ERP via SAP PI, no data is mapped in SAP PI. In SAP ERP, the data is mapped to an IDoc and processed. In both cases, mapping is carried out in SAP ERP.

## 7.1 Outbound Integration of ERP Shipments

You use this process to configure the settings in SAP ERP for outbound integration of ERP shipment processing. Note that although this guide explains the basic integration settings in SAP ERP, the term “outbound”, in the sense of outbound integration of ERP shipments, is to be understood always from the perspective of SAP TM.

Outbound integration of shipment processing enables you to do the following:

- Transfer freight orders from SAP TM to SAP ERP and create shipments in SAP ERP based on the freight orders
- Update a freight-order-based shipment in SAP ERP if the relevant freight order is changed in SAP TM and the changes are transferred to SAP ERP

- Delete a freight-order-based shipment in SAP ERP if the relevant freight order is deleted in SAP TM
- Send a confirmation from SAP ERP to SAP TM when a shipment is created in SAP ERP based on a freight order in SAP TM
- Update the execution status of a freight order in SAP TM based on the overall status of the corresponding shipment in SAP ERP using a status notification
- Update a freight order in SAP TM based on a notification about changes to deliveries assigned to a shipment in SAP ERP
- Update a freight order in SAP TM based on a notification about changed item and handling unit assignments to container handling units of a shipment in SAP ERP

The following data is used in this section of the guide:

Object	Example Data
Shipment type	ZTMO
Transportation planning point	1000
Output determination procedure	ZSHIP0

## 7.1.1 Basic Shipment Settings

### 7.1.1.1 Defining External Number Ranges

#### Use

For the outbound integration of shipments, you have to use an external number range for the ERP shipment and align the number range with the number range of the freight order in SAP TM.

#### Procedure

1. In the SAP ERP system, in Customizing for *Logistics Execution*, choose ► *Transportation* ► *Shipments* ► *Define Number Ranges for Shipments* ►.
2. Define a new number range or ensure that the required number range exists.  
The number range must be external and it must have the same interval as the corresponding number range in SAP TM. You can choose any available number and number range to define the external number range.



Example: External Number Range for Shipments

No.	From number	To number	External
02	6100000000	6100000000	Select this checkbox

### **i** Note

Choose any free number and number range to define the external number range. Ensure that you align the number range that you are defining with the internal number range of the corresponding freight orders in SAP TM.

### **i** Note

If you also want to integrate SAP Extended Warehouse Management (SAP EWM), you must set up an external number range with the same interval for transportation units (TUs) in SAP EWM. This ensures that in the context of outbound shipment integration, a freight order in SAP TM has the same number as the corresponding shipment in SAP ERP and the transportation unit in SAP EWM. For more information, see the respective scenario configuration guides.

## 7.1.1.2 Defining Shipment Types

### Procedure

1. In the SAP ERP system, in Customizing for Logistics Execution, choose **► Transportation ► Shipments ► Define Shipment Types ►**.
2. Define a new shipment type (for example, shipment type ZTMO) by copying existing shipment type 0001 and adjusting the data as follows:

Field	Value
Shipment type	ZTMO
Description	TM Integration Outb.
Document cat.	8 Shipment Note that this field is filled automatically.
<i>Number Systems</i> screen area	
NR int. assgt.	01

Field	Value
Scr.seq.group	T
No. range ext.	Enter the number range defined in the previous step, for example, 02
<i>Document Content</i> screen area	
ShpmtComplType	Loaded outbound shipment
Shipping type	01 Truck
Service Level	Groupage
ShTypePrelimLeg	Blank
ProcessControl	Individual shipment using one mode of transport
SubseqLegShType	Blank
Leg indicator	Direct leg.
Adopt route	Do not adopt stages
Determine legs	Blank: No legs to be determined
GR-RelevanceInd	Normal
<i>Control</i> screen area	
Application	V7 Note that the system automatically fills this field and the next four fields when you assign an output determination procedure to the shipment type. For more information, see <a href="#">Output Control: Assigning Output Determination Procedures [page 97]</a> .
TextDetermProc.	03 (filled automatically)
PartnDet.Proc	TR (filled automatically)
OutputDet.Proc	ZSHIPO (filled automatically)
Deadlines	WS STANDARD TRA (filled automatically)
Pick check	Shipment completion only for full picking
SplProfBefPlng	Blank
SplProfAfterPlg	Blank
HUs relevant for DI generation	Blank

Field	Value
<i>Proposal</i> screen area	
Weight unit	KG
Volume unit	CD3
Output Type	Blank
Selection var.	Blank
Planning prof.	Blank
Copy Routine	7 Service Agent/Route

The following settings differ from the settings in shipment type 0001 and are crucial for shipment integration:

- *No. range ext.*: This is the number range that you defined in the previous step (see [Defining External Number Ranges \[page 88\]](#)).
- *Adopt route* and *Determine Legs*: These settings prevent the system from carrying out additional calculations related to transportation stages when it creates a shipment. Data about stages should be taken from the IDoc.
- *OutputDet.Proc* and *Output Type*: These fields relate to the condition technique for output control. The system fills them automatically when you assign an output determination procedure to the shipment type. For more information, see [Assigning Output Determination Procedures \[page 97\]](#).

### 7.1.1.3 Maintaining Transportation Planning Points

1. In the SAP ERP system, in Customizing for *Enterprise Structure*, choose **Definition** > *Logistics Execution* > *Maintain Transportation Planning Point*.
2. Create transportation planning point 1000 by copying existing transportation planning point 0001. Enter the following data:

TPPt	Description	CoCd
1000	TM Integration	0001

3. In the SAP ERP system, in Customizing for *Logistics Execution*, choose **Transportation** > *Interfaces* > *External Transportation Planning Systems* > *Maintain Transportation Planning Point for External Systems*. An entry for the transportation planning point defined above should exist.

4. Edit the entry for the transportation planning point. Enter the following data:

TPPt	Description	TPS Part No.	Item type	Output	Ext. no. rge	Chnge Shp
1000	TM Integration	Logical system name of SAP PI system, for example, PI1CLNT001	LS	Leave this field empty	External number range used in the shipment type, for example, 02	00

### **i** Note

SAP TM does not use transportation planning points. Transportation planning point 1000 is, therefore, transferred by default to SAP ERP. If you require other transportation planning points that are stored with the SAP ERP shipment, implement BAdI `BADI_LE_SHIPMENT` to determine and save the correct transportation planning point for the shipment.

## 7.1.2 Output Control Settings

You must configure the following settings to send shipments from SAP ERP to SAP TM in the context of *SAP TM Outbound Shipment Integration*. This involves Customizing activities for maintaining field catalogs, condition tables, access sequences, condition types, and schemas. Note that for all of these Customizing activities, the usage is `B` and the application is `v7`.

### 7.1.2.1 Creating Condition Tables

#### Prerequisites

You have imported the `STRG` field into the transport-specific field catalog. Since it is not directly contained in the `KOMB` structure, you have to insert it indirectly using the `KOMBZ` structure, which is designed to store this type of custom entry. Note that this is a DDIC activity and not a Customizing activity.

#### Context

In this step, you define the combination of fields for which you want to create output condition records in a condition table. This enables you to control output determination depending on your specific field combination. Alternatively, you can check whether the data you require is already available.

## Procedure

1. In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose ► *Transportation* ► *Basic Transportation Functions* ► *Output Control* ► *Maintain Output Determination for Shipments* ► *Maintain Condition Tables* ►.
2. Choose *Maintain Output Condition Table for Shipments*.
3. Create table between 900 and 999 and enter fields *SHTYP* and *STTRG* in the *Selected fields* screen area under *Technical and Medium*.
4. Choose ► *Condition* ► *Create* ►.
5. In the *Table* field, enter a name (3-digit number) for the new condition table.  
Note that you can only choose names between 900 and 999.
6. Choose *Enter*.
7. Enter a description for the new condition table, for example, **ShipmntTyp/OverallSta - TM Shipment Integration**.
8. Select the required fields for the condition table from the list of allowed fields, for example, *Shipment Type and Ov.transport status*.
9. Generate the new condition table.

## Results

You have created a condition table for which you can maintain condition records.

## 7.1.2.2 Creating Access Sequences

### Prerequisites

You have to perform this step in a Customizing client that has authorization for cross-client table maintenance.

### Procedure

1. In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose ► *Transportation* ► *Basic Transportation Functions* ► *Output Control* ► *Maintain Output Determination for Shipments* ► *Maintain Access Sequence* ►.
2. Create an access sequence, for example, *z001*.

3. Select *Accesses* in the dialog structure and enter the following data:

No.	Table	Description	Requirement	Exclusive
<Next available number>	Table you created in <a href="#">Creating Condition Tables [page 92]</a>	ShpmntTyp/Overall-Sta (the description is filled automatically)	0	Not selected

4. Select your new entry and choose *Fields* in the dialog structure.

5. In the *Field Overview* table, enter 0 in the *Spec. Val. Source* field for the entry with condition `STRG` (*Ov.transport status*).

### 7.1.2.3 Creating Output Types for Shipments

#### Context

In the Customizing activity *Maintain Output Types*, you can define different condition types for the different situations in which SHPMNT IDocs are to be sent. Output types control how the SHPMNT IDoc is used to send a confirmation to SAP TM:

- Output type `ZTM1` generates an IDoc that sends a status notification to SAP TM.
- Output type `ZTM2` generates an IDoc that sends a confirmation to SAP TM.
- Output type `ZTMA` generates an IDoc that updates a freight order in SAP TM based on changed delivery assignments to a SAP ERP shipment.
- Output type `ZTMP` generates an IDoc that updates a freight order in SAP TM based on changed item or handling unit assignments to a container handling unit of a SAP ERP shipment.

#### Procedure

1. In the SAP ERP system, in Customizing for *Logistics Execution*, choose **► Transportation ► Basic Transportation Functions ► Output Control ► Maintain Output Determination for Shipments ► Maintain Output Types**.
2. Create output type `ZTM1` for shipments. Enter the following data:

Output Types

<i>Output Type</i>	<b>ZTM1</b>
<i>Description</i>	<b>TM Outp Stat Notify</b>

<i>General Data</i> tab page	
<i>Access sequence</i>	<b>Z001</b>
<i>Access to conditions</i>	Select this checkbox
<i>CannotBeChanged</i>	Do not select this checkbox
<i>Multiple issuing</i>	Select this checkbox
<i>Partner-indep.output</i>	Do not select this checkbox
<i>do not write processing log</i>	Do not select this checkbox
<i>Default values</i> tab page	
<i>Dispatch Time</i>	<b>4 Send immediately (when saving the application)</b>
<i>Transmission Medium</i>	<b>6 EDI</b>
<i>Partner Function</i>	<b>LS</b>
<i>Communication Strategy</i>	Leave this empty
<i>Time</i> tab page	
Timing 2 (job and time entry not allowed)	Select this checkbox.  (Do not select any of the other checkboxes.)

3. In the dialog structure, select *Processing Routines* and enter the following data:

Processing Routines

Field	Entry
<i>Transmission Medium</i>	<b>EDI</b>
<i>Program</i>	<b>RSNASTED</b>
<i>Form Routine</i>	<b>EDI_PROCESSING</b>

4. In the dialog structure, select *Partner functions* and enter the following data:

Partner Functions

Field	Entry
<i>Medium</i>	<b>EDI</b>
<i>Function</i>	<b>LS</b>

Field	Entry
Name	Logical System

- Repeat the above steps to create output types ZTM2, ZTMA, and ZTMP. Use the values for ZTM1 unless otherwise stated below.

Output Type	Description
ZTM2	TM Outp Confirmation
ZTMA	Assign/Unassign Del.
ZTMP	Package Assignment

## 7.1.2.4 Defining Output Determination Procedures for Shipments

- In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose **► Transportation ► Basic Transportation Functions ► Output Control ► Maintain Output Determination for Shipments ► Maintain Output Determination Procedure**.
- Create an output determination procedure such as ZSHIPO with the name *Transport Output Ship. Outb.*
- Select output determination procedure ZSHIPO and choose *Control Data* in the dialog structure.
- Assign output types to output determination procedure ZSHIPO by creating the following entries:

Reference Step Overview			
Step	Condition Counter	Condition Type	Requirement
10	1	ZTM1	xx
20	1	ZTM2	xx
30	1	ZTMA	58
40	1	ZTMP	xx

### **i** Note

Choose any free step number and condition counter that is available.



## 7.1.2.5 Assigning Output Determination Procedures to Shipment Types

### Context

In this step, you assign an output determination procedure and output type to the relevant shipment types.

### Procedure

1. In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose ► *Transportation* ► *Basic Transportation Functions* ► *Output Control* ► *Maintain Output Determination for Shipments* ► *Assign Output Determination Procedures* ⌵.
2. Create an entry for each relevant shipment type in the integration scenario (for information about determining shipment types, see [Defining Value Mappings \[page 124\]](#)) and assign the output determination procedure and output type to the shipment type.

For example, assign output determination procedure ZSHIPO to shipment type ZTMO, as follows:

Shipment Type	Description	Output Determination Procedure	Description	Output Type	Name
ZTMO	TM Integration Outb.	ZSHIPO	Transport Output Ship. Outb.	Blank	–

## 7.1.2.6 Assigning Output Types to Partner Functions

### Procedure

1. In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose ► *Transportation* ► *Basic Transportation Functions* ► *Output Control* ► *Maintain Output Determination for Shipments* ► *Assign Output Types to Partner Functions* ⌵.
2. Assign medium 6 EDI and partner function LS (logical system) to each output type as follows:

Output Type	Name	Medium	Function
ZTM1	TM Outp Stat Notify	6 – EDI	LS – Logical System
ZTM2	TM Outp Confirmation	6 – EDI	LS – Logical System
ZTMA	Assign/Unassign Del	6 – EDI	LS – Logical System
ZTMP	Package Assignment	6 – EDI	LS – Logical System

## 7.1.2.7 Checking Output Control Settings

### Context

You can check the output control settings using test report `RSNASTCK`.

### Procedure

1. Start report `RSNASTCK`.
2. Enter application **v7** and choose *Enter*
3. In the *Select procedure to be checked* dialog box, choose *only active ones*.
4. Enter the shipment type and choose *Enter*.

### Results

The system displays a log that shows whether the output control settings are consistent.

## 7.1.2.8 Creating Condition Records for Shipments

### Procedure

1. On the *SAP Easy Access* screen of your SAP ERP system, choose **Logistics > Logistics Execution > Master Data > Output > Shipment > Create** or call transaction `VV71`.
2. Enter output type **ZTM1 (TM Outp Stat Notify)** as the context for the condition record.
3. Create condition records for the condition table you created in [Creating Condition Tables \[page 92\]](#) with the key field pair `SHTYP (Shipment Type)` and `STTRG (Ov.transport status)`.
4. Create one entry for each shipment type and add value **0** for `STTRG`. For each condition record, enter the required data as follows:

Funct	Partner	Medium	Date	Language
LS	PI1CLNT001	6 EDI	4	EN

#### **i** Note

The *Partner* column contains the name of the SAP Netweaver PI System in the format `<PI SID>CLNT<PI CLNT>` (in the example, `PI1CLNT001`).

5. Repeat the above steps for the following output types:
  - ZTM2 (TM Outp Confirmation)
  - ZTMA (Assign/Unassign Del)
  - ZTMP (Package Assignment)

## 7.1.3 Configuring Inbound and Outbound Processing

This section contains the settings for configuring inbound communication to SAP ERP (inbound IDocs) and outbound communication from SAP ERP (outbound IDocs).

## 7.1.3.1 Defining Process Codes for Inbound IDocs

### Context

Using transaction **WE64**, you define which function modules are used to process IDocs. When you do this, you map message types to process codes, each of which can be represented by a function module. In this step, you configure the settings for message types **SHPMNT** (for creating or changing shipments) and **SHIPPL** (for deleting shipments).

### Procedure

1. In the SAP ERP system, call transaction **WE64**.
2. Under the *Inbound Messages* node, select the relevant message type and check that the following entries have been made:

Message Type	Process Code	Process ID	Type of Process ID
SHPMNT	SHPM	IDOC_INPUT_SHPMNT	Processing by function module
SHIPPL	SHPL	IDOC_INPUT_SHIPPL	Processing by function module

## 7.1.3.2 Defining Partner Profiles for Inbound IDocs

### Context

In this step, you define a partner profile for your SAP ERP system.

### Procedure

1. In the SAP ERP system, on the *SAP Easy Access* screen, choose **Tools > ALE > ALE Administration > Runtime Settings > Partner Profiles** (transaction **WE20**).

- In the navigation tree under *Partner Profiles*, choose partner type **LS** and check that a partner profile exists for the SAP TM system (for example, partner number **TM1CLNT750**). If the partner profile does not yet exist, create and save it using the following data:

Field	Value
<i>Partner No.</i>	<b>&lt;TM_SID&gt;CLNT&lt;TM_CLNT&gt;</b> For example, <b>TM1CLNT750</b>
<i>Partn. Type</i>	<b>LS</b>
<i>Type</i>	<b>US</b> (User)
<i>Agent</i>	Enter a user name
<i>Lang.</i>	<b>EN</b>

The *Inbound parmtrs* screen area shows the message types that can be received with this partner profile. The message control settings determine when a message type is actually received. These settings are described in the following step.

- On the *Post processing: permitted agent* tab page, choose the *Create inbound parameter* pushbutton and enter inbound parameters with the data shown in the following table.

This inbound parameter is used by the IDoc that was triggered by SAP TM to create or update a shipment based on a freight order:

SHPMNT

Field	Value
<i>Partner No.</i>	<b>&lt;TM_SID&gt;CLNT&lt;TM_CLNT&gt;</b> For example, <b>TM1CLNT750</b>
<i>Partn. Type</i>	<b>LS Logical System</b>
<i>Partner Role</i>	<b>LS Logical System</b>
<i>Message Type</i>	<b>SHPMNT</b>
<i>Message Code</i>	Blank
<i>Message Function</i>	Blank
<i>Test</i>	Not selected
<i>Inbound Options</i> tab page	
<i>Process Code</i>	<b>SHPM</b>
<i>Cancel Processing After Syntax Error</i>	Selected

Field	Value
<i>Processing by Function Module</i> screen area	
<i>Trigger Immediately</i>	Selected

This inbound parameter is used by the IDoc that was triggered by SAP TM to delete a shipment based on a freight order:

SHIPPL

Field	Value
<i>Partner No.</i>	<TM_SID>CLNT<TM_CLNT> For example, TM1CLNT750
<i>Partn. Type</i>	<b>LS Logical System</b>
<i>Partner Role</i>	<b>LS Logical System</b>
<i>Message Type</i>	<b>SHIPPL</b>
<i>Message Code</i>	Blank
<i>Message Function</i>	Blank
<i>Test</i>	Not selected
<i>Inbound Options</i> tab page	
<i>Process Code</i>	<b>SHIP</b>
<i>Cancel Processing After Syntax Error</i>	Selected
<i>Processing by Function Module</i> screen area	
<i>Trigger Immediately</i>	Selected

### 7.1.3.3 Defining Process Codes for Outbound IDocs

#### Procedure

1. In the SAP ERP system, call transaction **WE64**.
2. Under the *Outbound Messages* node, check that a SHPMNT entry exists with the following data:

Message Type	Process Code	Process ID	Type of Process ID
SHPMNT	SD11	IDOC_OUTPUT_SHPMNT	Processing by function module

## 7.1.3.4 Defining Partner Profiles for Outbound IDocs

### Use

In this step, you define a partner profile for your target system. In most cases, this is the SAP NetWeaver Process Integration (PI) system.

### Prerequisites

When you define the outbound parameters for the partner profile, you have to specify a receiver port for the SAP NetWeaver PI system. If a receiver port has not been defined in the SAP ERP system, create a receiver port using transaction `WE21`. In particular, you define a port to specify the system to which outbound IDocs are to be sent. The port must be of the type *Transactional RFC*. The following is an example of the settings made for a receiver port:

Field	Value
<i>Port</i>	Z_PI1_PORT
<i>Description</i>	<PI SID>CLNT<PI CLNT> (for example, PI1CLNT001)
<i>IDoc rec types SAP Release 3.0/3.1</i>	Not selected
<i>IDoc record types SAP Release 4.x</i>	Selected
<i>RFC Destination</i>	<PI1CLNT001> (RFC destination name to your PI system)
<i>Processing Options</i> screen area	No checkboxes selected

### Procedure

1. On the *SAP Easy Access* screen of your SAP ERP system, choose **Tools > ALE > ALE Administration > Runtime Settings > Partner Profiles** or call transaction `WE20`.

- In the navigation tree under *Partner Profiles*, choose *Partner Type LS* and check that a partner profile exists for the SAP NetWeaver Process Integration (PI) system (for example, partner number `PI1CLNT001`). If the partner profile does not yet exist, create it with the following data:

Field	Value
<i>Partner No.</i>	<PI SID>CLNT<PI CLNT> (for example, <code>PI1CLNT001</code> )
<i>Partn. Type</i>	<code>LS</code>
<i>Type</i>	<code>US</code> (User)
<i>Agent</i>	<Enter a user name>
<i>Lang.</i>	<code>EN</code>

- The *Outbound parmtrs* screen area shows the message types and message variants that can be sent with this partner profile. The message control settings of each entry determine when a message type is actually sent. The messages and message variants that are to be configured are described in the following steps. Note that several message variants for the message type `SHPMNT` and their uses are described. Configure the outbound parameter `SHPMNT (STA)` listed below by marking the partner profile for the SAP NetWeaver Process Integration (PI) system and choosing the *Create outbound parameter* pushbutton. Enter the data shown in the following table:

SHPMNT (STA)

Field	Value
<i>Partner No.</i>	<PI SID>CLNT<PI CLNT> (for example, <code>PI1CLNT001</code> )
<i>Partn. Type</i>	<code>LS Logical System</code>
<i>Partner Role</i>	<code>LS Logical System</code>
<i>Message Type</i>	<code>SHPMNT</code>
<i>Message code</i>	<code>STA</code>
<i>Message function</i>	Blank
<i>Outbound Options</i> tab page	
<i>Receiver Port</i>	Enter the relevant receiver port, for example, <code>Z_PI1_PORT</code> ( <code>Z_SOA_PORT</code> )
<i>Pack Size</i>	<code>1</code>
<i>Output Mode</i> screen area	
<i>Transfer IDoc Immed.</i>	Selected



Field	Value		
<i>Collect IDocs</i>	Not selected (default)		
<b>IDoc Type screen area</b>			
<i>Basic Type</i>	<b>SHPMNT05</b>		
<i>Extension</i>	Blank		
<i>View</i>	Blank		
<i>Cancel Processing After Syntax Error</i>	Selected		
<i>Seg. release in IDoc type</i>	Not selected		
<i>Segment Appl. Rel.</i>	Not selected		
<i>Message Control</i> tab page			
The data on this tab page defines the context in which the IDoc is sent. The details depend on the outbound parameter variant and described later in this section.			
<i>Application</i>	<i>Message Type</i>	<i>Process Code</i>	<i>Change Message</i>
V7	ZTM1	SD11	Do not select this checkbox
V7	ZTM1	SD11	Select this checkbox

4. Repeat the above step for the outbound parameters listed below. Any values that are not explicitly given are the same as those for outbound parameter SHPMNT (STA).
5. Once you have created all of the outbound parameters, distribute the partner profiles to the target system (in this case, the SAP NetWeaver PI system) as follows:
  1. Call transaction BD64 (Maintain Distribution Model).
  2. Create a new model view *Shipment Integration* if it does not already exist.
  3. Enter source system ERP, target system PI, and message type SHPMNT.

### Outbound Parameter Variants

- SHPMNT (CNF)

This outbound parameter is used for the IDoc that sends a confirmation message back to SAP TM after the shipment has been created based on the freight order.

Field	Value		
<i>Message code</i>	<b>CNF</b>		
<b>Message Control</b> tab page			
The data on this tab page defines the context in which the IDoc is sent. Create the following entries:			
<b>Application</b>	<b>Message Type</b>	<b>Process Code</b>	<b>Change Message</b>

Field		Value	
V7	ZTM2	SD11	Not selected
V7	ZTM2	SD11	Selected

- SHPMNT (ASG)

This outbound parameter is used for the IDoc that sends shipment data to SAP TM after deliveries have been assigned to the ERP shipment or unassigned from the ERP shipment.

Field		Value	
<i>Message code</i>		ASG	
<b>Message Control</b> tab page			
The data on this tab page defines the context in which the IDoc is sent. Create the following entries:			
Application	Message Type	Process Code	Change Message
V7	ZTMA	SD11	Not selected
V7	ZTMA	SD11	Selected

- SHPMNT (PKG)

This outbound parameter is used for the IDoc that sends shipment data to SAP TM after items or handling units have been assigned to or unassigned from handling units (containers).

Field		Value	
<i>Message code</i>		PKG	
<b>Message Control</b> tab page			
The data on this tab page defines the context in which the IDoc is sent. Create the following entries:			
Application	Message Type	Process Code	Change Message
V7	ZTMP	SD11	Not selected
V7	ZTMP	SD11	Selected

## 7.2 Outbound Integration of ERP Shipments: PI Mapping

You use this process to configure the settings in SAP ERP for outbound integration of ERP shipment processing. Outbound integration of shipment processing enables you to do the following:

- Transfer freight orders from SAP Transportation Management (SAP TM) to SAP ERP and create shipments in SAP ERP based on the freight orders
- Update a freight-order-based shipment in SAP ERP if the relevant freight order is changed in SAP TM and the changes are transferred to SAP ERP
- Delete a freight-order-based shipment in SAP ERP if the relevant freight order is deleted in SAP TM

The following example data is used in this section of the guide:

Object	Example Data
Shipment Type	ZTM
Transportation Planning Point	ZTM8
Output Determination Procedure	ZTM
Output Type for Confirmation Message	ZTM2

### 7.2.1 Basic Shipment Settings

#### 7.2.1.1 Defining External Number Ranges

##### Use

For the outbound integration of shipments, you have to use an external number range for the ERP shipment and align the number range with the number range of the freight order in SAP TM.

##### Procedure

1. In the SAP ERP system, in Customizing for *Logistics Execution*, choose ► *Transportation* ► *Shipments* ► *Define Number Ranges for Shipments* ►.
2. Define a new number range or ensure that the required number range exists.  
The number range must be external and it must have the same interval as the corresponding number range in SAP TM. You can choose any available number and number range to define the external number range.

Example: External Number Range for Shipments

No.	From number	To number	External
02	6100000000	6100000000	Select this checkbox

### **i** Note

Choose any free number and number range to define the external number range. Ensure that you align the number range that you are defining with the internal number range of the corresponding freight orders in SAP TM.

### **i** Note

If you also want to integrate SAP Extended Warehouse Management (SAP EWM), you must set up an external number range with the same interval for transportation units (TUs) in SAP EWM. This ensures that in the context of outbound shipment integration, a freight order in SAP TM has the same number as the corresponding shipment in SAP ERP and the transportation unit in SAP EWM. For more information, see the respective scenario configuration guides.

## 7.2.1.2 Defining Shipment Types

### Procedure

1. In the SAP ERP system, in Customizing for Logistics Execution, choose **► Transportation ► Shipments ► Define Shipment Types ►**.
2. Define a new shipment type (for example, shipment type ZTMO) by copying existing shipment type 0001 and adjusting the data as follows:

Field	Value
Shipment type	ZTMO
Description	TM Integration Outb.
Document cat.	8 Shipment Note that this field is filled automatically.
<i>Number Systems</i> screen area	
NR int. assgt.	01

Field	Value
Scr.seq.group	T
No. range ext.	Enter the number range defined in the previous step, for example, 02
<i>Document Content</i> screen area	
ShpmtCompType	Loaded outbound shipment
Shipping type	01 Truck
Service Level	Groupage
ShTypePrelimLeg	Blank
ProcessControl	Individual shipment using one mode of transport
SubseqLegShType	Blank
Leg indicator	Direct leg.
Adopt route	Do not adopt stages
Determine legs	Blank: No legs to be determined
GR-RelevanceInd	Normal
<i>Control</i> screen area	
Application	V7  Note that the system automatically fills this field and the next four fields when you assign an output determination procedure to the shipment type. For more information, see <a href="#">Output Control: Assigning Output Determination Procedures [page 97]</a> .
TextDetermProc.	03 (filled automatically)
PartnDet.Proc	TR (filled automatically)
OutputDet.Proc	ZSHIPO (filled automatically)
Deadlines	WS STANDARD TRA (filled automatically)
Pick check	Shipment completion only for full picking
SpIProfBefPIng	Blank
SpIProfAfterPIg	Blank
HUs relevant for DI generation	Blank

Field	Value
<i>Proposal</i> screen area	
Weight unit	KG
Volume unit	CD3
Output Type	Blank
Selection var.	Blank
Planning prof.	Blank
Copy Routine	7 Service Agent/Route

The following settings differ from the settings in shipment type 0001 and are crucial for shipment integration:

- *No. range ext.*: This is the number range that you defined in the previous step (see [Defining External Number Ranges \[page 88\]](#)).
- *Adopt route* and *Determine Legs*: These settings prevent the system from carrying out additional calculations related to transportation stages when it creates a shipment. Data about stages should be taken from the IDoc.
- *OutputDet.Proc* and *Output Type*: These fields relate to the condition technique for output control. The system fills them automatically when you assign an output determination procedure to the shipment type. For more information, see [Assigning Output Determination Procedures \[page 97\]](#).

### 7.2.1.3 Maintaining Transportation Planning Points

1. In the SAP ERP system, in Customizing for *Enterprise Structure*, choose ► [Definition](#) ► [Logistics Execution](#) ► [Maintain Transportation Planning Point](#) ►.
2. Create transportation planning point 1000 by copying existing transportation planning point 0001. Enter the following data:

TPPt	Description	CoCd
1000	TM Integration	0001

3. In the SAP ERP system, in Customizing for *Logistics Execution*, choose ► [Transportation](#) ► [Interfaces](#) ► [External Transportation Planning Systems](#) ► [Maintain Transportation Planning Point for External Systems](#) ►. An entry for the transportation planning point defined above should exist.

4. Edit the entry for the transportation planning point. Enter the following data:

TPPt	Description	TPS Part No.	Item type	Output	Ext. no. rge	Chnge Shp
1000	TM Integration	Logical system name of SAP PI system, for example, PI1CLNT001	LS	Leave this field empty	External number range used in the shipment type, for example, 02	00

#### **i** Note

SAP TM does not use transportation planning points. Transportation planning point 1000 is, therefore, transferred by default to SAP ERP. If you require other transportation planning points that are stored with the SAP ERP shipment, implement BAdI `BADI_LE_SHIPMENT` to determine and save the correct transportation planning point for the shipment.

## 7.2.2 Output Control Settings

You must configure the following settings to send shipments from SAP ERP to SAP TM in the context of *SAP TM Outbound Shipment Integration*. This involves Customizing activities for maintaining field catalogs, condition tables, access sequences, condition types, and schemas. Note that for all of these Customizing activities, the usage is `B` and the application is `V7`.

### 7.2.2.1 Creating Condition Tables

#### Prerequisites

You have imported the `STRG` field into the transport-specific field catalog. Since it is not directly contained in the `KOMB` structure, you have to insert it indirectly using the `KOMBZ` structure, which is designed to store this type of custom entry. Note that this is a DDIC activity and not a Customizing activity.

#### Context

In this step, you define the combination of fields for which you want to create output condition records in a condition table. This enables you to control output determination depending on your specific field combination. Alternatively, you can check whether the data you require is already available.

## Procedure

1. In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose ► *Transportation* ► *Basic Transportation Functions* ► *Output Control* ► *Maintain Output Determination for Shipments* ► *Maintain Condition Tables* ►.
2. Choose *Maintain Output Condition Table for Shipments*.
3. Create table between 900 and 999 and enter fields SHTYP and STTRG in the *Selected fields* screen area under *Technical and Medium*.
4. Choose ► *Condition* ► *Create* ►.
5. In the *Table* field, enter a name (3-digit number) for the new condition table.  
Note that you can only choose names between 900 and 999.
6. Choose *Enter*.
7. Enter a description for the new condition table, for example, **ShipmntTyp/OverallSta - TM Shipment Integration**.
8. Select the required fields for the condition table from the list of allowed fields, for example, *Shipment Type and Ov.transport status*.
9. Generate the new condition table.

## Results

You have created a condition table for which you can maintain condition records.

## 7.2.2.2 Creating Access Sequences

### Prerequisites

You have to perform this step in a Customizing client that has authorization for cross-client table maintenance.

### Procedure

1. In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose ► *Transportation* ► *Basic Transportation Functions* ► *Output Control* ► *Maintain Output Determination for Shipments* ► *Maintain Access Sequence* ►.
2. Create an access sequence, for example, z001.



3. Select *Accesses* in the dialog structure and enter the following data:

No.	Table	Description	Requirement	Exclusive
<Next available number>	Table you created in <a href="#">Creating Condition Tables [page 92]</a>	ShpmntTyp/Overall-Sta (the description is filled automatically)	0	Not selected

4. Select your new entry and choose *Fields* in the dialog structure.

5. In the *Field Overview* table, enter 0 in the *Spec. Val. Source* field for the entry with condition STTRG (*Ov.transport status*).

## 7.2.2.3 Creating Output Types for Shipments

### Context

In the Customizing activity *Maintain Output Types*, you can define different condition types for the different situations in which SHPMNT IDocs are to be sent. Output types control how the SHPMNT IDoc is used to send a confirmation to SAP TM:

- Output type ZTM1 generates an IDoc that sends a status notification to SAP TM.
- Output type ZTM2 generates an IDoc that sends a confirmation to SAP TM.
- Output type ZTMA generates an IDoc that updates a freight order in SAP TM based on changed delivery assignments to a SAP ERP shipment.
- Output type ZTMP generates an IDoc that updates a freight order in SAP TM based on changed item or handling unit assignments to a container handling unit of a SAP ERP shipment.

### Procedure

1. In the SAP ERP system, in Customizing for *Logistics Execution*, choose **► Transportation ► Basic Transportation Functions ► Output Control ► Maintain Output Determination for Shipments ► Maintain Output Types**.
2. Create output type ZTM1 for shipments. Enter the following data:

Output Types

<i>Output Type</i>	<b>ZTM1</b>
<i>Description</i>	<b>TM Outp Stat Notify</b>

<i>General Data</i> tab page	
<i>Access sequence</i>	<b>Z001</b>
<i>Access to conditions</i>	Select this checkbox
<i>CannotBeChanged</i>	Do not select this checkbox
<i>Multiple issuing</i>	Select this checkbox
<i>Partner-indep.output</i>	Do not select this checkbox
<i>do not write processing log</i>	Do not select this checkbox
<i>Default values</i> tab page	
<i>Dispatch Time</i>	<b>4 Send immediately (when saving the application)</b>
<i>Transmission Medium</i>	<b>6 EDI</b>
<i>Partner Function</i>	<b>LS</b>
<i>Communication Strategy</i>	Leave this empty
<i>Time</i> tab page	
Timing 2 (job and time entry not allowed)	Select this checkbox.  (Do not select any of the other checkboxes.)

3. In the dialog structure, select *Processing Routines* and enter the following data:

Processing Routines

Field	Entry
<i>Transmission Medium</i>	<b>EDI</b>
<i>Program</i>	<b>RSNASTED</b>
<i>Form Routine</i>	<b>EDI_PROCESSING</b>

4. In the dialog structure, select *Partner functions* and enter the following data:

Partner Functions

Field	Entry
<i>Medium</i>	<b>EDI</b>
<i>Function</i>	<b>LS</b>

Field	Entry
Name	Logical System

- Repeat the above steps to create output types ZTM2, ZTMA, and ZTMP. Use the values for ZTM1 unless otherwise stated below.

Output Type	Description
ZTM2	TM Outp Confirmation
ZTMA	Assign/Unassign Del.
ZTMP	Package Assignment

## 7.2.2.4 Defining Output Determination Procedures for Shipments

- In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose **► Transportation ► Basic Transportation Functions ► Output Control ► Maintain Output Determination for Shipments ► Maintain Output Determination Procedure**.
- Create an output determination procedure such as ZSHIPO with the name *Transport Output Ship. Outb.*
- Select output determination procedure ZSHIPO and choose *Control Data* in the dialog structure.
- Assign output types to output determination procedure ZSHIPO by creating the following entries:

Reference Step Overview			
Step	Condition Counter	Condition Type	Requirement
10	1	ZTM1	xx
20	1	ZTM2	xx
30	1	ZTMA	58
40	1	ZTMP	xx

### **i** Note

Choose any free step number and condition counter that is available.

## 7.2.2.5 Assigning Output Determination Procedures to Shipment Types

### Context

In this step, you assign an output determination procedure and output type to the relevant shipment types.

### Procedure

1. In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose ► *Transportation* ► *Basic Transportation Functions* ► *Output Control* ► *Maintain Output Determination for Shipments* ► *Assign Output Determination Procedures* ⌵.
2. Create an entry for each relevant shipment type in the integration scenario (for information about determining shipment types, see [Defining Value Mappings \[page 124\]](#)) and assign the output determination procedure and output type to the shipment type.

For example, assign output determination procedure ZSHIPO to shipment type ZTMO, as follows:

Shipment Type	Description	Output Determination Procedure	Description	Output Type	Name
ZTMO	TM Integration Outb.	ZSHIPO	Transport Output Ship. Outb.	Blank	–

## 7.2.2.6 Assigning Output Types to Partner Functions

### Procedure

1. In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose ► *Transportation* ► *Basic Transportation Functions* ► *Output Control* ► *Maintain Output Determination for Shipments* ► *Assign Output Types to Partner Functions* ⌵.
2. Assign medium 6 EDI and partner function LS (logical system) to each output type as follows:

Output Type	Name	Medium	Function
ZTM1	TM Outp Stat Notify	6 – EDI	LS – Logical System
ZTM2	TM Outp Confirmation	6 – EDI	LS – Logical System
ZTMA	Assign/Unassign Del	6 – EDI	LS – Logical System
ZTMP	Package Assignment	6 – EDI	LS – Logical System

## 7.2.2.7 Checking Output Control Settings

### Context

You can check the output control settings using test report `RSNASTCK`.

### Procedure

1. Start report `RSNASTCK`.
2. Enter application **v7** and choose *Enter*
3. In the *Select procedure to be checked* dialog box, choose *only active ones*.
4. Enter the shipment type and choose *Enter*.

### Results

The system displays a log that shows whether the output control settings are consistent.

## 7.2.2.8 Creating Condition Records for Shipments

### Procedure

1. On the *SAP Easy Access* screen of your SAP ERP system, choose **Logistics > Logistics Execution > Master Data > Output > Shipment > Create** or call transaction `VV71`.
2. Enter output type **ZTM1 (TM Outp Stat Notify)** as the context for the condition record.
3. Create condition records for the condition table you created in [Creating Condition Tables \[page 92\]](#) with the key field pair `SHTYP (Shipment Type)` and `STTRG (Ov.transport status)`.
4. Create one entry for each shipment type and add value **0** for `STTRG`. For each condition record, enter the required data as follows:

Funct	Partner	Medium	Date	Language
LS	PI1CLNT001	6 EDI	4	EN

#### Note

The *Partner* column contains the name of the SAP Netweaver PI System in the format `<PI SID>CLNT<PI CLNT>` (in the example, `PI1CLNT001`).

5. Repeat the above steps for the following output types:
  - `ZTM2 (TM Outp Confirmation)`
  - `ZTMA (Assign/Unassign Del)`
  - `ZTMP (Package Assignment)`

## 7.2.3 Configuration Settings for SAP NetWeaver PI (Shipment Integr.)

### Prerequisites

- You have set up SAP enhancement package 5 or 6 for SAP ERP 6.0 (software component version SAP APPL 6.05/6.06).
- You have set up SAP Transportation Management 9.1 (software component version SAPTM 120).
- You have set up SAP NetWeaver Process Integration (SAP NetWeaver PI) 7.0 or higher.
- The SAP ERP system and the SAP Transportation Management system exist as business systems in SAP NetWeaver Process Integration (*Integration Directory*) with completely configured PI receiver communication

channels (SAP Transportation Management system), and a completely configured IDoc receiver communication channel (SAP ERP system).

## Context

You can use a process integration scenario from the integration repository (*Integration Builder: Design (Integration Repository)*) as a configuration template in the integration directory (*Integration Builder: Configuration (Integration Directory)*). The system uses the information saved in the process integration scenario, together with additional assignments, to calculate the relevant configuration objects.

To configure the connection, you have access to predefined content for integration scenario `TM_ERPShipmentIntegration_Out` under <http://sap.com/xi/TMS/Global/IC>. Communication between SAP Transportation Management (software component SAPTM) and SAP enhancement package 5 for SAP ERP 6.0 or higher (software component SAP APPL) has to be set up for the following service/message interfaces:

From Sender Service/Message Interface	To Receiver Service/Message Interface
<p>SAP Transportation Management</p> <p>Name: <code>TransportationOrderSCMRequest_Out</code></p> <p>Namespace: <a href="http://sap.com/xi/TMS">http://sap.com/xi/TMS</a></p> <p>Software Component: SAPTM</p>	<p>SAP enhancement package for SAP ERP 6.0</p> <p>Name: <code>SHPMNT.SHPMNT05</code></p> <p>Namespace: <code>urn:sap-com:document:sap:idoc:messages</code></p> <p>Software Component: SAP APPL</p>
<p>SAP enhancement package for SAP ERP 6.0</p> <p>Name: <code>SHPMNT.SHPMNT05</code></p> <p>Namespace: <code>urn:sap-com:document:sap:idoc:messages</code></p> <p>Software Component: SAP APPL</p>	<p>SAP Transportation Management</p> <p>Name: <code>TransportationOrderSCMExecutionConfirmation_In</code></p> <p>Namespace: <a href="http://sap.com/xi/TMS">http://sap.com/xi/TMS</a></p> <p>Software Component: SAPTM</p>
<p>SAP enhancement package for SAP ERP 6.0</p> <p>Name: <code>SHPMNT.SHPMNT05</code></p> <p>Namespace: <code>urn:sap-com:document:sap:idoc:messages</code></p> <p>Software Component: SAP APPL</p>	<p>SAP Transportation Management</p> <p>Name: <code>TransportationOrderSCMExecutionStatusNotification_In</code></p> <p>Namespace: <a href="http://sap.com/xi/TMS">http://sap.com/xi/TMS</a></p> <p>Software Component: SAPTM</p>
<p>SAP Transportation Management</p> <p>Name: <code>TransportationOrderSCMExecutionCancellationRequest_Out</code></p> <p>Namespace: <a href="http://sap.com/xi/TMS">http://sap.com/xi/TMS</a></p> <p>Software Component: SAPTM</p>	<p>SAP enhancement package for SAP ERP 6.0</p> <p>Name: <code>SHIPPL.TPSSHT01</code></p> <p>Namespace: <code>urn:sap-com:document:sap:idoc:messages</code></p> <p>Software Component: SAP APPL</p>

From Sender Service/Message Interface	To Receiver Service/Message Interface
SAP enhancement package for SAP ERP 6.0 Name: SHPMNT.SHPMNT05 Namespace: urn:sap-com:document:sap:idoc:messages Software Component: SAP APPL	SAP Transportation Management Name: TransportationOrderSCMExecutionDeliveryAssignmentChangedNotification_In Namespace: http://sap.com/xi/TMS Software Component: SAP TM
SAP enhancement package for SAP ERP 6.0 Name: SHPMNT.SHPMNT05 Namespace: urn:sap-com:document:sap:idoc:messages Software Component: SAP APPL	SAP Transportation Management Name: TransportationOrderSCMExecutionItmPckgAssgnmtChngedNotification_In Namespace: http://sap.com/xi/TMS Software Component: SAP TM

## Procedure

1. In the *Integration Directory*, choose **Tools** > *Transfer Integration Scenario from the Integration Repository*.
2. Perform the *Select Integration Scenario* step.

In the *Integration Scenario* screen area, select the following process integration scenario from the *Integration Repository* and then choose *Continue*:

<b>Name</b>	TM_ERPShipmentIntegration_Out
<b>Namespace</b>	<a href="http://sap.com/xi/TMS/Global/IC">http://sap.com/xi/TMS/Global/IC</a>
<b>Software Component Version</b>	SAPTM IC (check the Product and Production Management System for the latest version)

3. Perform the *Create Configuration Scenario* step.

In the *Create Configuration Scenario* screen area, enter a name for the configuration scenario and choose *Finish*.

4. Choose *Close*.

The system transfers the integration scenario from the *Integration Builder: Repository*. The *Integration Scenario Configuration* wizard starts.

5. Perform the following configuration steps:

1. *Select Component View*

You can configure multiple component views within the same configuration scenario. For this connection, there is only one component view defined and you therefore skip this step.



2. *Assign Services*

To map the participants in a process displayed in the model to actual senders and receivers of messages in your system landscape, assign the business systems by choosing *Assign Services*. On the *Business System Services for A2A* tab page, assign the business system of the sender and receiver system. To select the next system, use the navigation arrows to navigate.

3. *Configure Connections*

To configure the connections, choose *Configure Connections*. For each connection, select the appropriate receiver communication channel for the receiver business system (PI receiver communication channel for SAP Transportation Management system; IDoc receiver communication channel for SAP ERP system) and choose the *Apply* pushbutton. The navigation arrows enable you to navigate to the other connections in the process integration scenario.

4. *Generate Connections*

To generate all connections, choose *Generate*. A dialog box appears in which you make the following settings:

<i>General</i>	Generation
<i>Scope of Generation</i>	You can limit the scope of generation to particular object types. Select the checkboxes of the following object types:  <i>Receiver Determination</i>  <i>Interface Determination</i>  <i>Sender/Receiver Agreement</i>
<i>Change List for Generated Objects</i>	Select the <i>Create New</i> radio button if you want to create a new change list for the generated objects. You can also use an existing change list. The process integration scenario is predefined.

5. Choose *Start*.

The system displays the generation log, which you can save.

6. Configure the interface determination for IDoc interface SHPMNT.SHPMNT05.

To avoid conflicts with other scenarios that also send IDoc SHPMNT.SHPMNT05 to the SAP NetWeaver PI system, you have to set up the interface determination for IDoc interface SHPMNT.SHPMNT05 accordingly. The system differentiates between different applications of the IDoc by using their message variants, which are communicated in field MESCOD of the IDoc control structure.

Make sure that the following condition and interface mapping have been entered for inbound interface *TransportationOrderSCMExecutionConfirmation\_In* under *Configured Inbound Interfaces*:

Field	Value
<i>Service</i>	SAP ERP system, for example, ERP_500
<i>Sender</i> screen area	
<i>Interface</i>	SHPMNT.SHPMNT05

Field	Value
<i>Namespace</i>	urn:sap-com:document:sap:idoc:messages
<i>Service</i>	SAP TM system to which the target interface is to be routed For example, TM1_750
<i>Configured Inbound Interfaces</i> screen area	
<i>Inbound Interface Name</i>	TransportationOrderSCMExecutionConfirmation_In
<i>Inbound Interface Namespace</i>	http://sap.com/xi/TMS
<i>Condition</i>	/SHPMNT05/IDOC/EDI_DC40/MESCOD = CNF
<i>Interface Mapping Name</i>	SHPMNTSHPMNT05_to_TransportationOrderSCMExecutionConfirmation

6. Repeat the above step for the following inbound interfaces:

- Make sure that the following condition and interface mapping have been entered for inbound interface `TransportationOrderSCMExecutionStatusNotification_In` under *Configured Inbound Interfaces*.

Field	Value
<i>Service</i>	SAP ERP system, for example, ERP_500
<i>Sender</i> screen area	
<i>Interface</i>	SHPMNT.SHPMNT05
<i>Namespace</i>	urn:sap-com:document:sap:idoc:messages
<i>Service</i>	SAP TM system to which the target interface is to be routed For example, TM1_750
<i>Configured Inbound Interfaces</i> screen area	
<i>Inbound Interface Name</i>	TransportationOrderSCMExecutionStatusNotification_In
<i>Inbound Interface Namespace</i>	http://sap.com/xi/TMS
<i>Condition</i>	/SHPMNT05/IDOC/EDI_DC40/MESCOD = STA

Field	Value
<i>Interface Mapping Name</i>	SHPMNTSHPMNT05_to_TransportationOrderSCMExecutionStatusNotification

- Make sure that the following condition and interface mapping have been entered for inbound interface `TransportationOrderSCMExecutionDeliveryAssignmentChangedNotification_In` under *Configured Inbound Interfaces*.

Field	Value
<i>Service</i>	SAP ERP system, for example, ERP_500
<i>Sender</i> screen area	
<i>Interface</i>	SHPMNT.SHPMNT05
<i>Namespace</i>	urn:sap-com:document:sap:idoc:messages
<i>Service</i>	SAP TM system to which the target interface is to be routed  For example, TM1_750
<i>Configured Inbound Interfaces</i> screen area	
<i>Inbound Interface Name</i>	TransportationOrderSCMExecutionDeliveryAssignmentChangedNotification_In
<i>Inbound Interface Namespace</i>	http://sap.com/xi/TMS
<i>Condition</i>	/SHPMNT05/IDOC/EDI_DC40/MESCOD = ASG
<i>Interface Mapping Name</i>	SHPMNTSHPMNT05_to_TransportationOrderSCMExecutionDeliveryAssignmentChangedNotification

- Make sure that the following condition and interface mapping have been entered for inbound interface `TransportationOrderSCMExecutionItmPckgAssgnmtChangedNotification_In` under *Configured Inbound Interfaces*

Field	Value
<i>Service</i>	SAP ERP system, for example, ERP_500
<i>Sender</i> screen area	
<i>Interface</i>	SHPMNT.SHPMNT05
<i>Namespace</i>	urn:sap-com:document:sap:idoc:messages

Field	Value
<i>Service</i>	SAP TM system to which the target interface is to be routed  For example, TM1_750
<i>Configured Inbound Interfaces</i> screen area	
<i>Inbound Interface Name</i>	TransportationOrderSCMExecutionItmPckgAssgmtChangedNotification_In
<i>Inbound Interface Namespace</i>	http://sap.com/xi/TMS
<i>Condition</i>	/SHPMNT05/IDOC/EDI_DC40/MESCOD = PKG
<i>Interface Mapping Name</i>	SHPMNTSHPMNT05_to_TransportationOrderSCMExecutionItmPckgAssgmtChangedNotification

## Results

The relevant receiver determinations, interface determinations, and collaboration agreements are generated for your integration scenario and can be made relevant for PI runtime by activating your change list.

### 7.2.3.1 Defining Value Mappings

#### Context

For each interface mapping described in the previous step, there is a corresponding message mapping in which fields from the source message are mapped to fields from the target message. There are three cases in which the target field is determined dynamically at runtime using a value mapping (this occurs twice for interface mapping `TransportationOrderSCMExecutionRequest_to_SHPMNTSHPMNT05` and once for interface mapping `TransportationOrderSCMExecutionCancellationRequest_to_SHIPPLTPSSHT01`), as shown in the following table:

Fields Determined Using Value Mappings

Action/Mapping	Name of Target Field
Create/Change Shipment	E1EDT20-SHTYP (header, shipment type)

Action/Mapping	Name of Target Field
	E1ADRM4 [2] -E1ADRE4-EXTEND_D (address, transp. planning point)
Delete Shipment	E1TPSHH-SHPPPT (header, transp. planning point)

The use of value mappings facilitates integration into the implementation landscape, where, in particular, the names of freight order types in SAP TM and their corresponding shipment types in SAP ERP are freely definable. Technically, each of these value mappings is a mapping between two pairs <agency, scheme>.

You have to define the required value mappings in the *Integration Directory*.

## Procedure

1. In the *Integration Directory*, choose **Tools** > **Value Mapping**.

The system displays a dialog box in which you can choose the agency and scheme for the source and target field.

2. For the agency, choose the name of the relevant SAP TM system and SAP ERP system. For the scheme, the values depend on the actual message mapping (see example below).

When you have selected the agency and scheme, the system displays a table where you can enter values for each <agency, scheme> pair. Each row in a value mapping therefore consists of three elements: <agency, scheme, value>.

3. To map the source value to the target value, create an entry for each pair (that is, for the first pair: <source system, freight order type>; and for the second pair: <target system, shipment type>).

In the value mapping for SHTYP (shipment type), the freight order type in SAP TM is entered in the *Value* column in the first line, and the shipment type in ERP is entered in the *Value* column in the second line.

4. Activate the value mapping. To do so, switch to the *Change List* tab page, select your changes, and choose *Activate* from the context menu.

### Example

The following example shows the settings for a system landscape with SAP TM system TM1 and SAP ERP system ERP. In the example, freight order types ZFO1 and ZFO2 are both mapped to shipment type ZTMO. This shows that the “first line” mentioned in step 3 may occur several times if several freight order types are mapped to the same shipment type.

Value Table for Value Mapping SHTYP

Agency	Scheme	Value
TM1_750	ProcessingTypeCode	ZFO1
TM1_750	ProcessingTypeCode	ZFO2
ERP_500	SHTYP	ZTMO

The value tables for the two other value mappings are defined in the same way, with the special exception that the value column for the source system contains constant 1 instead of a field value, as shown in the example below. In this example, for each of the two target fields (SHPPPT and EXTEND\_D), a mapping is defined to target value 1000. The corresponding first line contains <TM1\_750,const,1> in each case and is only entered once in the value table.

Value Table for Value Mapping Transportation Planning Point

Agency	Scheme	Value
TM1_750	const	1
ERP_500	SHPPPT	1000
ERP_500	EXTEND_D	1000

## 7.3 Inbound Integration of ERP Shipments

You use this process to configure the settings in SAP ERP for inbound integration of ERP shipment processing. Note that although this guide explains the basic integration settings in SAP ERP, the term “inbound”, in the sense of inbound integration of ERP shipments, is to be understood always from the perspective of SAP TM.

Inbound integration of shipment processing enables you to do the following:

- Transfer shipments from SAP ERP to SAP TM and create freight orders in SAP TM based on the shipments
- Update shipment-based freight orders in SAP TM if the relevant shipment in SAP ERP changes or if a delivery within the shipment changes
- Transfer the tendering result for a freight order from SAP TM to the shipment in SAP ERP
- Cancel freight orders in SAP TM if the relevant shipment in SAP ERP is deleted or the tendering status is reset

The following data is used in this section of the guide:

Object	Example Data
Shipment Type	ZTMI
Output Determination Procedure	ZSHIPI
Output Type for Outbound Deliveries	ZDLV

### 7.3.1 Basic Shipment Settings

## 7.3.1.1 Defining Number Ranges

### Use

For the inbound integration of shipments, you use an internal number range in SAP ERP which you can align with the number of the freight orders in SAP TM.

### Procedure

1. In the SAP ERP system, in Customizing for Logistics Execution, choose **► Transportation ► Shipments ► Define Number Ranges for Shipments ►**
2. Define a new number range or ensure that the required number range exists.

Example: External Number Range for Shipments			
No.	From	To	External
10	6500000000	6699999999	Deselect

#### **i** Note

Choose any free number and number range to define the external number range. Ensure that you align this number range with the external number range of the corresponding freight orders in SAP TM. In the Shipment Inbound Integration, it is not necessary to align the SAP ERP and SAP TM number ranges as the TM system can also use an internal number range defined in SAP TM, instead of an external number range, to create the corresponding freight orders.

## 7.3.1.2 Defining Shipment Types

### Procedure

1. In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose **► Transportation ► Shipments ► Define Shipment Types ►**.
2. Define a new shipment type (for example, shipment type ZTMI) by copying shipment type 0001 and adjusting the data as follows:

Field	Value
Shipment type	ZTMI
Description	TM Integration Inb.
Document cat.	8 Shipment Note that this field is filled automatically.
<i>Number Systems</i> screen area	
NR int. assgt.	10 (Choose the number range you previously defined).
Scr.seq.group	T
No. range ext.	Leave this field empty
<i>Document Content</i> screen area	
ShpmtComplType	Loaded outbound shipment
Shipping type	O1 Truck
Service Level	Load
ShTypePrelimLeg	Leave this field empty
ProcessControl	Individual shipment using one mode of shipment
SubseqLegShType	Leave this field empty
Leg indicator	Direct leg.
Adopt route	Adopt all stages
Determine legs	1: Legs determined according to departure point & itinerary
GR-RelevanceInd	Normal
<i>Control</i> screen area	
Application	V7 Note that the system automatically fills this field and the next four fields when you assign an output determination procedure to the shipment type. For more information, see <a href="#">Assigning Output Determination Procedures to Shipment Type [page 133]</a> .
TextDetermProc.	O3 (filled automatically)
PartnDet.Proc	TR (filled automatically)



Field	Value
OutputDet.Proc	ZSHIPI (filled automatically)
Deadlines	WS STANDARD TRA (filled automatically)
Pick check	Shipment completion only for full picking
SplProfBefPlng	Leave this field empty
SplProfAfterPlg	Leave this field empty
HUs relevant for DI generation	Leave this field empty
<i>Proposal</i> screen area	
Weight unit	KG
Volume unit	CD3
Output Type	Leave this field empty
Selection var.	Leave this field empty
Planning prof.	Leave this field empty
Copy Routine	7 Service Agent/Route

### 7.3.1.3 Defining Requirements

1. In the SAP ERP system, in Customizing for *Logistics Execution*, choose **► Transportation ► Basic Transportation Functions ► Output Control ► Define Requirements ►**.
2. Define requirement 901 in application V7 by implementing the coding described in manual correction instruction 1298755 in SAP Note [1527545](#).

#### **i** Note

You can choose any available requirement number between 900 – 999.

### 7.3.1.4 Implementing Additional Coding

#### Use

In this procedure, you implement additional coding in SAP ERP, which is described in SAP Note [1527545](#). Implement the correction instructions in this SAP Note as described below.

## Procedure

1. Implement correction instruction 1276168 as follows:
  1. Call transaction SE19.
  2. Create an implementation (Z\_CHECK\_RELEVANCE) for Business Add-In (BAI) definition BADI\_LE\_SHIPMENT in method BEFORE\_UPDATE.
2. Implement correction instruction 936559 as follows:
  1. Call transaction SE19.
  2. Create an implementation (Z\_SHP\_CANCEL) for Business Add-In (BAI) definition BADI\_LE\_SHIPMENT in method BEFORE\_UPDATE.
3. Implement correction instruction 936549 as follows:
  1. Call transaction SE38.
  2. Create program Z\_SEND\_SHIPMT05.
4. Implement correction instruction 1298598 as follows:
  1. Call transaction SE37.
  2. Modify function module IDOC\_OUTPUT\_SHIPPL as described in SAP Note [1527545](#).  
Note that this modification is only necessary if you want to enable the following system behavior:
    - Delete shipments in SAP ERP and subsequently cancel the corresponding freight orders in SAP TM
    - Set the tendering status of a shipment in SAP ERP to *Offer Canceled* and subsequently cancel the corresponding freight order in SAP TMIf you do not implement this modification, freight orders cannot be canceled from SAP ERP.

### **i** Note

Ignore correction instruction 1298755 at this stage.

For information about this correction instruction, see [Defining Requirements \[page 129\]](#).

## 7.3.2 Output Control Settings

### 7.3.2.1 Creating Output Types for Shipments

#### Context

In the Customizing activity *Maintain Output Types*, you can define different condition types for the different situations in which SHPMNT IDocs are to be sent:

- Output type TNDR generates an IDoc that creates a freight order in SAP TM.

- Output type `ZSHP` generates an IDoc that updates a freight order in SAP TM.
- Output type `TNCN` generates an IDoc that cancels a freight order in SAP TM.

## Procedure

1. In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose **► Transportation ► Basic Transportation Functions ► Output Control ► Maintain Output Determination for Shipments ► Maintain Output Types ►**.
2. Make sure that the output types `TNDR` and `TNCN` already exist.
3. Create output type `ZSHP` for shipments. Enter the following data:

Field	Value
<i>Output Type</i>	<b>ZSHP</b>
<i>Description</i>	<b>TM Tender Upd. FO</b>
<b>General Data</b> tab page	
<i>Access sequence</i>	<b>0004</b>
<i>Access to conditions</i>	Selected
<i>CannotBeChanged</i>	Not selected
<i>Multiple issuing</i>	Selected
<i>Partner-indep.output</i>	Not selected
<i>do not write processing log</i>	Not selected
<b>Default Values</b> tab page	
<i>Dispatch Time</i>	<i>4 Send immediately (when saving the application)</i>
<i>Transmission Medium</i>	<b>6 EDI</b>
<i>Partner Function</i>	<i>CR - Forwarding Agent</i>
<i>Communication Strategy</i>	Blank

4. In the dialog structure, choose *Processing Routines* and enter the following data:

Field	Value
<i>Transmission Medium</i>	<b>EDI</b>

Field	Value
<i>Program</i>	<b>RSNASTED</b>
<i>Form Routine</i>	<b>EDI_PROCESSING</b>

5. In the dialog structure, choose *Partner Functions* and enter the following data:

Field	Value
<i>Medium</i>	<b>EDI</b>
<i>Function</i>	<b>LS</b>
<i>Name</i>	<b>Logical System</b>

6. Repeat the above step for the following output types:

- TNRD (Tender - new offer)
- TNCN (Tender - cancel)

## 7.3.2.2 Defining Output Determination Procedures for Shipments

- In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose **► Transportation ► Basic Transportation Functions ► Output Control ► Maintain Output Determination for Shipments ► Maintain Output Determination Procedure**.
- Create an output determination procedure, for example, ZSHIPI with the name **Transport Output Ship. Inb**.
- Select output determination procedure ZSHIPI and choose *Control Data* in the dialog structure.
- Assign output types to output determination procedure ZSHIPI by creating the following entries:

Step	Condition Counter	Condition Type	Requirement
10	1	TNRD	52
20	1	TNDC	56
30	1	ZSHP	901

### **i** Note

- Choose any free step number and condition counter that is available.
- Requirement number 901 is only an example. Choose the requirement number you defined before in [Defining Requirements \[page 129\]](#).

## 7.3.2.3 Assigning Output Determination Procedures to Shipment Types

### Procedure

1. In the SAP ERP system, in Customizing for *Logistics Execution*, choose ► *Transportation* ► *Basic Transportation Functions* ► *Output Control* ► *Maintain Output Determination for Shipments* ► *Assign Output Determination Procedures* ►.
2. Create an entry for each relevant shipment type in the integration scenario and assign the output determination procedure to the shipment type. For example, assign output determination procedure ZSHIPI to shipment type ZTMI, as follows:

Shipment Type	Description	Output Determination Procedure	Description	Output Type	Name
ZTMI	TM Integration Inb.	ZSHIPI	Transport Output Ship. Inb.	Leave this field empty	–

## 7.3.2.4 Assigning Output Types to Partner Functions

### Procedure

1. In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose ► *Transportation* ► *Basic Transportation Functions* ► *Output Control* ► *Maintain Output Determination for Shipments* ► *Assign Output Types to Partner Functions* ►.
2. Assign medium 6 EDI and partner function LS (logical system) to each output type as follows:

Output Type	Name	Medium	Function
TNDR	Tender – New Offer	6 – EDI	LS – Logical System
TNCN	Tender – Cancel	6 – EDI	LS – Logical System
ZSHP	TM Tender Upd. FO	6 – EDI	LS – Logical System

## 7.3.2.5 Creating Condition Records for Shipments

### Procedure

1. On the *SAP Easy Access* screen of your SAP ERP system, choose ► *Logistics* ► *Logistics Execution* ► *Master Data* ► *Output* ► *Shipment* ► *Create* or call transaction VV71.
2. Enter output type **TNDR (Tender - new offer)** as the context for the condition record.
3. Create condition records with the key field pair *SHTYP (Shipment Type)* and *TDLNR (Service Agent)*.
4. Create one entry for each shipment type (for example, ZTMI) and service agent. For each condition record, enter the required data as follows:

Func	Partner	Medium	Date	Language
LS	PI1CLNT001	6 EDI	4	EN

#### **i** Note

The *Partner* column contains the name of the SAP Netweaver PI System in the format <PI SID>CLNT<PI CLNT> (in the example, PI1CLNT001).

5. Repeat the above steps for the following output types:
  - TNCN (Tender - Cancel)
  - ZSHP (TM Tender Upd. FO)

## 7.3.2.6 Creating Output Types for Outbound Deliveries

### Procedure

1. In the SAP ERP system, navigate to Customizing for *Logistics Execution* and choose ► *Shipping* ► *Basic Shipping Functions* ► *Output Control* ► *Output Determination* ► *Maintain Output Determination for Outbound Deliveries* ► *Maintain Output Types*.
2. Create an output type for outbound deliveries (for example, ZDLV) as follows:

Field	Value
<i>Output Type</i>	<b>ZDLV</b>
<i>Description</i>	<b>Shipment Update from Delv.</b>
<i>General Data</i> tab page	
<i>Access sequence</i>	<b>0001</b>
<i>Access to conditions</i>	Select this checkbox
<i>CannotBeChanged</i>	Do not select this checkbox
<i>Multiple issuing</i>	Select this checkbox
<i>Partner-indep.output</i>	Select this checkbox
<i>do not write processing log</i>	Do not select this checkbox
<i>Change output</i> screen area	
Leave these fields empty	
<i>Replacement of text symbols</i> screen area	
Leave these fields empty	
<i>Default values</i> tab page	
<i>Dispatch Time</i>	<b>4 Send immediately (when saving the application)</b>
<i>Transmission Medium</i>	<b>6 EDI</b>
<i>Partner Function</i>	<b>LS Logical system</b>
<i>Communication Strategy</i>	Leave this field empty

3. In the dialog structure under *Processing Routines*, enter the following data:

Field	Value
<i>Program</i>	<b>Z_SEND_SHIPMT05</b>  Note that this program is derived from correction instruction 936549. For more information, see <a href="#">Implementing Additional Coding [page 129]</a> .
<i>Form Routine</i>	<b>EDI_PROCESSING</b>

Note that you leave the other fields empty, or the system fills them automatically.

- In the dialog structure under *Partner functions*, enter the following data for the output type:

Field	Value
<i>Medium</i>	6 EDI
<i>Funct</i>	LS
<i>Name</i>	Logical system

## 7.3.2.7 Defining Output Determination Procedures for Outbound Deliveries

### Procedure

- In the SAP ERP system, in Customizing for *Logistics Execution*, choose [Shipping](#) > [Basic Shipping Functions](#) > [Output Control](#) > [Output Determination](#) > [Maintain Output Determination for Outbound Deliveries](#) > [Maintain Output Determination Procedure](#).
- Make sure that procedure **v10000** has been entered.
- In the dialog structure, select *Control Data*.
- Assign the output type for outbound deliveries (for example, **ZDEL**) to the output determination procedure for shipments **v10000**, as follows:

Reference Step Overview

Step	Condition Counter	Condition Type	Requirement
<Any available step number>	<Any available condition counter>	ZDLV	Blank

## 7.3.2.8 Creating Condition Records for Outbound Deliveries

### Procedure

- In the SAP ERP system, on the *SAP Easy Access* screen, choose [Logistics](#) > [Logistics Execution](#) > [Master Data](#) > [Output](#) > [Shipping](#) > [Outbound Deliveries](#) > [Create](#) (transaction **vv21**).



2. Choose the relevant output type for outbound deliveries, for example, ZDLV.
3. Choose *Enter*.
4. On the following screen, enter the data as shown in the table below (for example, delivery type LF):

Field	Value
<i>Delivery Type</i>	<b>LF</b>
<i>Name</i>	<b>Outbound Delivery</b>
<i>Medium</i>	<b>8 Special Function</b>
<i>Date/Time</i>	<b>4 Send immediately (when saving the application)</b>
<i>Language</i>	<b>EN</b>

**i Note**

LF is a standard delivery type that is part of the standard SAP ERP Customizing.  
Do not enter a value in the *Function* or *Partner* columns.

5. Save your entries.

## 7.3.3 Configuring Inbound and Outbound Processing

This section contains settings for configuring inbound communication to SAP ERP (inbound IDocs) and outbound communication from SAP ERP (outbound IDocs).

### 7.3.3.1 Defining Process Codes for Inbound IDocs

#### Context

Using transaction WE64, you define which function modules are used to process IDocs. When you do this, you map message types to process codes, each of which can be represented by a function module. In this step, you configure the settings for message types SHPMNT (for creating or changing shipments) and SHIPPL (for deleting shipments).

## Procedure

1. In your SAP ERP system, call transaction `WE64`.
2. Under the *Inbound Messages* node, select the relevant message type and check that the following entries have been made:

Message Type	Process Code	Process ID	Type of Process ID
SHPMNT	SHPM	IDOC_INPUT_SHPMNT	Processing by Function Mode

### 7.3.3.2 Defining Partner Profiles for Inbound IDocs

## Context

In this procedure, you define a partner profile for your SAP ERP system.

## Procedure

1. In the SAP ERP system, on the *SAP Easy Access* screen, choose **Tools > ALE > ALE Administration > Runtime Settings > Partner Profiles** (transaction `WE20`).
2. In the navigation tree under *Partner Profiles*, choose partner type `LS` and check that a partner profile exists for the SAP TM system (for example, partner number `TM1CLNT750`). If the partner profile does not yet exist, create and save it using the following data:

Field	Value
<i>Partner No.</i>	<code>&lt;TM_SID&gt;CLNT&lt;TM_CLNT&gt;</code> For example, <code>TM1CLNT750</code>
<i>Partn. Type</i>	<code>LS</code>
<i>Type</i>	<code>US</code> (User)
<i>Agent</i>	Enter a user name
<i>Lang.</i>	<code>EN</code>

The *Inbound parmtrs* screen area shows the message types that can be received with this partner profile. The message control settings determine when a message type is actually received. These settings are described in the following step.

3. On the *Post processing: permitted agent* tab page, choose the *Create inbound parameter* pushbutton and enter inbound parameters with the data shown in the following table.

This inbound parameter is used by the IDoc that updates the shipment with tendering information received from SAP TM.

SHPMNT

Field	Value
<i>Partner No.</i>	<TM_SID>CLNT<TM_CLNT> (for example, TM1CLNT750)
<i>Partn. Type</i>	LS Logical System
<i>Partner Role</i>	LS Logical System
<i>Message Type</i>	SHPMNT
<i>Message Code</i>	Blank
<i>Message Function</i>	Blank
<i>Inbound Options</i> tab page	
<i>Process Code</i>	SHPM
<i>Cancel Processing After Syntax Error</i>	Selected
<i>Processing by Function Module</i> screen area	
<i>Trigger by background program</i>	Not selected
<i>Trigger Immediately</i>	Selected

### 7.3.3.3 Defining Process Codes for Outbound IDocs

1. In the SAP ERP system, call transaction **WE64**.
2. Under the *Outbound Messages* node, check that a SHPMNT entry exists with the following data:

Message Type	Process Code	Process ID	Type of Process ID
SHPMNT	SD11	IDOC_OUTPUT_SHPMNT	Processing by function module

Message Type	Process Code	Process ID	Type of Process ID
DESADV	DELV	IDOC_OUTPUT_DELVRY	Processing by function module

**i Note**

You do not have to set up a process code for message type SHIPPL in this scenario. The corresponding IDoc is used but it is created automatically.

### 7.3.3.4 Defining Partner Profiles for Outbound IDocs

#### Prerequisites

When you define the outbound parameters for the partner profile, you have to specify a receiver port for the SAP NetWeaver PI system. If a receiver port has not been defined in the SAP ERP system, create a receiver port using transaction WE21. In particular, you define a port to specify the system to which outbound IDocs are to be sent. The port must be of the type *Transactional RFC*. The following is an example of the settings made for a receiver port:

Field	Value
<i>Port</i>	Z_PI1_PORT
<i>Description</i>	<PI SID>CLNT<PI CLNT> (for example, PI1CLNT001)
<i>IDoc rec types SAP Release 3.0/3.1</i>	Not selected
<i>IDoc record types SAP Release 4.x</i>	Selected
<i>RFC Destination</i>	<PI1CLNT001> (RFC destination name to your PI system)
<i>Processing Options</i> screen area	No checkboxes selected

**i Note**

If you want to use SOA2IDOC Integration without PI mapping, you have to create a port using the following settings:

Field	Value
<i>Port</i>	Z_SOA_PORT

Description	IDOC2SOA Port
Function Module	TRA_SHPMNT_OUT

## Context

In this step, you define a partner profile for your target system. In most cases, this is the SAP NetWeaver Process Integration (PI) system.

## Procedure

1. On the *SAP Easy Access* screen of your SAP ERP system, choose **Tools > ALE > ALE Administration > Runtime Settings > Partner Profiles** or call transaction `WE20`.
2. In the navigation tree under *Partner Profiles*, choose *Partner Type LS* and check that a partner profile exists for the SAP NetWeaver Process Integration (PI) system (for example, partner number `PI1CLNT001`). If the partner profile does not yet exist, create it with the following data:

Field	Value
<i>Partner No.</i>	<PI SID>CLNT<PI CLNT> (for example, <code>PI1CLNT001</code> )
<i>Partn. Type</i>	<code>LS</code>
<i>Type</i>	<code>US</code> (User)
<i>Agent</i>	<Enter a user name>
<i>Lang.</i>	<code>EN</code>

3. On the *Post processing: permitted agent* tab page, enter the details of the agent that is to be notified if processing errors occur.
4. The *Outbound parmtrs* screen area shows the message types and message variants that can be sent with this partner profile. The message control settings of each entry determine when a message type is actually sent.

The messages and message variants that are to be configured are described in the following steps. Note that several message variants for the message type `SHPMNT` and their uses are described.

Configure the outbound parameters listed below by marking the partner profile for the SAP NetWeaver Process Integration (PI) system and choosing the *Create outbound parameter* pushbutton. Enter the data shown in the following tables:

- **SHPMNT (CRE)**

This outbound parameter is used for the IDoc that sends the shipment data to SAP TM to create a freight order after a new shipment has been created in SAP ERP.

SHPMNT (CRE)

Field	Value		
Partner No.	<PI SID>CLNT<PI CLNT> (for example, PI1CLNT001)		
Partn. Type	LS Logical System		
Partner Role	LS Logical System		
Message Type	SHPMNT		
Message code	CRE		
Message function	Blank		
<b>Outbound Options tab page</b>			
Receiver Port	Enter the relevant receiver port, for example, Z_PI1_PORT or Z_SOA_PORT		
Pack Size	1		
<i>Output Mode</i> screen area			
Transfer IDoc Immed.	Selected		
Collect IDocs	Not selected (default)		
<b>IDoc Type screen area</b>			
Basic Type	SHPMNT05		
Extension	Blank		
View	Blank		
Cancel Processing After Syntax Error	Selected		
Seg. release in IDoc type	Not selected		
Segment Appl. Rel.	Not selected		
<b>Message Control tab page</b>			
The data on this tab page defines the context in which the IDoc is sent. Create the following entries:			
Application	Message Type	Process Code	Change Message

Field		Value	
V7	TNDR	SD11	Not selected
V7	ZSHP	SD11	Selected
V7	ZSCR	SD11	Not selected
V7	ZSCR	SD11	Selected

**i Note**

Message type ZSCR is required only if you want to use the integration with SAP Extended Warehouse Management scenario.

o **SHPMNT (CNC)**

This outbound parameter is used for the IDoc that cancels a freight order in SAP TM if tendering is canceled for the corresponding ERP shipment.

**i Note**

If you want to cancel freight orders in SAP TM when you delete the corresponding shipments in SAP ERP, use outbound parameter SHIPPL (CNC). If you want to cancel freight orders in SAP TM when you cancel tendering for the ERP shipments and you do not want to trigger freight order cancellation when you delete shipments, use outbound parameter SHPMNT (CNC).

SHPMNT (CNC)

Field	Value
<i>Partner No.</i>	<PI SID>CLNT<PI CLNT> (for example, PI1CLNT001)
<i>Partn. Type</i>	<b>LS Logical System</b>
<i>Partner Role</i>	<b>LS Logical System</b>
<i>Message Type</i>	<b>SHPMNT</b>
<i>Message code</i>	<b>CNC</b>
<i>Message function</i>	Blank
<b>Outbound Options tab page</b>	
<i>Receiver Port</i>	Enter the relevant receiver port, for example, Z_PI1_PORT or Z_SOA_PORT
<i>Pack Size</i>	<b>1</b>

Field	Value		
<i>Output Mode</i> screen area			
<i>Transfer IDoc Immed.</i>	Selected		
<i>Collect IDocs</i>	Not selected (default)		
<b>IDoc Type screen area</b>			
<i>Basic Type</i>	<b>SHPMNT05</b>		
<i>Extension</i>	Blank		
<i>View</i>	Blank		
<i>Cancel Processing After Syntax Error</i>	Selected		
<i>Seg. release in IDoc type</i>	Not selected		
<i>Segment Appl. Rel.</i>	Not selected		
<b>Message Control tab page</b>			
The data on this tab page defines the context in which the IDoc is sent. Create the following entries:			
<i>Application</i>	<i>Message Type</i>	<i>Process Code</i>	<i>Change Message</i>
V7	TNCN	SD11	Selected

○ **SHIPPL**

This outbound parameter is used for the IDoc that cancels a freight order in SAP TM based on a deleted ERP shipment.

**i Note**

If you want to cancel freight orders in SAP TM when you delete the corresponding shipments in SAP ERP, use outbound parameter SHIPPL (CNC). If you want to cancel freight orders in SAP TM when you cancel tendering for the ERP shipments and you do not want to trigger freight order cancellation when you delete shipments, use outbound parameter SHPMNT (CNC).

SHIPPL

Field	Value
<i>Partner No.</i>	<PI SID>CLNT<PI CLNT> (for example, PI1CLNT001)
<i>Partn. Type</i>	<b>LS Logical System</b>
<i>Partner Role</i>	<b>LS Logical System</b>



Field	Value
<i>Message Type</i>	<b>SHIPPL</b>
<i>Message code</i>	Blank
<i>Message function</i>	Blank
<b>Outbound Options tab page</b>	
<i>Receiver Port</i>	Enter the relevant receiver port, for example, Z_PI1_PORT or Z_SOA_PORT
<i>Pack Size</i>	<b>1</b>
<i>Output Mode</i> screen area	
<i>Transfer IDoc Immed.</i>	Selected
<i>Collect IDocs</i>	Not selected (default)
<b>IDoc Type screen area</b>	
<i>Basic Type</i>	<b>TPSSHT01</b>
<i>Extension</i>	Blank
<i>View</i>	Blank
<i>Cancel Processing After Syntax Error</i>	Selected
<i>Seg. release in IDoc type</i>	Not selected
<i>Segment Appl. Rel.</i>	Not selected
<b>Message Control tab page</b>	
No entries required	

○ **DESADV**

This outbound parameter is used for the IDoc that cancels a freight order in SAP TM based on a deleted ERP shipment.

DESADV

Field	Value
<i>Partner No.</i>	<b>&lt;PI SID&gt;CLNT&lt;PI CLNT&gt;</b> (for example, PI1CLNT001)
<i>Partn. Type</i>	<b>LS Logical System</b>

Field	Value		
<i>Partner Role</i>	<b>LS Logical System</b>		
<i>Message Type</i>	<b>DESADV</b>		
<i>Message code</i>	Blank		
<i>Message function</i>	Blank		
<b>Outbound Options tab page</b>			
<i>Receiver Port</i>	Enter the relevant receiver port, for example, Z_PI1_PORT or Z_SOA_PORT		
<i>Pack Size</i>	<b>1</b>		
<i>Output Mode</i> screen area			
<i>Transfer IDoc Immed.</i>	Selected		
<i>Collect IDocs</i>	Not selected (default)		
<b>IDoc Type screen area</b>			
<i>Basic Type</i>	<b>DELVRY05</b>		
<i>Extension</i>	Blank		
<i>View</i>	Blank		
<i>Cancel Processing After Syntax Error</i>	Selected		
<i>Seg. release in IDoc type</i>	Not selected		
<i>Segment Appl. Rel.</i>	Not selected		
<b>Message Control tab page</b>			
The data on this tab page defines the context in which the IDoc is sent. Create the following entries:			
<i>Application</i>	<i>Message Type</i>	<i>Process Code</i>	<i>Change Message</i>
V7	ZDLV	DELV	Not selected

5. Distribute the partner profiles to the target system (in this case, the SAP NetWeaver PI system) as follows:
  1. Call transaction BD64 (Maintain Distribution Model).
  2. Create a new model view *Shipment Integration* if it does not already exist.
  3. Enter source system ERP, target system PI, and message type SHPMNT.

## 7.3.4 Configuration Settings for SAP NetWeaver Process Integration

### Prerequisites

- You have set up SAP enhancement package 5 or 6 for SAP ERP 6.0 (software component version SAP APPL 6.05 or 6.06).
- You have set up SAP Transportation Management 9.1 (software component version SAPTM 120).
- You have set up SAP NetWeaver Process Integration (SAP NetWeaver PI) 7.0 or higher.
- The SAP ERP system and the SAP Transportation Management system exist as business systems in SAP NetWeaver Process Integration (Integration Directory) with completely configured PI receiver communication channels (SAP Transportation Management system), and a completely configured IDoc receiver communication channel (SAP ERP system).

### Context

You can use a process integration scenario from the integration repository (*Integration Builder: Design (Integration Repository)*) as a configuration template in the integration directory (*Integration Builder: Configuration (Integration Directory)*). The system uses the information saved in the process integration scenario, together with additional assignments, to calculate the relevant configuration objects.

To configure the connection, you have access to the predefined content for integration scenario `TM_ERPShipmentIntegration_In` (SAPTM IC 1.0) under <http://sap.com/xi/TMS/Global/IC>. Communication between SAP Transportation Management (software component SAPTM 1.0) and SAP enhancement package 5 for SAP ERP 6.0 (software component SAP APPL 6.05) has to be set up for the following service/message interfaces:

#### **i** Note

If you are using SOA2IDOC and IDOC2SOA Integration, you can also use the SOA2IDOC integration, which is described here, in the scenario `TM_ERPShipmentIntegration_In`. The TM side remains the same.

From Sender Service/Message Interface	To Receiver Service/Message Interface
SAP enhancement package for SAP ERP 6.0 Name: SHPMNT.SHPMNT05 Namespace: urn:sap-com:document:sap:idoc:messages Software Component: SAP APPL	SAP Transportation Management Name: TransportationOrderSCMRequest_In Namespace: <a href="http://sap.com/xi/TMS">http://sap.com/xi/TMS</a> Software Component: SAPTM 1.0

From Sender Service/Message Interface	To Receiver Service/Message Interface
<p>IDOC2SOA</p> <p>SAP Enhancement Package for SAP ERP 6.0</p> <p>Name: TransportationOrderSCMRequest_Out</p> <p>Namespace: http://sap.com/xi/APPL/Global Software</p> <p>Component: SAP APPL</p>	
<p>SAP enhancement package for SAP ERP 6.0</p> <p>Name: SHIPPL.TPSSHT01</p> <p>Namespace: urn:sap-com:document:sap:idoc:messages</p> <p>Software Component: SAP APPL</p>	<p>SAP Transportation Management</p> <p>Name: TransportationOrderSCMCancellationRequest_In</p> <p>Namespace: <a href="http://sap.com/xi/TMS">http://sap.com/xi/TMS</a></p> <p>Software Component: SAPTM</p>
<p>IDOC2SOA</p> <p>SAP enhancement package for SAP ERP 6.0</p> <p>Name: TransportationOrderSCMCancellationRequest_Out</p> <p>Namespace: http://sap.com/xi/APPL/Global Software</p> <p>Component: SAP APPL</p>	
<p>SAP Transportation Management</p> <p>Name: TransportationOrderSCMTenderingResultNotification_Out</p> <p>Namespace: <a href="http://sap.com/xi/TMS">http://sap.com/xi/TMS</a></p> <p>Software Component: SAPTM</p>	<p>SAP enhancement package for SAP ERP 6.0</p> <p>Name: SHPMNT.SHPMNT05</p> <p>Namespace: urn:sap-com:document:sap:idoc:messages</p> <p>Software Component: SAP APPL</p>
	<p>SOA2IDOC:</p> <p>SAP enhancement package for SAP ERP 6.0</p> <p>Name: TransportationOrderSCMTenderingResultNotification_In</p> <p>Namespace: http://sap.com/xi/APPL/Global Software Component: SAP APPL</p>

## Procedure

1. In the main menu of the *Integration Directory*, choose **Tools** > *Transfer Integration Scenario from the Integration Repository*.
2. Perform the *Select Integration Scenario* step.

In the *Integration Scenario* screen area, select the following process integration scenario from the *Integration Repository* and then choose *Continue*:

<b>Name</b>	TM_ERPShipmentIntegration_In
<b>Namespace</b>	<a href="http://sap.com/xi/TMS/Global/IC">http://sap.com/xi/TMS/Global/IC</a>
<b>Software Component Version</b>	SAPTM IC (check PPMS for current version)

3. Perform the *Create Configuration Scenario* step.

In the *Create Configuration Scenario* screen area, enter a name for the configuration scenario and choose *Finish*.

4. Choose *Close*.

The system transfers the integration scenario from the *Integration Builder: Repository*. The *Integration Scenario Configuration* wizard starts.

5. Perform the following configuration steps:

1. *Select Component View*

You can configure multiple component views within the same configuration scenario. For this connection, there is only one component view defined and you therefore skip this step.

2. *Assign Services*

To map the participants in a process displayed in the model to actual senders and receivers of messages in your system landscape, assign the business systems by choosing *Assign Services*. On the *Business System Services for A2A* tab, assign the business system of the sender and receiver system. To select the next system, use the navigation arrows to navigate.

3. *Configuration Connections*

To configure the three connections, choose *Configure Connections*. For each connection, select the appropriate receiver communication channel for the receiver business system (PI receiver communication channel for SAP Transportation Management system; IDoc receiver communication channel for SAP ERP system) and choose the *Apply* pushbutton. The navigation arrows enable you to navigate to the other connections in the process integration scenario.

4. *Generate*

To generate all connections, choose *Generate*. A dialog box appears in which you make the following settings:

<i>General</i>	Generation
<i>Scope of Generation</i>	You can limit the scope of generation to particular object types. Select the checkboxes of the following object types: <ul style="list-style-type: none"> <li>○ <i>Receiver Determination</i></li> <li>○ <i>Interface Determination</i></li> <li>○ <i>Sender/Receiver Agreement</i></li> </ul>
<i>Change List for Generated Objects</i>	Select the <i>Create New</i> radio button if you want to create a new change list for the generated objects. You can also use an existing change list. The process integration scenario is predefined.

- Choose *Start*.

The system displays the generation log, which you can save.

- Configure the interface determination for IDoc interface SHPMNT . SHPMNT05.

To avoid conflicts with other scenarios that also send IDoc SHPMNT . SHPMNT05 to the SAP NetWeaver PI system, you have to set up the interface determination for IDoc interface SHPMNT . SHPMNT05 accordingly. The system differentiates between different applications of the IDoc by using their message variants, which are communicated in field MESCOD of the IDoc control structure.

Make sure that the following condition and interface mapping have been entered for inbound interface TransportationOrderSCMRequest\_In under *Configured Inbound Interfaces*:

### **i** Note

Either use the left or the right value column depending on the technology you intend to use. If there is one column only for a field, the value is valid for the PI mapping as well as for IDOC2SOA.

Field	Value	
<i>Service</i>	PI mapping	IDOC2SOA
	SAP ERP system, for example, ERP_500	
<i>Sender</i> screen area		
<i>Interface</i>	SHPMNT . SHPMNT05	TransportationOrderSCMRequest_Out
<i>Namespace</i>	urn:sap-com:document:sap:idoc:messages	http://sap.com/xi/APPL/Global
<i>Service</i>	SAP TM system to which the target interface is to be routed For example, TM1_750	
<i>Configured Inbound Interfaces</i> screen area		
<i>Inbound Interface Name</i>	TransportationOrderSCMRequest_In	
<i>Inbound Interface Namespace</i>	http://sap.com/xi/TMS	
<i>Condition</i>	/SHPMNT05/IDOC/EDI_DC40/ MESCOD = CRE	No condition needed
<i>Interface Mapping Name</i>	SHPMNTSHPMNT05_to_TransportationOrderSCMRequest	No mapping needed

- Repeat the above step for the following inbound interface.

- Make sure that the following condition and interface mapping have been entered for inbound interface `TransportationOrderSCMCancellationRequest_In` under *Configured Inbound Interfaces*:

Field	Value	
<i>Service</i>	PI mapping	IDOC2SOA
	SAP ERP system, for example, ERP_500	
<i>Sender screen area</i>		
<i>Interface</i>	SHPMNT.SHPMNT05	TransportationOrderSCMCancellationRequest_Out
<i>Namespace</i>	urn:sap-com:document:sap:idoc:messages	http://sap.com/xi/APPL/Global
<i>Service</i>	SAP TM system to which the target interface is to be routed For example, TM1_750	
<i>Configured Inbound Interfaces screen area</i>		
<i>Inbound Interface Name</i>	TransportationOrderSCMCancellationRequest_In	
<i>Inbound Interface Namespace</i>	<a href="http://sap.com/xi/TMS">http://sap.com/xi/TMS</a>	
<i>Condition</i>	/SHPMNT05/IDOC/EDI_DC40/ MESCOD = CNC	No condition needed
<i>Interface Mapping Name</i>	SHPMNTSHPMNT05_to_TransportationOrderSCMCancellationRequest	No mapping needed

- Make sure that the following condition and interface mapping have been entered for inbound interface `TransportationOrderSCMExecutionConfirmation_In` under *Configured Inbound Interfaces*

Field	Value	
<i>Service</i>	PI mapping	IDOC2SOA
	SAP ERP system, for example, ERP_500	
<i>Sender screen area</i>		
<i>Interface</i>	SHPMNT.SHPMNT05	TransportationOrderSCMExecutionConfirmation_Out
<i>Namespace</i>	urn:sap-com:document:sap:idoc:messages	http://sap.com/xi/APPL/Global

Field	Value	
Service	SAP TM system to which the target interface is to be routed. For example, TM1_750.	
Configured Inbound Interfaces screen area		
Inbound Interface Name	TransportationOrderSCMExecutionConfirmation_In	
Inbound Interface Namespace	http://sap.com/xi/TMS	
Condition	/SHPMNT05/IDOC/EDI_DC40/ MESCOD = CNF	No condition needed
Interface Mapping Name	SHPMNTSHPMNT05_to_Transport ationOrderSCMExecutionConfi rmation	No mapping needed

- Make sure that the following condition and interface mapping have been entered for inbound interface `TransportationOrderSCMExecutionStatusNotification_In` under *Configured Inbound Interfaces*

Field	Value	
Service	PI mapping	IDOC2SOA
	SAP ERP system, for example, ERP_500	
Sender screen area		
Interface	SHPMNT.SHPMNT05	TransportationOrderSCMExecu tionStatusNotification_Out
Namespace	urn:sap-com:docu- ment:sap:idoc:messages	http://sap.com/xi/APPL/Global
Service	SAP TM system to which the target interface is to be routed. For example, TM1_750.	
Configured Inbound Interfaces screen area		
Inbound Interface Name	TransportationOrderSCMExecutionStatusNotification_In	
Inbound Interface Namespace	http://sap.com/xi/TMS	
Condition	/SHPMNT05/IDOC/EDI_DC40/ MESCOD = STA	No condition needed



Field	Value	
Interface Mapping Name	SHPMNTSHPMNT05_to_TransportationOrderSCMExecutionStatusNotification	No mapping needed

- Make sure that the following condition and interface mapping have been entered for inbound interface SHIPPL.TPSSHT01 / TransportationOrderSCMExecutionCancellationRequest\_In under *Configured Inbound Interfaces*

Field	Value	
Service	PI mapping	IDOC2SOA
	SAP TM system, for example, TM1_750	
Sender screen area		
Interface	TransportationOrderSCMExecutionCancellationRequest_Out	
Namespace	http://sap.com/xi/TMS	
Service	SAP ERP system to which the target interface is to be routed For example, ERP_500	
Configured Inbound Interfaces screen area		
Inbound Interface Name	SHIPPL.TPSSHT01	TransportationOrderSCMExecutionCancellationRequest_In
Inbound Interface Namespace	urn:sap-com:document:sap:idoc:messages	http://sap.com/xi/APPL/Global
Condition	No condition needed	No condition needed
Interface Mapping Name	TransportationOrderSCMExecutionCancellationRequest_to_SHIPPLTPSSHT01	No mapping needed

- Make sure that the following condition and interface mapping have been entered for inbound interface TransportationOrderSCMExecutionDeliveryAssignmentChangedNotification\_In under *Configured Inbound Interfaces*

Field	Value	
Service	PI mapping	IDOC2SOA
	SAP ERP system, for example, ERP_500	

Field	Value	
Sender screen area		
Interface	SHPMNT.SHPMNT05	TransportationOrderSCMExecutionDeliveryAssignmentChangedNotification_Out
Namespace	urn:sap-com:document:sap:idoc:messages	http://sap.com/xi/APPL/Global
Service	SAP TM system to which the target interface is to be routed. For example, TM1_750.	
Configured Inbound Interfaces screen area		
Inbound Interface Name	TransportationOrderSCMExecutionDeliveryAssignmentChangedNotification_In	
Inbound Interface Namespace	http://sap.com/xi/TMS	
Condition	/SHPMNT05/IDOC/EDI_DC40/ MESCOD = ASG	No condition needed
Interface Mapping Name	SHPMNTSHPMNT05_to_TransportationOrderSCMExecutionDeliveryAssignmentChangedNotification_In	No mapping needed

- Make sure that the following condition and interface mapping have been entered for inbound interface `TransportationOrderSCMExecutionItmPckgAssgnmntChangedNotification_In` under *Configured Inbound Interfaces*

Field	Value	
Service	PI mapping	IDOC2SOA
	SAP ERP system, for example, ERP_500	
Sender screen area		
Interface	SHPMNT.SHPMNT05	TransportationOrderSCMExecutionItmPckgAssgnmtChangedNotification_Out
Namespace	urn:sap-com:document:sap:idoc:messages	http://sap.com/xi/APPL/Global

Field	Value	
Service	SAP TM system to which the target interface is to be routed. For example, TM1_750.	
Configured Inbound Interfaces screen area		
Inbound Interface Name	TransportationOrderSCMExecutionItmPckgAssgnmntChangedNotification_In	
Inbound Interface Namespace	http://sap.com/xi/TMS	
Condition	/SHPMNT05/IDOC/EDI_DC40/ MESCOD = PKG	No condition needed
Interface Mapping Name	SHPMNTSHPMNT05_to_TransportationOrderSCMExecutionItmPckgAssgnmntChangedNotification_In	No mapping needed

## Results

The relevant receiver determinations, interface determinations, and collaboration agreements are generated for your integration scenario and can be made relevant for PI runtime by activating your change list.

### 7.3.4.1 Checking Settings for Acknowledgement of IDocs

#### Use

In this procedure, you check the settings in your SAP PI system for acknowledgement of IDoc messages. If you do not want the system to send acknowledgment messages (ALEAUD IDocs) to the sender, carry out the following steps.

#### Procedure

1. In the SAP PI system, call transaction SE38, enter report `IDX_NOALE` and choose *Execute*.
2. Enter the sender port and the corresponding client
3. Choose *Do Not Request Acknowledgment*.

---

**i** Note

You can also request acknowledgments again by choosing *Request Acknowledgment*.

# 8 Configuration Settings for Plant Maintenance (PM) Integration

## Use

You use this process to configure the settings in SAP ERP that enable you to integrate plant maintenance (PM) processing of SAP ERP and resource master data of SAP TM.

## Prerequisites

You have activated the business function LOG\_SCM\_EQUIFUNCLOC\_INT (SCM, Equipment / Functional Location Integration into TM Resources) and rebuilt the CIF selection screen (refer to note [1320454](#) for details) has to be executed.

You have completed the basic settings for establishing the standard CIF transfer from SAP ERP to SAP TM. Refer to chapter *Configuration Settings for Core Interface (CIF)* for details.

### **i** Note

When specifying the SAP APO release SAP\_SCMB has to be used as system type and 713 or higher as release.

In order to enable the transfer of equipment and functional locations, you have to activate the change pointers for the message types CIFEQ (Equipment) and / or CIFFL (Functional Location) in Customizing for ERP under [SAP Components > Advanced Planning and Optimization > Basic Settings for the Data Transfer > Change Transfer > Change Transfer for Master Data > Activate ALE Change Pointers for Message Types](#)

Additionally you should configure the respective categories to write change documents when changing data. You do this in Customizing for ERP under:

- Equipment Categories  
[Plant Maintenance and Customer Service > Master Data in Plant Maintenance and Customer Service > Technical Objects > Equipment > Equipment Categories > Maintain Equipment Categories](#)
- Functional Categories  
[Plant Maintenance and Customer Service > Master Data in Plant Maintenance and Customer Service > Technical Objects > Functional Locations > Define Category of Functional Location](#)

## Activities

### Logging

---

You can view the application logging for processing using transaction SLG1 (Application Log: Display Logs) through object CIF and sub object RESTM.

### Enhancement Possibilities

In order to modify the data to be transferred from SAP ERP to SAP TM the following BADIs are available in Customizing for ERP:

- Functional Location
  - ▶ *Integration with Other SAP Components* ▶ *Advanced Planning and Optimization* ▶ *Application-Specific Settings and Enhancements* ▶ *Enhancements for Functional Location* ▶ *BAdI: CIF - Transfer Functional Locations to TM as Resources* ▶
- Equipment
  - ▶ *Integration with Other SAP Components* ▶ *Advanced Planning and Optimization* ▶ *Application-Specific Settings and Enhancements* ▶ *Enhancements for Equipment* ▶ *BAdI: CIF - Transfer Equipment to TM as Resources* ▶

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