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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.

Table 1:

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>2017-11-30</td>
<td>Initial Version</td>
</tr>
<tr>
<td>1.1</td>
<td>2017-12-21</td>
<td>Content changes to the guide</td>
</tr>
</tbody>
</table>
2 Getting Started

2.1 About This Document

Use

This Upgrade Master Guide provides a central starting point for the technical upgrade of SAP Transportation Management 9.4 (SAP TM 9.4) or SAP TM 9.3 or SAP TM 9.2 or SAP TM 9.1 or SAP TM 9.0 or SAP TM 8.1 or SAP TM 8.0 to SAP TM 9.5. You can find cross-scenario upgrade information as well as scenario-specific information in this guide.

Note

The central starting point for the technical implementation of your SAP solution is the Master Guide, which you can find on SAP Service Marketplace 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 Upgrade Master Guide provides an overview of the upgrade paths, as well as the upgrade of the involved software units (components) and scenarios from a technical perspective. The Upgrade Master Guide is a planning tool that helps you to decide which software units you have to upgrade, while taking into account the dependencies between the software units. It refers you to the required detailed documentation, and in particular the following:

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

For a general overview of available SAP documentation, see The Main SAP Documentation Types.

The Upgrade Master Guide consists of the following main sections:

- Getting Started [page 5]
  This section contains valuable information about using this document and related information crucial to the upgrade.
- Transportation Management Upgrade Overview [page 11]
  This section provides an overview of a possible system landscape and overall upgrade information.

Note

For information about the technical upgrade to SAP TM 9.5 and the latest upgrade, installation, and configuration guides, see SAP Service Marketplace at http://help.sap.com/tm.

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

This Upgrade Master Guide primarily deals with the overall technical upgrade of SAP TM 8.0, SAP TM 8.1, SAP TM 9.0, SAP TM 9.1, SAP TM 9.2, SAP TM 9.3 and SAP TM 9.4, rather than its subordinate components. This means that additional software dependencies may exist that are not mentioned explicitly in this document. For more information about component-specific software dependencies, see the corresponding upgrade guides.

2.2 Related Information

Planning Information

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

<table>
<thead>
<tr>
<th>Content</th>
<th>Location on SAP Service Marketplace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latest versions of installation and upgrade guides</td>
<td><a href="http://help.sap.com/tm">http://help.sap.com/tm</a></td>
</tr>
<tr>
<td>SAP Upgrade Info Center – general information about upgrade topics and solution-specific upgrade information</td>
<td><a href="http://service.sap.com/upgradeinfo">http://service.sap.com/upgradeinfo</a></td>
</tr>
<tr>
<td>General information about SAP Transportation Management</td>
<td><a href="http://service.sap.com/scm">http://service.sap.com/scm</a></td>
</tr>
<tr>
<td>Sizing and calculation of hardware requirements – such as CPU, disk and memory resource</td>
<td><a href="http://service.sap.com/sizing">http://service.sap.com/sizing</a></td>
</tr>
<tr>
<td>Released platforms and technology-related topics such as maintenance strategies and language support</td>
<td><a href="http://service.sap.com/platforms">http://service.sap.com/platforms</a></td>
</tr>
<tr>
<td>Network security</td>
<td><a href="http://service.sap.com/securityguide">http://service.sap.com/securityguide</a></td>
</tr>
<tr>
<td>High Availability</td>
<td><a href="http://service.sap.com/ha">http://service.sap.com/ha</a></td>
</tr>
<tr>
<td>Performance</td>
<td><a href="http://sap.com/performance">http://sap.com/performance</a></td>
</tr>
<tr>
<td>Information about Unicode technology</td>
<td><a href="http://www.sdn.sap.com/irj/sdn/i18n">http://www.sdn.sap.com/irj/sdn/i18n</a></td>
</tr>
</tbody>
</table>
Further Useful Links

The following table lists further useful links on SAP Service Marketplace:

Table 3:

<table>
<thead>
<tr>
<th>Content</th>
<th>Location in SAP Service Marketplace</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP Notes search</td>
<td><a href="https://support.sap.com/notes">https://support.sap.com/notes</a></td>
</tr>
<tr>
<td>SAP Software Distribution Center (software download and ordering of software)</td>
<td><a href="https://support.sap.com/swdc">https://support.sap.com/swdc</a></td>
</tr>
<tr>
<td>SAP Online Knowledge Products (OKPs) – role-specific Learning Maps</td>
<td><a href="https://support.sap.com/ekt">https://support.sap.com/ekt</a></td>
</tr>
</tbody>
</table>

Related Upgrade Master Guides

This Upgrade Master Guide is based on Component Upgrade Master Guides for cross-industry solutions.

2.3 Important SAP Notes

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

Make sure that you have the current version of each SAP Note, which you can find on SAP Service Marketplace at https://support.sap.com/notes.

Installation/Upgrade Notes

Table 4:

<table>
<thead>
<tr>
<th>SAP Note Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1539802</td>
<td>SAP TM: Overview note</td>
</tr>
<tr>
<td>1678998</td>
<td>Release Strategy for the ABAP Add-On SAP TM</td>
</tr>
<tr>
<td>2562832</td>
<td>Release Restrictions of SAP Transportation Management 9.5</td>
</tr>
<tr>
<td>2238445</td>
<td>Integration of Supply Chain Management Applications to SAP S/4HANA, on-premise edition</td>
</tr>
<tr>
<td>2519997</td>
<td>SAP TM 9.5: Collection of notes recommended to be implemented</td>
</tr>
<tr>
<td>SAP Note Number</td>
<td>Title</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------</td>
</tr>
<tr>
<td>2512482</td>
<td>Installation/Delta Upgrade note for TM 9.5</td>
</tr>
<tr>
<td>2316985</td>
<td>Implementing the SCM Optimizer Version 13.0</td>
</tr>
<tr>
<td>2118104</td>
<td>Installation/Upgrade SCEMSRV 920</td>
</tr>
<tr>
<td>2050605</td>
<td>SAP Event Management 9.2 – Installation/Upgrade</td>
</tr>
<tr>
<td>1224284</td>
<td>Enterprise Services, Installing and Accessing the SOA Documentation. This SAP Note lists the business-related grouping of Enterprise Services.</td>
</tr>
<tr>
<td>1515223</td>
<td>SAP NetWeaver Process Integration: Release Recommendation. This SAP Note sets out our recommendation on which release of SAP NetWeaver PI you should use.</td>
</tr>
<tr>
<td>1529649</td>
<td>Factory Calendar Expires 2010</td>
</tr>
<tr>
<td>1388258</td>
<td>Version Interoperability within the SAP Business Suite</td>
</tr>
<tr>
<td>1573180</td>
<td>Enable AEX for SAP Business Suite</td>
</tr>
<tr>
<td>1846034</td>
<td>SAP Visual Business 2.1: Information about patches</td>
</tr>
<tr>
<td>1738013</td>
<td>TM: Integration to EM, ERP, CRM and EWM – Releases, Enhancement Packages and Support Packages. This note provides an overview on required releases depending on the features to be used.</td>
</tr>
<tr>
<td>631042</td>
<td>Release strategy for Implementation Content (ST-ICO)</td>
</tr>
<tr>
<td>1747234</td>
<td>Trigger Processing and Usage of the Report /SCMTMS/PROCESS_TRIGGER_BGD</td>
</tr>
<tr>
<td>2062861</td>
<td>SAP TM Archiving</td>
</tr>
<tr>
<td>2062861</td>
<td>SAP TM Archiving</td>
</tr>
</tbody>
</table>

Information/Consulting Notes and Troubleshooting Notes

Table 5:

<table>
<thead>
<tr>
<th>SAP Note Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>9000000</td>
<td>NetWeaver Business Client – FAQ</td>
</tr>
<tr>
<td>423184</td>
<td>ALE: Problems with Logical System Names</td>
</tr>
<tr>
<td>SAP Note Number</td>
<td>Title</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>1080668</td>
<td>Problems with alert subscription</td>
</tr>
<tr>
<td>1634677</td>
<td>TM: Checking Customizing settings in ERP</td>
</tr>
</tbody>
</table>
3 SAP Transportation Management 9.5 on SAP HANA

SAP Transportation Management (SAP TM) 9.5 is released to run on the SAP HANA database.

**Note**
- The required 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: Upgrade Overview

### 4.1 Upgrade at a Glance

The following table provides an overview of the software units (components) that you need to upgrade:

<table>
<thead>
<tr>
<th>Previous Release</th>
<th>Target Release</th>
<th>Action and Further Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP TM 8.0</td>
<td>SAP TM 9.5 SP00</td>
<td>Upgrade</td>
</tr>
<tr>
<td>SAP TM 8.1</td>
<td>SAP TM 9.5 SP00</td>
<td>Upgrade</td>
</tr>
<tr>
<td>SAP TM 9.0</td>
<td>SAP TM 9.5 SP00</td>
<td>Upgrade</td>
</tr>
<tr>
<td>SAP TM 9.1</td>
<td>SAP TM 9.5 SP00</td>
<td>Upgrade</td>
</tr>
<tr>
<td>SAP TM 9.2</td>
<td>SAP TM 9.5 SP00</td>
<td>Upgrade</td>
</tr>
<tr>
<td>SAP TM 9.3</td>
<td>SAP TM 9.5 SP00</td>
<td>Upgrade</td>
</tr>
<tr>
<td>SAP SCM Basis 7.01 to SAP SCM Basis 7.13</td>
<td>SAP SCM Basis 7.14 SP03</td>
<td>Upgrade</td>
</tr>
<tr>
<td>SAP SCM Optimizer 7.02 SP01 or SAP SCM Optimizer 7.03 or SAP SCM Optimizer 10.0 or SAP SCM Optimizer 11.0 or SAP SCM Optimizer 12.0</td>
<td>SAP SCM Optimizer 13.0 or higher (see SAP Note 2316985)</td>
<td>Upgrade</td>
</tr>
<tr>
<td>MDG Foundation 7.48</td>
<td>MDG Foundation 7.49 SP04</td>
<td>Upgrade</td>
</tr>
<tr>
<td>SAP Business Suite Foundation 7.02 to SAP Business Suite Foundation 7.47</td>
<td>SAP Business Suite Foundation 7.48 SP03</td>
<td>Upgrade</td>
</tr>
<tr>
<td>SAP NetWeaver 7.02 or SAP NetWeaver 7.31 SP02 or SAP NetWeaver 7.40</td>
<td>SAP NetWeaver 7.50 SP03</td>
<td>Upgrade</td>
</tr>
<tr>
<td>Geocoding</td>
<td>Geocoding</td>
<td>No action required</td>
</tr>
<tr>
<td>XI CONTENT SAP TM 1.1 to XI Content SAP TM 1.4</td>
<td>XI CONTENT SAP TM 1.5 SP00</td>
<td>Upgrade</td>
</tr>
<tr>
<td>XI CONTENT SCM BASIS 7.02 or XI CONTENT SCM BASIS 7.13</td>
<td>XI CONTENT SCM BASIS 7.14 SP02</td>
<td>Upgrade</td>
</tr>
</tbody>
</table>
### 4.2 Upgrade Paths

If you use SAP Event Management (SAP EM) as an optional add-on for SAP TM 9.4, make sure that you are using SAP EM 9.2 SP 02 or higher. We recommend that you apply the most recent Support Package.

For all other software units (components) that need to be upgraded, there is a direct upgrade path. This means that a step-based upgrade is not necessary.

### 4.3 Upgrade of Involved Software Units

There are no special requirements for upgrading the software units (components). For more information about the upgrade of the involved software units (components), see [Overall Upgrade Sequence](page 17).

### 4.4 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 Service Marketplace at [http://service.sap.com/sp-stacks](http://service.sap.com/sp-stacks).
### Table 7: Software Component Matrix Components

<table>
<thead>
<tr>
<th>SAP TM Business Processes</th>
<th>SAP TM 9.5</th>
<th>SAP ERP 6.0*/ SAP S/4HANA**</th>
<th>SAP EM 9.2* (SP 02 and higher)</th>
<th>SAP SCM Optimizer 13.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM: Managing Transportation Requirements</td>
<td>X</td>
<td>X*</td>
<td>(X)</td>
<td>(X)</td>
</tr>
<tr>
<td>TM: Managing Forwarding Orders</td>
<td>X</td>
<td>(X)</td>
<td>(X)</td>
<td>X</td>
</tr>
<tr>
<td>TM: Managing Bookings</td>
<td>X</td>
<td>(X)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>TM: Managing Freight Orders</td>
<td>X</td>
<td>(X)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>TM: Planning Freight and Selecting Carriers</td>
<td>X</td>
<td>(X)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>TM: Tendering Freight</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>TM: Executing and Monitoring Freight</td>
<td>X</td>
<td>(X)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>TM: Settling Freight Orders</td>
<td>X</td>
<td>X</td>
<td>(X)</td>
<td>X</td>
</tr>
<tr>
<td>TM: Settling Forwarding Orders</td>
<td>X</td>
<td>X</td>
<td>(X)</td>
<td>X</td>
</tr>
</tbody>
</table>

Integration to SAP S/4HANA on premise edition is supported with SAP S/4HANA SP0 and subsequent. For more information, see SAP Note [2238445](#).

* 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 SP0 and subsequent. For more information, see SAP Note [2238445](#).

X = mandatory; (X) = optional; – = not part of the business scenario

### 4.5 System Landscape

The following figure provides an overview of the minimum possible system landscape for SAP TM 9.5.
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.

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.
Additional Information Regarding Enterprise Services

Enterprise services are shipped with SAP TM 9.5. There is one technical scenario for enterprise services:

- Using asynchronous enterprise services (TM services): To run asynchronous enterprise services, you must install SAP NetWeaver Exchange Infrastructure (SAP NetWeaver XI).

**Note**

SAP SNC services run with an SAP ERP system for message exchange.


Setting Up the Documentation Infrastructure for Enterprise Services

SAP TM 9.5 enterprise services documentation is to be run with SAP Solution Composer, which is part of SAP Solution Manager. For more information about how to set up the documentation infrastructure for enterprise services, see SAP Note [1224284](http://help.sap.com/nw75) (Enterprise Services, Installing and Accessing the SOA Docu).

4.6 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**

On SAP Service Marketplace, 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:

Table 8:

<table>
<thead>
<tr>
<th>Tool</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solution Manager System Landscape (transaction SMSY)</td>
<td>To model and set up your system landscape</td>
</tr>
<tr>
<td>SAP Solution Manager Maintenance Optimizer (transaction DSWP)</td>
<td>To install support packages and SAP enhancement packages</td>
</tr>
<tr>
<td>Business Process Repository</td>
<td>To access configuration documentation, links to Customizing activities and master data transactions, specifically tailored for individual business processes, business scenarios, or implementable steps</td>
</tr>
<tr>
<td>Business Process Change Analyzer (available with SAP enhancement package 1 for SAP Solution Manager 7.0)</td>
<td>To analyze the effects of transports and support packages as well as activation logs for business functions</td>
</tr>
</tbody>
</table>

**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.

---

**4.7 Business Process Repository (BPR) Viewer**

The business process repository viewer (BPR viewer) is a tool on SAP Service Marketplace 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)

## 4.8 Overall Upgrade Sequence

### Use

To upgrade to SAP TM 9.5, you require a complete upgrade only for SAP TM. All underlying layers are simply SP upgrades; the releases can remain the same. Refer to the release notes for the individual service packages.

To run a specific scenario, you only need a subset of the available software units. Some software units are only required for special processes. For information about which software units are required to run a specific scenario, see Software Component Matrix [page 12].

For the latest component version and patch level requirements, see the SAP Support Package page on SAP Service Marketplace at [http://service.sap.com/sp-stacks](http://service.sap.com/sp-stacks).

### Process

**Table 9:**

<table>
<thead>
<tr>
<th>Step</th>
<th>Action/Required Documentation</th>
<th>Remarks/Subsequent Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Installation of SAP TM 9.4 SP00 and higher – installation notes</td>
<td>For more information, see SAP Note <a href="http://service.sap.com/sp-stacks">2345023</a>.</td>
</tr>
</tbody>
</table>
### 4.9 Post Import Actions - XPRAs

#### 4.9.1 Introduction

In SAP TM 9.5 (SAP TM 160), some fields and tables have a different implementation to those of SAP TM 9.4, SAP TM 9.3, SAP TM 9.2, SAP TM 9.1, SAP TM 9.0, SAP TM 8.1, or SAP TM 8.0. The system uses reports, programs, and “execution of programs after import” (XPRAs) reports to implement these changes automatically.

**Note**

All XPRAs and migration reports use authorization group TMXP to avoid accidental or unintended data migration. In order to execute such programs, the executing user has to have `S_PROGRAM` authorization with `P_GROUP = 'TMXP'` and `P_ACTION = 'SUBMIT'`.

The following areas are affected:

- Calculation profile
- Rate tables
- Equipment groups
- Schedules
- Customs
- Party roles
- Service level codes
- Planning

---

<table>
<thead>
<tr>
<th>Step</th>
<th>Action/Required Documentation</th>
<th>Remarks/Subsequent Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Upgrade of ESA ECC-SE 605</td>
<td>You can also install ESA ECC-SE 603 SP09. If you want to use internal forwarding settlement in the Transportation Charge Management component of SAP Transportation Management 9.2, you have to install ESA ECC-SE 604 SP09.</td>
</tr>
</tbody>
</table>

**Note**

ESA ECC-SE 604 and 605 are independent of EHP7 or any other enhancement package of SAP ERP 6.0.

● Freight order management
● Forwarding order management
● Waybill stocks
● Credit limit check
● Trade lanes
● Air cargo security
● Charges profiles
● Tendering
● Resource master
● Charge calculation
● EWM integration
● Agreements
● Page Layouts
● GANTT settings for warnings and notifications
● Profile and layout sets

i Note
For some of the XPRA reports, correction notes are available. For more information, see references of SAP note 2345023.

4.9.2 Calculation Profile

In SAP TM 8.1 or higher, several fields in the Customizing activity Define General Settings have been moved to the Customizing activity Define Calculation Profile. The invoicing level, which was included in the Customizing activity Define Settlement Profile in SAP TM 8.0, now maps to the calculation level in the Customizing activity Define Calculation Profile in SAP TM 8.1.

The system uses /SCMTMS/XPRA_101_TCC_CALC_PROF to implement these changes in SAP TM 8.1 or higher.

Run Times

Depending on the size of the installation, you can expect the following run times:

Table 10:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Organizational Units</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>500</td>
<td>2 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>1,000</td>
<td>4 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>2,000</td>
<td>8 seconds</td>
</tr>
</tbody>
</table>
### 4.9.3 Rate Tables

#### Rate Table Reference Scales

In SAP TM 8.0, rate tables use reference scales that you define independently. In SAP TM 8.1 or higher, rate tables use scales that are intended only for these rate tables.

The system uses /SCMTMS/XPRA_101_TC_RATES to convert the rate tables from the SAP TM 8.0 format to the format of SAP TM 8.1 or higher.

#### Run Times

Depending on the size of the installation, you can expect the following run times:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Scale Items</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>100,000</td>
<td>1 minute 40 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>500,000</td>
<td>8 minutes 20 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>1,000,000</td>
<td>16 minutes 40 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>10,000,000</td>
<td>2 hours 46 minutes 40 seconds</td>
</tr>
</tbody>
</table>

#### Rate Table Validity

As of SAP TM 9.3, the validity period of the rates in a rate table can be defined at rate level. This means that rates in a rate table can have different validity periods. The system uses the XPRA /SCMTMS/XPRA_140_RATE_VALIDITY to default the validity period of rates created from TM 9.1 onwards to the validity period of the parent rate table.

#### Run Times

Depending on the size of the installation, you can expect the following run times:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Rate Values</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>10,000,000</td>
<td>8 minutes 20 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>100,000,000</td>
<td>1 hour 23 minutes 20 seconds</td>
</tr>
</tbody>
</table>
Migration of Zero Rates

In SAP Transportation Management (SAP TM) 9.1 and 9.2, database records for zero rates in rate tables are stored as \( \text{RATE} = 0 \). As of SAP TM 9.3, database records for zero rates are stored as \( \text{ZERO_RATE} = X \). The system uses the XPRA /SCMTMS/XPRA_140_ZERO_RATE to migrate the database records for zero rates from the old format to the new format in SAP TM 9.3.

Run Times

 Depending on the size of the installation, you can expect the following run times:

Table 13:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Rate Values</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>500,000,000</td>
<td>6 hours 56 minutes 40 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>1,000,000,000</td>
<td>13 hours 53 minutes 20 seconds</td>
</tr>
</tbody>
</table>

4.9.4 Equipment Groups

In SAP TM 9.0, equipment groups are dependent on the transportation mode. To ensure that the system continues to respond in the same way after you have upgraded to SAP TM 9.0 or higher, an XPRA assigns the transportation modes \( \text{SEA} \) and \( \text{ROAD} \) to each equipment group that does not have a transportation mode assigned to it.

The system uses /SCMTMS/XPRA_110_EQU_MOT to assign missing transportation modes.
Run Times

Depending on the size of the installation, you can expect the following run times:

Table 14:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Equipment Groups</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>10</td>
<td>1 second</td>
</tr>
<tr>
<td>Medium</td>
<td>50</td>
<td>1 second</td>
</tr>
<tr>
<td>Large</td>
<td>100</td>
<td>1 second</td>
</tr>
<tr>
<td>Very large</td>
<td>200</td>
<td>2 seconds</td>
</tr>
</tbody>
</table>

4.9.5 Schedules

As of SAP TM 9.0, the departure rules support multiple departure days for the same week. If you specify a weekly rule, the days of the week can be selected separately. For this reason, this XPRA migrates the weekday that was previously stored as a single field into seven new fields representing each day of the week.

The new schedule queries also support a selection based on the first/last and standard/actual locations. It is therefore necessary to specify first/last and standard/actual locations in the schedule database tables.

The system uses /SCMTMS/XPRA_110_FO_SCHEDULE to convert the schedule tables from the SAP TM 8.1 format to the format of SAP TM 9.0 or higher.

Run Times

Depending on the size of the installation, you can expect the following run times:

Table 15:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Schedules</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>100</td>
<td>5 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>500</td>
<td>25 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>1,000</td>
<td>50 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>5,000</td>
<td>4 minutes 10 seconds</td>
</tr>
</tbody>
</table>
4.9.6 Customs

This XPRA is required for system upgrades from SAP TM 8.1 to SAP TM 9.0 or higher. It copies existing settings from the SAP TM 8.1 Customizing tables into the new Customizing tables.

The system uses /SCMTMS/XPRA_110_GTS_ACTIVITY to convert the customs tables from the SAP TM 8.1 format to the SAP TM 9.0 format.

Run Times

Depending on the size of the installation, you can expect the following run times:

Table 16:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Customs Settings</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>2</td>
<td>0 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>3</td>
<td>0 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>5</td>
<td>1 second</td>
</tr>
<tr>
<td>Very large</td>
<td>10</td>
<td>1 second</td>
</tr>
</tbody>
</table>

4.9.7 Party Roles

In SAP TM 9.0, Customizing for party role codes has been moved from the SAP TM software layer to SCM_BASIS. This XPRA copies existing Customizing settings for party role codes from SAP TM to the new Customizing tables in SCM_BASIS.

The system uses /SCMTMS/XPRA_110_PTRO to move party role code settings from SAP TM to SCM_BASIS.

Run Times

Depending on the size of the installation, you can expect the following run times:

Table 17:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Party Roles</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>20</td>
<td>1 second</td>
</tr>
<tr>
<td>Medium</td>
<td>40</td>
<td>2 seconds</td>
</tr>
</tbody>
</table>
4.9.8 Service Level Codes

As of SAP Transportation Management 9.0, transportation service level codes used in sales and purchasing are independent of one another.

They can also be defined as either dependent on or independent of the transportation mode. The Customizing tables for transportation service level codes have been moved from SAP SCM Basis to SAP TM, so that the applications that use these Customizing settings belong completely to SAP TM.

The system uses /SCMTMS/XPRA_110_SLC to move service level codes from the SCM_BASIS software layer to SAPTM.

Run Times

Depending on the size of the installation, you can expect the following run times:

Table 18:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Codes</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>10</td>
<td>1 second</td>
</tr>
<tr>
<td>Medium</td>
<td>30</td>
<td>2 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>100</td>
<td>10 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>200</td>
<td>20 seconds</td>
</tr>
</tbody>
</table>

4.9.9 Planning

Determine Planning-Relevant Attributes

The XPRA /SCMTMS/XPRA_140_TOR_GEN_ATTR sets the new planning-relevant attributes that are available as of SAP TM 9.3 to indicate, for example, if the business document represents a capacity or a requirement.

For more information, see the system documentation.

Run Times
Depending on the size of the installation, you can expect the following run times:

Table 19:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Orders</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>500,000</td>
<td>10 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>5,000,000</td>
<td>1 minute 40 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>50,000,000</td>
<td>16 minutes 40 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>500,000,000</td>
<td>2 hours 46 minutes 40 seconds</td>
</tr>
</tbody>
</table>

**Manual Planning Settings**

The XPRA for Manual Planning Settings of Planning Profiles (/SCMTMS/XPRA_150_PROFILES) changes fields and values in the following areas:

- Means-of-transport dependent costs
  The field values are changed to support the new logic for unlimited numbers.
- Optimizer settings
  The old field for incremental planning is mapped to the new fields.
- Planning profile and manual planning settings
  For each planning profile, manual planning settings are created using default values.

**Run Times**

Depending on the size of the installation, you can expect the following run times:

Table 20:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number Profiles</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>25</td>
<td>1 second</td>
</tr>
<tr>
<td>Medium</td>
<td>50</td>
<td>1 second</td>
</tr>
<tr>
<td>Large</td>
<td>200</td>
<td>4 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>1000</td>
<td>20 seconds</td>
</tr>
</tbody>
</table>

**Scheduling Settings of Planning Profiles**

As of SAP TM 9.5, several settings from the planning profile has been moved to the new scheduling settings.

The system uses the XPRA /SCMTMS/XPRA_160_SCHEDSETT to copy scheduling related settings from planning profiles into the new scheduling settings, and updates the planning profiles with a link to the new created scheduling settings.
Run Times

Depending on the size of the installation, you can expect the following run times:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number Profiles</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>10</td>
<td>1 second</td>
</tr>
<tr>
<td>Medium</td>
<td>100</td>
<td>1 second</td>
</tr>
<tr>
<td>Large</td>
<td>1,000</td>
<td>10 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>10,000</td>
<td>1 minute 40 seconds</td>
</tr>
</tbody>
</table>

4.9.10 Freight Order Management

Enable Charge Calculation and Settlement

In SAP TM 9.0, the following two indicators have been added to Customizing for freight orders and freight bookings, as well as to the associated documents:

- Enable Charge Calculation
- Enable Settlement

These indicators must be selected for all existing booking order types and booking documents. Otherwise, it will no longer be possible to calculate and settle charges for existing documents.

These indicators must be selected for all existing freight order types and freight order documents if the document is relevant for subcontracting. Otherwise, the indicators must not be selected.

The system uses `/SCMTMS/XPRA_110_TOR_CHRG_REL` to convert the freight management tables from the SAP TM 8.1 format to the format of SAP TM 9.0 or higher.

Run Times

Depending on the size of the installation, you can expect the following run times:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Orders</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>10,000</td>
<td>6 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>200,000</td>
<td>2 minutes</td>
</tr>
<tr>
<td>Large</td>
<td>2,000,000</td>
<td>20 minutes</td>
</tr>
<tr>
<td>Very large</td>
<td>36,000,000</td>
<td>6 hours</td>
</tr>
</tbody>
</table>
Update Dates and Times of Transportation Orders

The XPRA /SCMTMS/XPRA_140_TOR_STOPS (XPRA TM 9.3: Update Assignment Category and Dates/Times of TO Stops) migrates existing appointment dates/times into new fields that are available as of SAP TM 9.3. Also, the XPRA fills the loading/unloading dates/times of the assigned cargo and the coupling/uncoupling dates/times of the assigned transportation units (railcar units and trailer units). Further, new values are available for the assignment category of transportation order stops. The XPRA sets the assignment category values.

Additionally, in service orders, the XPRA migrates the execution date that was previously stored as a single field into two new fields representing start date/time and end date/time of the execution.

The XPRA changes the transportation order stops of transportation order (TO) documents which were last updated within the last 365 days and have life cycle status Draft, New, or In Process.

i Note

For older TO documents or TO documents that have life cycle status Completed or Cancelled, you have to run migration report /SCMTMS/MIGR_140_TOR_STOPS after the upgrade.

Run Times

Depending on the size of the installation, you can expect the following run times:

Table 23:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of TO Stops</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>100,000</td>
<td>15 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>1,000,000</td>
<td>2 minutes 30 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>10,000,000</td>
<td>25 minutes</td>
</tr>
<tr>
<td>Very large</td>
<td>100,000,000</td>
<td>4 hours 10 minutes</td>
</tr>
</tbody>
</table>

Hierarchical Views

In SAP TM 9.3, the Customizing activity for defining hierarchical views has been reworked. If you are upgrading from a lower release, you can display your hierarchical views that you created in the lower release by calling view cluster /SCMTMS/VC_TOR_OH_OLD in transaction SM34.

Data Migration for Freight Document Items and Stops

As of SAP TM 9.4, you can use the XPRA /SCMTMS/XPRA_150_TOR_ITEMSTOP, to perform the following:

- Default the new fields added to the TOR Item and Stop.
- Fills the PACKAGE_ID and PLATENUMBER fields with relevant data based on the Define Usage of ERP Packaging Information Customizing.
Note

For freight documents that have life cycle status *Completed* or *Cancelled*, you have to run migration report /SCMTMS/MIGR_150_TOR_ITEMSTOP after the upgrade.

Run Times

Depending on the size of the installation, you can expect the following run times:

Table 24:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Freight Documents</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>50,000</td>
<td>35 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>500,000</td>
<td>5 minutes 50 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>2,000,000</td>
<td>23 minutes 20 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>5,000,000</td>
<td>58 minutes 20 seconds</td>
</tr>
</tbody>
</table>

Migration of TRQ and TOR Document Blocks

As of SAP TM 9.4, new nodes for document blocks have been introduced for the business objects /SCMTMS/TRQ and /SCMTMS/TOR. These nodes improve the handling of document blocks.

The system performs the migration for documents of business objects /SCMTMS/TOR and /SCMTMS/TRQ together.

For more information, see the *Forwarding Order Management* section.

Data Migration for Freight Document Items and Stops

As of SAP TM 9.4, the freight order Item and Stop have been extended with several new fields. The new fields need to be defaulted with appropriate values.

In addition, the system fills the item fields PACKAGE_ID and PLATENUMBER with relevant data based on the settings you have specified in the Customizing activity *Define Usage of ERP Packaging Information*.

The system uses the XPR /SCMTMS/XPRA_150_TOR_ITEMSTOP to perform this migration.

Note

For freight documents that have the life cycle status as *Completed* or *Canceled*, you have to run migration report /SCMTMS/MIGR_150_TOR_ITEMSTOP after the upgrade.

Run Times
Depending on the size of the installation, you can expect the following run times:

Table 25:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Freight Documents</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>50,000</td>
<td>35 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>500,000</td>
<td>5 minutes 50 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>2,000,000</td>
<td>23 minutes 20 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>5,000,000</td>
<td>58 minutes 20 seconds</td>
</tr>
</tbody>
</table>

Data Migration for Freight Documents

As of SAP TM 9.5, freight documents have been re-factored to improve the system performance when the system fetches data from the predecessor documents. The following areas have been re-factored:

- TOR Root Parties
- TOR Root Document References
- TOR Summary Information
- TOR Items
- TOR Customs

The system uses the XPRA /SCMTMS/XPRA_160_TOR_NODES to perform this migration.

**Note**

For freight documents that have life cycle status as Completed or Canceled, you have to run the migration report /SCMTMS/MIGR_160_TOR_NODES after the upgrade.

Run Times

Depending on the size of the installation, you can expect the following run times:

Table 26:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Freight Documents</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>10,000</td>
<td>40 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>250,000</td>
<td>16 minutes 40 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>1,000,000</td>
<td>1 hour 6 minutes 40 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>2,500,000</td>
<td>2 hours 46 minutes 40 seconds</td>
</tr>
</tbody>
</table>
Performance Improvement

As of SAP TM 9.5, changes have been implemented in the system to improve performance when TOR items are processed and subsequent processes in the area of freight order management are executed by the system. The performance improvement is achieved whenever information from predecessor order documents (for example, forwarding orders) is required.

The `/SCMTMS/XPRA_160_TOR_NODES` XPRA report and the `/SCMTMS/MIGR_160_TOR_NODES` migration report change the following existing database tables:

- TOR Root Party (/SCMTMS/D_TORPY)
- TOR Root Document Reference (/SCMTMS/D_TORDRF)
- TOR Item (/SCMTMS/D_TORITE)

Furthermore, these reports change the following database tables that are new in SAP TM 9.5:

- TOR Summary Report (/SCMTMS/D_TORSUM)
- TOR Item Customs Information (/SCMTMS/D_TORCIN)

If you upgrade from a lower SAP TM release to SAP TM 9.5 or higher, the XPRA is executed automatically. You also have to execute the migration report. The XPRA is used for current documents, the migration report for documents that have already been completed.

4.9.11 Forwarding Order Management

Forwarding Order Types Customizing

In SAP TM 9.0, the following fields have been added to Customizing for forwarding order types:

- Enable Charge Calculation
- Default Mode of Transport Category

Charge calculation must be enabled for all existing forwarding orders. Otherwise, it would no longer be possible to calculate charges for these documents. Charge calculation must be enabled in Customizing for forwarding orders and in the forwarding order documents.

The default mode of the transportation category is stored in Customizing for the forwarding order type. It can be determined using the default transportation mode, which is also specified in the settings for forwarding order types.

The system uses `/SCMTMS/XPRA_110_TRQ_CHRG_REL` to convert the forwarding management tables from the SAP TM 8.1 format to the format of SAP TM 9.0 or higher.

Run Times
Depending on the size of the installation, you can expect the following run times:

Table 27:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Orders</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>10,000</td>
<td>6 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>200,000</td>
<td>2 minutes</td>
</tr>
<tr>
<td>Large</td>
<td>2,000,000</td>
<td>20 minutes</td>
</tr>
<tr>
<td>Very large</td>
<td>10,000,000</td>
<td>1 hour 40 minutes</td>
</tr>
</tbody>
</table>

**Planning Status**

As of SAP TM 9.2, a new planning status *Partially Planned* has been introduced for transportation requests.

The system checks all transportation request documents, such as forwarding orders, order-based transportation requirements, and delivery-based transportation requirements and sets the planning status as *Partially Planned*, if the following applies:

- The document is in the planning process.
- At least one freight unit (FU) or transportation unit (TU) has been created.
- At least one freight document has been assigned to the document, but not all FU or TU stages have been planned.

The system uses `/SCMTMS/XPRA_130_FWO_PLN_STA` to perform this migration.

**Run Times**

Depending on the size of the installation, you can expect the following run times:

Table 28:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Transportation Requests</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>500</td>
<td>1 second</td>
</tr>
<tr>
<td>Medium</td>
<td>10,000</td>
<td>10 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>100,000</td>
<td>1 minute 40 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>1,000,000</td>
<td>16 minutes 40 seconds</td>
</tr>
</tbody>
</table>

**Update Root Key Values for Document References**

As of SAP TM 9.0 the Business Transaction Document ID has been included in queries and personal object worklists (POWLs) of forwarding order management. It can be used to select forwarding orders and forwarding quotations by the document references of these business documents.
The system uses the XPRA /SCMTMS/XPRA_140_TRQ_DOCREF to update the /SCMTMS/D_TRQDRF database with correct values for the ROOT_KEY database field. After updating the database, you can also use the Business Tr. Doc. ID parameter for business documents that have been created before you performed the system upgrade.

**Run Times**

Depending on the size of the installation, you can expect the following run times:

Table 29:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Document References</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>250,000</td>
<td>10 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>500,000</td>
<td>20 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>1,500,000</td>
<td>1 minute</td>
</tr>
<tr>
<td>Very large</td>
<td>12,500,000</td>
<td>8 minutes 20 seconds</td>
</tr>
</tbody>
</table>

**Re-factoring of Resource Data of TRQ Document Items**

This XPRA is required for system upgrades to SAP Transportation Management (SAP TM) 9.4 and higher. It changes the following database table:

- TRQ ITEM (/SCMTMS/D_TRQITM)

As of SAP TM 9.4, resource fields were harmonized on database. This XPRA moves the data of the old, distributed fields into the new harmonized fields.

In addition, it corrects items of delivery-based transportation requirements depending on the Customizing activity Define Usage of ERP Packaging Information.

**Note**

For TRQ documents that have life cycle status **Completed** or **Cancelled**, you have to run migration report /SCMTMS/MIGR_150_RES_REF_TRQ after the upgrade.

**Run Times**

Depending on the size of the installation, you can expect the following run times:

Table 30:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Items</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>100,000</td>
<td>40 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>1,000,000</td>
<td>6 minutes 40 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>5,000,000</td>
<td>33 minutes 20 seconds</td>
</tr>
</tbody>
</table>
## Migration of Freight and Forwarding Document Blocks

As of SAP TM 9.4, new nodes for document blocks have been introduced for the business objects /SCMTMS/TRQ and /SCMTMS/TOR. These new nodes improve the handling of document blocks.

The system uses the XPRA /SCMTMS/XPRA_150_BLOCKS to migrate old document blocks into the new data format. The system migrates the documents of business objects /SCMTMS/TOR and /SCMTMS/TRQ. In addition, it propagates document blocks to related documents, where this is now necessary.

### Run Times

Depending on the size of the installation, you can expect the following run times:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Document Blocks</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>10,000</td>
<td>20 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>100,000</td>
<td>3 minutes 20 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>1,000,000</td>
<td>33 minutes 20 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>10,000,000</td>
<td>5 hours 33 minutes 20 seconds</td>
</tr>
</tbody>
</table>

## 4.9.12 Waybill Stocks

As of SAP TM 9.0 SP05, you can assign multiple organizations and business partners to waybill stocks. The system also validates stocks based on the unique stock IDs you specify and provides better support for prefixes and check digits. Waybill stocks from previous enhancements need to be migrated.

The system uses /SCMTMS/XPRA_120_WBN_CLEANUP to perform this migration.
Run Times

Depending on the size of the installation, you can expect the following run times:

Table 32:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Waybill Number Ranges</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>10</td>
<td>1 second</td>
</tr>
<tr>
<td>Medium</td>
<td>100</td>
<td>1 second</td>
</tr>
<tr>
<td>Large</td>
<td>1,000</td>
<td>1 second</td>
</tr>
<tr>
<td>Very large</td>
<td>10,000</td>
<td>10 seconds</td>
</tr>
</tbody>
</table>

Exhausted Waybill Stocks

As of SAP TM 9.0 SP08, you can mark a waybill stock as exhausted. A new field has been introduced to mark waybill stocks as exhausted.

The system uses `/SCMTMS/XPRA_130_WBN_STK_EXHST` fill this new field with the correct values.

Run Times

Depending on the size of the installation, you can expect the following run times:

Table 33:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Waybill Stocks</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>150</td>
<td>5 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>300</td>
<td>10 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>450</td>
<td>15 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>600</td>
<td>20 seconds</td>
</tr>
</tbody>
</table>

4.9.13 Credit Limit Check

As of SAP TM 9.0, you provide the internal ID of an organization to assign a credit segment ID to a sales organization or company organization. This causes problems when you transport the Customizing between various systems such as, development, test, production, since the internal IDs of the organization change during a migration, whereas the external IDs do not change.
Hence, two new fields have been created in the database for the external IDs of the sales organization and company organization.

The system uses /SCMTMS/XPRA_120_CLC to perform this migration. Note that this XPRA report fills the external IDs for the existing entries maintained with the internal IDs.

Run Times

Depending on the size of the installation, you can expect the following run times:

Table 34:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Sales Organizations</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>10</td>
<td>1 second</td>
</tr>
<tr>
<td>Medium</td>
<td>100</td>
<td>1 second</td>
</tr>
<tr>
<td>Large</td>
<td>1,000</td>
<td>1 second</td>
</tr>
<tr>
<td>Very large</td>
<td>10,000</td>
<td>10 seconds</td>
</tr>
</tbody>
</table>

4.9.14 Trade Lanes

As of SAP TM 9.1, the following fields have been introduced for trade lanes:

- **Trade Lane Category**
- **Trade Lane Type**

You must specify the trade lane category as TL and specify a default trade lane type. As a prerequisite, you must specify the default trade lane type in the Customizing for Define Trade Lane Types and the internal number range of the number range object /SCMTMS/TD.

A new number range object has been introduced with a length of 20 characters instead of 10 characters. As a consequence, the system determines all the existing trade lanes IDs again using an internal number range of the new number range object /SCMTMS/TD.

The system uses /SCMTMS/XPRA_120_FO_TRADE_LANE to perform this migration.
Run Times

Depending on the size of the installation, you can expect the following run times:

Table 35:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Trade Lanes</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>10</td>
<td>1 second</td>
</tr>
<tr>
<td>Medium</td>
<td>100</td>
<td>1 second</td>
</tr>
<tr>
<td>Large</td>
<td>10,000</td>
<td>30 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>100,000</td>
<td>5 minutes</td>
</tr>
</tbody>
</table>

4.9.15 Air Cargo Security

Set Cargo Handover Party Data for Freight Units

As of SAP TM 9.1, cargo hand over party data has been introduced for freight units.

The system uses /SCMTMS/XPRA_120 FU ACS to perform this migration. To ensure that the system continues to respond in the same way after you upgrade to SAP TM 9.1, this XPRA updates the freight units created in SAP TM 9.0 with the correct values for cargo hand over party data from the location or business partner master data.

Run Times

Depending on the size of the installation, you can expect the following run times:

Table 36:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Freight Units with ACS</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>5,000</td>
<td>5 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>50,000</td>
<td>50 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>250,000</td>
<td>4 minutes, 10 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>1,000,000</td>
<td>16 minutes, 40 seconds</td>
</tr>
</tbody>
</table>

Copy Customizing Settings From SAP TM to SCM Basis

As of SAP TM 9.4, Customizing for National Security Status and Shippers Offset has been moved from the SAPTM software layer to SCM_BASIS. The system uses the XPRA /SCMTMS/XPRA_150 ACS_SCMB to copy the existing Customizing settings from SAP TM to the new Customizing tables in SCM_BASIS.
Run Times

Depending on the size of the installation, you can expect the following run times:

Table 37:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Countries</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>25</td>
<td>1 second</td>
</tr>
<tr>
<td>Medium</td>
<td>50</td>
<td>1 second</td>
</tr>
<tr>
<td>Large</td>
<td>100</td>
<td>2 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>200</td>
<td>4 seconds</td>
</tr>
</tbody>
</table>

4.9.16 Charges Profiles

You need this XPRA when you upgrade your system from SAP TM 9.0 or lower.

It changes the following database tables:

- Organizational unit settings for Charge Management
- SAP TM organizations

The system creates a new profile for general charge calculation settings for each organizational unit that has an entry in the charge calculation settings. This profile is assigned a profile ID and is included in the organizational unit as the charges general settings profile ID. This establishes a direct link between the organizational unit and the corresponding general settings for charge calculation.

The system uses /SCMTMS/XPRA_120_TCC_FASET to perform this migration.

Run Times

Depending on the size of the installation, you can expect the following run times:

Table 38:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Organizations</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>1,000</td>
<td>1 second</td>
</tr>
<tr>
<td>Medium</td>
<td>5,000</td>
<td>5 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>10,000</td>
<td>10 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>50,000</td>
<td>50 seconds</td>
</tr>
</tbody>
</table>
4.9.17 Tendering

As of SAP TM 9.1 the following new fields are available in table /SCMTMS/D_TORTSD:

- **TOR_COPY_ROOT_KEY**
  References the root key of the freight order copy, which is created when you publish a new tendering.

- **TOR_COPY_STOP_KEY**
  References the stop, which is represented by the tendering stop date instances. The referenced stop is a part of the freight order copy.

The new fields are filled for existing tendering stop date instances. The system uses /SCMTMS/XPRA_120_TEND_STOPDATE to perform this migration.

### Run Times

Depending on the size of the installation, you can expect the following run times:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Tendering Stop Dates</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>1,000</td>
<td>1 second</td>
</tr>
<tr>
<td>Medium</td>
<td>10,000</td>
<td>10 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>30,000</td>
<td>30 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>100,000</td>
<td>1 minute 40 seconds</td>
</tr>
</tbody>
</table>

4.9.18 Resource Master

As of SAP TM Release 9.1 Support Package 01, two new fields have been introduced for resource master:

- Multiresource
- Number of Individual Resources

The system uses /SCMTMS/XPRA_120_TMSRESOURCE to upgrade from SAP TM Release 9.0 or below to Release 9.1 or higher.

The XPRA copies the values of multiresource and the number of individual resources for vehicle resources from the Customizing activity *Means of Transport* to the additional header data table of the TM Resource Master (/SCMB/RESTMSHD).
Run Times

Depending on the size of the installation, you can expect the following run times:

Table 40:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Vehicle Resources</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>100</td>
<td>1 second</td>
</tr>
<tr>
<td>Medium</td>
<td>1,000</td>
<td>2 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>10,000</td>
<td>20 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>100,000</td>
<td>200 seconds</td>
</tr>
</tbody>
</table>

4.9.19 Charge Calculation

Refactoring

As of SAP TM 9.3, the charges data model has been restructured in order to improve charge calculation. The following changes have been made:

- The system stores the payment term information in the charge items
- The system stores the rate and amount information in the charge lines
- The system stores the calculation base quantities in the calculation basis

The system uses /SCMTMS/XPRA_140_DO_REFACTOR to upgrade charge information of business documents that are not completed and not canceled into the data format of SAP TM 9.3 (or higher).

**Note**

If you want to convert charges of business documents that are completed or canceled, you must run the migration report /SCMTMS/MIGR_140_DO_REFACTOR manually.

Apart from charge calculation area, refactoring has been done for several areas, for example in freight order management, forwarding order management, and in charge management. For more information, see SAP Note 2171821.

Run Times

Depending on the size of the installation, you can expect the following run times:

Table 41:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Charge Elements</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>100,000</td>
<td>15 seconds</td>
</tr>
</tbody>
</table>
### Set Late Changes indicator

As of SAP TM 9.5, the *Late Changes* indicator is set on charge items and charge roots for freight orders that have dispute status as *Dispute Resolved*.

The system uses the XPRA `/SCMTMS/XPRA_160_SET_LATE_CHNG` to upgrade the charge information of freight orders that are not completed and not canceled, when upgrading from SAP TM 9.1 or higher to 9.5 or higher.

**Note**

If you want to convert charges of freight orders that are completed or canceled, you must run the migration report `/SCMTMS/MIGR_160_SET_LATE_CHNG` manually.

### Run Times

Depending on the size of the installation, you can expect the following run times:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Freight Orders</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>25,000</td>
<td>50 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>100,000</td>
<td>3 minutes 20 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>500,000</td>
<td>16 minutes 40 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>2,000,000</td>
<td>1 hour 6 minutes 40 seconds</td>
</tr>
</tbody>
</table>

### Set Ready for Invoicing Indicator

As of SAP TM 9.5, the *Ready for Invoicing* indicator is set on charge items in forwarding documents or transportation requirements that have the execution status as *Executed* or *In Execution*.

The system uses the XPRA `/SCMTMS/XPRA_160_UPD_READY_INV` to perform the migration, when upgrading from SAP TM 9.0 or higher to 9.5 or higher.
### 4.9.20 EWM Integration

#### Transit Warehousing

As of SAP TM 9.3, *Extended Warehouse Management Integration Relevance (EWM_INT_REL)* indicator is available. It specifies whether a transportation order (TO) document, that is, a freight document or a transportation unit, is relevant for integration with the SAP Extended Warehouse Management (SAP EWM).

A transportation order document is relevant for the integration with SAP EWM, if one of the items or transportation stops contain a warehouse number and a logical system (EWM system).

The system uses the XPRA /SCMTMS/XPRA_140_EWM_INT_REL to determine if the transportation stops or items contain a warehouse number and a logical system and sets the indicator accordingly.

For more information, see the system documentation.

#### Run Times

Depending on the size of the installation, you can expect the following run times:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of TO Stops/Items</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>100,000</td>
<td>3 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>500,000</td>
<td>15 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>2,000,000</td>
<td>1 minute</td>
</tr>
</tbody>
</table>

---

**Note**

If you want to convert charges in forwarding documents or transportation requirements that are completed or canceled, you must run the migration report /SCMTMS/MIGR_160_UPD_READY_INV manually.

#### Run Times

Depending on the size of the installation, you can expect the following run times:

Table 43:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Forwarding Orders</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>5,000</td>
<td>5 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>100,000</td>
<td>1 minute 40 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>500,000</td>
<td>8 minutes 20 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>2,000,000</td>
<td>33 minutes 20 seconds</td>
</tr>
</tbody>
</table>
### 4.9.21 Agreements

#### Update Organizational Unit ID

As of SAP TM 8.1, you can add organizational units IDs in agreement documents. The system uses the XPRAXPRA /SCMTMS/XPRA_140_MAP_ORGEXTID to determine and update the ID of organizational units in agreements.

#### Rune Times

Depending on the size of the installation, you can expect the following run times:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Contractors</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>10,000</td>
<td>2 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>100,000</td>
<td>20 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>500,000</td>
<td>1 minute 40 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>1,000,000</td>
<td>3 minutes 20 seconds</td>
</tr>
</tbody>
</table>

### 4.9.22 Page Layouts

As of SAP TM 9.4, a new page layout for SAP Transportation Cockpit, Transportation Proposal, Carrier Selection, and Delivery Proposal has been introduced.

The system uses the XPRAXPRA /SCMTMS/XPRA_150_PAGE_LAYOUT to migrate the old page layouts into the new format.
Run Times

Depending on the size of the installation, you can expect the following run times:

Table 46:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Page Layouts</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>10</td>
<td>0 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>40</td>
<td>2 seconds</td>
</tr>
<tr>
<td>Large</td>
<td>200</td>
<td>5 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>1,000</td>
<td>25 seconds</td>
</tr>
</tbody>
</table>

4.9.23 GANTT Settings for Warnings and Notifications

As of SAP TM 9.5, new default customizing has been introduced for a new warning column in existing GANTT layouts. Furthermore, some colors and thresholds in the resource scheme to notification tables have been deprecated.

The system uses the XPRA /SCMTMS/XPRA_160_GNT_CUST to migrate old GANTT settings, when upgrading from SAP TM 9.2 or higher to SAP TM 9.5 or higher.

As of SAP TM 9.5, customizing-related fields are harmonized on database. The following new fields have been introduced:

- **New fields for notifications:**
  - NOT_SCHEME_ID, NOT_ID, ENABLE, SELECTED, COLOR, HEIGHT, NOT_INTERVAL, INTERVAL_GROUP, and UOM
  - They are filled with appropriate values. Field values are migrated from the database tables /SCMTMS/C_GNT_NA (Color Schemes for resources) and /SCMTMS/C_GNT_TH (Threshold Set) to the corresponding new tables.
- **New fields for warnings:** WARNING_SCHEME, WN_ID, ENABLE, and SELECTED

Run Times

Depending on the size of the installation, you can expect the following run times:

Table 47:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Page Layouts</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>1</td>
<td>1 second</td>
</tr>
<tr>
<td>Medium</td>
<td>5</td>
<td>1 second</td>
</tr>
</tbody>
</table>
4.9.24 Profile and Layout Sets

As of SAP TM 9.5, profile and layout sets were refactored to gain more flexibility in the Transportation Cockpit, Carrier Selection, and the Delivery Creation.

The system uses the XPRA /SCMTMS/XPRA_160_PL_SETS to migrate profile and layout sets into the new data format, when upgrading from SAP TM 9.1 or higher to SAP TM 9.5 or higher.

It changes the following database tables:
- Profile and Layout Sets (/SCMTMS/D_PLSET)
- Profile and Layout Set - Root Table (/SCMTMS/D_PLSROT)
- Profile and Layout Set - User Table (/SCMTMS/D_PLSUSR)
- Profile and Layout Set - User Attribute Table (/SCMTMS/D_PLSUSA)
- Profile and Layout Set - Description Table (/SCMTMS/D_PLSDSC)

Run Times

Depending on the size of the installation, you can expect the following run times:

Table 48:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Page Layouts</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>10</td>
<td>1 second</td>
</tr>
<tr>
<td>Medium</td>
<td>100</td>
<td>1 second</td>
</tr>
<tr>
<td>Large</td>
<td>1,000</td>
<td>10 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>10,000</td>
<td>1 minute 40 seconds</td>
</tr>
</tbody>
</table>
4.9.25 Scheduling Settings of Planning Profiles

As of SAP TM 9.5, some of the settings have been relocated from the planning profiles to the scheduling settings.

The system uses the XPRAXCMTM/XPRA_160_SCHEDSETT to change the following settings:

- **PLANN_STRAT_SCH** (Scheduling Strategy field)
- **SCHED_DIR** (Scheduling Direction field)
- **PUDLCONS** (Consider Requirement Document Dates field)
- **SERV_TIME_SET** (Calculate Loading and Unloading Duration field)
- **SERV_TIME_DUR** ((Un)loading Duration field)

For this reason, the XPRAXCMTM/XPRA changes the following database tables:

- Planning Profile (SCMTM/BLAPRO)
- Scheduling Settings (SCMTM/FVSSSET)

In addition:

- The XPRAXCMTM updates the planning profile with a link to the scheduling settings.
- New scheduling settings are created with the same ID as the planning profile.
- In the scheduling settings, the setting COUPLING_DTM_TYPE is set to true.

The system runs this XPRAXCMTM when you migrate from a lower SAP TM release to SAP TM 9.5 or higher.

**Run Times**

Depending on the size of the installation, you can expect the following run times:

Table 49:

<table>
<thead>
<tr>
<th>Size of the Organization</th>
<th>Number of Profiles</th>
<th>Run Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>10</td>
<td>0 seconds</td>
</tr>
<tr>
<td>Medium</td>
<td>100</td>
<td>1 second</td>
</tr>
<tr>
<td>Large</td>
<td>1,000</td>
<td>10 seconds</td>
</tr>
<tr>
<td>Very large</td>
<td>10,000</td>
<td>1 minute 40 seconds</td>
</tr>
</tbody>
</table>
4.10 Post Import Actions - Reports

4.10.1 Introduction

Along with the XPRA reports, you must also execute migration reports in the following areas:

- Forwarding and freight settlement
- Schedules
- Customs
- Freight order management
- Forwarding order management
- Rate tables
- Allocations
- Charges
- Agreements
- Change documents
- Bill of lading
- Profiles and settings

Note that the system does not execute these reports automatically during the XPRA phase of the upgrade. You need to manually execute these reports in order to avoid any error during migration of documents. For more information on post-upgrade migration steps, see SAP note 2160716.

**Note**

In TM 9.3, refactoring has been done for several areas, for example in freight order management, forwarding order management, and in charge management. Some of these changes have implications if you migrate to TM 9.3 or higher from a lower release, for example, if you have made enhancements to configurations or validations. For more information, see SAP Note 2171821.

4.10.2 Forwarding and Freight Settlement

As of SAP TM 8.0 and SAP TM 8.1, the system does not automatically update the *Invoiced Amount* field in forwarding settlement documents and freight settlement documents.

When you upgrade to SAP TM 9.0 or higher, you must run program `/SCMTMS/UPDATE_INV_AMT_FWSD` for all forwarding settlement documents and program `/SCMTMS/UPDATE_INV_AMT_FSD` for all freight settlement documents. The system copies the values of the *Final Amount* field and automatically updates the *Invoiced Amount* field with the copied values.

The runtime is approximately 5 documents per second.
4.10.3 Schedules

If you have schedules in the SAP TM 8.0 or SAP TM 8.1 format, you must use the report `SCMTMS/SCHEDULE_CONVERSION` to convert them to the format of SAP TM 9.0 or higher.

When you execute the report, on the selection screen of the report, you can enter a prefix that is assigned to your new schedule format. This enables you to convert the same schedule multiple times and assign different prefixes to the new schedules.

If you do not enter a prefix, the system creates a new schedule with reference to the old schedule. After conversion, the system retains the old schedule data in the database for your access.

4.10.4 Customs

When you upgrade your system to 9.0 or higher, you must run the report `/SCMTMS/XPRA_110_TOR_GTS_ACT` if you use customs functions. As of SAP TM 9.0, fields for custom statuses have been added to the database table `/SCMTMS/D_TORCCP`. You must run this report to complete these new fields.

As the system only migrates custom-relevant execution documents, the runtime is very short.

4.10.5 Freight Order Management

- Resource usage check
  Optionally, you can run the report `/SCMTMS/TOR_UPDATE_RES_ITEM` as of SAP TM 9.1. When you run this report, the system checks a resource for the following:
  ○ Whether a time overlap exists
  ○ Whether the resource used in your freight document or transportation unit is used in another freight document or transportation unit
  ○ Whether a planning block exists
  ○ Whether a downtime exists
  The system stores these values at the item-level for faster results. Note that you must execute the resource only on documents that are in logistical execution or planning phase. All new values are relevant as of SAP TM 9.2.
  The runtime is approximately 500 documents per second.

- Update reference fields
  You must run the report `/SCMTMS/UPDATE_TOR_REF_ITM_KEY` when upgrading from TM 9.0 or lower to TM 9.1 or higher, in order to update the reference fields in a freight unit and freight order items.
  The runtime is approximately 500 documents per second.

**Note**
When you have documents in the system that are not complete, you may face the following issues when you do not run this report post-upgrade:
○ Doubling of items after document update from predecessor documents (for example, status update)
- Corruption of document flow (missing references on the user interface)
- Misinterpretation of planning in migrated items, which may lead to incorrect planning results

**Invoice and charge relevance**

You must run the report `/SCMTMS/MIGR_110_TOR_CHRG_REL` to set charge and invoice relevance indicators on completed freight order and booking documents.

The runtime is approximately 2500 freight order and freight booking documents per second.

**Note**

When you have documents in the system that are not complete, you may face the following issues when you do not run this report post-upgrade:

- Charges may not be recalculated after update for completed TOR document (from any other referenced document).
- Settlement document may not be updated or may get lost after update for completed TOR document (from any other referenced document).

**Update resource items**

You must run the report `/SCMTMS/UPD_CURR_POS_STOP_DB` when upgrading from TM 8.0 or 8.1 to TM 9.0 or higher, in order to update the stop position (first stop, intermediate stop, and last stop) for all documents of business object `/SCMTMS/TOR`.

The runtime is approximately 2500 documents per second. The runtime gets significantly less with increasing numbers of items per freight document.

**Delivery-based transportation**

You must run report `/SCMTMS/UPDATE_FU_BASE_BTD` when upgrading from TM 8.0 or 8.1 to TM 9.0 or higher, for the system to update freight unit items with the original forwarding order and delivery number for delivery-based transportation requirement. The system copies this information from the corresponding forwarding order.

The runtime is approximately 5000 documents per second.

**Trailer documents**

You must run the report `/SCMTMS/MIGRATE_FOR_TRAILER`, when you use freight orders as trailer documents. As of TM 9.0, trailer documents are transportation units that belong to the forwarding order category and not the freight order category. This report performs the conversion. Note that you must execute this report in every relevant client individually.

The runtime is 50 documents per second approximately.

**Updating source and destination location**

As of SAP TM 9.0, freight units retain the source and destination location of their corresponding transportation request document. This information has to be added to all existing freight unit items that are related to a transportation request document. Once you upgrade to 9.2 or higher, you must execute the report `/SCMTMS/FILL_TRQ_SRC_DES_LOC` to migrate relevant freight unit documents.

The runtime is approximately 500 documents per second.

**Updating assignment category and dates/times of TO Stops**

As of SAP TM 9.3, new fields are available for the transportation order stop:

- Appointment
- Aggregated loading/unloading dates/times
- Aggregated coupling/uncoupling dates/times

You can use report `/SCMTMS/MIGR_140_TOR_STOPS` to migrate transportation order documents that have life cycle status *Completed* or *Cancelled* or that were not changed the last 365 days.
It is migrating existing appointment dates/times into the new fields. The aggregated loading/unloading dates/times and the aggregated coupling/uncoupling dates/times are determined based on the assigned requirements information.

Further, new values for the assignment category for requirement stops are available to indicate, for example, if an element is to be loaded or unloaded. The report sets these new values. This is a prerequisite for the calculation of the aggregated loading/unloading times and the aggregated coupling/uncoupling times of a capacity stop.

Additionally, in service orders, the report migrates the execution date that was previously stored as a single field into two new fields representing start and end of the execution date.

The runtime is 6000 stops per second approximately.

- Warehouse next relevant stop indicators
  As of SAP TM 9.4, a new indicator has been introduced on the freight document stop that indicates whether the next warehouse integration relevant stop is loading, unloading, or any other kind of stop. This information can be used in POWLs for freight bookings, freight orders, or transportation units to find documents relevant for EWM integration. If you do not need this information, you can skip the migration.

  You need to execute report /SCMTMS/MIGR_150_WH_NEXT_REL to set the new indicator correctly for EWM integration relevant documents from before the upgrade to SAP TM 9.4 or higher. It only processes open documents that are still in execution and locks documents in the client in which the report is executed before processing them. So the report can be executed in parallel to business operations. The locking times for a single document is expected to be very short.

  The runtime is approximately 2000 documents per second.

- Data migration for freight document items and stops
  As of SAP TM 9.4, the TOR Item and Stop have been extended with several new fields.

  You can use the report /SCMTMS/MIGR_150_TOR_ITEMSTOP to migrate completed documents from before the upgrade to SAP TM 9.4 or higher (similar to XPRA /SCMTMS/XPRA_150_TOR_ITEMSTOP).

  Note that if you do not migrate the completed documents, the system might display incorrect TO Item and Stop information.

  The runtime is approximately 1250 documents per second.

- Calculate total distance and total duration
  As of SAP TM 9.4, new fields for Total Distance and Total Duration have been introduced on header level of freight documents. After you upgrade to SAP TM 9.4 or higher, you must execute the migration report /SCMTMS/MIGR_150_TOR_DIS_DUR for all documents from before the upgrade. The system displays the total distance and duration in the freight document and their POWLs.

  Recommendation

  Open documents must be migrated first and the completed documents can be migrated later.

  The runtime is approximately 2500 documents per second.

- Data migration for freight documents
  As of SAP TM 9.5, freight documents have been re-factored to improve the system performance, whenever data from predecessor documents is needed. The following areas have been re-factored:

  ○ Freight document root parties
  ○ Freight document root document references
  ○ Freight document Summary Information
  ○ Freight document Items
  ○ Freight document Customs

  After an upgrade to SAP TM 9.5 or higher, you must execute the migration report /SCMTMS/MIGR_160_TOR_NODES for all completed or canceled documents from before the upgrade.
The run time is approximately 500 documents per second.

4.10.6 Forwarding Order Management

- As of SAP TM 9.0, transportation request documents need to be updated with additional information. Implement the report from SAP note 1986281 by following the instructions provided in the note.
- Charge relevance
  You must run the report /SCMTMS/MIGR_110_TRQ_CHRG_REL to set charge relevance indicators on completed forwarding order documents.
  The runtime is approximately 4000 forwarding order documents per second.

  **Note**
  When you have documents in the system that are not complete and when you do not run this report post-upgrade, charges may not be recalculated after update for the completed TOR document (from any other referenced document).

- Refactoring of resource data of TRQ document items (completed documents)
  As of SAP TM 9.4, resource fields have been harmonized on database.
  You can use the report /SCMTMS/MIGR_150_RES_REF_TRQ to migrate completed documents from before the upgrade to SAP TM 9.4 or higher (similar to XPRAX/SCMTMS/XPRA_150_RES_REF_TRQ). Note that if you do not migrate completed documents, the system might not display correct resource information.
  The runtime is approximately 2500 documents per second.

4.10.7 Rate Tables

As of SAP TM 9.1, the system uses values from the rate table type Customizing to fill the following:

- Rate Table Type field in the rate tables
- Customizing rate table templates
- Web rate table templates

To migrate rate tables of former SAP TM releases, you must run the report /SCMTMS/TC_RATES_MAP_RATE_TYPE.

The runtime is approximately 1000 rate tables per second.

As of SAP TM 9.1, the system stores the number of rate records maintained for a validity period on the Validities tab page of a rate table. When you upgrade to SAP TM 9.1 or higher, you must execute the report /SCMTMS/TCRATE_UPDATE_REC_CNT to update this information on the rate tables of lower releases.

The runtime is approximately 100 rate tables per second.
4.10.8 Allocations

If you have allocations in SAP TM 8.0 format or SAP TM 8.1 format, you can use the report /SCMTMS/TAL_CONVERSION to convert them to SAP TM 9.0 format or a higher release format.

You can enter an allocation type when you execute the report. In Define Transportation Allocation Types Customizing, you can define specific number ranges for different allocation types.

When you select the Draw New Allocation ID checkbox, the system generates a new allocation number within the predefined number range.

If the allocation ID of the old allocation is outside the defined number range, you can decide either of the following:

- Whether the old allocation ID must still be assigned to the new allocation
- Whether you want the system to generate a new allocation ID within the number range

4.10.9 Charge Calculation

- In SAP TM 8.0, the system stores the calculation rule details in the table /SCMTMS/D_TCBASI and /SCMTMS/D_TCRULE. As of SAP TM 8.1, the system stores this information as part of the table /SCMTMS/D_TCBASI. When you upgrade from SAP TM 8.0 to SAP TM 9.0 or higher, you must migrate the charges by running the report /SCMTMS/COPY_CALBASE_2_CALRULE.
- As of SAP TM 9.3 the charges data model has been restructured in order to improve charge calculation. The following changes have been made:
  - The system stores the payment term information in the charge items
  - The system stores the rate and amount information in the charge lines
  - The system stores the calculation base quantities in the calculation basis

If you want to convert charges of business documents that are completed or canceled into the data format of SAP TM 9.3, you must run the migration report /SCMTMS/MIGR_140_DO_REFACTOR. The run time is approximately 3000 charge elements per second.

- Copy NOG texts from charge items to the ROOT text collection of charges host business object (TRQ/TOR) As of SAP TM 9.1, the system no longer stores the NOG texts with the charge items, but stores them on the ROOT level of charges host business object (TRQ or TOR). You can use the report /SCMTMS/TCC_CPY_NOG_TO_TXT_COL to copy maintained NOG texts from charge items to the text collection of the host business objects. This is relevant for upgrades from SAP TM 9.0 or lower to SAP TM 9.1 or higher. Existing NOG texts on charge items will not be deleted, but will no longer be used and shown on SAP TM UIs.

- As of SAP TM 9.5, the Late Changes indicator is set on charge items and charge roots for freight orders which have a dispute status as Dispute Resolved. Note that if you want to migrate freight documents with status completed or canceled, you must use the report /SCMTMS/MIGR_160_SET_LATE_CHNG after the upgrade from SAP TM 9.1 or higher to SAP TM 9.5 or higher. The run time is approximately 500 freight documents per second.

- As of SAP TM 9.5, the Ready for Invoicing is set on the charge items in the forwarding document or transportation requirements. Note that if you want to migrate forwarding order documents or transportation requirements that have the status as completed or canceled, you must use the report /SCMTMS/MIGR_160_UPD_READY_INV after the upgrade from SAP TM 9.0 or higher to SAP TM 9.5 or higher.
The run time is approximately 1,000 documents per second.

### 4.10.10 Agreements

As of SAP TM 8.1, the system adds the organizational ID of organizational units to the agreement documents. When you upgrade from SAP TM 8.0 to SAP TM 8.1 or higher, you must use the migration report `/SCMTMS/XPRA_140_MAP_ORGEXTID` to determine and update organizational ID name of organizational units in agreements.

The runtime is approximately 5000 agreements per second.

### 4.10.11 Bill of Lading

As of SAP TM 9.0, a new concept of handling and maintaining bill of lading numbers is introduced. Hence, when you perform a system upgrade, you must check if any custom development from a release earlier than SAP TM 9.0 needs to be adapted.

For more information, see SAP Note 2221310.

### 4.11 Incompatibilities for Compartments

Compartments and means-of-transport combinations are no longer nodes of the business object (BO) vehicle resource. Therefore, conditions for the compartment level must use data access definitions with the following data access classes:

- `/SCMTMS/CL_COND_DAD_COMP_DATA`: Data access class for compartment data, for example, compartment type, sequence
- `/SCMTMS/CL_COND_DAD_COMP_ATTR`: Data access class for compartment attributes to extract the attribute values as defined for the compartment type

Moreover, conditions for the means-of-transport combination level must use data access definitions with the following classes:

- `/SCMTMS/CL_COND_DAD_MTR_COMB`: Data access class for means-of-transport combination data
- `/SCMTMS/CL_COND_DAD_MTR_CO_ATT`: Data access class for means-of-transport combination attributes
5 Solution-Wide Topics

5.1 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 Service Marketplace at http://service.sap.com/solutionmanager.
- 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, Software Lifecycle Manager, see the current Master Guide and Upgrade Master Guide for SAP NetWeaver on SAP Service Marketplace at http://service.sap.com/installnw70 and http://service.sap.com/upgradenw70.

5.2 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 Service Marketplace at https://support.sap.com/en/solution-manager.html.

5.3 Service-Oriented Architecture (SOA)

5.3.1 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.
5.3.2 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.

  **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.

  **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.

  **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.

5.3.3 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.
5.3.4 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
Important Disclaimers and Legal Information

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