



MASTER GUIDE | PUBLIC

SAP TM 9.6 FPS02

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Master Guide for SAP TM

Using SAP NetWeaver 7.5

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1 Document History

⚠ Caution

Before you start the implementation, make sure you have the latest version of this document. You can find the latest version at the following location: <http://help.sap.com/tm>.

The following table provides an overview of the most important document changes.

Version	Date	Description
3.0	2019-10-09	Formal Revision for FPS02
3.1	2020-05-11	Details about SAP Note 2910642 added

2 Getting Started

2.1 About This Document

Use

This Master Guide is the central starting point for the technical implementation of SAP Transportation Management 9.6 (SAP TM 9.6). It contains cross-scenario implementation information as well as scenario-specific information.

i Note

The central starting point for the **technical upgrade** of your SAP application/solution is the Upgrade Master Guide, which you can find on SAP Help Portal at <http://help.sap.com/tm>.

Whenever there is a reference to SAP ERP in the documentation of these applications, this refers not only to SAP ERP systems, but also to SAP S/4HANA.

This Master Guide provides an overview of SAP Transportation Management 9.6 (SAP TM 9.6), its software units (components), and its scenarios from a technical perspective. The Master Guide is a planning tool that helps you to design your SAP TM 9.6 system landscape. It refers you to the required detailed documentation, namely:

- Installation guides for single software units (components)
- SAP Notes
- Configuration documentation
- SAP Library documentation

This Master Guide provides information about the components and guides that are required during the implementation of SAP TM 9.6. The Master Guide comprises the following sections:

- [Getting Started \[page 4\]](#)
This section contains valuable information about using this document and related information crucial to the installation.
- [SAP Transportation Management Overview \[page 10\]](#)
This section provides an overview of a possible system landscape and overall installation information.
- [Business Scenarios of SAP Transportation Management \[page 17\]](#)
This section contains descriptions of some pre-designed business scenarios that can help you to implement SAP TM.
- [Solution-Wide Topics \[page 31\]](#)

i Note

For information about the technical implementation of SAP TM 9.6 and the latest installation and configuration guides, see SAP Help Portal at <http://help.sap.com/tm>.

We strongly recommend that you use the documents available here. The guides are regularly updated.

Constraints

- The business processes and scenarios that are described here serve as examples of how you can use SAP software in your company. They are intended only as models and may not run exactly as described in your system landscape. Make sure that you check your requirements and systems to determine whether the processes and scenarios can be used productively at your site. We also recommend that you test the processes and scenarios thoroughly in your test systems to ensure they are complete and free of errors before going live.
- This Master Guide primarily discusses the overall technical implementation of SAP TM 9.6, rather than its subordinate components. This means that additional software dependencies might exist without being mentioned explicitly in this document. You can find more information on component-specific software dependencies in the corresponding installation guides.

2.2 Related Information

Planning Information

For more information about planning topics not covered in this guide, see the following content:

Content	Location
Latest versions of installation and upgrade guides	http://help.sap.com/tm
Sizing, calculation of hardware requirements – such as CPU, disk and memory resource – with the Quick Sizer tool	http://sap.com/sizing
Released platforms and technology-related topics such as maintenance strategies and language support	https://support.sap.com/pam
Performance	http://sap.com/performance
Information about Support Package Stacks, latest software versions and patch level requirements	http://support.sap.com/sp-stacks
Information about Unicode technology	http://www.sdn.sap.com/irj/sdn/i18n

Further Useful Links

The following table lists further useful links:

Content	Location
SAP Notes search	https://support.sap.com/notes
SAP Software Distribution Center (software download and ordering of software)	https://support.sap.com/swdc
SAP Online Knowledge Products (OKPs) — role-specific learning maps	https://support.sap.com/ekt

Related Master Guides

This Master Guide is based on Component Master Guides for cross-industry solutions. You can find more information about the relevant solutions in the following documents:

List of Related Master Guides














Title	Location
SAP NetWeaver 7.5 Master Guide	http://help.sap.com/nw75 ▶ <i>Installation and Upgrade</i> ▶ <i>Master Guide</i> ▶
SAP ERP 6.0 EHP 8 Master Guide	https://help.sap.com/erp ▶ <i>Installation and Upgrade</i> ▶ <i>Master Guide</i> ▶

2.3 Important SAP Notes




You must read the following SAP Notes before you start the installation. These SAP Notes contain the most recent information about the installation, as well as corrections to the installation documentation.

Make sure that you have the up-to-date version of each SAP Note, which you can find on SAP Support Portal at <https://support.sap.com/notes>.




SAP Note Number	Title
1678998	Release strategy for the Product SAP TM
2729261	Release Restrictions of SAP Transportation Management 9.6

SAP Note Number	Title
2238445 	Integration of Supply Chain Management Applications to SAP S/4HANA, on-premise edition
1738013 	TM: Integration with EM, ERP, CRM and EWM - Releases, Enhancement Packages and Support Packages
2707086 	Installation/Delta Upgrade note for TM 9.6
2715852 	SAP TM 9.6-Collection of SAP Notes recommended to be implemented
1686826 	Installation Help for Installing SCM Optimizers To use detailed mixed package building, you must install the new package builder optimizer.
2050605 	SAP Event Management 9.2 – Installation/Upgrade
2118104 	Support Packages for SCEMSRV 920
1224284 	Enterprise Services, Installing and Accessing the SOA Documentation. This SAP Note lists the business-related grouping of Enterprise Services.
1515223 	SAP NetWeaver Process Integration: Release Recommendation. This SAP Note sets out our recommendation on which release of SAP NetWeaver PI you should use.
1529649 	Factory Calendar Expires 2010
1388258 	Version Interoperability within the SAP Business Suite
1573180 	AEX Enablement for SAP Business Suite
2062861 	SAP TM Archiving

Important SAP Notes – Information/Consulting Notes

SAP Note Number	Title
900000 	NetWeaver Business Client – FAQ
2842396 	New Fields in the Product Master Data for Package Building
2910642 	Updated maintenance timelines for SAP Transportation Management Business Suite releases

Important SAP Notes – Troubleshooting Notes

SAP Note Number	Title
423184 	ALE: Problems with Logical System Names
1080668 	Problems with Alert Subscription
1634677 	TM: Checking Customizing Settings in ERP

3 SAP Transportation Management 9.6 on SAP HANA

SAP Transportation Management (SAP TM) 9.6 is released to run on the SAP HANA database.

iNote

- The required SAP Netweaver release is SAP NetWeaver 7.5. For more information, see SAP note [2156130](#) - Add-on compatibility of SAP NetWeaver 7.5 - ABAP.
- The release on the SAP HANA database does not imply any functional changes or functional enhancement to SAP TM. All scenarios and all functions in SAP TM can be used on SAP HANA in the same way as on any other supported database.

4 SAP Transportation Management Overview

4.1 Introduction to SAP Transportation Management

Transportation costs have become an important factor in our economy. This is caused by increasing fuel costs and the highly increased demand to move goods within a more and more globalized business environment. Furthermore, the transportation market is highly competitive, which tends to lead to low margins in this sector.

To operate private fleets efficiently, regardless of whether you are a manufacturer, retailer, or logistics service provider, you need to be able to plan your transportation needs in an efficient way. SAP Transportation Management allows you to:

- Determine the most efficient transportation plan, while fulfilling the given constraints (such as service level agreements, costs, and resource availability)
- Identify cost-saving opportunities (such as consolidation possibilities and the choice of the best means of transport)
- Maximize the utilization of existing resources (such as using your own fleet)
- React to execution events and solve possible conflicts with the initial plan

This Master Guide provides an overview of the following transportation scenarios:

- [International Outbound Transportation \(Travel & Logistics Services\) \[page 17\]](#)
- [International Inbound Logistics \(Chemicals\) \[page 19\]](#)
- [Domestic Inbound Transportation \(Automotive\) \[page 21\]](#)
- [Domestic Outbound Transportation \(Food\) \[page 23\]](#)
- [Less than Container Load \(LCL\) Ocean Freight \(Travel & Logistics Services\) \[page 24\]](#)
- [Air Freight Without LCL \(Travel & Logistics Services\) \[page 26\]](#)
- [Intermodal Rail Freight \[page 29\]](#)

i Note

The central starting point for the **technical upgrade** of your SAP application is the Upgrade Master Guide, which you can find on SAP Help Portal at <http://help.sap.com/tm>.

4.2 Software Components of SAP Transportation Management

This section provides an overview of the most important software components in SAP Transportation Management.

TM Server

The TM Server hosts the basic functionality of SAP Transportation Management. It is based on for SAP NetWeaver 7.5 and contains mainly the software component versions SAP Transportation Management 170 (SAPTM 170), SAP SCM BASIS 7.14 (SCM BASIS 714), and SAP Business Suite Foundation 748 (SAP_BS_FND 748).

TM UI Features

TM UI features contains the software component version SAP Transportation Management User Interface 1.70 (SAPTMUI 170), which can be installed separately from TM Server on SAP Netweaver 7.5.

SAP SCM Optimizer

SAP SCM Optimizer, as used by SAP Transportation Management, contains two optimizers dedicated to vehicle scheduling and routing (VSR) and carrier selection (CS). The optimizers take into account various constraints and are guided by global objective functions based on key performance indicators. In the case of highly complex scenarios, the optimization results improve with increasing CPU time.

Content Components

The following content component versions are also part of SAP Transportation Management:

- XI Content: XI CONTENT SAP TM 1.7 and XI CONTENT SCM BASIS 7.14.

i Note

For additional content (for example, BI Content), see SAP Support Package Stacks at <http://support.sap.com/sp-stacks>.

i Note

SAP Transportation Management delivers web templates and displays query results graphically as an example of how BW queries can be used in Netweaver Business Client. The sources of web templates are delivered in the JAVA stack of SAP BW and hence in order to make use of web templates, you must perform a double stack installation for SAP BW. You need not setup the Enterprise Portal along with this.

4.3 Software Component Matrix

This section provides an overview of which business scenario uses which software unit (component).

For the latest component version and patch level requirements, see the SAP Support Package page on SAP Support Portal at <http://support.sap.com/sp-stacks>.

Note

There are software requirements for each of the following components that are not explicitly mentioned in this document. These requirements are documented in the associated installation guides.

Software Component Matrix Components

SAP TM Business Processes	SAP TM 9.6	SAP ERP 6.0*/ SAP S/4HANA**	SAP EM 9.2* (SP 02 and higher)	SAP SCM Optimizer
TM: Managing Transportation Requirements	X	X*	(X)	(X)
TM: Managing Forwarding Orders	X	(X)	(X)	X
TM: Managing Bookings	X	(X)	X	X
TM: Managing Freight Orders	X	(X)	X	X
TM: Planning Freight and Selecting Carriers	X	(X)	X	X
TM: Tendering Freight	X	—	—	—
TM: Executing and Monitoring Freight	X	(X)	X	X
TM: Settling Freight Orders	X	X	(X)	X
TM: Settling Forwarding Orders	X	X	(X)	X

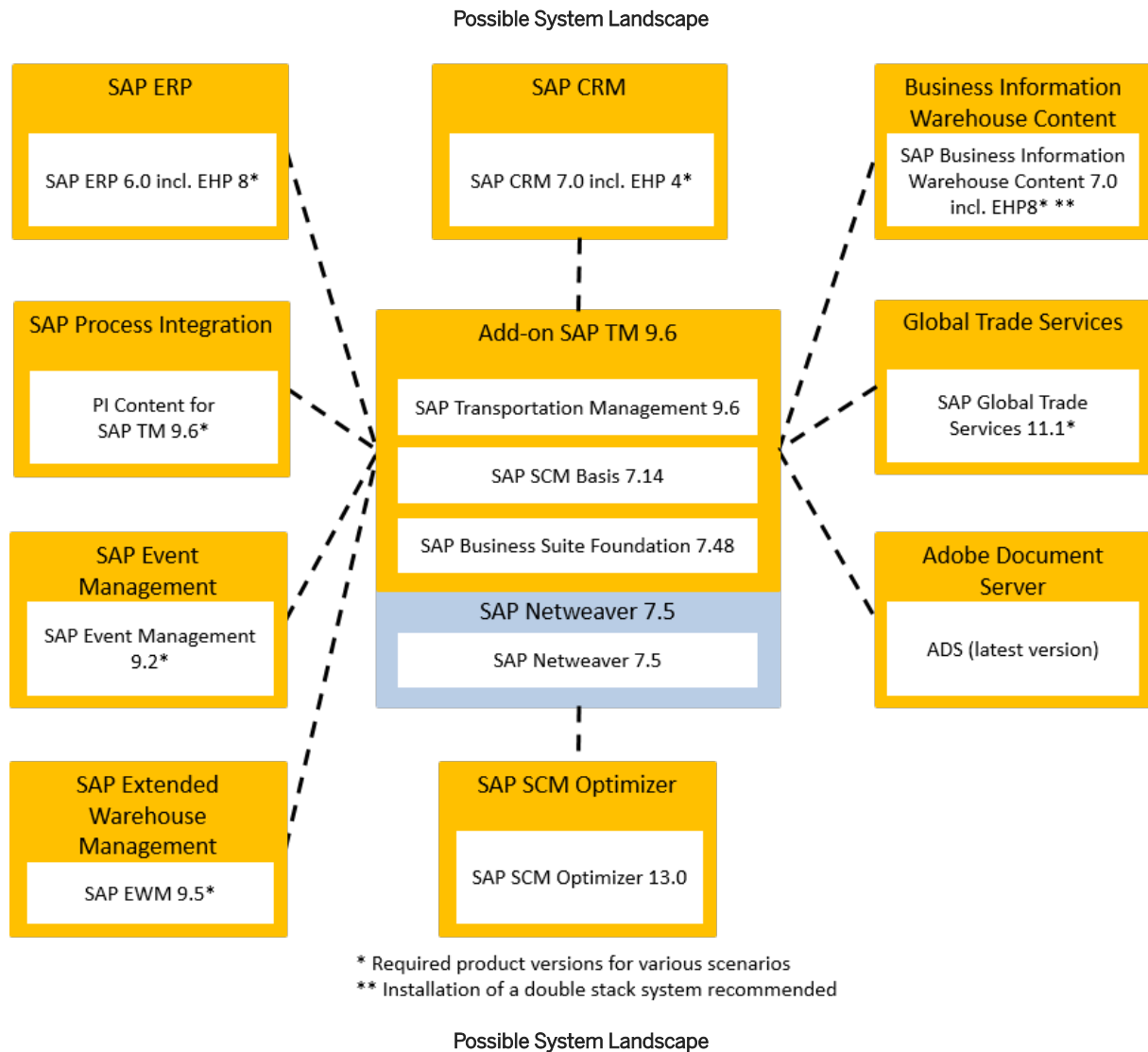
* Usage of latest release required only when you use new features. For more information, see SAP Note [1738013](#).

** Integration to SAP S/4HANA on premise edition is supported with SAP S/4HANA 1511 SP00 and subsequent. For more information, see SAP Note [2238445](#).

Key: X = mandatory; (X) = optional; – not part of the business process

4.4 System Landscape

The following figure provides an overview of a possible system landscape for SAP TM 9.6.



⚠ Caution

Use a minimal system landscape for test and demo purposes only. For performance, scalability, high availability, and security reasons, do **not** use a minimal system landscape as your production landscape.

We do not recommend installing all components on one host. You should distribute the components among several hosts, as shown in the diagram above. This diagram provides just one example; there are several ways to distribute the components. The distribution depends on many factors, such as sizing, security, available hardware, technical dependencies, and so on.

i Note

SAP Global Trade Services is required for customs management.

Additional Information Regarding Printing

If you want to print documents such as bills of lading, you require Adobe Document Services (ADS). For more information, see *Configuration of Adobe Document Services for Print Applications* in SAP Library for SAP NetWeaver on SAP Help Portal at <http://help.sap.com/nw>.

For more information about the installation of SAP NetWeaver, see the Master Guide for SAP NetWeaver 7.5 on SAP Help Portal at <http://help.sap.com/nw75/>. In SAP Help Portal, choose ► *SAP NetWeaver 7.5* ► *Installation and Upgrade Information* ► *Master Guide*. For more information about the required releases and Support Packages, see the respective sections about the business processes for SAP Transportation Management.

4.5 Tools and Resources for Planning Your System Landscape

To plan your system landscape, you can use a few tools and resources that are available to you as SAP customer.

Tools

We provide the Business Process Repository (BPR) Viewer to look up descriptions of business scenarios and business processes.

In addition, there are tools in SAP Solution Manager that support you before, during, or after the installation of your SAP product or SAP enhancement package.

These tools include:

Tools for Supporting Installations and Upgrades

Tool	Purpose
Solution Manager System Landscape (transaction <code>SMSY</code>)	To model and set up your system landscape
SAP Solution Manager Maintenance Optimizer (transaction <code>DSWP</code>)	To install support packages and SAP enhancement packages
Business Process Repository	To access configuration documentation, links to Customizing activities and master data transactions, specifically tailored for individual business processes, business scenarios, or implementable steps

Tools for Supporting Installations and Upgrades

Tool	Purpose
Business Process Change Analyzer (available with SAP enhancement package 1 for SAP Solution Manager 7.0)	To analyze the effects of transports and support packages as well as activation logs for business functions

i Note

You require the SAP Solution Manager 7.2 version of solution manager:

SAP Solution Manager: Implementation Content

To get implementation content that supports you during the configuration of your business processes and business scenarios, you need the SAP Solution Manager add-on *Implementation Content* ST-ICO 150_700 (SP52 or higher).

Maintenance Planner

SAP solution manager's cloud-based maintenance planner is the successor of maintenance optimizer. Maintenance planner is the central tool to plan updates, upgrades, or new installations in your system landscape.

For more information, see https://help.sap.com/viewer/p/maintenance_planner.

4.6 Business Process Repository (BPR) Viewer

The business process repository viewer (BPR viewer) is a tool that allows you to preview the existing business scenarios, business processes that are shipped as part of SAP Solution Manager content. You can make use of the information in SAP Solution Manager during your implementation project by taking the pre-delivered implementation content as the starting point for your project scope. The implementation content is delivered with the following assigned information:

- Description of the business scenario, process, or implementable step
- Configuration content (Customizing activities or configuration documentation)

4.7 Overall Implementation Sequence

Use

⚠ Caution


Before you start the installation, you **must** know which components and releases are required for the business processes you want to use. We do not recommend installing all components. Only install those components that are required for the business processes you want to use.

For more information about the required components, see the [software component matrix \[page 12\]](#) for each business process.


The following table describes the overall installation sequence for SAP TM 9.6:

Process




TM Host

Step	Action/Required Documentation	Remarks/Subsequent Steps
1	Installation of SAP NetWeaver 7.5 – Installation Guide	For more information, see http://help.sap.com/tm .
2	Installation/Delta Upgrade note for SAP TM 9.6	For more information, see SAP Note 2707086 

SCM Optimizer Host

Step	Action/Required Documentation	Remarks/Subsequent Steps
1	To use detailed mixed package building, you must install the new package builder optimizer.	For more information, see installation note 1686826  Installation Help for Installing SCM Optimizers .

i Note

For an overview of the planning and installation information necessary for implementing SAP Identity Management, see the Installation Overview on SAP Help Portal at <http://help.sap.com/nwidm80>   [SAP Identity Management 8.0](#) .

5 Business Scenarios of SAP Transportation Management

5.1 Business Scenarios of SAP Transportation Management

Prerequisites

Before you start to configure the scenarios, you have to implement the settings described in the following documents:

Content	Location
Basic Settings for SAP ERP	This configuration guide is part of SAP Solution Manager implementation content ST-ICO 150_700 SP52 (or higher). For more information about SAP Solution Manager, see https://support.sap.com/en/solution-manager.html .
Basic Settings for SAP Transportation Management	This configuration guide is part of SAP Solution Manager implementation content ST-ICO 150_700 SP52. For more information about SAP Solution Manager, see https://support.sap.com/en/solution-manager.html .

5.2 International Outbound Transportation (Travel & Logistics Services)

Description

This scenario describes the freight forwarding process for transporting three twenty-foot standard dry containers for a customer from the United States to Germany by sea. The entire trip is managed by the freight forwarder Simon Express Corporation US and its European subsidiary Deutsche Ubersee AG.

In this scenario, the customer, New York Abrasives USA, delivers three twenty-foot standard dry containers containing steel parts to the forwarder's warehouse (Simon Express Corp.) at Newark, United States. The containers are to be delivered to the consignee Lebensmittelgrosshandlung Meyer in Dusseldorf, Germany by sea.

Simon Express Corp. reserves the required ocean freight space with the ocean liner Europa Express and also organizes the customs clearance and drayage of the cargo to Newark Port.

Europa Express, the container shipping line, ships the containers from Newark to Rotterdam.

Once the containers reach the port of Rotterdam, Simon Express Corp.'s subsidiary in Europe organizes the customs clearance of the cargo from the port. It also organizes a trucking service for delivering the three containers to the consignee Lebensmittelgrosshandlung Meyer in Dusseldorf.

Europa Express bills the shipper for handling, ocean transport, customs, and delivery services.

The scenario comprises the following business processes:

1. TM: Managing Forwarding Orders
2. TM: Managing Bookings
3. TM: Planning Freight and Selecting Carriers
4. TM: Managing Freight Orders
5. TM: Executing and Monitoring Freight
6. TM: Settling Forwarding Orders
7. TM: Settling Freight Orders

Technical System Landscape

The following software units (components) are either mandatory or optional, as indicated below, for the technical implementation of the scenario:

Software Unit (Component)	Mandatory	Optional
SAP Transportation Management 9.6	X	—
EHP7 for SAP ERP 6.0 and higher	X	—
SAP EM 9.2 SPO2 (Event Management) and higher	X	—
SAP SCM Optimizer	X	—
XI CONTENT SAP TM 1.70	X	—
SAP NetWeaver PI	X	—

Software Units

For more information about software units (components), see the [Software Component Matrix](#) section of this guide.

Implementation Sequence

For more information, see the section [Overall Implementation Sequence](#) or [Overall Upgrade Sequence](#).

Further Information

The following documents provide more information about the scenario:

Content	Location
Scenario description	The scenario description is part of SAP Solution Manager implementation content. For more information about SAP Solution Manager, see https://support.sap.com/en/solution-manager.html .
Configuration documentation	The configuration documentation is part of SAP Solution Manager implementation content. For more information about SAP Solution Manager, see https://support.sap.com/en/solution-manager.html .

i Note

The documentation for this scenario will not be updated any longer. However, SAP Transportation Management still supports the business process.

5.3 International Inbound Logistics (Chemicals)

Description

You use this business scenario to manage your international inbound logistics. As an ordering party you procure material from different overseas vendors. A logistics unit within your company plans the individual stages, which includes identifying a vessel for the ocean shipment. Depending on the relevant Incoterm, you are responsible for arranging inbound transportation activities for certain stages. For example, the Incoterm FOB ("free on board") specifies that vendors are responsible for managing pre-carriage stages (from the source location to the port of loading), while the logistics service provider is responsible for the stages from the port of loading to the destination location (main carriage and on-carriage stages).

The scenario comprises the following business processes:

1. Processing Purchase Orders in ERP
2. TM: Managing Transportation Requirements
3. TM: Managing Bookings
4. TM: Planning Freight and Selecting Carriers
5. TM: Executing and Monitoring Freight
6. TM: Settling Freight Orders
7. Verifying Logistics Invoices Online

Technical System Landscape

The following software units (components) are either mandatory or optional, as indicated below, for the technical implementation of the scenario:

Software Unit (Component)	Mandatory	Optional
SAP Transportation Management 9.6	X	—
EHP7 for SAP ERP 6.0 and higher	X	—
SAP EM 9.2 SPO2 or higher	—	X
SAP NetWeaver PI	X	—
XI CONTENT SAP TM 1.70	X	—

Software Units

For more information about software units (components), see the [Software Component Matrix](#) section of this guide.

Implementation Sequence

For more information, see the section [Overall Implementation Sequence](#) or [Overall Upgrade Sequence](#).

Further Information

The following documents provide more information about the scenario:

Content	Location
Scenario description	The scenario description is part of SAP Solution Manager implementation content. For more information about SAP Solution Manager, see https://support.sap.com/en/solution-manager.html .
Configuration documentation	The configuration documentation is part of SAP Solution Manager implementation content. For more information about SAP Solution Manager, see https://support.sap.com/en/solution-manager.html .

5.4 Domestic Inbound Transportation (Automotive)

Description

You can use this business scenario to manage your inbound shipments for goods you procure and receive from domestic suppliers.

As a buyer receiving high volumes of goods per day, you achieve more favorable freight agreements with logistics service providers than the individual vendors would, and therefore you pay for the freight charges of inbound shipments.

Freight settlement with logistics service providers is a key capability of SAP TM based on master data defined in Transportation Charge Management and integrated into SAP ERP for invoice processing. SAP TM enables you to efficiently process freight settlements and increases your visibility of freight expenses incurred.

The common mode of transport for land-based transport is the truck. Full truck loads reduce the transportation costs but are rarely achieved with direct shipments from one supplier location to one destination location alone. A mix of direct shipments, shipments with pre-carriages and main carriage, and multi-pick, multi-drop trips reduces the transportation costs. SAP TM enables you to optimize truck loads achieving optimal transportation costs while taking into account constraints such as on-time delivery.

When directly ordering material to be used as components in production plants, on-time delivery is crucial in order to achieve the lowest possible inventory levels without risking production plans due to missing parts, and to optimize the utilization of resources in goods receipt and warehouse processing. Shipment tracking and event monitoring create the necessary visibility of transportation execution, enabling you to react earlier to critical situations.

This scenario describes the shipment of goods within Germany via truck. The goods are ordered by two production plants from two different vendors; each vendor has several production locations from which the goods are shipped. An area forwarding agent is automatically selected to transport the goods depending on the transportation zone where the supplying vendor is located.

A trip per day with full truck load (FTL) is considered to be realistic, collecting the freight to be picked from supplier locations in the region of North Rhine-Westphalia, and to be delivered to the plants located in the region of Bavaria. The freight agreement with the logistics service provider contains an overall charge for FTL for a truck per day. All freight beyond that trip is charged based on weight- and distance-related rates.

The scenario comprises the following business processes:

1. Processing Purchase Orders in ERP
2. TM: Managing Transportation Requirements
3. TM: Planning Freight and Selecting Carriers
4. TM: Executing and Monitoring Freight
5. Inbound Processing and Receipt Confirmation Without Warehouse Management
6. TM: Settling Freight Orders
7. Verifying Logistics Invoices Online
8. Processing Evaluated Receipt Settlements (ERS) in ERP

Technical System Landscape

The following software units (components) are either mandatory or optional, as indicated below, for the technical implementation of the scenario:

Software Unit (Component)	Mandatory	Optional
SAP Transportation Management 9.6	X	—
EHP7 for SAP ERP 6.0 and higher	X	—
SAP EM 9.2 SP02 or higher	—	X
XI CONTENT SAP TM 1.70	X	—
SAP NetWeaver PI	X	—

Software Units

For more information about software units (components), see the [Software Component Matrix](#) section of this guide.

Implementation Sequence

For more information, see the section [Overall Implementation Sequence](#) or [Overall Upgrade Sequence](#).

Further Information

The following documents provide more information about the scenario:

Content	Location
Scenario description	The scenario description is part of SAP Solution Manager implementation content. For more information about SAP Solution Manager, see https://support.sap.com/en/solution-manager.html .
Configuration documentation	The configuration documentation is part of SAP Solution Manager implementation content. For more information about SAP Solution Manager, see https://support.sap.com/en/solution-manager.html .

i Note

As of SAP TM 9.2, the documentation for this scenario will not be updated. However, SAP Transportation Management still supports the business process.

5.5 Domestic Outbound Transportation (Food)

Description

This scenario is used by a shipper that wants to manage its domestic outbound freight. The shipper will be either a distributor or manufacturer of its own products and distributes them through its network of plants, distribution centers, and possibly, third party warehouse operations.

The shipper has a logistics organization that is responsible for the timely, cost effective, and efficient transportation of its products between and from its facilities to the end customer (that is, prepaid). In some cases, the shipper may also be responsible for certain portions of the transportation operations for customer-arranged freight (that is, collection).

The scenario comprises the following business processes:

1. Sales Order Processing
2. TM: Managing Transportation Requests
3. TM: Planning Freight and Selecting Carriers
4. TM: Tendering Freight
5. TM: Executing and Monitoring Freight
6. TM: Settling Freight Orders

Technical System Landscape

The following software units (components) are either mandatory or optional, as indicated below, for the technical implementation of the scenario:

Software Unit (Component)	Mandatory	Optional
SAP Transportation Management 9.6	X	—
EHP7 for SAP ERP 6.0 and higher	X	—
SAP EM 9.2 SPO2 or higher	—	X
XI CONTENT SAP TM 1.70	X	—
SAP NetWeaver PI	X	—

Software Units

For more information about software units (components), see the [Software Component Matrix](#) section of this guide.

Implementation Sequence

For more information, see the section [Overall Implementation Sequence](#) or [Overall Upgrade Sequence](#).

Further Information

The following documents provide more information about the scenario:

Content	Location
Scenario description	The scenario description is part of SAP Solution Manager implementation content. For more information about SAP Solution Manager, see https://support.sap.com/en/solution-manager.html .
Configuration documentation	The configuration documentation is part of SAP Solution Manager implementation content. For more information about SAP Solution Manager, see https://support.sap.com/en/solution-manager.html .

5.6 LCL Ocean Freight (Travel & Logistics Services)

Description

This scenario describes the less than container load (LCL) ocean freight operations of the freight forwarding company, Interforwarders, Japan. Interforwarders is a global logistics service provider (LSP) organization with offices and facilities in various major Japanese and North American cities. The Interforwarders transportation network consists of forwarding houses in Tokyo, Nagoya, and Hiroshima as well as a central gateway and container freight station in Yokohama. On the U.S. west coast, the gateway is the container freight station in Los Angeles, and forwarding houses are in Phoenix, San Diego, and San Francisco. Typically, the forwarding houses have direct customer contact, whereas the central gateway serves to coordinate and consolidate all ocean traffic through its container freight station. This means that the forwarding houses have contracts (forwarding agreements) with customers (including both shippers and consignees), which stipulate the appropriate charges and handling of shipments. The gateways, on the other hand, enter into contracts (freight agreements)

with the carriers (container shipping lines and trucking companies) to specify optimized consolidated cost rates and volume agreements.

In this scenario, the Yokohama gateway reserves container space by generating ocean bookings directly with the container shipping line, SOCAL, for specific voyages within the schedule for the trade lane from Yokohama to the port of Long Beach.

The scenario comprises the following main stages:

- Pick-up of individual shipments from shippers and transportation to a forwarding house on a less than truck load (LTL) basis
At the forwarding house, the shipments are consolidated into full truck loads (FTL).
- Pre-carriage from the forwarding house to the container freight station on an FTL basis
At the container freight station, the truck loads are loaded into standard containers, as supplied by the container shipping line. The filled containers are loaded on to the scheduled container transporter.
- Main carriage from the container port at Yokohama to the container port at Long Beach.
The containers are unloaded into truck loads.
- On-carriage from the container freight station to the appropriate U.S. forwarding house on an FTL basis
The trucks are unloaded and the individual shipments are sorted according to their final destinations.
- Delivery to the final destinations on an LTL basis

This scenario comprises the following business processes:

1. TM: Managing Bookings
2. TM: Managing Forwarding Orders
3. TM: Planning Freight and Selecting Carriers
4. TM: Executing and Monitoring Freight
5. TM: Settling Freight Orders
6. TM: Settling Forwarding Orders
7. Verifying Logistics Services Online
8. Billing in ERP

As of TM 9.6, this scenario has been enhanced with a second variant for full container deliveries (FCL). In this scenario, a container is delivered directly to a shipper's location (empty provisioning) as the first stage. Once the shipper loads the container, the container is transported directly to the port of Yokohama. The main stage connects this port with the import destination at Long Beach. Later, the container is delivered to a consignee.

Technical System Landscape

The following software units (components) are either mandatory or optional, as indicated below, for the technical implementation of the scenario:

Software Unit (Component)	Mandatory	Optional
SAP Transportation Management 9.6	X	—
EHP7 for SAP ERP 6.0 and higher	X	—

Software Unit (Component)	Mandatory	Optional
SAP EM 9.2 SPO2 or higher	—	X

Software Units

For more information about software units (components), see the [Software Component Matrix](#) section of this guide.

Implementation Sequence

For more information, see the section [Overall Implementation Sequence](#) or [Overall Upgrade Sequence](#).

Further Information

The following documents provide more information about the scenario:

Content	Location
Scenario description	The scenario description is part of SAP Solution Manager implementation content. For more information about SAP Solution Manager, see https://support.sap.com/en/solution-manager.html .
Configuration documentation	The configuration documentation is part of SAP Solution Manager implementation content. For more information about SAP Solution Manager, see https://support.sap.com/en/solution-manager.html .

5.7 Air Freight (Travel & Logistics Services)

Description

This scenario describes the operations that involve consolidated air freight at gateways belonging to a LSP with subsidiaries in Japan and in the United States. The transportation network consists of forwarding houses (stations) in Tokyo and Nagoya, a central gateway, and two warehouses at Narita International Airport. There

are two warehouses on the U.S west coast, a gateway at Los Angeles International Airport, and forwarding houses (stations) in Phoenix, AZ and San Diego, CA.

In this scenario, the gateway in Narita creates an internal master flight schedule with specific flights and transportation allocations for each carrier for specific days of the week. You then create a master flight plan by defining the actual departures in a certain time period, for example six months. Based on this master flight plan, you extract an operational flight plan containing all flights with booked capacity for a shorter time period, for example, four weeks. The system then automatically creates freight bookings for each schedule departure and assigns air waybill numbers from a predefined number range.

The forwarding houses in Nagoya and Tokyo register the individual shipments in the form of forwarding orders from various shippers in Nagoya and the greater Tokyo area. The forwarding houses check the shipments before assigning the forwarding orders to a freight booking for the main carriage stage or generating a transportation proposal. The forwarding houses also create freight orders for picking up the goods from the shipper.

The forwarding houses also perform all the necessary export customs clearance activities and record it in the forwarding orders.

Land transportation in Japan consists of the following stages:

- Pickup of individual shipments from the shipper and transport to the forwarding houses in Tokyo and Nagoya
Note that Tokio station can be converted into an EWM warehouse if EWM is connected. Then you must execute standard procedures for inbound and outbound processes before a truck can depart for the second stage.
- Pre-carriage from the forwarding houses in Tokyo and Nagoya to the gateway in Narita

After the truck arrives at the gateway in Narita, the individual shipments are loaded as loose air freight, which is then transported to the carrier's warehouses at the airport. The airline confirms the departure of the plane by sending an *Uplift Confirmed* message to the LSP. At this point, the LSP in Japan sends the forwarding settlements to the shippers and the freight settlement to the carrier. New forwarding orders, including freight units and freight bookings for the import process, are generated from the preceding forwarding orders and freight bookings.

Once the goods arrive at the gateway in Los Angeles, the LSP in the United States confirms the arrival at destination. The goods are then deconsolidated for customs clearance before being reconsolidated and transported as part of a full truck load from the gateway to the forwarding houses in San Diego, CA or Phoenix, AZ.

The scenario comprises the following business processes:

1. TM: Managing Bookings
2. TM: Managing Forwarding Orders
3. TM: Planning Freight and Selecting Carriers
4. TM: Executing and Monitoring Freight
5. TM: Managing Freight Orders
6. TM: Settling Freight Orders
7. TM: Settling Forwarding Orders

Technical System Landscape

The following software units (components) are either mandatory or optional, as indicated below, for the technical implementation of the scenario:

Software Unit (Component)	Mandatory	Optional
SAP Transportation Management 9.6	X	—
EHP7 for SAP ERP 6.0 and higher	—	X
SAP EM 9.2 SPO2 or higher	—	X

Software Units

For more information about software units (components), see the [Software Component Matrix](#) section of this guide.

Implementation Sequence

For more information, see the section [Overall Implementation Sequence](#) or [Overall Upgrade Sequence](#).

Further Information

The following documents provide more information about the scenario:

Content	Location
Scenario description	The scenario description is part of SAP Solution Manager implementation content. For more information about SAP Solution Manager, see https://support.sap.com/en/solution-manager.html .
Configuration documentation	The configuration documentation is part of SAP Solution Manager implementation content. For more information about SAP Solution Manager, see https://support.sap.com/en/solution-manager.html .

5.8 Intermodal Rail Freight

Description

This scenario describes the freight forwarding process for transporting a twenty-foot container for a customer from Halifax, Canada to Houston, U.S by sea and rail. The shipper Maersk Line hands over the container to the Canadian National Railway at the container terminal Halterm in Halifax. Since the container contains dangerous goods, the Canadian National Railway transports it to Toronto on a scheduled train as ordered by the customer. The interchange to BNSF (Burlington Northern and Santa Fe Railway) takes place in Toronto. Ocean Bond sends the container to Oklahoma, crossing the U.S. border in Detroit. The scheduled train operated by BNSF sends the container to the final destination (Houston) and the consignee, Hendricks Platforms Inc., picks up the container at the yard in Houston.

Alternatively, you can also send the container through Chicago. Because of heavy congestion on the ordered default route, the container operationally follows the actual route through Chicago. Canadian National Railway operates the freight forwarding from Toronto to Chicago Heights Yard and arranges for the interchange of freight to BNSF at Chicago IM EX Yard. The Canadian National Railways subcontracts Joe's Trucking to forward the freight through a truck from Chicago Heights to Chicago IM EX. The container is off-loaded from the railcar and loaded to the truck. On arriving at Chicago IM EX Yard, the container is off-loaded again from the truck and loaded on a railcar. The container reaches the final destination (Houston) and the consignee, Hendricks Platforms Inc., picks up the container at the yard in Houston.

The invoices are based on the ordered route and Rule 11. Canadian National Railway and BNSF each send an invoice to Maersk for their portion of the trip. The charges on each of the invoices include the respective terminal handling in the origin and destination.

Apart from the charges for transportation and additional services, there may be charges incurred during execution. These event-based charges are added as additional charges in the invoices.

The scenario comprises the following business processes:

1. TM: Managing Transportation Requirements
2. TM: Planning Freight and Selecting Carriers
3. TM: Executing and Monitoring Freight
4. TM: Settling Forwarding Orders
5. TM: Settling Freight Orders

Technical System Landscape

The following software units (components) are either mandatory or optional, as indicated below, for the technical implementation of the scenario:

Software Unit (Component)	Mandatory	Optional
SAP Transportation Management 9.6	X	—

Software Unit (Component)	Mandatory	Optional
EHP7 for SAP ERP 6.0 and higher		X
SAP EM 9.2 SPO2 or higher	X	—
XI CONTENT SAP TM 1.70	X	—
SAP NetWeaver PI	X	—

Software Units

For more information about software units (components), see the *Software Component Matrix* section of this guide.

Implementation Sequence

For more information, see the section *Overall Implementation Sequence* or *Overall Upgrade Sequence*.

Further Information

The following documents provide more information about the scenario:

Content	Location
Scenario description	The scenario description is part of SAP Solution Manager implementation content. For more information about SAP Solution Manager, see https://support.sap.com/en/solution-manager.html .
Configuration documentation	The configuration documentation is part of SAP Solution Manager implementation content. For more information about SAP Solution Manager, see https://support.sap.com/en/solution-manager.html .

6 Solution-Wide Topics

6.1 Introduction

- For more information about the Upgrade Roadmap that provides methodologies for planning and executing an upgrade project, see SAP Solution Manager. For more information about SAP Solution Manager, see SAP Support Portal at <https://support.sap.com/en/solution-manager.html>.
- For more information about shared services that are provided by SAP NetWeaver and are required to run a system landscape, such as Solution Manager, System Landscape Directory, and Software Lifecycle Manager, see the current Master Guide and Upgrade Master Guide for SAP NetWeaver on SAP Help Portal at <http://help.sap.com/nw75> under *Installation and Upgrade*.

6.2 SAP Solution Manager

We strongly recommend the SAP Solution Manager platform to efficiently support the implementation of your solution. Using SAP Solution Manager significantly accelerates the implementation process and helps you to achieve your business goals. At the same time, SAP can deliver Support Services based on the business scenarios designed and documented in SAP Solution Manager. Implementation content for your solution may further accelerate the implementation process.

For information about the availability of content specifically tailored to your solution, see SAP Support Portal at <https://support.sap.com/en/solution-manager.html>.

6.3 Service-Oriented Architecture (SOA)

6.3.1 Introduction

SAP's delivery on SOA (service-oriented architecture) differs from the pure architectural concept of SOA in the delivery of ready-to-use enterprise services. Enterprise services are SAP-defined Web services which provide end-to-end business processes or individual business process steps that can be used to compose business scenarios while ensuring business integrity and ease of reuse. SAP designs and implements enterprise service interfaces to ensure semantic harmonization and business relevance. This section deals with the service-enablement of SAP Business Suite 7.

6.3.2 Service Enablement

The service enablement of SAP Business Suite consists of one or more of the following SAP components:

- **SAP Business Suite 7**

Enterprise services are an integral part of the software components of the SAP Business Suite applications. Enterprise services are the technical interfaces to the functionality available in the business application.

- **SAP NetWeaver PI 7.0 or higher**

SAP NetWeaver Process Integration (SAP NetWeaver PI) is an open integration and application platform that provides tools enabling you to set up a service-oriented architecture for business applications. You can use the platform for providing, discovering, and consuming services, integrating applications using the integration server, and managing business processes. Process integration is required in a runtime environment to consume enterprise services in a mediated scenario.

We recommend that you use the highest version of SAP NetWeaver Process Integration (PI). For more information, see SAP Note [1515223](#) and SAP Note [1388258](#).

i Note

Starting with SAP NetWeaver Process Integration (PI) 7.3, SAP provides a new installation option Advanced Adapter Engine Extended (AEX). Since AEX is based on AS Java alone, it is easier to install and maintain as well as it needs less memory and data storage. Therefore, AEX is a cost-saving option compared to a full installation of SAP NetWeaver PI. For more information about the AEX, enter the phrase *Advanced Adapter Engine Extended* in the documentation of SAP NetWeaver Process Integration at <http://help.sap.com/nw73> and see SAP Note [1573180](#).

i Note

Asynchronous services that are enabled for *Web Services Reliable Messaging (WS-RM)* can be called in a point-to-point communication scenario. Otherwise asynchronous services can only be consumed in a mediated scenario.

- **Enterprise Services Repository**

The Enterprise Services Repository (ES Repository) is the central repository that contains the definition of all enterprise services and models. The ES Repository is shipped with SAP NetWeaver PI and with SAP NetWeaver Composition Environment (CE) starting with SAP NetWeaver PI 7.1 and with SAP NetWeaver CE 7.1. The Enterprise Services Repository is a design time environment that enables you to create and enhance enterprise service definitions.

i Note

In a SAP NetWeaver 7.0x landscape you use the Integration Repository to create and enhance enterprise service definitions.

- **Services Registry**

The Services Registry is shipped with SAP NetWeaver PI and SAP NetWeaver CE starting with SAP NetWeaver PI 7.1 and SAP NetWeaver CE 7.1. The Service Registry is only required for the publication of enterprise service end-points (Web services) that have been configured and activated in the SAP Business Suite.

- **SAP NetWeaver CE 7.1 or higher**

The SAP NetWeaver Composition Environment (SAP NetWeaver CE) provides a robust environment for the design and implementation of composite applications.

The design time environment of SAP NetWeaver CE can be used for the model-driven design and development of composite applications based on enterprise services. SAP NetWeaver CE offers the tools and the environment necessary for running composite applications fast and efficiently in a runtime environment.

6.3.3 Installation of the Service-Oriented Architecture (SOA)

The installation of service interfaces, and therefore the service enablement of SAP Business Suite, consists of one or more of the following phases:

- **Identification of software components and required business functions**
You use the technical data section of the enterprise service documentation to identify the following data for each enterprise service:
 - the software component version with which the service was shipped
 - the business function(s) required to be activated
- **Identification of technical usages** (relevant for SAP ERP only)
SAP Note [1818596](#) provides a mapping of business functions and software component versions to technical usages. You use this documentation to identify the required technical usages for your list of software component versions and business functions.
- **Installation of the software component ECC-SE** (relevant for SAP ERP only)
The software component ECC-SE contains service implementations for ECC (the ERP Central Component). This component must be explicitly installed if you intend to use enterprise services for ECC functionality. In this case you must also select the technical usage "ESA ECC-SE" during the enhancement package installation.
- **Selection and installation together with the other parts of the enhancement package**
In the enhancement package installation process you must select all the technical usages you have identified for service enablement together with the technical usages you identified for enhanced features in SAP Business Suite. The selected technical usages will install the corresponding software components that contain the enterprise services interfaces and implementations.
- **Import of ESR Content (aka XI Content)** (optional)
To install the content required for the enterprise service definitions you must select the technical usage "XI Content" in the enhancement package installation process. This usage type downloads the content files for SAP NetWeaver PI 7.0 or higher. Unpack the ZIP file and copy the tpz files corresponding to your SAP NetWeaver PI version into the import directory of your Integration Repository (for SAP NetWeaver PI 7.0x) or Enterprise Services Repository (for SAP NetWeaver ES Repository 7.1 or higher). Use the import function to import the content files into the corresponding repository (Integration Repository or Enterprise Services Repository). (Choose **Tools** > **Import Design Objects**)
- **Services Registry** (optional)
The services registry is shipped starting with SAP NetWeaver PI 7.1 and CE 7.1. You must configure the services registry and then publish the enterprise services from the Business Suite application to the registry using the transaction `SOAMANAGER` in the backend.
For further information regarding the SAP NetWeaver PI, CE and ES Repository, refer to the corresponding SAP NetWeaver Installation and Master Guides.

6.3.4 Related Documentation

For more information about the service-oriented architecture (SOA), see the following information sources:



- SCN Community in the SAP Network at <https://scn.sap.com/community/soa> (registration required)
- SAP Note [1359215](#): Technical prerequisites for using enterprise services (relevant for *ERP* only)
- SAP note [838402](#): Problems with non-Unicode system landscapes

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