Dual-Stack Split for SAP Systems Based on SAP NetWeaver 7.1 to 7.5 on UNIX
Document History

Note

Before you start the implementation, make sure you have the latest version of this document, which is available at [https://support.sap.com/lttoolset](https://support.sap.com/lttoolset) → System Provisioning → Split Option of Software Provisioning Manager.

The following table provides an overview on the most important document changes:

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description</th>
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<tr>
<td>2.2</td>
<td>2017-09-11</td>
<td>Updated version for software provisioning manager 1.0 SP21 (SL Toolset 1.0 SP21)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● New Features:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>○ Media Signature Check, documented in: New Features, Running the Installer, Preparing the Dual-Stack Split Media</td>
</tr>
<tr>
<td></td>
<td></td>
<td>○ Support of Oracle 12.2., documented in: New Features</td>
</tr>
<tr>
<td>2.1</td>
<td>2017-05-22</td>
<td>Updated version for software provisioning manager 1.0 SP20 (SL Toolset 1.0 SP20)</td>
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<td></td>
<td></td>
<td>● New Features:</td>
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<tr>
<td></td>
<td></td>
<td>○ New SAPUI5-based graphical user interface (GUI) “SL Common GUI”, documented in: Prerequisites for Running the Installer, Running the Installer, Useful Information About the Installer</td>
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<tr>
<td></td>
<td></td>
<td>○ Cleanup of operating system users, documented in: SAP System Parameters, Creating Operating System Users and Groups</td>
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<tr>
<td>2.0</td>
<td>2017-02-06</td>
<td>Updated version for software provisioning manager 1.0 SP19 (SL Toolset 1.0 SP19)</td>
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<td></td>
<td></td>
<td>● New Features:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>○ Verification of the integrity of data units in Software Provisioning Manager, documented in: New Features, Downloading the Software Provisioning Manager Archive</td>
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<tr>
<td>1.9</td>
<td>2016-10-07</td>
<td>Updated version for software provisioning manager 1.0 SP18 (SL Toolset 1.0 SP18)</td>
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<td>Version</td>
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<tr>
<td>1.8</td>
<td>2016-06-06</td>
<td>Updated version for software provisioning manager 1.0 SP17 (SL Toolset 1.0 SP17):</td>
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<tr>
<td></td>
<td></td>
<td>● New feature: Move of AS Java target system to different database type during dual-stack split.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Updated or newly created sections in this documentation:</td>
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<tr>
<td></td>
<td></td>
<td>○ New Features [page 8]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>○ Operating System and Database Migration During Dual-Stack Split [page 16]</td>
</tr>
<tr>
<td></td>
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<td>○ Planning Checklist [page 21]</td>
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<tr>
<td></td>
<td></td>
<td>○ Preparing the Dual-Stack Split Media [page 38]</td>
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<td>1.7</td>
<td>2016-02-15</td>
<td>Updated version for software provisioning manager 1.0 SP10 (SL Toolset 1.0 SP16)</td>
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<td>1.6</td>
<td>2015-10-12</td>
<td>Updated version for software provisioning manager 1.0 SP09 (SL Toolset 1.0 SP15)</td>
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<td>2015-09-14</td>
<td>Updated version for software provisioning manager 1.0 SP09 (SL Toolset 1.0 SP14)</td>
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<td>2015-04-27</td>
<td>Updated version for software provisioning manager 1.0 SP08 (SL Toolset 1.0 SP13)</td>
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<td>1.3</td>
<td>2014-11-24</td>
<td>Updated version for software provisioning manager 1.0 SP07 (SL Toolset 1.0 SP12)</td>
</tr>
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<td>1.2</td>
<td>2014-07-07</td>
<td>Updated version for software provisioning manager 1.0 SP06 (SL Toolset 1.0 SP11)</td>
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<td>1.1</td>
<td>2014-03-17</td>
<td>Updated version for software provisioning manager 1.0 SP05 (SL Toolset 1.0 SP10)</td>
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<td>1.0</td>
<td>2013-10-28</td>
<td>Initial version</td>
</tr>
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1 Introduction

1.1 About This Document

This document explains how to use Software Provisioning Manager 1.0 SP21, which is part of SL Toolset 1.0 SP21, to split a dual-stack (ABAP+Java) system into one ABAP and one Java stack each with its own system ID. You can also use Software Provisioning Manager 1.0 (“the installer” for short) to remove the Java stack of your SAP dual stack-system.

The split procedure is valid for:

- Optional splitting of SAP NetWeaver dual stack-based systems (such as SAP BW systems with SAP BEx Web) and SAP Business Suite systems based on SAP NetWeaver 7.1 and higher.
- Mandatory splitting of SAP NetWeaver dual stack-based systems upgraded to SAP NetWeaver 7.5 Process Integration or SAP Solution Manager 7.2.

For a detailed list of supported SAP system products and releases, see SAP Note 1797362. For information about supported operating system and database platforms, see the Product Availability Matrix at http://support.sap.com/pam.

Related Information

- Use Cases of Dual-Stack Split [page 7]
- About Software Provisioning Manager [page 8]
- Naming Conventions [page 8]
- New Features [page 8]
- Constraints [page 11]
- SAP Notes for the Dual-Stack Split [page 12]
- Accessing the SAP Library [page 12]
- How to Use this Guide [page 13]
1.2 Use Cases of Dual-Stack Split

Dual-Stack System

A dual-stack system is an SAP system that contains installations of both SAP NetWeaver Application Server for ABAP and SAP NetWeaver Application Server for Java. It has the following characteristics:

- Common SAP system ID (<SAPSID>) for its ABAP and Java stacks
- Common startup framework
- Common database (with different schemes for ABAP and Java)

Dual-Stack Split

While splitting off the Java part of a dual-stack system into a separate system, the dual-stack system is reduced to an ABAP system. To do this, the tool runs a system copy and uses the Java system copy export to reinstall the Java system separately and with a new SAP system ID. The ABAP stack of the former dual-stack system is not affected by this procedure.

The separated systems can either use their own databases (Split Option: Move Java Database) or both use the existing database in the ABAP system (Split Option: Keep Database).

For more information, see:
- Split Option: Move Java Database [page 14]
- Split Option: Keep Database [page 18]
- SAP Note 1797362

Use Case

- For information about the use cases for splitting a dual-stack system, see SAP Note 1655335.
- If you no longer need the Java stack of your SAP dual-stack system, you can remove it as described in Removing the Java Stack [page 86].
- The procedure described in this guide mainly applies to splitting a single SAP dual-stack system. For more information about splitting systems within a system landscape, see Splitting Within a System Landscape [page 81].

More Information

For more information about dual-stack split, see http://scn.sap.com/docs/DOC-25162.
1.3 About Software Provisioning Manager

Software Provisioning Manager 1.0 is the successor of the product- and release-specific delivery of provisioning tools, such as SAPinst. Before you run it, we recommend that you always download the latest version of Software Provisioning Manager 1.0. Software Provisioning Manager 1.0 is part of the Software Logistics Toolset 1.0 (“SL Toolset” for short). This way, you automatically get the latest fixes and supported processes. For more information about Software Provisioning Manager as well as products and releases supported by it, see SAP Note 1680045 and http://scn.sap.com/docs/DOC-30236. “SAPinst” has therefore been renamed to “Software Provisioning Manager 1.0” in this documentation. However, the term “SAPinst” is still used in:

- Texts and screen elements in the Software Provisioning Manager GUI
- Naming of executables, for example sapinst.exe

In the following, we generally refer to Software Provisioning Manager 1.0 as the “installer”. We only use the term “Software Provisioning Manager 1.0” if this is required for technical reasons.

Related Information

Preparing the Dual-Stack Split Media [page 38]

1.4 Naming Conventions

- “usage type”, “technical usage”, and “product instance”
  As of Software Provisioning Manager 1.0 SP07 (SL Toolset 1.0 SP12), the term “product instance” replaces the terms “usage type” and “technical usage” for SAP systems based on SAP NetWeaver 7.3 including enhancement package 1 and higher. For more information, see SAP Note 1970349. Note that there is no terminology change for older releases and all mentioned terms can be used as synonyms. As this guide is a generic document, the currently used terms remain but only “product instance” is going to be used from now on when referring to SAP NetWeaver 7.3 EHP1 and higher.
  For more information, see New Features [page 8].
- SAP system refers to SAP NetWeaver system or SAP system based on SAP NetWeaver.
- Dual-stack system refers to SAP NetWeaver ABAP+Java system or SAP ABAP+Java system based on SAP NetWeaver.

1.5 New Features

The table below provides an overview of the new features in Software Provisioning Manager.

Table 2:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media Signature Check</td>
<td>The signature of media is checked <strong>automatically</strong> by the installer during the Define Parameters phase while processing the Media Browser screens. As of now the installer only accepts media whose signature has been checked. See also the description of this new security feature in SAP Note 2393060. For more information, see Preparing the Dual-Stack Split Media [page 38] and Running the Installer [page 52].</td>
<td>Software Provisioning Manager 1.0 SP21 (SL Toolset 1.0 SP21)</td>
</tr>
<tr>
<td>Support of Oracle 12.2</td>
<td>Software Provisioning Manager (the “installer”) now supports dual-stack split for SAP systems with Oracle 12.2.</td>
<td>Software Provisioning Manager 1.0 SP21 (SL Toolset 1.0 SP21)</td>
</tr>
<tr>
<td>SL Common GUI with SAPINST 7.4.9</td>
<td>With the new installer framework version SAPINST 7.4.9, you can now use the new SAPUI5-based graphical user interface (GUI) “SL Common GUI”. For more information, see Useful Information About the Installer [page 57], Running the Installer [page 52], and SAP Note 2336746.</td>
<td>Software Provisioning Manager 1.0 SP20 (SL Toolset 1.0 SP20)</td>
</tr>
<tr>
<td>Cleanup of Operating System Users</td>
<td>You can now specify during the Define Parameters phase that the operating system users are to be removed from group sapinst after the execution of the installer has completed.</td>
<td>Software Provisioning Manager 1.0 SP20 (SL Toolset 1.0 SP20)</td>
</tr>
<tr>
<td>Verification of Integrity of Data Units in Software Provisioning Manager</td>
<td>The integrity of data units extracted from the Software Provisioning Manager archive is verified. For more information, see Downloading and Extracting the Software Provisioning Manager Archive [page 39]. In addition, check SAP Note 1680045 whether additional information is available.</td>
<td>Software Provisioning Manager 1.0 SP19 (SL Toolset 1.0 SP19)</td>
</tr>
<tr>
<td>Support of Linux on IBM Power Systems (little endian)</td>
<td>Software Provisioning Manager supports as of now Linux on IBM Power Systems (little endian) as operating system platform for SAP systems based on SAP NetWeaver 7.5 and higher. For more information, see SAP Note 2378874.</td>
<td>Software Provisioning Manager 1.0 SP19 (SL Toolset 1.0 SP19)</td>
</tr>
<tr>
<td>Move of AS Java Target System to Different Operating System and Database Type During Dual-Stack Split</td>
<td>When performing a dual-stack split, you can now move the Java stack of the dual-stack system being split to an AS Java system on an operating system or database type different from the operating system and database type of the original dual-stack system. For more information, see Operating System and Database Migration During Dual-Stack Split [page 16].</td>
<td>Software Provisioning Manager 1.0 SP18 (SL Toolset 1.0 SP18)</td>
</tr>
</tbody>
</table>

**Note**

With Software Provisioning Manager 1.0 SP17 this feature was already available but only supported for database migration to SAP Solution Manager 7.2 on SAP HANA database. It is now generally supported.
<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Provisioning for SAP NetWeaver 7.5 and SAP NetWeaver 7.5-based Products</td>
<td>All system provisioning tasks (installation, system copy, system rename) are available for the new SAP NetWeaver 7.5 release. The Dual Stack option, which integrates an AS ABAP and AS Java in a single system (common System ID <code>&lt;SAPSID&gt;</code>, common startup framework, common database), is no longer supported in SAP systems based on SAP NetWeaver 7.5. After upgrading to SAP NetWeaver 7.5 PI, you first have to split the still existing dual stack system before you can use SAP NetWeaver 7.5 PI productively. For more information, see the Upgrade Master Guide - SAP NetWeaver 7.5 at: <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></td>
<td>Software Provisioning Manager 1.0 SP09 (SL Toolset 1.0 SP15)</td>
</tr>
<tr>
<td>System Provisioning for SAP Solution Manager 7.2</td>
<td>All system provisioning tasks (installation, system copy, system rename) are available for the new SAP Solution Manager 7.2 release. Compared to previous SAP Solution Manager releases, SAP Solution Manager 7.2 is no longer provided as a classical dual-stack system (ABAP system with Java Add-in), but consists of a separate ABAP and Java stack.</td>
<td>Software Provisioning Manager 1.0 SP09 (SL Toolset 1.0 SP15)</td>
</tr>
<tr>
<td>Reusing Server Ports from the original dual-stack system that is being split</td>
<td>You can now reuse specific ports from the original dual-stack system in the target Java system, such as the ICM server ports and the message server ports. For more information, see Planning Checklist [page 21].</td>
<td>Software Provisioning Manager 1.0 SP10 (SL Toolset 1.0 SP14)</td>
</tr>
<tr>
<td>Usage Type Library Deprecation for SAP Systems Based on SAP NetWeaver 7.3 EHP1 and Higher</td>
<td>Software Provisioning Manager 1.0 no longer uses the “Usage Types” definitions in its business logic for SAP systems based on SAP NetWeaver 7.3 EHP1 and higher. This is done to unify modeling and terminology across all SAP tools used during the planning, installation and maintenance activities. The “Product Instance” definition replaces “Usage Types” regarding product modeling. For more information, see SAP Notes <a href="http://help.sap.com/note1970349">1970349</a> and <a href="http://help.sap.com/note1877731">1877731</a>.</td>
<td>Software Provisioning Manager 1.0 SP07 (SL Toolset 1.0 SP12)</td>
</tr>
<tr>
<td>Feedback Evaluation Form</td>
<td>SAP SE’s aim is to provide fast and efficient procedures. To evaluate the procedure you just carried out, we need information generated by the tool during process execution and your experience with the tool itself. A new evaluation form contains a simple questionnaire and XML data generated during the procedure. Port 4239 is used for displaying the feedback evaluation form. For more information, see Prerequisites for Running the Installer [page 49].</td>
<td>Software Provisioning Manager 1.0 SP07 (SL Toolset 1.0 SP12)</td>
</tr>
</tbody>
</table>
1.6 Constraints

You need to consider some constraints before you start splitting your SAP dual-stack system.

- **Dual Stack Split scenario “Keep Database”** (see Split Option: Keep Database [page 18]) in a heterogeneous system setup - SCS instance and primary application server (PAS) instance are running on different operating systems - of a distributed target Java system is not supported. This is because the installation of the target SCS instance and PAS instance reuses the kernel, SAPJVM, and other executables of the source PAS instance. Thus the target SCS instance and PAS instance must be installed on an operating system compatible with the kernel of the source PAS instance.

- The dual-stack split procedure does not support the splitting of the following:
  - SAP Process Integration systems based on SAP NetWeaver releases lower than 7.5.
  - SAP Solution Manager systems with releases lower than 7.2.
  - Heterogeneous systems
  - Since MCOD is not supported for SAP systems with SAP ASE, you cannot use split option Keep Database. Instead, you can only use split option Move Java Database [page 14].

- The dual-stack split procedure does not implicate the following:
  - Prerequisites Checker
  - SAP host agent
  - Diagnostics agent
  - Additional application server instances

You can ignore sections in the installation documentation that focus on these options.

**Note**

If these options are installed on your SAP dual-stack system and you want to use them on the Java system after the split, you need to install them again on the Java system using the installation media that you used to install your dual-stack system.

- If your source or target database is SAP MaxDB, keep in mind that dual-stack split is only supported for SAP systems running on SAP MaxDB 7.8 or higher.

### Feature | Description | Availability
--- | --- | ---
Option Verify Signed Media | The digital signature ensures that the signatory of a digital document can be identified unambiguously and signatory’s name is documented together with the signed document, the date, and the time. For more information, see SAP Note 1979965. | Software Provisioning Manager 1.0 SP06 (SL Toolset 1.0 SP11)
1.7 SAP Notes for the Dual-Stack Split

You must read the following SAP Notes before you start the dual-stack split. These SAP Notes contain the most recent information on the dual-stack split, as well as corrections to the dual-stack split documentation. Make sure that you have the most up-to-date version of each SAP Note, which you can find at http://support.sap.com/notes.

Table 3: SAP Notes for the Dual-Stack Split

<table>
<thead>
<tr>
<th>SAP Note Number</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1680045</td>
<td>Release Note for Software Provisioning Manager 1.0</td>
<td>Software provisioning manager 1.0 with installation, system copy, system rename and dual-stack split for SAP NetWeaver-based systems</td>
</tr>
<tr>
<td>1797362</td>
<td>Dual-Stack Split for Systems Based on SAP NetWeaver</td>
<td>Problems discovered after the publication of the dual-stack split guide</td>
</tr>
<tr>
<td>1655335</td>
<td>Use Cases for Splitting Dual-Stack Systems</td>
<td>—</td>
</tr>
</tbody>
</table>

1.8 Accessing the SAP Library

The references to the SAP NetWeaver Library documentation in this guide always refer to the following on SAP Help Portal:

- SAP systems based on SAP NetWeaver 7.3:
  
  Function-Oriented View: English

- SAP systems based on SAP NetWeaver 7.3 including Enhancement Package 1:
  
  Function-Oriented View: English

- SAP systems based on SAP NetWeaver 7.4:
  
  Function-Oriented View: English

- SAP systems based on SAP NetWeaver 7.5:
  
  Function-Oriented View: English
1.9 How to Use this Guide

This documentation comprises the description of the dual-stack split procedure and dual-stack-split-specific steps.

For general or installation-specific information, see the Java installation guide relevant for your database and operating system platform, which you can find at:


In the following, we refer to this documentation as “installation guide”.

Procedure

1. You decide on the split option that you want to use. The following split options are available for central, distributed, and high-availability systems:
   ○ “Move Java Database” (non-MCOD)
   ○ “Keep Database” (MCOD)
   For more information, see Split Options Covered by this Guide [page 14].
2. You follow the list of steps at the beginning of each phase:
   ○ Planning [page 21]
   ○ Preparation [page 25]
   ○ Splitting [page 46]
   ○ Follow-up Activities [page 71]
2 Split Options Covered by this Guide

This section shows the split options covered by this guide. You have to decide which option you want to use because the steps you have to perform vary according to the split option that you choose.

Related Information

Split Option: Move Java Database [page 14]
Split Option: Keep Database [page 18]

2.1 Split Option: Move Java Database

The split option “Move Java Database” offers the possibility to split a dual-stack system into one ABAP system and one Java system each with its own database (non-MCOD).

If you want to install two Oracle databases on one host, read SAP Note 98252 before installing the second database instance.

Move Java Database for Standard Systems

When you choose the “Move Java Database” option for a standard system, the tool exports the Java stack of the dual-stack system and uses this export to reinstall all main instances on a single host. This equates to an installation of a standard system.

These are the following instances:

- Primary application server instance (PAS instance)
- Central services instance (SCS instance)
- Database instance (DB)

**Note**

If required, you can install the primary application server instance and the central services instance on the ABAP system host again.

Once the installation has finished and after the System Landscape Directory has been reconfigured, the tool removes all Java parts from the dual-stack system.
When you choose the “Move Java Database” option for a distributed system, the tool exports the Java stack of the dual-stack system, and uses this export to reinstall the main instances on several hosts. Every instance can run on a separate host. This equates to an installation of a distributed system.

These are the following instances:

- Primary application server instance (PAS instance)
- Central services instance (SCS instance)
- Database instance (DB)

**Note**

If required, you can reinstall the primary application server instance and the central services instance on the ABAP system hosts.

After the installation has finished and the System Landscape Directory has been reconfigured, the tool removes all Java parts from the dual-stack system.
2.1.1 Operating System and Database Migration During Dual-Stack Split

During the export of the Java stack in the “Move Database” scenario, you can specify an operating system and database type that is different from the original operating system and database type of the source dual-stack system.

The target Java system that you are about to split off from the source dual-stack system is then installed on this newly specified operating system and database type.

**Recommendation**

We recommend this feature if you want to upgrade your SAP Solution Manager to release 7.2 and migrate it to SAP HANA.

For more information, see SAP Note 2227300 and SAP Solution Manager 7.2: Simplified Upgrade and Migration to SAP HANA.
If you decide to change the operating system and database type, you must provide the following SAP kernel archives for the target AS Java system. These archives must be Unicode and match the version of the SAP kernel which is used by the dual-stack system. You can download the archives from http://support.sap.com/swdc either beforehand or during the dual-stack split procedure:

- for SAPEXE.SAR
- SAPEXEDB.SAR
- SAPJVM<Version>.SAR
- and IGSEXE.SAR
- optional: SAPCRYPTOLIB.SAR

**Note**

The manifests inside the provided archives are checked, if they match the values of the source system and hardcoded values, such as target operating system or Unicode. The export is created as usual, the so-called EXE.SAR is created from the provided archives, and the SOURCE.PROPERTIES file of the export is updated with the target operating system and database type, overwriting the values of the source dual-stack system. The target Java installation works the same way as if you did not change the operating system and database type.

**Related Information**

Split Option: Move Java Database [page 14]
Preparing the Dual-Stack Split Media [page 38]
2.2 Split Option: Keep Database

The split option “Keep Database” offers the possibility for the Java system to reuse the existing database of the dual-stack system using MCOD (multiple components – one database).

➤ Recommendation

MCOD is generally available and there is no intention to de-support this installation feature.

However, SAP recommends that customers should not use the MCOD feature when installing new systems.

The major drawbacks are as follows:

- Previous-point-in-time (PPT) recovery of a single system within an MCOD installation becomes a highly complex and time-consuming procedure.
- SAP Landscape Management (LaMa) is generally not supported for MCOD installations. For more information, see SAP Note 1709155.
- There are strong dependencies, for example on the database version used for the MCOD system.
- Downtime - planned or unplanned - always affects all systems sharing the same database.

Exception: In case of a dual-stack split you can use the “Keep Database” option thus keeping ABAP and Java stack in one database. There, the PPT recovery problem does not apply because both stacks belong logically together and would always be recovered jointly anyhow. However, keep in mind that even for this specific case the introduction of SAP Landscape Management would require a split into separate database subsystems.

Additional information might be available in SAP Note 2146542.

Keep Database for Central and Distributed Systems

When you choose the “Keep Database” option, the tool exports the Java file system on the dual-stack system. It uses this export to reinstall a central services instance (SCS) and a primary application server instance (PAS) for Java. They can be installed on one host, on different hosts, or on the source system hosts again. Additionally, the tool adapts the Java schema of the database of the dual-stack system to the target Java system.

After the installation has finished and the System Landscape Directory has been reconfigured, the tool removes all Java parts from the dual-stack system except the Java database schema.
Figure 3: Split Option: Keep Database for Standard Systems

ASC = ABAP Central Services Instance
SCS = Java Central Services Instance
PAS = Primary Application Server Instance
DB = Database Instance
Figure 4: Split Option: Keep Database for Distributed Systems

ASCS = ABAP Central Services Instance
SCS = Java Central Services Instance
PAS = Primary Application Server Instance
DB = Database Instance
3 Planning

3.1 Planning Checklist

This section includes the planning steps that you must perform when you want to install the new Java system on one or more hosts.

**Recommendation**

We recommend that you first perform the dual-stack split procedure in a test system to identify possible further application-specific post-split activities required for your scenario.

Perform the planning steps according to the split option and your system variant.

**Note**

Most of the required planning steps listed in this section are not described in this documentation. You can find the detailed description in the Java installation guide relevant for your database and operating system platform, which you can find at:

https://support.sap.com/sitoolset

In the following, we refer to this documentation as “installation guide”.

Prerequisites

You have decided on your split option [page 14].

Procedure

1. You check the hardware and software requirements for the Java installation host.
   For more information, see *Hardware and Software Requirements* in the installation guide.
2. You read about user management [page 24].
3. You identify basic SAP system installation parameters.
   For more information, see *Basic Installation Parameters* in the installation guide.
Be aware of the following dual-stack-split-specific deviations:

○ **SAP System Parameters**:
  ○ User management
    We do not recommend that you make modifications in the user management settings. For more information, see User Management [page 24].
  ○ System Landscape Directory (SLD)
    You can ignore SLD parameters.
  ○ SAP system ports
    You can specify the ports that you plan to reuse in the Java system you are about to create during the dual-stack split procedure.

**Note**
If you choose to reuse the ports from the original dual-stack system in the target AS Java system, keep in mind that you cannot access the additional application server instances of the original dual-stack system using these ports any longer during the split procedure, because the original ports are now used by the newly installed Java system.

○ Internet Communication Manager Ports:
  You can specify the Internet Communication Manager (ICM) ports that you want the target AS Java to take over from the source system. The selected ports are removed from the primary application server instance of the source system and then inserted in the instance profile of the primary application server instance of the target AS Java system. An ICM server port is the `icm/server_port_<xx>` profile parameter.

**Note**
Before the ports are moved, they are resolved to numerical values.

○ Message Server Ports:
  You can migrate message server ports from the original dual-stack system to the target AS Java system, if you want to ensure that the newly created ABAP and Java systems stay connected. You can move all `ms/server_port_<XX>` port parameters from the SCS instance of the original dual-stack system to SCS instance of the Java system being created during the split procedure.

**Note**
Before the ports are moved, they are resolved to numerical values.

○ “Move Java Database” and Oracle only: **SAP System Database Parameters**: Java database schema
  We recommend that you choose a schema ID that is different from your SAP system ID. It might cause problems when you copy a system if `<SCHEMA_ID>` is the same as `<SAPSID>`, and the database-specific method used for the copy does not allow you to rename the database schemas. In certain situations, you might create a system copy with a new `<SAPSID>`, but with the database schema named like the old `<SAPSID>`. This is not a technical problem, but might be confusing to the system administrator.

○ “Move Database only”: You can specify whether you want to install the split-off target AS Java system on an operating system or database type different from the source dual-stack system. Otherwise the SAP Kernel from the dual-stack system is archived and used to install the target AS Java system on the same operating system and database type as the source dual-stack system.
○ **Target Database Type:**
  Specify the target database type if you want to migrate the target AS Java system to a database type different from that of the source dual-stack system.

○ **Target Operating System:**
  Specify the target operating system if you want to migrate the target AS Java system to an operating system different from that of the source dual-stack system.

  The archives must be Unicode and of the same version as the SAP Kernel of the dual-stack system.

  See also Operating System and Database Migration During Dual-Stack Split [page 16].

4. Depending on your split option, proceed in one of the following ways:
   ○ **“Move Java Database”**
     ○ **SAP MaxDB**:
       ○ You plan your system configuration.
       For more information, see SAP MaxDB System Configuration in the installation guide.
       ○ For the database installation, you decide how to distribute your system components to disk.
       For more information, see Distribution of SAP System Components to Disk in the installation guide.

     ○ **Oracle database:** For the database installation, you decide how to distribute your database components to disk.
       To calculate how much storage is required for your Oracle database, see section Database System Configuration in the SAP Library [page 12] at:
       - Function-Oriented View > Database Administration > Database Administration for Oracle > SAP Database Guide: Oracle > Getting Started with Oracle and the SAP System.

     ○ **IBM DB2 for Linux, UNIX, and Windows**: You plan the setup of your database carefully.
       For more information, see Setup of Database Layout in the installation guide.

     ○ **IBM DB2 for z/OS**: You plan your system configuration.
       For more information, see System Configuration in the installation guide.

   ○ **“Keep Database”**
     ○ **SAP MaxDB only**: You plan your system configuration.
       For more information, see SAP MaxDB System Configuration in the installation guide.

     ○ **IBM DB2 for z/OS only**: You plan your system configuration.
       For more information, see System Configuration in the installation guide.

5. You decide on the transport host to use.
   For more information, see SAP System Transport Host in the installation guide

6. You plan for adapting the transport routes within your system landscape. For more information, see Splitting Within a System Landscape [page 81].

7. To install a high-availability system, you read Planning the Switchover Cluster in the installation guide.

8. You can continue with Preparation [page 25].
3.2 User Management

The dual-stack split procedure does not change the user management and you cannot choose which kind of user management you want to use for the target AS Java system. That is, the separated Java system and the ABAP system both use the user management of the former dual-stack system. The following is possible:

- If the dual-stack system uses AS ABAP as data source for the User Management Engine (UME), after the split the separated Java stack will also use the ABAP UME.
- If the dual-stack system uses an LDAP directory as source for user data, this is also valid for the Java stack.

In both cases, manual configuration is not required.

We do not recommend that you make modifications to the user management settings.

For more information, see SAP Note 718383.

Note

If the UME data source is configured to use an ABAP data source and the UME data source configuration file is not one of the supported files mentioned in SAP Note 718383, the tool does not work.
4 Preparation

4.1 Preparation Checklist

This section includes the preparation steps that you have to perform when you want to install the new Java system on one or more hosts.

Note

Most of the required preparation steps listed in this section are not described in this documentation. You can find the detailed description in the Java installation guide relevant for your database and operating system platform, which you can find at:

https://support.sap.com/sitoolset ➤ System Provisioning ➤ Installation Option of Software Provisioning Manager ➤ Guide for Installation of Systems Based on SAP NetWeaver 7.1 and Higher ➤ Installation Guides by Database ➤ <Database> ➤ <OS Platform> ➤ Java

In the following, we refer to this documentation as “installation guide”.

1. You make sure that the required operating system users and groups are created.
   To create the groups and users automatically, run the tool on the host where the SAP Java system is to be installed and choose Dual-Stack Split Operating System Users and Groups.
   For more information, see Creating Operating System Users and Groups [page 26].
2. You set up file systems and make sure that the required disk space is available for the directories to be created during the installation of the Java system.
   For more information, see Required File Systems and Directories in the installation guide.
3. IBM DB2 for Linux, UNIX, and Windows only: JSizeCheck requires monitoring functions that are no longer available with IBM DB2 for Linux, UNIX, and Windows version 10.5 by default. Before you start a Java export, you have to create these monitoring functions as follows:
   1. Log on as user db2<dbsid>.
   2. Execute the following command:
      ```
      db2updv105 -r -d <DBSID> -u db2<dbsid> -p <password>
      ```
4. IBM DB2 for z/OS: If you want to apply split option “Keep Database”, ensure that the path of the /sapmnt directory is identical on both the source and the target application server. For example, do not use /sapfs/sapmnt on the source application server and /sapmnt on the target application server.
5. If applicable, you set up virtual host names.
   For more information, see Using Virtual Host Names [page 37].
6. If you want to install a high-availability system, you perform switchover preparations.
   For more information, see Performing Switchover Preparations for High-Availability in the installation guide.
7. If you want to share the transport directory trans from another system, you export this directory to your installation hosts.
   For more information, see Exporting and Mounting the Transport Directory [page 70].
8. If the Java stack is used as non-ABAP target system, we recommend that you clean up the import queue by importing all transport requests in the queue. If this is not possible, you must copy the import buffer after performing the dual-stack split. For more information, see Configuring Target Systems for Non-ABAP Transports [page 79].

9. If you want to use customized UME data source configuration file, see the SAP Library [page 12] for your release at:

   Security ➤ Identity Management ➤ User Management of the Application Server Java ➤ Configuring User Management ➤ UME Data Sources ➤ LDAP Directory as Data Source ➤ Customizing a UME Data Source Configuration

10. You make sure that the required media are available on each host.
    You can download the Java stack and database installation media from SAP Service Marketplace as described in Preparing the Dual-Stack Split Media [page 38].

11. You can continue with Splitting the Dual-Stack System [page 46].

### 4.2 Creating Operating System Users and Groups

During the installation, the installer checks all required accounts (users, groups) and services on the local machine. The installer checks whether the required users and groups already exist. If not, it creates new users and groups as necessary.

The sapinst_instdir directory belongs to a group named sapinst. If this group is not available, it is created automatically as a local group.

<table>
<thead>
<tr>
<th>Only valid for 'Platform': z/OS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>i</strong> Note</td>
</tr>
<tr>
<td><strong>IBM DB2 for z/OS only:</strong></td>
</tr>
<tr>
<td>Users and groups that need to be created on z/OS need to be created manually before the installation is started. For more information, see Necessary z/OS Group and User IDs [page 34].</td>
</tr>
</tbody>
</table>

| End of 'Platform': z/OS      |

If you do not want the installer to create operating system users, groups, and services automatically, you can optionally create them before the installation is started. This might be the case if you use central user management such as Network Information System (NIS).

For distributed installations, unless you are using global accounts or NIS, you must create the target users automatically using the installer or manually on the operating system, before starting the dual-stack split:

<table>
<thead>
<tr>
<th>Caution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The user ID (UID) and group ID (GID) of SAP users and groups must be identical for all servers belonging to an SAP system.</td>
</tr>
<tr>
<td>This does not mean that all users and groups have to be installed on all SAP servers.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IBM DB2 for z/OS only:</th>
</tr>
</thead>
</table>
On z/OS, instead of NIS, RACF may be used. For more information, see section Security Settings for z/OS in the Security Guide for SAP on IBM DB2 for z/OS, which is available on the SAP Service Marketplace at http://service.sap.com/instguidesnw<Your_SAP_NetWeaver_Release>OperationsDatabase-Specific GuidesSAP Security Guide: DB2 for z/OS.

The installer checks if the required services are available on the host and creates them if necessary. See the log messages about the service entries and adapt the network-wide (NIS) entries accordingly.

The installer checks the NIS users, groups, and services using NIS commands. However, the installer does not change NIS configurations.

**Recommendation**

For a distributed or a high-availability system, we recommend that you distribute account information (operating system users and groups) over the network, for example by using Network Information Service (NIS).

If you want to use global accounts that are configured on a separate host, you can do this in one of the following ways:

- You start the installer and choose Dual-Stack Split Operating System Users and Groups. For more information, see Running the Installer [page 52].
- You create operating system users and groups manually. Check the settings for these operating system users.

**User Settings**

- **Oracle Solaris**: If your operating system is Oracle Solaris 10 or higher, follow the parameter recommendations for SAP applications in SAP Note 724713.

**Caution**

Caution: the limit mechanism supports hard and soft limits. The soft limit cannot be bigger than the hard limit. The hard limit can be set/increased by the root user like: `limit -h <limit> <new_value>`, for example `limit -h datasize unlimited`.
○ Using `csh` shell, the output of command `limit` needs to be at least as follows:

**Example**

The following table lists example output taken from SUSE Linux Enterprise Server 11 (x86_64).

<table>
<thead>
<tr>
<th>Output</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>cputime</td>
<td>unlimited</td>
</tr>
<tr>
<td>filesize</td>
<td>unlimited</td>
</tr>
<tr>
<td>datasize</td>
<td>unlimited</td>
</tr>
<tr>
<td>stacksize</td>
<td>8192 KB</td>
</tr>
<tr>
<td>coredumpsize</td>
<td>unlimited</td>
</tr>
<tr>
<td>descriptors</td>
<td>8192</td>
</tr>
<tr>
<td>memoryuse</td>
<td>unlimited</td>
</tr>
</tbody>
</table>

○ Using `sh` or `ksh` shell, the output of command `ulimit -a` needs to be at least as follows:

**Example**

The following table lists example output taken from SUSE Linux Enterprise Server 11 (x86_64).

<table>
<thead>
<tr>
<th>Output sh</th>
<th>Output ksh</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>cpu time (seconds)</td>
<td>cpu time (seconds)</td>
<td>unlimited</td>
</tr>
<tr>
<td>file size (blocks)</td>
<td>file size (blocks)</td>
<td>unlimited</td>
</tr>
<tr>
<td>data seg size (kbytes)</td>
<td>data size (Kibytes)</td>
<td>unlimited</td>
</tr>
<tr>
<td>stack size (kbytes)</td>
<td>stack size (Kibytes)</td>
<td>8192 KB</td>
</tr>
<tr>
<td>core file size (blocks)</td>
<td>core file size (blocks)</td>
<td>unlimited</td>
</tr>
<tr>
<td>open files</td>
<td>nofile</td>
<td>8192</td>
</tr>
<tr>
<td>max memory size (kbytes)</td>
<td>max memory size (Kibytes)</td>
<td>unlimited</td>
</tr>
</tbody>
</table>

End of ‘Platform’: HP-UX, Linux, Oracle Solaris

- All users **must** have identical environment settings. Any change to the environment – such as variables, or paths – is at your own responsibility.
- The `sapinst_instdir` directory belongs to a group named `sapinst`. If this group is not available, it is created automatically as a local group. For security reasons, SAP recommends you to remove the `sapinst` group from the operating system user groups after the execution of the installer has completed.
- If you have multiple operating system users with user ID (UID) 0, you must assign the `sapinst` group to all of them.
- **Do not** delete any shell initialization scripts in the home directory of the operating system users. This applies even if you do not intend to use the shells that these scripts are for.
- **Oracle Database only:**
  If you use NFS-V4 file system, you have to create the `ora<dbsid>` user and - if your database release is Oracle 12 - the `oracle` user on the NFS server. You can do this either manually or by running `Operating System Users and Groups`. This user must have the same user ID as the `ora<dbsid>` user and - if your database release is Oracle 12 - the `oracle` user on the database server. Otherwise, you see the error message `FSL-02098 Could not change owner of ... during the installation of the database instance`.
- **SAP MaxDB only:**
  If you create the `sdb` user manually, make sure that you lock it for the installation. In most cases, the installer locks this user after it has been created.
- If you install an SAP system with instances distributed over several hosts, make sure that the following requirements are met:
  - The user ID (UID) and group ID (GID) of each operating system user must be unique and the same on each instance host that belongs to the same SAP system.
  - Make sure that the group ID of group `sapinst` is always different from the group ID of any other group (for example, of group `sapsys`) used during the installation. For example, if you want to install an additional application server instance for an existing SAP system, you must make sure that the group ID of group `sapinst` created on the host of the additional application server instance is different from the group ID of any other group on the primary application server instance host of the existing SAP system.
  - If you use local operating system user accounts instead of central user management (for example, NIS), users `<sapsid>adm`, `<sapsid>sapadm`, and the database operating system user must have the same password on all hosts.
- **SAP HANA Database only:**
  - If you use local operating system user accounts instead of central user management (for example, NIS), users `<sapsid>adm` and `<sapsid>sapadm` must have the same password on all hosts.
  - If you use local operating system user accounts, make sure that you install your SAP system in Custom mode and specify suitable IDs for user `<sapsid>adm` and group `sapsys` on all hosts. The IDs have to be the same on all hosts. If you choose Typical mode, you are not asked to specify the user and group IDs.
- If you create operating system users manually or use already existing operating system users, make sure that the home directory for each of these users is **not** the root directory (`/`).
- Make sure that the home directory of user `<sapsid>adm` is not critical for recursive changes on permissions. When operating system users are created by the installer, the permissions on the home directories of these users are changed recursively. This can cause unpredictable errors if you define a critical home directory. For example, the home directory must **not** be `/` or `/usr/sap`.

Dual-Stack Split for SAP Systems Based on SAP NetWeaver 7.1 to 7.5 on UNIX

Preparation
Only valid for 'Platform': HP-UX

HP-UX: To prevent terminal query errors in the `<sapsid>adm` environment, comment out the line `eval `tset -s -Q -m ':?hp'` in the `/etc/skel/.login` script. For more information, see SAP Note 1038842.

End of 'Platform': HP-UX

Operating System Users and Groups

The installer chooses available operating system user IDs and group IDs unless you are installing an additional application server instance. On an additional application server instance you have to enter the same IDs as on the host of the primary application server instance.

If you have multiple operating system users with user ID (UID) 0, you must assign the `sapinst` group to all of them.

**Recommendation**

For security reasons, we recommend that you remove the operating system users from the group `sapinst` after the installer has completed.

We recommend that you specify this “cleanup” already during the Define Parameters phase on the Cleanup Operating System Users screen. Then, the removal of the operating system users from the group `sapinst` is done automatically.

**IBM DB2 for z/OS:**

Table 6: Users and Their Groups

<table>
<thead>
<tr>
<th>User</th>
<th>Primary Group</th>
<th>Secondary Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;sapsid&gt;adm</td>
<td>sapsys</td>
<td>sapinst</td>
</tr>
<tr>
<td>root</td>
<td>sapsys</td>
<td>sapinst</td>
</tr>
</tbody>
</table>

Table 7: Groups and Members

<table>
<thead>
<tr>
<th>Groups</th>
<th>Members</th>
</tr>
</thead>
</table>
| sapsys | ● <sapsid>adm  
         | ● root     |
| sapinst| ● <sapsid>adm  
         | ● root     |

**SAP MaxDB and SAP HANA Database:**
Table 8: Users and Groups

<table>
<thead>
<tr>
<th>User</th>
<th>Primary Group</th>
<th>Additional Group</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>root</td>
<td>None</td>
<td>sapinst</td>
<td>Superuser of the UNIX operating system</td>
</tr>
<tr>
<td>&lt;sapsid&gt;adm</td>
<td>sapsys</td>
<td>sapinst</td>
<td>SAP system administrator</td>
</tr>
<tr>
<td>SAP MaxDB only:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sqd&lt;dbsid&gt;</td>
<td>sapsys</td>
<td>sapinst.sdba</td>
<td>Owner of database instance &lt;DBSID&gt;</td>
</tr>
<tr>
<td>SAP MaxDB only:</td>
<td>sdb</td>
<td></td>
<td>Database software owner</td>
</tr>
</tbody>
</table>

Table 9: Groups and Members

<table>
<thead>
<tr>
<th>Groups</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>sapsys</td>
<td>SAP MaxDB:</td>
</tr>
<tr>
<td></td>
<td>&lt;sapsid&gt;adm, sqd&lt;dbsid&gt;</td>
</tr>
<tr>
<td></td>
<td>SAP HANA database:</td>
</tr>
<tr>
<td></td>
<td>&lt;sapsid&gt;adm</td>
</tr>
<tr>
<td>sapinst</td>
<td>SAP MaxDB:</td>
</tr>
<tr>
<td></td>
<td>root, &lt;sapsid&gt;adm, sqd&lt;dbsid&gt;</td>
</tr>
<tr>
<td></td>
<td>SAP HANA database:</td>
</tr>
<tr>
<td></td>
<td>root, &lt;sapsid&gt;adm</td>
</tr>
<tr>
<td>SAP MaxDB only:</td>
<td>sqd&lt;dbsid&gt;, sdb</td>
</tr>
<tr>
<td>sdb</td>
<td></td>
</tr>
</tbody>
</table>

IBM DB2 for Linux, UNIX and Windows:

Table 10: Users and Groups

<table>
<thead>
<tr>
<th>User</th>
<th>Primary Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superuser of the UNIX operating system</td>
<td>root</td>
</tr>
<tr>
<td></td>
<td>No primary group is assigned by the installer (additional group is sapinst)</td>
</tr>
<tr>
<td>SAP system administrator&lt;sapsid&gt;adm</td>
<td>sapsys (db&lt;dbsid&gt;ctl as secondary group)</td>
</tr>
<tr>
<td>Java connect user sap&lt;sapsid&gt;db</td>
<td>db&lt;dbsid&gt;mon</td>
</tr>
</tbody>
</table>

Note: Only used on the database host.
Table 11: Groups and Members

<table>
<thead>
<tr>
<th>Groups</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>sapsys</td>
<td>&lt;sapsid&gt;adm</td>
</tr>
<tr>
<td>sapinst</td>
<td>root, &lt;sapsid&gt;adm, db2&lt;dbsid&gt;</td>
</tr>
<tr>
<td>db&lt;dbsid&gt;ctl</td>
<td>&lt;sapsid&gt;adm</td>
</tr>
<tr>
<td>db&lt;dbsid&gt;adm</td>
<td>db2&lt;dbsid&gt;</td>
</tr>
<tr>
<td>db&lt;dbsid&gt;mon</td>
<td>Java connect user sap&lt;sapsid&gt;db</td>
</tr>
</tbody>
</table>

i Note
Only used on the database host.

Table 12: SAP System Users and Groups

<table>
<thead>
<tr>
<th>User</th>
<th>Primary Group</th>
<th>Additional Groups</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>root</td>
<td>No primary group assigned by the installer.</td>
<td>sapinst</td>
<td>Superuser of the UNIX operating system</td>
</tr>
<tr>
<td>&lt;sapsid&gt;adm</td>
<td>sapsys</td>
<td>oper, dba, sapinst</td>
<td>SAP system administrator and for Oracle 12 the default database administrator</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The following groups are always required for Oracle 12, but for Oracle 11 only if you want to use Oracle ASM: asmoper, asmdba</td>
<td></td>
</tr>
<tr>
<td>ora&lt;dbsid&gt;</td>
<td>dba</td>
<td>oper,sapinst,oinstall</td>
<td>Database administrator</td>
</tr>
<tr>
<td>User</td>
<td>Primary Group</td>
<td>Additional Groups</td>
<td>Comment</td>
</tr>
<tr>
<td>----------</td>
<td>---------------</td>
<td>--------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>oracle</td>
<td>dba</td>
<td>oper, sapinst, asmoper, asmadmin, asmdba, oinstall</td>
<td>Oracle Software Owner and database administrator</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>This user is only required on the host where the database instance runs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>This user is only required for Oracle 12 or Oracle 11 with ASM/Exadata.</td>
</tr>
</tbody>
</table>

Table 13: SAP System Groups and Members

<table>
<thead>
<tr>
<th>Groups</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>sapsys</td>
<td>&lt;sapsid&gt;adm</td>
</tr>
<tr>
<td>oper</td>
<td>&lt;sapsid&gt;adm, ora&lt;sbsid&gt;, oracle</td>
</tr>
<tr>
<td></td>
<td>(always required for Oracle 12; for Oracle 11 only required if you want to use Oracle ASM)</td>
</tr>
<tr>
<td>dba</td>
<td>&lt;sapsid&gt;adm, ora&lt;sbsid&gt;, oracle</td>
</tr>
<tr>
<td></td>
<td>(always required for Oracle 12; for Oracle 11 only required if you want to use Oracle ASM)</td>
</tr>
<tr>
<td>sapinst</td>
<td>root, &lt;sapsid&gt;adm, ora&lt;sbsid&gt;, oracle</td>
</tr>
<tr>
<td></td>
<td>(always required for Oracle 12; for Oracle 11 only required if you want to use Oracle ASM)</td>
</tr>
<tr>
<td>asmoper</td>
<td>&lt;sapsid&gt;adm</td>
</tr>
<tr>
<td></td>
<td>(always required for Oracle 12; for Oracle 11 only required if you want to use Oracle ASM)</td>
</tr>
<tr>
<td>asmadmin</td>
<td>oracle</td>
</tr>
<tr>
<td></td>
<td>(always required for Oracle 12; for Oracle 11 only required if you want to use Oracle ASM)</td>
</tr>
<tr>
<td>asmdba</td>
<td>&lt;sapsid&gt;adm</td>
</tr>
<tr>
<td></td>
<td>(always required for Oracle 12; for Oracle 11 only required if you want to use Oracle ASM)</td>
</tr>
<tr>
<td>oinstall</td>
<td>oracle</td>
</tr>
<tr>
<td></td>
<td>(always required for Oracle 12; for Oracle 11 only required if you want to use Oracle ASM)</td>
</tr>
</tbody>
</table>

SAP Adaptive Server Enterprise:

Table 14: Users and Groups

<table>
<thead>
<tr>
<th>User:</th>
<th>Primary Group:</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIX superuser root</td>
<td>No primary group assigned by SAPinst (group sapinst is assigned as secondary group).</td>
</tr>
</tbody>
</table>
SAP Host Agent:

Table 15: User and Groups of the SAP Host Agent

<table>
<thead>
<tr>
<th>User</th>
<th>Primary Group</th>
<th>Additional Group</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>sapadm</td>
<td>sapsys</td>
<td>-</td>
<td>SAP Host Agent administrator</td>
</tr>
</tbody>
</table>

*Note*

If `sapadm` does not exist, it is created during the SAP Host Agent installation using `/bin/false` shell.

Make sure that `/bin/false` can be used as a login shell.

*Only valid for ‘Platform’: AIX*  
*AIX*: Add `/bin/false` to the list of valid login shells (attribute `shells`) in `/etc/security/login.cfg`.

End of ‘Platform’: AIX

Table 16: Groups and Members of the SAP Host Agent User

<table>
<thead>
<tr>
<th>Groups</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>sapsys</td>
<td>sapadm</td>
</tr>
<tr>
<td>sapinst</td>
<td>sapadm</td>
</tr>
</tbody>
</table>

4.3 Necessary z/OS Group and User IDs

This topic is only valid for ‘Platform’: z/OS

The following are lists of the group and z/OS user IDs necessary for your SAP system on z/OS. If these group or user IDs do not already exist in your system, you must create them.

Users and Groups for z/OS

Table 17: Necessary z/OS Group and User IDs

<table>
<thead>
<tr>
<th>Group/User ID</th>
<th>Description</th>
<th>Usage Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Administration User ID</td>
<td>Temporary user needed for the SAP installation.</td>
<td>AS Java</td>
</tr>
<tr>
<td>DB Connect User ID for AS Java</td>
<td>Permanent user needed for the database connection. You are free to choose the name of this user. If you are installing both usage types, we advise you to choose different names for the user IDs for AS Java.</td>
<td>AS Java</td>
</tr>
<tr>
<td>Group ID for Java Schema</td>
<td>Permanent group needed for the Java schema. This group ID must be the same as the name of the Java schema that you specify during installation. If you are installing both usage types, you must choose different names for the group IDs for Java schema.</td>
<td>AS Java</td>
</tr>
</tbody>
</table>

Users and Groups for z/OS UNIX System Services

Before the installation, you must create each of the following groups and users in RACF for your SCS or ASCS instance on z/OS UNIX System Services.

For each group and user listed in the following table, you must create an entry in the table /etc/ualiastable, to ensure that each group and user can be used in both upper and lowercase.

Table 18: Necessary z/OS UNIX System Services Group and User IDs

<table>
<thead>
<tr>
<th>Group/User ID</th>
<th>Description</th>
<th>Usage Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>sapsys Group ID</td>
<td>Permanent group needed for the central services instance on z/OS.</td>
<td>Diagnostics Agent, SAP Host Agent</td>
</tr>
<tr>
<td>&lt;sapsid&gt;adm User ID</td>
<td>Permanent user needed for the central services instance on z/OS.</td>
<td>AS Java</td>
</tr>
<tr>
<td>Group/User ID</td>
<td>Description</td>
<td>Usage Type</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>------------</td>
</tr>
</tbody>
</table>
| User ID to install an SAP central services instance on z/OS | Temporary user needed for the SAP central services instance installation. | AS Java
Diagnostics Agent
SAP Host Agent |
| sapinst Group ID | Permanent group needed for the central services instance on z/OS. | AS Java
Diagnostics Agent |
| <dasid>adm User ID | Permanent user needed by the Diagnostics Agent. | AS Java
Diagnostics Agent |
| sapadm User ID | Permanent user needed by the SAP Host Agent. | AS Java
Diagnostics Agent
SAP Host Agent |

**Caution**

The user ID (UID) and group ID (GID) of SAP users and groups must be identical for all servers belonging to an SAP system.

This does not mean that all users and groups have to be installed on all SAP servers.

---

**Enhanced ASCII Setup on z/OS**

To enable enhanced ASCII support, see the procedure in section *User ID <sapadm> and <daaadm> to Run the Host and Diagnostics Agent on z/OS* in the Security Guide for SAP on IBM DB2 for z/OS, which is available on the SAP Service Marketplace at [http://service.sap.com/instguidesnw](http://service.sap.com/instguidesnw).
4.4 Using Virtual Host Names

You can use one or more virtual TCP/IP host names for SAP servers within an SAP server landscape to hide their physical network identities from each other. This can be useful when quickly moving SAP servers or complete server landscapes to alternative hardware since you do not need to reinstall or reconfigure.

Prerequisites

Make sure that the virtual host name can be correctly resolved in your Domain Name System (DNS) setup.

Context

Procedure

Proceed as described in SAP Note 962955.

4.5 Performing a Full System Backup

If you decided to use the split option “Keep Database”, you must perform a full system backup of the dual-stack system before you start the split procedure.

If you decided to use the split option “Move Java Database”, you do not need to perform a backup before you start the split procedure.
For more information about backing up your database, see the database-specific backup and recovery documentation in the SAP Library [page 12] for your release and database at:

### Table 19:

<table>
<thead>
<tr>
<th>Database</th>
<th>Path in Help Portal</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP MaxDB</td>
<td>[SAP NetWeaver Library: Function-Oriented View](Function-Oriented View)</td>
</tr>
<tr>
<td></td>
<td>[Database Administration](Database Administration)</td>
</tr>
<tr>
<td></td>
<td>[Database Administration for SAP MaxDB](Database Administration for SAP MaxDB)</td>
</tr>
<tr>
<td>Oracle</td>
<td>[SAP NetWeaver Library: Function-Oriented View](Function-Oriented View)</td>
</tr>
<tr>
<td></td>
<td>[Database Administration](Database Administration)</td>
</tr>
<tr>
<td></td>
<td>[Database Administration for Oracle](Database Administration for Oracle)</td>
</tr>
<tr>
<td>IBM DB2 for Linux, UNIX, and Windows</td>
<td>[SAP NetWeaver Library: Function-Oriented View](Function-Oriented View)</td>
</tr>
<tr>
<td></td>
<td>[Database Administration](Database Administration)</td>
</tr>
<tr>
<td></td>
<td>[Database Administration for IBM DB2 for Linux, UNIX, and Windows](Database Administration for IBM DB2 for Linux, UNIX, and Windows)</td>
</tr>
<tr>
<td>IBM DB2 for z/OS</td>
<td>[SAP NetWeaver Library: Function-Oriented View](Function-Oriented View)</td>
</tr>
<tr>
<td></td>
<td>[Database Administration](Database Administration)</td>
</tr>
<tr>
<td></td>
<td>[Database Administration for DB2 for z/OS](Database Administration for DB2 for z/OS)</td>
</tr>
</tbody>
</table>

### 4.6 Preparing the Dual-Stack Split Media

This section describes how to prepare the media that is required for the dual-stack split, which are available as follows.

- The Software Provisioning Manager archive containing the installer.
  You always have to download the latest version of the Software Provisioning Manager archive.
- The media containing the software to be installed, which are available as follows:
  - You normally obtain the physical installation media as part of the installation package. You can find them listed under *Using the Physical Installation Media from the Installation Package* below.
  - As an alternative to downloading the complete SAP kernel media, you can download only the archives (SAR files) that are required from the SAP kernel for the target Java system installation, as described under *Downloading the Archives Required for the Dual-Stack Split (Without Operating System and Database Migration)* below.
  - If you want to change the operating system and database type during the dual-stack split (see *Operating System and Database Migration During Dual-Stack Split* [page 16]), you have to provide the SAPEXE `<Version>`.SAR, SAPEXEDB `<Version>`.SAR, SAPJVM `<Version>`.SAR, igsexe `<version>`.sar, SAPCRYPTOLIB.SAR (optional) archives for the target operating system and database. You can find the information on where to download these archives under *Downloading the Archives Required for Operating System and Database Migration* below.
  - You can also download the complete installation media apart from the Software Provisioning Manager archive from SAP, as described in *Downloading the Complete Installation Media* below.
Note

The signature of media is checked automatically by the installer during the Define Parameters phase while processing the Media Browser screens. As of now the installer only accepts media whose signature has been checked. See also the description of this new security feature in SAP Note 2393060.

For more information about which kernel version to use, see SAP Note 1680045. In addition, check the Product Availability Matrix at: http://support.sap.com/pam.

Related Information

Downloading and Extracting the Software Provisioning Manager Archive [page 39]
Using the Physical Media from the Installation Package [page 40]
Downloading the SAP Kernel Archives Required for the Dual-Stack Split (Without Operating System and Database Migration) [page 42]
Downloading the SAP Kernel Archives Required for Operating System and Database Migration [page 42]
Downloading Complete Installation Media [page 44]

4.6.1 Downloading and Extracting the Software Provisioning Manager Archive

You must always download and extract the Software Provisioning Manager 1.0 archive from the SAP Software Download Center because you must use the latest version.

Procedure

1. Download the latest version of the Software Provisioning Manager 1.0 archive
   SWPM10SP<Support_Package_Number>_<Version_Number>.SAR from:
   https://launchpad.support.sap.com/#/softwarecenter SUPPORT PACKAGES & PATCHES By Alphabetical Index (A-Z) S SOFTWARE PROVISIONING MANAGER

2. Get the latest version of the SAPCAR tool on the host where you want to run the installer:
   a. Go to https://launchpad.support.sap.com/#/softwarecenter SUPPORT PACKAGES & PATCHES and search for “sapcar”.
   b. Select the archive file for your operating system and download it to an empty directory.
   c. Rename the executable to sapcar.exe.
   For more information about SAPCAR, see SAP Note 212876.

3. Using the latest version of SAPCAR, you can verify the signature of the downloaded
   SWPM10SP<Support_Package_Number>_<Version_Number>.SAR archive as follows:
a. Get the latest version of the SAPCRYPTOLIB archive to your installation host as follows:

1. Go to https://launchpad.support.sap.com/#/softwarecenter SUPPORT PACKAGES & PATCHES and search for “sapcryptolib”.
2. Select the archive file for your operating system and download it to the same directory where you have put the SAPCAR executable.
3. Use the following command to extract the SAPCRYPTOLIB archive to the same directory where you have put the SAPCAR executable:
   
   ```
sapcar -xvf sapcryptolibp_84...sar -R <target directory>
   ```
4. Download the Certificate Revocation List from https://tcs.mysap.com/crl/crlbag.p7s and move it into the same directory.

b. Verify the signature of the downloaded SWPM10SP<Support_Package_Number>_<Version_Number>.SAR archive by executing the following command:

   ```
   Note
   Check SAP Notes 2178665 and 1680045 whether additional information is available.
   ```

   ```
   /<Path to SAPCAR>/sapcar -tvVf <Path to Download Directory>/
   SWPM10SP<Support_Package_Number>_<Version_Number>.SAR -crl<file name of revocation list>
   ```

4. Unpack the Software Provisioning Manager archive to a local directory using the following command:

   ```
   /<Path to SAPCAR>/sapcar -xvf <Path to Download Directory>/
   SWPM10SP<Support_Package_Number>_<Version_Number>.SAR <Path to Unpack Directory>
   ```

   ```
   Note
   Make sure that all users have read permissions for the directory where you want to unpack the installer.
   ```

   ```
   Caution
   Make sure that you unpack the Software Provisioning Manager archive to a dedicated folder. Do not unpack it to the same folder as other installation media.
   ```

4.6.2 Using the Physical Media from the Installation Package

This section describes how you use the physical installation media as part of the installation package.

Procedure

1. Identify the required media as listed below.
The following table lists the media required for the dual-stack split:

Table 20:

<table>
<thead>
<tr>
<th>SAP Instance Installation</th>
<th>Required Media</th>
</tr>
</thead>
</table>
| Central services instance | ○ Software Provisioning Manager archive  
○ UC Kernel (folder K_U_<Version_Number>_ <OS>) where “U” means Unicode. |
| Central services instance, primary application server instance | ○ Software Provisioning Manager archive  
○ UC Kernel (folder K_U_<Version_Number>_ <OS>) where “U” means Unicode.  
○ SAP NetWeaver Java Component (folders JAVA_*)  
○ RDBMS client media |
| Move Java Database only: Database instance | ○ Software Provisioning Manager archive  
○ UC Kernel (folder K_U_<Version_Number>_ <OS>) where “U” means Unicode.  
○ SAP NetWeaver Java Component (folders JAVA_*)  
○ MS SQL Server, Oracle Database: RDBMS media  
○ MS SQL Server, Oracle Database: RDBMS patch media (if available) |

2. Make the installation media available on each installation host as follows:
   a. Download and unpack the latest version of Software Provisioning Manager as described in Downloading and Extracting the Software Provisioning Manager Archive [page 39].
   b. Make the installation media containing the software to be split available.

   You can do this in one of the following ways:
   ○ Copy the required media folders directly to the hosts.
   ○ Mount media on a central media server that can be accessed from the hosts.

⚠️ Caution
   ○ Mount the media locally. We do not recommend you to use Network File System (NFS), because reading from media mounted with NFS might fail.
   ○ If you copy the media to disk, make sure that the paths to the destination location of the copied media do not contain any blanks and commas.
   ○ If you perform a local installation and there is only one media drive available on your installation host, you must copy at least the Installation Master medium to the local file system.
4.6.3 Downloading the SAP Kernel Archives Required for the Dual-Stack Split (Without Operating System and Database Migration)

As an alternative to providing the complete SAP kernel media, you can also download only the required installation archives for your SAP system installation. During the installation, you can either specify the dedicated path to the archive, or provide the path to a download basket with all downloaded archives.

Context

You only need to provide the SAPHOSTAGENT<Version>.SAR for the Java target system host. The remaining software packages required for the Java target system installation are taken from the Java stack of the source system.

Procedure

You can download the SAPHOSTAGENT<Version>.SAR archive from the following path:

http://support.sap.com/swdc

4.6.4 Downloading the SAP Kernel Archives Required for Operating System and Database Migration

If you want to change the operating system and database type during the dual-stack split, you have to provide the SAPEXE <Version>.SAR, SAPDB <Version>.SAR, SAPJVM <Version>.SAR, igsexe <version>.sar archives for the target operating system and database.

Procedure

1. Go to http://support.sap.com/swdc
2. Choose the required software component and release:
   ○ For an SAP NetWeaver system choose SAP NetWeaver and complementary products SAP NetWeaver <Release> Application Server Java
For an SAP Business Suite system based on SAP NetWeaver, choose SAP Application Components:

- SAP CRM | SAP ERP | SAP SCM | SAP SRM

3. Choose the required package:

**Note**

You have to choose the same operating system type as that of the primary application server of the dual-stack system.

**Caution**

- Make sure that you always use the highest available patch level unless special patch levels are specified for the relevant package in SAP Note 1680045.
- Make sure that you always choose SAP EXE<Version>.SAR, SAPEXEDB<Version>.SAR of the same SAP kernel release and extension:

**Example**

- If SAP EXE<Version>.SAR is of version 7.42 EXT, then SAPEXEDB<Version>.SAR must also be of version 7.42 EXT.
- If SAP EXE<Version>.SAR is of version 7.45, then SAPEXEDB<Version>.SAR must also be of version 7.45.

- If you provide the archives in one download folder, and there is more than one version of the same archive available - for example SAP EXE<Version>.SAR - and these versions match the product-specific requirements, the installer selects one of these archive versions. If you want a specific archive version to be used, make sure that this is the only version available in the download folder. When running system provisioning in GUI mode, you can also check in the GUI which archive is being used. So even if there is more than one version of the same archive available in the download folder, you can select the exact archive version you want to use and enter the exact path to the required archive file.

- **SAP EXE<Version>.SAR:**
  - SAP KERNEL<Version><Operating System><Database independent>
- **SAPEXEDB<Version>.SAR:**
  - SAP KERNEL<Version><Operating System><Database>
- igexe<version>.sar:
  - SAP IGS<Version><Operating System>
- SAP JVM<Version>.SAR:
  - **SAP JVM<Version><Operating System>**
- If your target system based on SAP NetWeaver 7.3 including EHP1 or lower - that is you have to use SAP Kernel 7.21 - download the latest patch level of SAPCRYPTOLIB<Version>.SAR from the following path:
4.6.5 Downloading Complete Installation Media

This section describes how you download complete media from the SAP Software Download Center.

Procedure

1. Download and unpack the latest version of Software Provisioning Manager as described in Downloading and Extracting the Software Provisioning Manager Archive [page 39].
2. Identify all download objects that belong to one medium according to one of the following:

   - Download path or location:
     - To download the complete kernel media, go to https://support.sap.com/sitoolset System Provisioning Software Provisioning Manager 1.0 SP<Current Version> Download Kernel releases delivered for SL Toolset SL TOOLSET 1.0 (INSTALLATIONS AND UPGRADES) KERNEL FOR INSTALLATION/SWPM.
     - To download all media required for your SAP product, you can use one of the following navigation paths:
       - https://launchpad.support.sap.com/#/softwarecenter INSTALLATIONS & UPGRADES By Category SAP NETWEAVER AND COMPLEMENTARY PRODUCTS <Product>
   - Material number
     All download objects that are part of an installation medium have the same material number and an individual sequence number:

     Example

     51031387_1
     51031387_2
Title

All objects that are part of an installation medium have the same title, such as
<Solution><Media_Name><OS> or <Database>RDBMS<OS> for database media.

3. Download the objects to the download directory.
4. To correctly re-combine the media that are split into small parts, unpack all parts into the same directory.

In the unpacking directory, the system creates a subdirectory with a short text describing the medium and copies the data into it. The data is now all in the correct directory, the same as on the medium that was physically produced. For more information, see SAP Note 1258173₃.

⚠️ Caution

Make sure that you unpack each installation media to a separate folder. Do not unpack installation media to the same folder where you unpack the Software Provisioning Manager archive.

Do not unpack installation media to the same folder where you unpack the SAP kernel archives for archive-based installation.
5 Splitting the Dual-Stack System

5.1 Splitting Checklist

This section includes the splitting steps that you have to perform for the following split options:

- “Move Java Database”
- “Keep Database”

Detailed information about the steps is available in the relevant section.

Note

Some of the required processing steps listed in this section are not described in this documentation. You can find the detailed description in the Java installation guide relevant for your database and operating system platform, which you can find at:


In the following, we refer to this documentation as “installation guide”.

Move Java Database

Central System

1. You check the prerequisites [page 49] and export the Java stack using the installer [page 52].

Caution

Make sure that you stop the Java stack of the source system before you start the export. This is not required if you perform the export for test purposes only, that is, you do not use the export in a productive system.

To stop the Java stack, use transaction SMICM on the ABAP stack.

You can decide whether you want the Java stacks of all instances to be activated or deactivated after the export. If you decide to deactivate them, you can restart them later as described in Move Java Database: Restarting Instances [page 85].

2. If AS Java has been disabled, you restart the source system.

3. You check the prerequisites [page 49] and run the installer [page 52] to install a Java only system using the export from the dual-stack system.
Note

Make sure that you choose a system ID for the Java target system that is different from the dual-stack source system ID.

For a list of forbidden system IDs, see also the F1 help in the tool dialog.

4. **Oracle**: You install the Oracle database software.
   For more information, see *Installing the Oracle Database Software* in the installation guide.

5. You continue with Follow-Up Activities [page 71].

**Distributed and High-Availability System**

1. **Oracle**: On the database instance host of the Java system, you install the Oracle database software.
   For more information, see *Installing the Oracle Database Software* in the installation guide.

2. On the primary application server instance host of the dual-stack system, you check the prerequisites [page 49] and run the installer [page 52] to export the Java parts of the file system of the primary application server instance.

   **Caution**

   Make sure that you stop the Java stack of the source system before you start the export. This is not required if you perform the export for test purposes only, that is, you do not use the export in a productive system.

   To stop the Java stack, use transaction SMICM on the ABAP stack.

   You can decide whether you want the Java stacks of all instances to be activated or deactivated after the export. If you decide to deactivate them, you can restart them later as described in *Move Java Database: Restarting Instances* [page 85].

3. If AS Java has been disabled, you restart the source system.

4. You merge the export directories of the database instance and of the central instance.

5. You check the prerequisites [page 49] and run the installer [page 52] to install a central services instance for the Java target system.

   **Note**

   Make sure that you choose a system ID for the Java target system that is different from the dual-stack source system ID.

   For a list of forbidden system IDs, see also the F1 help in the tool dialog.

6. You check the prerequisites [page 49] and run the installer [page 52] to install a database instance for the Java target system using the export from the dual-stack system.

7. You check the prerequisites [page 49] and run the installer [page 52] to install a primary application server instance for the Java target system using the export from the dual-stack system.

8. You continue with Follow-Up Activities [page 71].
Keep Database

1. On the primary application server instance host of the dual-stack system, you check the prerequisites [page 49] and run the installer [page 52] to export the file system of the primary application server instance.

   **Caution**

   Make sure that you stop the Java stack of the source system before you start the export. This is not required if you perform the export for test purposes only, that is, you will not use the export in a productive system.

   To stop the Java stack, use transaction SMICM on the ABAP stack.

   You can decide whether you want the Java stacks of all instances to be activated or deactivated after the export. If you decide to deactivate them, you can restart them later as described in Move Java Database: Restarting Instances [page 85].

2. If AS Java has been disabled, you restart the source system.

3. You check the prerequisites [page 49] and run the installer [page 52] to install a central services instance for the Java target system.

   **Note**

   Make sure that you choose a system ID for the Java target system that is different from the dual-stack source system ID.

   For a list of forbidden system IDs, see also the F1 help in the tool dialog.

4. All databases except IBM DB2 for z/OS: On the database instance host of the dual-stack system, you check the prerequisites [page 49] and run the installer [page 52] to adapt the database for the Java target system.

   **Note**

   Make sure that you enter the profile directory of the Java target system in the SAP System > General Parameters screen.

5. IBM DB2 for z/OS only: On the primary application server instance host of the dual-stack system, you check the prerequisites [page 49] and run the installer [page 52] to adapt the database for the Java target system.

   **Note**

   Make sure that you enter the profile directory of the Java target system in the SAP System > General Parameters screen.

6. You check the prerequisites [page 49] and run the installer [page 52] to install a primary application server instance for the Java target system using the export from the dual-stack system.

7. You continue with Follow-Up Activities [page 71].
5.2 Prerequisites for Running the Installer

Make sure you fulfill the following prerequisites before running the installer.

- If you want to use the SL Common GUI, make sure that the following web browser requirements are met:
  - You have one of the following supported browsers on the device where you want to run the SL Common GUI: Google Chrome, Mozilla Firefox, Microsoft Edge, or Microsoft Internet Explorer 11. Always use the latest version of these web browsers.
    - Recommendation: We recommend using Google Chrome.
  - If you copy the SL Common GUI URL manually in the browser window, make sure that you open a new Web browser window in private browsing mode (Internet Explorer), incognito mode (Chrome) or private browsing mode (Firefox). This is to prevent Web browser plugins and settings from interfering with the SL Common GUI.

For more information about the SL Common GUI, see Useful Information About the Installer [page 57].

- We recommend that you use the csh shell for the installation. If you want to use another shell, make sure that you have read SAP Note 202227.
  - The installer uses csh scripts during the installation to obtain the environment for user <sapsid>adm. This is also true if user <sapsid>adm already exists from an earlier SAP system installation, and the shell of this user is not csh. Before you start the installer, execute the following command as user <sapsid>adm to make sure that the csh scripts are up-to-date:
    ```bash
    /bin/csh -c "source /home/<sapsid>adm/.cshrc;env"
    ```

- Make sure that your operating system does not delete the contents of the temporary directory /tmp or the contents of the directories to which the variables TEMP, TMP, or TMPDIR point, for example by using a crontab entry.

- Make sure that the temporary directory has the permissions 777.

- Make sure that you have at least 300 MB of free space in the installation directory for each installation option. In addition, you need 300 MB free space for the installer executables. If you cannot provide 300 MB free space in the temporary directory, you can set one of the environment variables TEMP, TMP, or TMPDIR to another directory with 300 MB free space for the installer executables.

  You can set values for the TEMP, TMP, or TMPDIR environment variable to an alternative installation directory as described in section Useful Information About the Installer [page 57].

- The following information is only valid if you use the Java GUI:
  - Make sure that your DISPLAY environment variable is set to <Host_Name>:0.0, where <Host_Name> is the host on which you want to display the installer GUI.

You can set values for the DISPLAY environment variables as follows:

<table>
<thead>
<tr>
<th>Shell Used</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bourne shell (sh)</td>
<td>DISPLAY=&lt;Host_Name&gt;:0.0</td>
</tr>
<tr>
<td></td>
<td>export DISPLAY</td>
</tr>
<tr>
<td>Shell Used</td>
<td>Command</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>C shell (csh)</td>
<td><code>setenv DISPLAY &lt;Host_Name&gt;:0.0</code></td>
</tr>
<tr>
<td>Korn shell (ksh)</td>
<td><code>export DISPLAY=&lt;Host_Name&gt;:0.0</code></td>
</tr>
</tbody>
</table>

- Make sure that `umask` is set to `022` for the user with `root` permissions that you want to use for running the installer.
- As the user with `root` permissions that you want to use for running the installer, enter the following command: `umask 022`
- **Only valid for 'Platform': AIX**
  - AIX: Make sure that you have set the limits for operating system users as described in SAP Note 323816.
- **End of 'Platform': AIX**
- **Only valid for 'Platform': HP-UX, Linux, Oracle Solaris**
  - HP-UX, Linux, Oracle-Solaris: Make sure that you have set the limits for operating system users `root`, `<sapsid>adm`, and your database-specific operating system users (see also section "Creating Operating System Users and Groups" and "Running the Installer" in the installation guide).

**Caution**

Caution: the `limit` mechanism supports hard- and soft-limits. The soft-limit cannot be bigger than the hard-limit. The hard-limit can be set/increased by the root user like: `limit -h <limit>` `<new_value>`, for example `limit -h datasize unlimited`.

- Using `csh` shell, the output of command `limit` needs to be at least as follows:

  ![Example](example_table.png)

  The following table lists example output taken from SUSE Linux Enterprise Server 11 (x86_64).

  Table 22:
Using `sh` or `ksh` shell, the output of command `ulimit -a` needs to be at least as follows:

**Example**

The following table lists example output taken from SUSE Linux Enterprise Server 11 (x86_64).

<table>
<thead>
<tr>
<th>Output sh</th>
<th>Output ksh</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>cpu time (seconds)</td>
<td>cpu time (seconds)</td>
<td>unlimited</td>
</tr>
<tr>
<td>file size (blocks)</td>
<td>file size (blocks)</td>
<td>unlimited</td>
</tr>
<tr>
<td>data seg size (kbytes)</td>
<td>data size (Kibytes)</td>
<td>unlimited</td>
</tr>
<tr>
<td>stack size (kbytes)</td>
<td>stack size (Kibytes)</td>
<td>8192 KB</td>
</tr>
<tr>
<td>core file size (blocks)</td>
<td>core file size (blocks)</td>
<td>unlimited</td>
</tr>
<tr>
<td>open files</td>
<td>nofile</td>
<td>8192</td>
</tr>
<tr>
<td>max memory size (kbytes)</td>
<td>max memory size (Kibytes)</td>
<td>unlimited</td>
</tr>
</tbody>
</table>

Make sure that the following ports are not used by other processes:

- **When using the SL Common GUI:**
  - Port 4237 is used by default as HTTPS port for communication between the installer and the SL Common GUI.
  - If this port cannot be used, you can assign a free port number by executing `sapinst` with the following command line parameter:
    ```
    SAPINST_HTTPS_PORT=<Free Port Number>
    ```
  - Port 4239 is used by default for displaying the feedback evaluation form at the end of the installer processing.
  - The filled-out evaluation form is then sent to SAP using HTTPS.
  - If this port cannot be used, you can assign a free port number by executing `sapinst` with the following command line parameter:
    ```
    SAPINST_HTTP_PORT=<Free Port Number>
    ```

- **When using the Java SDT GUI:**
  - Port 21212 is used by default for communication between the installer GUI server and the installer GUI client.
  - If this port cannot be used, you can assign a free port number by executing `sapinst` with the following command line parameter:
    ```
    SAPINST_DIALOG_PORT=<Free Port Number>
    ```
  - Port 4239 is used by default for displaying the feedback evaluation form at the end of the installer processing.
  - The filled-out evaluation form is then sent to SAP using HTTPS.
  - If this port cannot be used, you can assign a free port number by executing `sapinst` with the following command line parameter:
    ```
    SAPINST_HTTP_PORT=<Free Port Number>
    ```
• If you want to change the host name of your system, change the computer name and the host name on OS level and make sure that the host name resolution and UNC paths work. For more information, see SAP Note 129997.
If you want to change the virtual host name, see SAP Note 962955.
• Make sure that you have specified the most important SAP system parameters as described in Basic SAP System Installation Parameters in the installation documentation of your release before you start the installer.
• IBM DB2 for z/OS: Check that your hosts meet the requirements for the installer options that you want to perform.
• If you want to perform a distributed or a high-availability installation, make sure that you have exported and mounted global directories. For more information, see Exporting and Mounting Global Directories [page 69].
• IBM DB2 for Linux and UNIX and Windows: Make sure that you have carefully planned your database layout, in particular the tablespace layout, as described in Setup of Database Layout in the installation documentation of your release.
• IBM DB2 for Linux and UNIX and Windows, Solaris SPARC only: If you want to set up the DB2 high-availability cluster solution SA MP, make sure that you have read the document IBM DB2 High Availability Solution: IBM Tivoli System Automation for Multiplatforms at: http://service.sap.com/installnw<release>Installation - SAP NetWeaver Systems</release>
• IBM DB2 for z/OS: Make sure that you have installed DB2 for z/OS. For information on that installation, see SAP DBA Guide: DB2 for z/OS DB2 Setup especially the section Stored Procedures Enablement.

5.3 Running the Installer

This section describes how to run the installer to perform the dual-stack split.

Prerequisites

For more information, see Prerequisites for Running the Installer [page 49].

Context

Software Provisioning Manager (the “installer” for short) offers two GUls:
• The new web browser-based “SL Common GUI of the Software Provisioning Manager” - “SL Common GUI” for short
• The “classic” Java-based GUI with a CUI client and server - “Java SDT GUI” for short
Note

If the SL Common GUI does not meet your requirements you can still use the “classic” Java SDT GUI. You then have to start the sapinst executable with the command line option `SAPINST_SLP_MODE=false`.

In cases where both GUIs behave the same way, we address them as “installer GUI”.

For more information, see Useful Information About the Installer [page 57].

This procedure describes an installation where you use one of the following GUI scenarios:

- You run the installer and use the SL Common GUI. Then you can control the processing of the installer in the browser running on any device.
- You run the installer and use the Java SDT GUI. Both are running on the same host.

The following information is only valid if you use the Java SDT GUI:

- If you need to see the installation on a remote display, we recommend that you perform a remote installation [page 62], where the installer GUI is running on a separate host from the installer.
- Alternatively you can use an X server for Microsoft Windows or other remote desktop tools for remote access to the installer GUI on Windows workstations. For more information, see SAP Note 1170809.

Procedure

1. Log on to the host where you want to run the installer.

   Make sure that you log on as a user with root permissions.

   Caution

   Make sure that this user has not set any environment variables for a different SAP system or database.

   Caution

   Do not use an existing `<sapsid>adm` user.

   SL Common GUI only: If your security policy requires that the person running the installer is not allowed to know the credentials of a user with root permissions on the host where the installer is to perform the dual-stack split, you can specify another operating system user for authentication purposes. You do this using the `SAPINST_REMOTE_ACCESS_USER` parameter when starting the sapinst executable from the command line. You have to confirm that the user is a trusted one. For more information, see SAP Note 1745524.

2. Make the required media available.

   For more information, see Preparing the Dual-Stack Split Media [page 38].

   Recommendation

   Make the installation media available locally. For example, if you use Network File System (NFS), reading from media mounted with NFS might fail.
3. Start the installer as follows:

Open a command prompt and enter the following command:

```
/\Path_To_Unpack_Directory/>/sapinst
```

The installer GUI starts automatically by displaying the Welcome screen.

### Note

If you want to use a virtual host name, start the installer with the installer property `SAPINST_USE_HOSTNAME` as follows:

```
/\Path_To_Unpack_Directory/>/sapinst SAPINST_USE_HOSTNAME=<Virtual_Host_Name>
```

### Caution

Make sure that the installation directory is not mounted with NFS, or there might be problems when starting the Java Virtual Machine.

4. The installer is starting up.

Depending on the type of the installer GUI you want to use, do one of the following:

- If you use the SL Common GUI, the installer now starts and waits for the connection with the SL Common GUI.
  You can find the URL you require to access the SL Common GUI at the bottom of the shell from which you are running the installer.

```
Sample Code

...  
*----------------------------------------------------------------------* 
*----------------------------------------------------------------------* 
Open your browser and paste the following URL address to access the GUI  
https://[<hostname>]:4237/sapinst/docs/index.html 
Logon users: ['<users>']  
*----------------------------------------------------------------------* 
*----------------------------------------------------------------------* 
...  
```

If you have a supported web browser (see Prerequisites for Running the Installer [page 49]) installed on the host where you run the installer, you can open this URL directly in the shell. Otherwise open the URL in a supported web browser that runs on another device.

The SL Common GUI opens in the browser by displaying the Welcome screen.
Before you reach the Welcome screen, your browser might warn you that the certificate of the sapinst process on this computer could not be verified. Accept this warning to inform your browser that it can trust this site, even if the certificate could not be verified.

- If you use the Java SDT GUI - that is you started the sapinst executable with command line option SAPINST_SLP_MODE=false, the Java SDT GUI starts automatically by displaying the Welcome screen.

5. In the Welcome screen, choose Dual-Stack Split <Database> <Keep Database | Move Java Database> <Standard System|Distributed System|High-Availability System>.

Perform the related dual-stack split options exactly in the order they appear.

6. Choose Next.

7. Follow the instructions in the installer input screens and enter the required parameters.

- If you use the SL Common GUI, choose either F1 or the HELP tab. Then the available help text is displayed in the HELP tab.
- If you use the Java SDT GUI, choose F1. Then a dialog opens with the available help text.

8. After you have entered all requested input parameters, the installer displays the Parameter Summary screen. This screen shows both the parameters that you entered and those that the installer set by default.

If required, you can revise the parameters before starting the dual-stack split procedure.
9. To start the execution, choose **Next**.

The installer starts the split procedure and displays its progress on the **Task Progress** screen.

The installer starts the export and displays its progress of the system copy export during the processing phase.

When the dual-stack option has finished successfully, the installer displays the message **Execution of <Split_Option> has completed.**

10. If required, delete directories with the name `sapinst_exe.xxxxx.xxxx` after the installer has finished. Sometimes these remain in the temporary directory.

    **Note**
    
    If there are errors with the installer extraction process, you can find the log file `dev_selfex.out` in the temporary directory.

    **Recommendation**
    
    Keep all installer directories until you are sure that the system, including all instances, is completely and correctly installed. Once the system is completely and correctly installed, make a copy of the installer directories with all their contents. Save the copy to a physically separate medium, such as a medium or a USB drive that is separate from your installation hosts.

    This might be useful for analyzing any issues that might occur later when using the system. For security reasons, do **not** keep the installer directories on hosts where you processed it, but make sure that you delete them after saving them separately.

11. **IBM DB2 for Linux and UNIX and Windows**: If not already done, install the DB2 license.

    **Note**
    
    If you have bought your DB2 license from SAP (OEM customers), install the DB2 license as described in SAP Note 816773.

12. If you copied installation media to your hard disk, you can delete these files when the installer has successfully completed.

13. **Java GUI only**: For security reasons, we recommend that you delete the `.sdtgui` directory within the home directory of the user with which you ran the installer:

    `<User_Home>/.sdtgui/`

14. For security reasons, we recommend that you remove the operating system users from the group `sapinst` **after** you have completed the installation.

    **Note**
    
    This step is only required, if you did **not** specify during the Define Parameters phase that the operating system users are to be removed from the group `sapinst` after the execution of the installer has completed.
5.4 Additional Information About the Installer

The following sections provide additional information about the installer.

5.4.1 Useful Information About the Installer

This section contains some useful technical background information about the installer and the installer GUI.

- Software Provisioning Manager (the installer) offers two GUIs:
  - The new web browser-based “SL Common GUI of the Software Provisioning Manager” - “SL Common GUI” for short
  - The “classic” Java-based GUI with a CUI client and server - “Java SDT GUI” for short

The SL Common GUI of the Software Provisioning Manager (or “SL Common GUI” for short) uses the SAP UI Development Toolkit for HTML5 - also known as SAPUI5 - a client-side HTML5 rendering library based on JavaScript. The benefits of this new user interface technology for the user are:
  - Zero footprint, since only a web browser is required on the client
  - New controls and functionality, for example, view logs in web browser.

The SL Common GUI connects the web browser on a client with the sapinst executable - which is part of Software Provisioning Manager - running on the installation host using the standard protocol HTTPS.

For the SL Common GUI, the installer provides a pre-generated URL at the bottom of the shell from which you are running the installer. If you have a supported web browser installed on the host where you run the
installer, you can start the SL Common GUI directly from this URL. Otherwise, open a web browser supported by the SL Common GUI on any device and run the URL from there. For more information about supported web browsers see Prerequisites for Running the Installer [page 49].

If the SL Common GUI does not meet your requirements, you can still use the “classic” Java SDT GUI. To do so, you must start the sapinst executable with the command line option SAPINST_SLP_MODE=false. You can switch back to the default installer GUI at any time with the following steps:

1. Stop the installer.
2. Restart the installer with command line option SAPINST_SLP_MODE=false.
3. On the What do you want to do? screen choose Continue with the existing run.

- The installer creates the installation directory sapinst_instdir directly below the temporary directory. The installer finds the temporary directory by checking the value of the TEMP, TMP, or TMPDIR environment variable. If no value is set for these variables, the installer uses /tmp as default installation directory.

If you want to use an alternative installation directory, set the environment variable TEMP, TMP, or TMPDIR to the required directory before you start the installer.

Table 24:

<table>
<thead>
<tr>
<th>Shell Used</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bourne shell (sh)</td>
<td>TEMP=&lt;Directory&gt;</td>
</tr>
<tr>
<td></td>
<td>export TEMP</td>
</tr>
<tr>
<td>C shell (csh)</td>
<td>setenv TEMP &lt;Directory&gt;</td>
</tr>
<tr>
<td>Korn shell (ksh)</td>
<td>export TEMP=&lt;Directory&gt;</td>
</tr>
</tbody>
</table>

⚠️ Caution

Make sure that the installation directory is not mounted with NFS, otherwise there might be problems when the Java Virtual Machine is started.

- For each option, the installer creates a subdirectory located in the sapinst_instdir directory.
- The installer extracts itself to the temporary directory. These executables are deleted again after the installer has stopped running.

Directories called sapinst.exe.xxxxxx.xxxx sometimes remain in the temporary directory. You can safely delete them. The temporary directory also contains the log file dev_selfex.out from the extraction process, which might be useful if an error occurs.

⚠️ Caution

If the installer cannot find a temporary directory, the installation terminates with the error FCO-00058.

- To see a list of all available installer properties, start the installer as described above with the option -p:
  ```bash
  ./sapinst -p
  ```
- This information is only relevant if you use the Java GUI of the installer: If you need to run the installer in accessibility mode, proceed as described in Running the Installer in Accessibility Mode [page 66].
If required, stop the installer by choosing one of the following, depending on the installer GUI you use:
- In the SL Common GUI, choose the Cancel button.
- In the Java SDT GUI, choose SAPinst ➤ Exit Process in the Java SDT GUI menu.

**Note**
If you need to terminate the installer, press Ctrl+C.

### 5.4.2 Interrupted Processing of the Installer

Here you find information about how to restart the installer if its processing has been interrupted.

**Context**

The processing of the installer might be interrupted for one of the following reasons:

- An error occurred during the Define Parameters or Execute phase:
  The installer does not abort the installation in error situations. If an error occurs, the installation pauses and a dialog box appears. The dialog box contains a short description of the choices listed in the table below as well as a path to a log file that contains detailed information about the error.

- You interrupted the installation by choosing
  - Cancel in the SL Common GUI
  - Exit Process in the SAPinst menu in the Java SDT GUI

**Caution**

If you stop an option in the Execute phase, any system or component installed by this option is incomplete and not ready to be used. Any system or component uninstalled by this option is not completely uninstalled.
The following table describes the options in the dialog box:

Table 25:

<table>
<thead>
<tr>
<th>Option</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retry</td>
<td>The installer retries the installation from the point of failure without repeating any of the previous steps. This is possible because the installer records the installation progress in the <code>keydb.xml</code> file. We recommend that you view the entries in the log files, try to solve the problem, and then choose <em>Retry</em>. If the same or a different error occurs, the installer displays the same dialog box again.</td>
</tr>
<tr>
<td>Stop</td>
<td>The installer stops the installation, closing the dialog box, the installer GUI, and the GUI server. The installer records the installation progress in the <code>keydb.xml</code> file. Therefore, you can continue the installation from the point of failure without repeating any of the previous steps. See the procedure below.</td>
</tr>
<tr>
<td>Continue</td>
<td>The installer continues the installation from the current point.</td>
</tr>
<tr>
<td>View Log</td>
<td>Access installation log files.</td>
</tr>
</tbody>
</table>

The following procedure describes the steps to restart an installation, which you stopped by choosing *Stop*, or to continue an interrupted installation after an error situation.

**Procedure**

1. Log on to the installation host as a user with the required permissions as described in *Running the Installer* [page 52].
2. Make sure that the media required for the dual-stack split are still available.
   
   For more information, see *Preparing the Dual-Stack Split Media* [page 38].

   ➤ **Recommendation**

   Make the installation media available **locally**. For example, if you use remote file shares on other Windows hosts, CIFS shares on third-party SMB-servers, or Network File System (NFS), reading from media mounted with NFS might fail.

   **Note**

   **Oracle Solaris:** If you mount installation media, make sure that you do this with option `nomapcase`.

   End of ‘Platform’ Oracle Solaris
3. Restart the installer from the directory to which you unpacked the Software Provisioning Manager archive by executing the following command:

   `<Path_To_Unpack_Directory>/sapinst`

4. The installer is restarting.

   Depending on the type of the installer GUI you want to use, do one of the following:
   
   ○ If you use the SL Common GUI, the installer now starts and waits for the connection with the SL Common GUI.
     You can find the URL you require to access the SL Common GUI at the bottom of the shell from which you are running the installer.

   ```
   Sample Code
   ...
   *************************************************************************
   ****************
   Open your browser and paste the following URL address to access the GUI
   https://[<hostname>]:4237/sapinst/docs/index.html
   Logon users: [<users>]
   *************************************************************************
   ****************
   ...
   ```

   If you have a supported web browser (see Prerequisites for Running the Installer [page 49]) installed on the host where you run the installer, you can open this URL directly in the shell. Otherwise open the URL in a supported web browser that runs on another device. The SL Common GUI opens in the browser by displaying the Welcome screen.

   ```
   Note
   Before you reach the Welcome screen, your browser might warn you that the certificate of the sapinst process on this computer could not be verified. Accept this warning to inform your browser that it can trust this site, even if the certificate could not be verified.
   ```

   ○ If you use the Java SDT GUI - that is you started the sapinst executable with command line option `SAPINST_SLP_MODE=false`, the Java SDT GUI starts automatically by displaying the Welcome screen.

5. From the tree structure on the Welcome screen, select the installation option that you want to continue and choose Next.

   The What do you want to do? screen appears.

6. On the What do you want to do? screen, decide between the following alternatives and continue with Next:
Table 26:

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perform a new run</strong></td>
<td>The installer does not continue the interrupted dual-stack split option. Instead, it moves the content of the old installer directory and all installer-specific files to a backup directory. Afterwards, you can no longer continue the old option. The following naming convention is used for the backup directory: log_&lt;Day&gt;_&lt;Month&gt;_&lt;Year&gt;_&lt;Hours&gt;_&lt;Minutes&gt;_&lt;Seconds&gt;</td>
</tr>
<tr>
<td></td>
<td><strong>Example</strong></td>
</tr>
<tr>
<td></td>
<td>log_01_Oct_2016_13_47_56</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong></td>
</tr>
<tr>
<td></td>
<td>All actions taken by the dual-stack split before you stopped it (such as creating directories or users) are not revoked.</td>
</tr>
<tr>
<td><strong>Caution</strong></td>
<td>The installer moves all the files and folders to a new log directory, even if these files and folders are owned by other users. If there are any processes currently running on these files and folders, they might no longer function properly.</td>
</tr>
<tr>
<td><strong>Continue with the existing one</strong></td>
<td>The installer continues the interrupted dual-stack split from the point of failure.</td>
</tr>
</tbody>
</table>

5.4.3 Performing Remote Processing of the Installer (Java SDT GUI only)

Here you find information about how to process the installer on a remote host.

**Note**

This section is only valid if you use the Java SDT GUI. That is, you started the sapinst executable with command line option **SAPINST_SLP_MODE=false**.

**Prerequisites**

- The remote host meets the prerequisites for starting the installer as described in **Prerequisites for Running the Installer [page 49]**.
- Both computers are in the same network and can ping each other.
To test this:
1. Log on to your remote host and enter the command: `ping <Local_Host>`
2. Log on to the local host and enter the command: `ping <Remote_Host>`
   - If you need to specify another operating system user with the `SAPINST_REMOTE_ACCESS_USER` command line parameter, make sure that this user exists on the remote host.

Context

You use this procedure to process the installer on a remote host. In this case, the installer runs on the remote host, and the installer GUI runs on the local host. The local host is the host from which you control the installation with the installer GUI. The installer GUI connects using a secure SSL connection to the installer.

If your security policy requires that the person performing the installation by running the installer GUI on the local host is not allowed to know the credentials of a user with root permissions on the remote host, you can specify another operating system user for authentication purposes. You do this using the `SAPINST_REMOTE_ACCESS_USER` parameter when starting the `sapinst` executable from the command line. You have to confirm that the user is a trusted one. For more information, see SAP Note 1745524.

Alternatively you can use an X server for Microsoft Windows or other remote desktop tools for remote access to the installer GUI on Windows workstations. For more information, see SAP Note 1170809.

Procedure

1. Log on to the remote host as a user with root permissions.
   
   **Caution**
   
   Make sure that this user has not set any environment variables for a different SAP system or database.

2. Make the installation media available on your remote host.
   
   For more information, see Preparing the Dual-Stack Split Media [page 38].

   **Recommendation**
   
   Make the installation media available locally. For example, if you use Network File System (NFS), reading from media mounted with NFS might fail.

   **Note**
   
   Oracle Solaris: If you mount installation media, make sure that you do this with option `nomapcase`.

   Only valid for 'Platform': Oracle Solaris

   **End of 'Platform': Oracle Solaris**

3. Open a command prompt and change to the directory to which you unpacked the Software Provisioning Manager archive.
4. Check the version of the sapinst executable by entering the following command:

```bash
<Path_To_Unpack_Directory>/sapinst -sfxver
```

The version of the sapinst executable must be exactly the same as the version of the sapinstgui executable on the local host (see also Starting the Installer GUI Separately [page 64]).

5. Start the installer by entering the following command:

```bash
<Path_To_Unpack_Directory>/sapinst
```

### Note

If you need to specify another operating system user for authentication purposes, enter the following command:

```bash
<Path_To_Unpack_Directory>/sapinst
SAPINST_REMOTE_ACCESS_USER=<Specified_OS_User>
```

The installer now starts and waits for the connection to the installer GUI. You see the following at the command prompt:

`guiengine: no GUI connected; waiting for a connection on host <Host_Name>, port <Port_Number> to continue with the installation`

6. Start the installer GUI on your local host as described in Starting the Installer GUI Separately [page 64].

### 5.4.4 Starting the Java SDT GUI Separately

Here you find information about how to start the Java SDT GUI separately.

### Note

This section is only valid if you use the Java SDT GUI. That is, you started the sapinst executable with command line option `SAPINST_SLP_MODE=false`.

### Prerequisites

The host on which you want to start the installer GUI meets the prerequisites for starting the installer as described in Prerequisites for Running the Installer [page 49].

### Note

If you want to run the installer on a Windows host, make sure that you meet the prerequisites for the installer listed in the relevant Windows guide.
Context

You might need to start the installer GUI separately in the following cases:

- You closed the installer GUI using File Close GUI only from the installer menu while the installer is still running.
- You want to perform a remote installation, where the installer GUI runs on a different host from the installer. For more information, see Performing Remote Processing of the Installer (Java SDT GUI only) [page 62].
- You want to run the installer in accessibility mode. In this case, you have to start the installer GUI separately on a Windows host as described below with the command line parameter -accessible. For more information, see Running the Installer in Accessibility Mode [page 66].

In this procedure, the following variables are used: <Remote_Host> is the name of the remote host, and <Port_Number_Gui_Server_To_Gui_Client> is the port the GUI server uses to communicate with the GUI client (21212 by default).

Procedure

- Starting the Installer GUI on Windows
  a. Make the installer software available on the host on which you want to start the installer GUI. For more information, see Preparing the Dual-Stack Split Media [page 38].
  b. Start the installer GUI by executing the sapinstgui executable with the appropriate command line parameters:
     ○ If you want to perform a remote installation, proceed as follows:
       1. Check the version of sapinstgui.exe by entering the following command:
          <Path_To_Unpack_Directory>\sapinstgui.exe -sfxver
          The version of the sapinstgui executable must be exactly the same as the version of the sapinst executable on the remote host (see also Performing a Remote Installation [page 62]).
       2. Start the installer GUI by entering the following command:
          <Path_To_Unpack_Directory>\sapinstgui.exe -host <Remote_Host> -port <Port_Number_Gui_Server_To_Gui_Client>
     ○ If you closed the installer GUI using File Close GUI only and want to reconnect to the installer, proceed as follows:
       1. If you are performing a local installation with the installer and the installer GUI running on the same host, execute the following command:
          <Path_To_Unpack_Directory>\sapinstgui.exe -port <Port_Number_Gui_Server_To_Gui_Client>
       2. If you are performing a remote installation with the installer and the installer GUI running on different hosts, execute the following command:
          <Path_To_Unpack_Directory>\sapinstgui.exe -host <Remote_Host> -port <Port_Number_Gui_Server_To_Gui_Client>
  c. The installer GUI starts and connects to the installer.

- Starting the Installer GUI on UNIX
a. Make the installer software available on the host on which you want to start the installer GUI. For more information, see Preparing the Dual-Stack Split Media [page 38].

b. Start the installer GUI by executing the sapinstgui executable with the appropriate command line parameters:
   ○ If you want to perform a remote installation, proceed as follows:
     1. Check the version of the sapinstgui executable by entering the following command:
        
        `<Path_To_Unpack_Directory>/sapinstgui -sfxver`
        
        The version of the sapinstgui executable must be exactly the same as the version of the sapinst executable on the remote host (see also Performing a Remote Installation [page 62]).
        
        2. Start the installer GUI by entering the following command:
           
           `<Path_To_Unpack_Directory>/sapinstgui -host <Remote_Host> -port <Port_Number_Gui_Server_To_Gui_Client>`
   ○ If you closed the installer GUI using File > Close GUI only and want to reconnect to the installer, proceed as follows:
     1. If you are performing a local installation with the installer and the installer GUI running on the same host, execute the following command:
        
        `<Path_To_Unpack_Directory>/sapinstgui -port <Port_Number_Gui_Server_To_Gui_Client>`
     2. If you are performing a remote installation with the installer and the installer GUI running on different hosts, execute the following command:
        
        `<Path_To_Unpack_Directory>/sapinstgui -host <Remote_Host> -port <Port_Number_Gui_Server_To_Gui_Client>`

c. The installer GUI starts and connects to the installer.

5.4.5 Running the Installer in Accessibility Mode

You can also run the installer in accessibility mode.

**Note**

The information contained in this section is only valid if you use the Java SDT GUI. That is, you started the sapinst executable with command line option `SAPINST_SLP_MODE=false`.

If you use the SL Common GUI, apply the standard accessibility functions of your web browser.

**Context**

The following features are available:

- Keyboard access:
  This feature is generally available for all operating systems.

- High-contrast color:
  This feature is derived from the Windows display properties. Therefore, to enable this feature, perform a remote installation with the installer GUI running on a Windows host.
• Custom font setting:
  This feature is derived from the Windows display properties. Therefore, to enable this feature, perform a remote installation with the installer GUI running on a Windows host.

Procedure

• Activating and Adjusting Accessibility Settings on Windows
  You first have to activate and adjust the relevant settings for the font size and color schemes before you start the installer or the installer GUI.

  i Note
  The following procedure applies for Windows Server 2012 and might be different when using another Windows operating system.

  a. Right click on your Windows desktop and choose Personalize.
  b. Select Adjust font size (DPI) and choose Larger scale (120 DPI).
     To define other font size schemes, choose Custom DPI.
  c. In the right-hand pane, select Window Color and Appearance.
     Select a color scheme from the Color scheme drop-down box.
     To define your own color schemes, choose Advanced.

• Running the Installer in Accessibility Mode
  You perform a remote installation as follows:
  a. Start the installer on the remote host by executing the following command from the command line as described in Performing Remote Processing of the Installer (Java SDT GUI only) [page 62]:
     `<Path_To_Unpack_Directory>/sapinst`
  b. Start the installer GUI on a local Windows host by executing the following command from the command line as described in Starting the Java SDT GUI Separately [page 64]:
     `<Path_To_Unpack_Directory>\sapinstgui.exe -accessible -host <Remote_Host> -port <Port_Number_Gui_Server_To_Gui_Client>`

5.4.6 Troubleshooting with the Installer

This section tells you how to proceed when errors occur while the installer is running.

Context

If an error occurs, the installer:
• Stops processing
• Displays a dialog informing you about the error

Procedure

1. Check SAP Note 1548438 for known installer issues.
2. If an error occurs during the Define Parameters or the Execute Service phase, do one of the following:
   ○ Try to solve the problem:
     ○ To check the installer log files (sapinst.log and sapinst_dev.log) for errors, choose:
       ○ The LOG FILES tab, if you are using the SL Common GUI.
       ○ The View Logs menu item, if you are using the Java SDT GUI.
     ○ To check the log and trace files of the installer GUI for errors:
       ○ If you use the SL Common GUI, you can find them in the directory <User_Home>/sapinst/.
       ○ If you use the Java SDT GUI, you can find them in the directory <User_Home>/sdtgui/.
       ○ If the GUI server or the installer GUI do not start, check the file sdtstart.err in the current <User_Home> directory.
       ○ If the installer GUI aborts without an error message, restart the installer GUI as described in Starting the Installer GUI Separately [page 64].
       ○ If you use an X Server for Microsoft Windows or other remote desktop tools for the Remote Access of the Java SDT GUI on Windows workstations and you experience display problems such as missing repaints or refreshes, contact your X Server vendor. The vendor can give you information about whether this X Server supports Java Swing-based GUIs and also tell you about further requirements and restrictions. For more information, see SAP Note 1170809.
       ○ Then continue by choosing Retry.
     ○ If you cannot resolve the problem, abort the installer by choosing one of the following, depending on the type of installer GUI you use:
       ○ If you use the SL Common GUI, choose Cancel in the tool menu.
       ○ If you use the Java SDT GUI, choose Stop from the error message or SAPinst Exit Process in the tool menu.
       For more information, see Interrupted Processing of the Installer [page 59].
3. If you cannot resolve the problem, report an incident using the appropriate subcomponent of BC-INS*. For more information about using subcomponents of BC-INS*, see SAP Note 1669327.
5.5  Exporting and Mounting Global Directories

If you install a database or an additional application server instance on a host other than the SAP global host, mount global directories from the SAP global host.

Prerequisites

If you want to install the executables locally instead of sharing them, do not mount the exe directory with Network File System (NFS). Instead, create `<sapmnt>/<SAPSID>/exe` as a local directory (not a link) with a minimum of 1.5 GB free space.

Context

There is no need to create the directories before the installation when you install a primary application server instance. The global directories must be exported only if you install additional application server instances.

Procedure

1. Log on to the SAP global host as user root and export the following directories with read/write access for the root user to the host where you want to install the new instance:
   
   `<sapmnt>/<SAPSID>/exe`
   `<sapmnt>/<SAPSID>/profile`
   `<sapmnt>/<SAPSID>/global`

   Make sure that the user root of the host where you want to install the new instance can access the exported directories.

2. Log on to the host of the new instance that you want to install as user root.

3. Create the following mount points and mount them from the SAP global host:

   `<sapmnt>/<SAPSID>/exe`
   `<sapmnt>/<SAPSID>/profile`
   `<sapmnt>/<SAPSID>/global`

   **Caution**

   Make sure that the mount points under `/<sapmnt>/<SAPSID>/` are permanent. Otherwise automatic start of the instance services does not work when you reboot the system.
5.6 Exporting and Mounting the Transport Directory

Every SAP system must be assigned to a transport directory. All application server instances of an SAP system must point to the same transport directory.

Context

Multiple SAP systems can use the same transport directory. However, it is not required to have one global transport directory in your SAP system landscape. Depending on your security requirements, you must decide how you want to set up the transport directories in your landscape. Systems with lower security requirements (DEV, QA, for example) can share a transport directory. For systems with higher security requirements (PROD, for example), you might want to have a separate transport directory.

The transport directory is used by the Change and Transport System (CTS). The CTS helps you to organize development projects, and then transport the changes between the SAP systems in your system landscape.

Consider the following:

- If the transport directory already exists, make sure that it is exported on the transport directory host and mount it on the SAP instance installation host.
- If the transport directory does not exist, proceed as follows:
  ○ Create the transport directory (either on the host where the primary application server instance is running or on a file server).
  ○ Export it on the transport directory host.
  ○ If you did not create the transport directory on your SAP instance installation host, mount it there.

Procedure

1. Exporting the Transport Directory
   a. Log on as user root to the host where the transport directory /usr/sap/trans resides.
   b. Make sure that /usr/sap/trans belongs to the group sapsys and to the user root.
   c. If not already done, export the directory using Network File System (NFS).

2. Mounting the Transport Directory

   a. Create the mount point /usr/sap/trans.
   b. Mount /usr/sap/trans using Network File System (NFS) from the exporting host.

i Note

If the transport directory resides on your local SAP instance installation host, you do not need to mount it.
6 Follow-Up Activities

6.1 Follow-Up Activities Checklist

This section includes the follow-up activities that you have to perform for the split options “Move Java Database” and “Keep Database”.

Context

Note

Most of the required steps listed in this section are not described in detail in this documentation. You can find the detailed description in the Java system copy guide relevant for your database and operating system platform, which you can find at:

https://support.sap.com/sitoolset System Provisioning System Copy Option of Software Provisioning Manager System Copy Guides

In the following, we refer to this documentation as “system copy guide”.

Procedure

1. On the Java target system, you install the SAP license.
   For more information, see Installing the License Key [page 73].
2. On the Java target system, you maintain the connection to the system landscape directory [page 74].
3. On the Java target system, you generate the public-key certificates.
   For more information, see Generating Public-Key Certificates [page 73].
4. IBM DB2 for Linux and UNIX and Windows only: On the Java target system, you enable the recoverability of the database.
   For more information, see Enabling Recoverability of the IBM DB2 for Linux, UNIX, and Windows Database [page 76].
5. You must recreate the JCo destinations as described in the documentation Creating JavaConnector (JCo) Destinations in the SAP Library [page 12] at: Application Server Application Server Java Developing Java Web Dynpro Applications Content Administration and Measurements Web Dynpro Content Administrator Functions for JCo Destinations.
   See also SAP Note 899144.
6. On the Java target system, you perform product instance or usage type-specific follow-up activities as required.
   For more information, see the relevant sections in the product instance or usage type-specific follow-up activities in the system copy guide.

7. We recommend that you perform regression testing.

8. Depending on your system variant, proceed in one of the following ways:
   - **Standard system**
     On the source system, you run the installer [page 52] to remove the Java parts in the file system and in the database.
   - **Distributed or High-Availability System**
     1. On the additional application server instance host of the source system, you run the installer [page 52] to remove the Java parts from the additional application server instance.

     **Note**
     "Keep Database" only:
     Before you start removing the Java parts from your source system, you have to adapt the Secure Store of the dual-stack system. Follow the instructions that are displayed at the end of the *Adapt Database for Java Target System* step.

     2. On the primary application server instance host of the source system, you run the installer [page 52] to remove the Java parts from the primary application server instance.

     3. On the central services instance host of the source system, you run the installer [page 52] to remove the central services instance.

     4. "Move Java Database" only: On the database host of the source system, you run the installer [page 52] to remove the Java database schema.

9. On the ABAP system, you call transaction RZ10 to reimport the profiles from the file system.

10. If the ABAP system is part of a non-ABAP transport landscape, you perform Follow-Up Activities for the Enhanced Change and Transport System [page 78].

11. If required and not already done so, you configure the CTS Deploy Web Service [page 80] on the ABAP system.

12. Maintain the secinfo and reginfo files in the ABAP system.


13. You clean up the system landscape data [page 84].

14. To remove obsolete SLD data, see the following document:

15. For security reasons, SAP recommends you to remove the sapinst group from the group set of the operating system users of the source and target system.
6.1.1 Installing the License Key

Once the installation of the target system is completed and the SAP system copy has been imported, you have to install a new license key.

You must install a permanent SAP license. When you install your SAP system, a temporary license is automatically installed.

Note

If the copied system has a valid permanent license for AS Java, this license key is preserved in the target system. This means, no temporary license is installed if a valid permanent license key is detected in the target system.

For more information about ordering and installing the SAP license, see the SAP Library [page 12] for your release at:

- SAP NetWeaver Composition Environment 7.1 / 7.1 including Enhancement Package 1:
  - [Administrator’s Guide] Configuration of SAP NetWeaver CE Initial System Configuration Licensing the AS Java
- SAP NetWeaver Composition Environment 7.2:
  - [Administrator’s Guide] Configuration of SAP NetWeaver CE Configuring Mandatory Components Configuring Application Server Java Mandatory Configuration Tasks Licensing the AS Java
- SAP NetWeaver 7.3 and higher:
  - [Solution Life Cycle Management] SAP Licenses

6.1.2 Generating Public-Key Certificates

Reconfiguring the Public-Key Certificates

After the system copy, the public-key certificates are not correct on the target system. You need to reconfigure them as described in the SAP Library [page 12] for your release at:

- SAP NetWeaver Composition Environment 7.1 / 7.1 including Enhancement Package 1 / 7.2:
- SAP NetWeaver 7.3 and higher:
Importing the Public-Key Certificates

You also need to import this public-key certificate on any systems that are to accept logon tickets from the AS Java system. For more information, see the SAP Library [page 12] for your release at:

- SAP NetWeaver Composition Environment 7.1 / 7.1 including Enhancement Package 1 / 7.2:

- SAP NetWeaver Composition Environment 7.2:

- SAP NetWeaver 7.3 and higher:

6.1.3 Maintaining the Connection to the System Landscape Directory

After installing the Java system, you need to reconfigure the connection between the System Landscape Directory (SLD), the source system, and the target system.

The steps required differ depending on whether you use a local or a central SLD.

Note

These steps are only required if the connection to the SLD was established on the source system before the split.

Prerequisites

SLDAP_USER credentials are available in the ABAP system.
Local SLD

1. Create users, groups, and roles as described in the SAP Library [page 12] for your release at:
   Solution Life Cycle Management > Configuring, Working with and Administering System Landscape Directory > Administrating the SLD > Changing the SLD Configuration > Configuring SLD User Authorizations

2. Configure the SLD Server as described in the SAP Library [page 12] for your release at:
   Solution Life Cycle Management > Configuring, Working with and Administering System Landscape Directory > Administrating the SLD > Changing the SLD Configuration > Configuring Server Parameters

3. Configure the ABAP Gateway in the SLD as described in the SAP Library [page 12] for your release at:
   Solution Life Cycle Management > Configuring, Working with and Administering System Landscape Directory > Administrating the SLD > Changing the SLD Configuration > Configuring the SLD Bridge

4. Maintain the connection between the ABAP system and the SLD.
   1. Configure the SLD Data Supplier Service as described in the SAP Library [page 12] for your release at:
      Solution Life Cycle Management > Configuring, Working with and Administering System Landscape Directory > Connecting Systems to the SLD > Connecting AS ABAP Systems to the SLD > Setting Up the SLD Data Supplier for AS ABAP-Based Systems
   2. Maintain the RFC destination as described in the SAP Library [page 12] for your release at:
   3. Maintain the HTTP connection parameters on the ABAP system as described in the SAP Library [page 12] for your release at:
      Solution Life Cycle Management > Configuring, Working with and Administering System Landscape Directory > Connecting Systems to the SLD > Connecting AS ABAP Systems to the SLD > Using SLD API for AS ABAP-Based Systems > Creating an HTTP Destination for the SLD ABAP API on the AS ABAP Side

5. Maintain the connection between the Java system and the SLD.
   Configure the SLD Data Supplier Service as described in the SAP Library [page 12] for your release at:
   Solution Life Cycle Management > Configuring, Working with and Administering System Landscape Directory > Connecting Systems to the SLD > Connecting AS Java Systems to the SLD > Setting Up the SLD Data Supplier for AS Java-Based Systems

6. If the former dual-stack system was registered to SLD, the system data of the dual-stack system were not deleted by running the configuration wizard. So you have to manually delete these system data from the SLD.
Central SLD

1. Create users, groups, and roles as described in the SAP Library [page 12] for your release at: Solution Life Cycle Management > Configuring, Working with and Administering System Landscape Directory > Administrating the SLD > Changing the SLD Configuration > Configuring SLD User Authorizations

2. Maintain the connection between the Java system and the SLD. Configure the SLD Data Supplier Service as described in the SAP Library [page 12] for your release at: Solution Life Cycle Management > Configuring, Working with and Administering System Landscape Directory > Connecting Systems to the SLD > Connecting AS Java Systems to the SLD > Setting Up the SLD Data Supplier for AS Java-Based Systems

6.1.4 Enabling Recoverability of the IBM DB2 for Linux, UNIX, and Windows Database

Use

⚠️ Caution

This section only applies to your database. You only have to perform the steps outlined in this section once — even if you install multiple SAP systems into one database.

Roll forward recovery provides the ability to recover lost data due to media failure, such as hard disk failure, and applies log file information (log journal) against the restored database. These log files contain the changes made to the database since the last backup.

⚠️ Caution

A production system must run in log retention mode.

If a system is not running in log retention mode, all changes applied to the database since the last complete backup are lost in the event of a disk failure.

In log retention mode, the log files remain in the log directory (log_dir). To archive the log files, you can use DB2’s own log file management solution. For more information, see the Database Administration Guide — SAP on IBM DB2 for Linux, UNIX, and Windows.

Procedure

1. Log on to the database server as user db2<dbsid>.
2. To activate log retention mode and to specify the log archiving method, you must set configuration parameter LOGARCHMETH1 to one of the following options:
   - **LOGRETAIN**
     No log archiving takes place. Log files remain in the log directory.
   - **DISK:<log_archive_path>**
     Log files are archived to a disk location. You can archive them to tape using the DB2 tape manager (db2tapemgr) at a later point in time.
   - **TSM:<TSM_management_class>**
     Log files are archived to Tivoli Storage Management (TSM)
   - **VENDOR:<path_to_vendor_lib>**
     Log files are archived to a library that is provided by your vendor storage management
   - **USEREXIT**
     For downward compatibility with the former user exit concept, you can specify value USEREXIT for parameter LOGARCHMETH1.

   To set configuration parameter LOGARCHMETH1 for your preferred archiving method, enter the following command:
   ```
   db2 update db cfg for <dbsid> using LOGARCHMETH1 <log_archiving_method>
   ```

   For more information, see the Database Administration Guide — SAP on IBM DB2 for Linux, UNIX, and Windows.

3. To activate the settings, you must restart the database. The database is now in backup pending mode. You need to take an offline backup before you can continue.

4. To start the offline backup for a single-partitioned database, enter the following command:
   ```
   db2 backup db <dbsid> to <device>
   ```

   **Example**
   For example, to perform an offline backup of database C11 to tapes in devices rmt0 and rmt1, enter the following command:
   ```
   db2 backup database C11 to /dev/rmt0, /dev/rmt1
   ```

   **Note**
   On a multi partition database, you must activate log retention mode on all database partitions. In addition, you also have to perform an offline backup for all database partitions.

   For more information about how to start a DB2 backup, see the DB2 online documentation.

**More Information**

- For access to the Database Administration Guide — SAP on IBM DB2 for Linux, UNIX, and Windows and more documentation about SAP systems on IBM DB2 for Linux, UNIX, and Windows, see Online Information from SAP [page 88].
- For access to online information about DB2 that is provided by IBM, see Online Information from IBM [page 89].
6.1.5 Follow-Up Activities for the Enhanced Change and Transport System

If you used the enhanced Change and Transport System as transport tool in your dual-stack system before the split, you need to reconfigure the transport routes within the landscape after installing the Java system.

The steps that you have to perform differ depending on the role of the split system within the transport landscape.

Also check the application-specific documentation for configuration details for CTS+ configuration. For SAP applications you can usually find this documentation at http://scn.sap.com/docs/DOC-8576.

6.1.5.1 Configuring Source Systems for Non-ABAP Transports

In the source system, you have to perform the following configuration steps for non-ABAP transports.

Procedure

1. On the domain controller, use transaction STMS to create a non-ABAP system with the <SAPSID> of the new Java system. We recommend that you continue using the ABAP system of the former dual stack as communication system. To classify it as a source system, select the Activate Organizer flag.

   For more information, see the SAP Library [page 12] of your release at:


   i Note

   Keep in mind that ABAP and non-ABAP objects can no longer be part of the same transport request. There will be different transport requests for ABAP objects and for non-ABAP objects.

2. In the domain controller, delete the parameters for non-ABAP transports from the configuration of the ABAP stack of the original dual-stack system.

   For more information about these parameters, see Parameters for non-ABAP transports in the SAP Library [page 12] of your release at:

6.1.5.2 Configuring Target Systems for Non-ABAP Transports

In the target system, you have to perform the following configuration steps for non-ABAP transports.

Procedure

1. Use transaction STMS to create a non-ABAP system with the <SAPSID> of the new Java system. We recommend that you continue to use the ABAP system of the former dual-stack as communication system. To classify it as a target system, select the Activate Deployment Service flag and make the appropriate settings for the deployment method.

   For information about individual applications, see the application-specific documentation for CTS+ configuration. For SAP applications which you can usually find at https://scn.sap.com/docs/DOC-8576.

   For general information about how to create a non-ABAP target system, see the SAP Library [page 12] of your release at:


2. In the ABAP communication system, configure the CTS Deploy Web Service [page 80].

3. In the domain controller, delete the parameters for non-ABAP transports from the configuration of the ABAP stack of the original dual-stack system.

   For more information on the parameters, see Parameters for non-ABAP transports in the SAP Library [page 12] of your release at:


4. If you have not cleaned up the import queue as described in the Preparation Checklist [page 25], you must copy the import buffer of the ABAP system to the Java system. This ensures the processing of pending transport queues.

   Proceed as follows:

   Use the cp command to copy the buffer file to a file named <SAPSID of new Java system> and move it to the following directory: /usr/sap/trans/buffer/.
6.1.5.3 Configuring the CTS Deploy Web Service

Context

After installing the Java system, you need to reconfigure the CTS Deploy Web Service. This step is only required if you used the enhanced Change and Transport System as transport tool in your dual-stack system before the split and if the split system is used as a target system for “non-ABAP” transports.

For information about how to move the CTS Deploy Web Service host, see SAP Note 1823824.

Procedure

1. In your ABAP system in the client that you use for transports, call transaction SM59.
2. Check the CTS Deploy Web Service and adjust the host, port, and authentication details if required.
   
   For more information, see the Configuring the HTTP Connection section in Configuring the CTS Deploy Web Service in the SAP Library [page 12] of your release at:


   Use the new Java system as host of the system where the CTS Deploy Web Service runs.

3. We recommend that you use the new Connection Test to make sure that the connection works properly.

6.1.5.4 Configuring Transport Routes

Context

In the TMS of the domain controller, create the transport routes.

Procedure

- For the source system, create the transport routes between the new Java source system and the next system in the transport track.
For the target system, create the transport routes between the previous Java system in the transport track and the new Java system, and between the new Java system and the next system in the transport track.

Next Steps

For more information, see the SAP Library [page 12] of your release at:

- Application Help
- Function-Oriented View
- Solution Life Cycle Management by Key Capability
- Software Life Cycle Management
- Software Logistics
- Change and Transport System
- Transport Management System (BC-CTS-TMS)
- Configuring TMS
- Configuring the Transport Routes

6.1.5.5 Splitting Within a System Landscape

Since an SAP system is usually part of a system landscape, dependencies between systems and adapting transport routes within the system landscape are topics to consider when planning a dual-stack split.

This section provides information for planning the dual-stack split within an exemplary system landscape composed of a development system (DEV), a test system (QAS), and a productive system (PRD), and it lists the required steps for adapting the transport routes.

![Figure 5: System Landscape Before Split](image)

Process Flow

1. You split the first system in the transport track.
In this example this means that you split the dual-stack system DEV into an ABAP system DEV and a Java system JDS.

2. In the Transport Management System (TMS), you create a Java system (JDS) with the ABAP system (DEV) as communication system, and select the **Activate Transport Organizer** flag.

3. In the TMS, you delete the configuration settings of the Java system in the ABAP system (DEV).

4. In the TMS, you create the transport route between the new Java system (JDS) and the next system in the transport track (QAS).

5. You split the next system in the transport track.
   In this example this means that you split the dual-stack system QAS into an ABAP system QAS and a Java system JQS.

6. In the TMS, you create a Java system (JQS) with the ABAP system (QAS) as communication system, and select the **Activate Deployment Service** flag.

7. In the ABAP system (QAS), you adjust the CTS Deploy Web Service.

8. In the TMS, you delete the configuration settings of the Java system in the ABAP system (QAS).

9. If required, you copy the import buffer of the ABAP system (QAS) to the Java system (JQS). This ensures the processing of pending transport tracks.

10. In the TMS, you create the transport routes between the previous Java system in the transport track (JDS) and the new Java system (JQS) and between JQS and the next system in the transport track (PRD).
11. You split the next system in the transport track. In this example this means that you split the last dual-stack system in the transport track PRD into an ABAP system PRD and a Java system JPS.

12. In the TMS, you create a Java system (JPS) with the ABAP system (PRD) as communication system, and select the **Activate Deployment Service** flag.

13. In the ABAP system (PRD), you configure the CTS Deploy Web Service.

14. In the TMS, you delete the configuration settings of the Java system in the ABAP system (PRD).

15. You copy the import buffer of the ABAP system (PRD) to the Java system (JPS). This ensures the processing of pending transport tracks.

16. In the TMS, you create the transport route between the new Java system (JPS) and the Java system preceding in the transport track (JQS).
6.1.6 Cleaning Up the System Landscape

To ensure data consistency for future maintenance, you have to clean up the system landscape data first in the SLD, and then in transaction SMSY, respectively the Landscape Management Database (LMDB) in the SAP Solution Manager.

Make sure that the entries for the removed Java stack are no longer part of the former dual-stack system in SLD and transaction SMSY, respectively LMDB.

1. Log on to the SLD User Interface (http://<Host_Name>:port/sld).
2. In the Technical Systems view, locate the Java System that you previously have split from the dual stack and remove it.
3. Remove the obsolete Java System from the SAP Solution Manager:
   ○ In SAP Solution Manager 7.1, the deletion of the Java system in the SLD is propagated automatically to LMDB and SMSY.
   ○ If you still operate a SAP Solution Manager 7.01 system, call transaction SMSY and delete the technical system of type “Java”.
   ○ If the Java system is still in use – for example, in a Product System or Logical Component – you must first remove it from all uses.

More Information

For more information about how to proceed, see the following:

- SAP Note 1873543 and http://support.sap.com/solutionmanager.
7 Additional Information

7.1 Move Java Database: Restoring Instances

Use

If you encounter severe problems during the split and decide to stop it, you can use the source system as a dual-stack system again. You then have to restart all instances of the source system.

**Note**

This is only possible if you have not yet removed the Java stack of the dual-stack source system.

**Procedure**

1. Edit the primary application server instance profile
   
   `<SAPSID>_DVEBMGS<Instance_Number>_<Host_Name>`: Replace the line `rdisp/j2ee_start=0` with `rdisp/j2ee_start=1`.

2. Restart the primary application server instance service.
   Log on to the system as `<sapid>adm` and invoke `sapcontrol-nr <PAS_Instance_Number>-function RestartService`.

3. Restart the instance by calling transaction SMICM.

4. Open the default profile and add the profile parameter:
   
   `icm/HTTP/ASJava/disable_url_session_tracking = TRUE`

7.2 Keep Database: Restoring Instances

Use

If you encounter severe problems during the split and decide to stop, you can use the source system as a dual-stack system again. You then have to restart all instances of the source system.

**Note**

This is possible only if you have not yet removed the Java stack of the dual-stack source system.
Procedure

1. If you have already executed the option Install Java Primary Application Server to install the AS Java target system, proceed as follows:

   1. **MS SQL Server, SAP MaxDB:** Rename the Java database schema to its original value (for example, SAP<SAPSID_Dual-Stack_System>DB), depending on your database vendor.
   2. Start the GUI ConfigTool and choose Tools » Configuration Editor » Open » Configurations » destinations » RFC » Propertiesheet UMEBackendConnection and restore the default values of the properties jco.client.ashost and jco.client.sysnr.

2. Edit the primary application server instance profile

   <SAPSID>_DVEBMGS<Instance_Number>_<Host_Name>: Replace the line rdisp/j2ee_start=0 with rdisp/j2ee_start=1.

3. Restart the primary application server instance service.

   Log on to the primary application server instance host as <sapsid>adm and invoke sapcontrol-nr <PAS_Instance_Number>-function RestartService.

4. Restart the instance by calling transaction SMICM.

5. Open the default profile and add the profile parameter:

   icm/HTTP/ASJava/disable_url_session_tracking = TRUE

7.3 Removing the Java Stack

Use

Using this procedure, you will permanently delete the Java stack from the system without the need to start the dual stack split procedure.

**Note**

During the removal process, all Java database content, all Java file systems and subdirectories of the Java stack are deleted. Before you start, make sure that you have saved a copy of all files and directories that you want to keep to a secure location.

Prerequisites

Before you start the removal procedure, perform the following:

- Shut down the J2EE cluster using transaction SMICM
- Set rdisp/j2ee_start = 0 in the primary and all additional application server instance profiles
- Restart the instance services as follows:
  - **Windows:**
    - In SAP MMC on the relevant instances, choose All Tasks » Restart Service
UNIX/IBM i:
Log on as <sapsid>adm and execute the following for the relevant instances:
sapcontrol -nr <Instance_Number> -function RestartService

Procedure

1. Start the tool and choose split option Move Database as described in Running the Installer [page 52].
2. Depending on your system variant, perform the steps listed below:
   ○ Standard System
     ○ Remove Java Stack from Dual-Stack System
   ○ Distributed System
     ○ Remove Java Stack from Dual-Stack Additional Application Server Instance
     ○ Remove Java Stack from Dual-Stack Primary Application Server Instance
     ○ Remove SCS Instance from Dual-Stack System
     ○ Remove Java Schema of Dual-Stack Database Instance

⚠️ Caution

You must skip the export and installation steps.

3. After you remove the Java stack, you have to remove the Java stack data from the SLD, transaction SMSY and LMDB in the SAP Solution Manager.
   For more information, see Cleaning Up the System Landscape [page 84].
   The removal of the technical Java system from the SLD is important for the system landscape data consistency.

7.4 Heterogeneous SAP System Installation

This section provides information on the installation of an SAP system in a heterogeneous system landscape. “Heterogeneous system landscape” means that application servers run on different operating systems.

See SAP Note 1067221 for more information on:
- Supported combinations of operating systems and database systems
- How to install an application server on Windows in a heterogeneous (UNIX) SAP system environment
- Heterogeneous SAP system landscapes with different UNIX operating systems
### 7.5 Online Information from SAP

More information is available online as follows:

Table 27: Documentation

<table>
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<tr>
<th>Description</th>
<th>Internet Address</th>
<th>Title</th>
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<tr>
<td>Installation guide for SAP systems running on IBM DB2 10.1 or higher with the pureScale Feature</td>
<td><a href="http://service.sap.com/instguidesnw">http://service.sap.com/instguidesnw</a></td>
<td>Database Installation Guide: Running an SAP System on IBM DB2 &lt;Version&gt; with the pureScale Feature</td>
</tr>
</tbody>
</table>
7.6 Online Information from IBM

You can use the following IBM DB2 for Linux, UNIX, and Windows welcome page as a starting point to all kinds of documentation for your relevant database version: [http://www.ibm.com/support/knowledgecenter/en/SSEPGG](http://www.ibm.com/support/knowledgecenter/en/SSEPGG)

The following tables provide direct links to IBM DB2 online documentation and manuals, listed by database version:

Table 28: IBM DB2 Knowledge Center

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Table 29: IBM Manuals

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