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

*i Note*

Before you start reading, make sure you have the latest version of this dual-stack split guide, which is available at [https://support.sap.com/sltoolset](https://support.sap.com/sltoolset) > System Provisioning > Split a System using Software Provisioning Manager.

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

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<td>● Signature check for installation archives, documented in: <em>New Features, Downloading SAP Kernel Archives (Archive-Based Installation)</em></td>
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<td>Archive-Based Installation for Diagnostics Agent. <em>Downloading the SAP Kernel Archives Required for the Dual-Stack Split (Without Operating System and Database Migration)</em>, <em>Downloading the SAP Kernel Archives Required for Operating System and Database Migration</em></td>
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<td>● Installer Log Files Improvements, documented in: <em>New Features, Useful Information about the Installer, Troubleshooting with the Installer</em></td>
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<td>● Enabling IPv6, documented in: <em>New Features, Prerequisites for Running the Installer</em></td>
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<td>● New Features section restructured: As of SP22, a dedicated subsection for each new SP has been created. New features below SP22 remain in a common table.</td>
</tr>
<tr>
<td></td>
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<td>● The Java SDT GUI - which was in the SP21 version still available in parallel to the SL Common GUI - has been deprecated with SP22. As of SP22, SL Common GUI is the only available installer GUI:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>○ The following sections which were explicitly related to Java SDT GUI were completely removed from this documentation: <em>Performing a Remote Installation Remote Processing of the Installer (Java SDT GUI only)</em>, <em>Starting the Java SDT GUI Separately</em>, <em>Running the Installer in Accessibility Mode</em> (general accessibility information was moved to <em>Useful Information About the Installer</em>).</td>
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<td>○ The Java SDT GUI-specific information was removed from the common installer sections: <em>Running the Installer</em>, <em>Useful Information About the Installer</em>, <em>Interrupted Processing of the Installer</em>, <em>Troubleshooting with the Installer</em></td>
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<td>● New section <em>Using the Step State Editor (SAP Support Experts Only)</em> was added to section <em>Additional Information About the Installer</em></td>
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<td>● Option to install the SCS instance with an integrated SAP Web Dispatcher, documented in: <em>New Features, SCS Instance with Integrated SAP Web Dispatcher</em>, <em>Additional Parameters for an SAP Web Dispatcher Installation Integrated in the SCS Instance (Optional)</em></td>
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**Note**

This feature was retroactively released on 2018-02-12.

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<td>○ New SAPUI5-based graphical user interface (GUI) “SL Common GUI”,</td>
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<td>○ Cleanup of operating system users, documented in: SAP System Parameters,</td>
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<td>Verification of the integrity of data units in Software Provisioning</td>
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<td>• New feature: Move of AS Java target system to different database type</td>
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<td>○ New Features [page 10]</td>
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<td>○ Operating System and Database Migration During Dual-Stack Split [page 18]</td>
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<td>○ Planning Checklist [page 23]</td>
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<td>○ Preparing the Dual-Stack Split Media [page 39]</td>
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1 About This Document

This document explains how to use Software Provisioning Manager 1.0 SP24, which is part of SL Toolset 1.0 SP24, 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 SAP system products and releases covered by this guide, see SAP Note 1797362. For information about supported operating system and database platforms, see the Product Availability Matrix at https://support.sap.com/pam.

Related Information

Use Cases of Dual-Stack Split [page 8]
About Software Provisioning Manager 1.0 [page 9]
Naming Conventions [page 10]
New Features [page 10]
Constraints [page 13]
SAP Notes for the Dual-Stack Split [page 14]
Accessing the SAP Library [page 14]
How to Use this Guide [page 15]

1.1 Use Cases of Dual-Stack Split

Dual-Stack System

A dual-stack system is an SAP system that contains installations of both Application Server 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 16]
- Split Option: Keep Database [page 20]
- 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 80].

More Information

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

1.2 About Software Provisioning Manager 1.0

Software Provisioning Manager 1.0 is the successor of the product- and release-specific delivery of provisioning tools, such as “SAPinst”. We strongly 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 been renamed to “Software Provisioning Manager” (“installer” for short) in this documentation, but the terms “SAPinst” and “sapinst” are still used in:

- The name of the technical framework of Software Provisioning Manager. For more information about the SAPinst Framework, see SAP Note 2393060.
Related Information

Preparing the Dual-Stack Split Media [page 39]

1.3 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 10].
- 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.

1.4 New Features

This section provides an overview of the new features in Software Provisioning Manager 1.0 (the “installer” for short).

<table>
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<tr>
<th>Feature</th>
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<tbody>
<tr>
<td>Installer Log Files Improvements</td>
<td>Installer log files are now available immediately after the installer has been started, that is <strong>before</strong> a product has been selected on the Welcome screen. For more information, see Useful Information about the Installer [page 58] and Troubleshooting with the Installer [page 64].</td>
<td>Software Provisioning Manager 1.0 SP22 (SL Toolset 1.0 SP22)</td>
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<tr>
<td>Signature Check of Installation Archives</td>
<td>The signature of installation archives is checked <strong>automatically</strong> by the installer during the <strong>Define Parameters</strong> phase while processing the <strong>Software Package Browser</strong> screens. As of now the installer only accepts archives whose signature has been checked. For more information, see Downloading the SAP Kernel Archives Required for the Dual-Stack Split (Without Operating System and Database Migration) [page 43] and Downloading the SAP Kernel Archives Required for Operating System and Database Migration [page 44].</td>
<td>Software Provisioning Manager 1.0 SP22 (SL Toolset 1.0 SP22)</td>
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<tr>
<td>Media Signature Check</td>
<td>The signature of media is checked <strong>automatically</strong> by the installer during the <strong>Define Parameters</strong> phase while processing the <strong>Media Browser</strong> 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 39] and Running the Installer [page 54].</td>
<td>Software Provisioning Manager 1.0 SP21 (SL Toolset 1.0 SP21)</td>
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<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>
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<tr>
<td>SL Common GUI with SAPINST 7.49</td>
<td>With the new installer framework version SAPINST 7.49, you can now use the new SAPUI5-based graphical user interface (GUI) &quot;SL Common GUI&quot;. For more information, see Useful Information about the Installer [page 58], Running the Installer [page 54].</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 <strong>Define Parameters</strong> 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>
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<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 1.0 Archive [page 40]. 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>
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<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 18].</td>
<td>Software Provisioning Manager 1.0 SP18 (SL Toolset 1.0 SP18)</td>
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<tr>
<td>i Note</td>
<td>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.</td>
<td></td>
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<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> Installation and Upgrade.</td>
<td>Software Provisioning Manager 1.0 SP09 (SL Toolset 1.0 SP15)</td>
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<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>
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<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 23].</td>
<td>Software Provisioning Manager 1.0 SP10 (SL Toolset 1.0 SP14)</td>
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### Feature

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<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 1970349 and 1877731.</td>
<td>Software Provisioning Manager 1.0 SP07 (SL Toolset 1.0 SP12)</td>
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<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 51].</td>
<td>Software Provisioning Manager 1.0 SP07 (SL Toolset 1.0 SP12)</td>
</tr>
<tr>
<td>Option Verify Signed Media</td>
<td>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.</td>
<td>Software Provisioning Manager 1.0 SP06 (SL Toolset 1.0 SP11)</td>
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### 1.5 Constraints

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

- 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

**i Note**

Dual Stack Split scenario “Keep Database” (see Split Option: Keep Database [page 20]) 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.

- 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 16].
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.

**i 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.

### 1.6 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](http://support.sap.com/notes).

**SAP Notes for the Dual-Stack Split**

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<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>

### 1.7 Accessing the SAP Library

The references to the **SAP NetWeaver Library** documentation in this guide always refer to the following on SAP Help Portal. When you come across a reference to SAP Library documentation in this guide, you always have to
1.8 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 16].
2. You follow the list of steps at the beginning of each phase:
   ○ Planning [page 23]
   ○ Preparation [page 27]
   ○ Splitting [page 48]
   ○ Follow-up Activities [page 70]
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 16]
Split Option: Keep Database [page 20]

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)

**i 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.
Move Java Database for Distributed 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)

**i 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

**i 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 16]
Preparing the Dual-Stack Split Media [page 39]
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 is 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.
Split Option: Keep Database for Standard Systems

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

ABAP
Java
Export and Install SCS

Export and Install Java PAS

MCOD

**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.

i Note

The references to the “installation guide” in this section refer to the documentation Installation Guide - Installation of SAP Systems Based on the Application Server Java of SAP NetWeaver 7.1 to 7.5 on <Your Target OS Platform>:<Your Target Database>, which you can download here:

https://support.sap.com/sitoolset >> System Provisioning >> Install a System using Software Provisioning Manager >> Installation Option of Software Provisioning Manager 1.0 SP<Current Number> >> Installation Guides - Application Server Systems >> Installation Guides - Application Server Systems - Software Provisioning Manager 1.0 >> SAP Application Server Systems Based on SAP NetWeaver

In the table, filter for the following: Database = <Your Target Database>, Product Release = SAP NetWeaver 7.X, Operating System Platform = <Your Target OS Platform>, Technical Stack = Java.

Prerequisites

You have decided on your split option [page 16].

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 26].
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 26].
  - **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 18].

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 14] 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 80].

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

8. You can continue with Preparation [page 27].
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.

<table>
<thead>
<tr>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>
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

The references to the “installation guide” in this section refer to the documentation Installation Guide - Installation of SAP Systems Based on the Application Server Java of SAP NetWeaver 7.1 to 7.5 on <Your Target OS Platform>:<Your Target Database>, which you can download here:

https://support.sap.com/sitoolset System Provisioning Install a System using Software Provisioning Manager Installation Option of Software Provisioning Manager 1.0 SP<Current Number> Installation Guides - Application Server Systems Installation Guides - Application Server Systems - Software Provisioning Manager 1.0 SAP Application Server Systems Based on SAP NetWeaver

In the table, filter for the following: Database =<Your Target Database>, Product Release = SAP NetWeaver 7.X, Operating System Platform =<Your Target OS Platform>, Technical Stack = Java.

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 28].

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 /sapsfs/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 38].

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 68].
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 78].

9. If you want to use customized UME data source configuration file, see the SAP Library [page 14] 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 39].

11. You can continue with Splitting the Dual-Stack System [page 48].

### 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.

**i Note**

**IBM Db2 for z/OS only:**

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 36].

**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:

**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.

**IBM Db2 for z/OS only:**
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 Help Portal at http://help.sap.com/viewer/db2_security_guide.

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 54].
- You create operating system users and groups manually. Check the settings for these operating system users.

User Settings

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

- Only valid for Platform: AIX
  AIX: Make sure that you have set the limits for operating system users as described in SAP Note 323816.

- 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:

<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:

<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>

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

- All users must have identical environment settings. Any change to the environment – such as variables, or paths – is at your own responsibility.
- 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, 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, 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 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.

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:

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>

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></td>
<td>• root</td>
</tr>
<tr>
<td>sapinst</td>
<td>• &lt;sapsid&gt;adm</td>
</tr>
<tr>
<td></td>
<td>• root</td>
</tr>
</tbody>
</table>

SAP MaxDB and SAP HANA Database:

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>sapsys</td>
<td>sapinst, sdba</td>
<td>Owner of database instance &lt;DBSID&gt;</td>
</tr>
<tr>
<td>sqd&lt;dsid&gt;</td>
<td>sapsys</td>
<td>sapinst</td>
<td></td>
</tr>
<tr>
<td>User</td>
<td>Primary Group</td>
<td>Additional Group</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------</td>
<td>------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td><strong>SAP MaxDB only:</strong></td>
<td>sdb</td>
<td>sdba</td>
<td>Database software owner</td>
</tr>
<tr>
<td>sdb</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Groups and Members**

**Groups**

<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><strong>SAP MaxDB only:</strong></td>
<td>sqa&lt;dbsid&gt;, sdb</td>
</tr>
<tr>
<td>sdb</td>
<td></td>
</tr>
</tbody>
</table>

**IBM Db2 for Linux, UNIX, and Windows:**

**Users and Groups**

<table>
<thead>
<tr>
<th>User</th>
<th>Primary Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superuser of the UNIX operating system root</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>

**i Note**

- Only used on the database host.

| db2<dbsid> | db<dbsid>adm (sapinst as secondary group) |

**i Note**

- Only used on the database host.
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>

Oracle:

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></td>
<td></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>ora&lt;dbsid&gt;</td>
<td>dba</td>
<td>oper, sapinst, oinstall</td>
<td>Database administrator This user is only required on the host where the database instance runs.</td>
</tr>
<tr>
<td>oracle</td>
<td>dba</td>
<td>oper, sapinst, asmoper, asadmin, asmdba, oinstall</td>
<td>Oracle Software Owner and database administrator 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>
### Groups

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

### SAP Adaptive Server Enterprise:

### 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>
<tr>
<td>SAP system administrator &lt;sapsid&gt;adm</td>
<td>sapsys (sapinst as secondary group)</td>
</tr>
</tbody>
</table>

| syb<dbsid>           | sapsys |

**i Note**

Only used on the database host.

### SAP Host Agent:

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

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

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.

For more information, see [https://help.sap.com/viewer/db2_security_guide](https://help.sap.com/viewer/db2_security_guide)

Users and Groups for z/OS

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>
</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.

For more information, see [https://help.sap.com/viewer/db2_security_guide](https://help.sap.com/viewer/db2_security_guide).

### 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>sapinst Group ID</td>
<td>Permanent group needed for the central services instance on z/OS.</td>
<td>AS Java</td>
</tr>
<tr>
<td>&lt;dasid&gt;adm User ID</td>
<td>Permanent user needed by the Diagnostics Agent.</td>
<td>AS Java</td>
</tr>
<tr>
<td>&lt;sapid&gt;adm User ID</td>
<td>Permanent user needed for the central services instance on z/OS.</td>
<td>AS Java</td>
</tr>
</tbody>
</table>

The table below provides a detailed view of the 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>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>
<tr>
<td>Group/User ID</td>
<td>Description</td>
<td>Usage Type</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------------------------------</td>
<td>-----------------------</td>
</tr>
</tbody>
</table>
| sapadm       | 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 the Security Guide for SAP on IBM Db2 for z/OS, section "Security Settings for z/OS", which you can find under https://help.sap.com/viewer/db2_security_guide.

End of ‘Platform': z/OS

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. Assign the required virtual host names to the instance to be installed by specifying them in the `<Instance_Name> Host Name` field of the `<Instance_Name> Instance` screen while running the installer.

4.5 Performing a Full System Backup

Here you find information about how to perform a full system backup, if required.

- 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.

More Information

For more information about backing up your database, see the database-specific backup and recovery documentation in the SAP Library [page 14] for your release and database under Database Administration.

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 18]), you have to provide the SAPEXE <Version>.SAR, SAPEXEDB <Version>.SAR, SAPJVM <Version>.SAR, igexe <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](http://support.sap.com/pam).

**Related Information**

- Downloading and Extracting the Software Provisioning Manager 1.0 Archive [page 40]
- Using the Physical Media from the Installation Package [page 42]
- Downloading the SAP Kernel Archives Required for the Dual-Stack Split (Without Operating System and Database Migration) [page 43]
- Downloading the SAP Kernel Archives Required for Operating System and Database Migration [page 44]
- Downloading Complete Installation Media [page 46]

### 4.6.1 Downloading and Extracting the Software Provisioning Manager 1.0 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://support.sap.com/sitoolset](https://support.sap.com/sitoolset) > System Provisioning > Download Software Provisioning Manager

2. Make sure that you use the latest version of the SAPCAR tool when manually extracting the Software Provisioning Manager archive.

**Note**

An older SAPCAR version might extract archive files in a wrong way and this could prevent the installer from working consistently.
Proceed as follows to get the latest version of SAPCAR:

a. Go to https://launchpad.support.sap.com/#/softwarecenter
   SUPPORT PACKAGES & PATCHES
   By Category SAP TECHNOLOGY COMPONENTS 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 to the same directory.
   b. Verify the signature of the downloaded
      SWPM10SP<Support_Package_Number>_<Version_Number>.SAR archive by executing the following command:

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

      \(<\text{Path to SAPCAR}\>/\text{SAPCAR} \ -tvF \ <\text{Path to Download Directory}>
      /\text{SWPM10SP<Support_Package_Number>_<Version_Number>.SAR} \ -crl<\text{file name of revocation list}>

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

   i 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.

Context

The signature of installation media is checked automatically by the installer during the Define Parameters phase while the Media Browser screens are processed (see also Running the Installer [page 54]). The installer only accepts media whose signature has been checked. For more information, see SAP Note 2393060.

Procedure

1. Identify the required media as listed below.

   The following table lists the media required for the dual-stack split:

<table>
<thead>
<tr>
<th>SAP Instance Installation</th>
<th>Required Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central services instance</td>
<td>○ Software Provisioning Manager archive</td>
</tr>
<tr>
<td></td>
<td>○ UC Kernel (folder $K_U&lt;$Version_Number&gt;_&lt;OS&gt;) where &quot;U&quot; means Unicode</td>
</tr>
<tr>
<td>Central services instance, primary</td>
<td>○ Software Provisioning Manager archive</td>
</tr>
<tr>
<td>application server instance</td>
<td>○ UC Kernel (folder $K_U&lt;$Version_Number&gt;_&lt;OS&gt;) where &quot;U&quot; means Unicode</td>
</tr>
<tr>
<td></td>
<td>○ SAP NetWeaver Java Component (folders JAVA_* )</td>
</tr>
<tr>
<td></td>
<td>○ RDBMS client media</td>
</tr>
</tbody>
</table>

   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 1.0 Archive [page 40].
   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.
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.

i Note

The signature of installation archives is checked automatically by the installer [page 54] during the Define Parameters phase while processing the Software Package Browser screens. The installer only accepts archives whose signature has been checked. After scanning the archives and verifying the signature, an info file is written where you can find detailed information about matching and non-matching archive files. You can access this info file by choosing the info file link in the Archive Scanning Result section of the Software Package Browser screen. The info file contains only the results of the latest archive scan. For more information, see SAP Note 2393060.

Procedure

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

Recommendation

It is highly recommended that you always choose the highest SP version of the SAPHOSTAGENT<SP-version>.SAR archive.

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, SAPEXEDB <Version>.SAR, SAPJVM <Version>.SAR, igsexec <version>.sar archives for the target operating system and database.

Context

The signature of installation archives is checked automatically by the installer [page 54] during the Define Parameters phase while processing the Software Package Browser screens. The installer only accepts archives whose signature has been checked. After scanning the archives and verifying the signature, an info file is written where you can find detailed information about matching and non-matching archive files. You can access this info file by choosing the info file link in the Archive Scanning Result section of the Software Package Browser screen. The info file contains only the results of the latest archive scan. For more information, see SAP Note 2393060.

Procedure

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> <Release> Entry by Component <Java Product Instance>
3. Choose the required package:

   i 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 `SAPEXE<Version>.SAR`, `SAPEXEDB<Version>.SAR` of the same SAP kernel release and extension.

💡 Example

- If `SAPEXE<Version>.SAR` is of version 7.49, then `SAPEXEDB<Version>.SAR` must also be of version 7.49.
- If `SAPEXE<Version>.SAR` is of version 7.45, then `SAPEXEDB<Version>.SAR` must also be of version 7.45.
- If `SAPEXE<Version>.SAR` is of version 7.42 EXT, then `SAPEXEDB<Version>.SAR` must also be of version 7.42 EXT.

- If you provide the archives in one download folder, and there is more than one version of the same archive available - for example `SAPEXE<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.

- `SAPEXE<Version>.SAR`:
  - `SAP KERNEL <Version><UC | NUC> <Operating System> #Database independent`
- `SAPEXEDB<Version>.SAR`:
  - `SAP KERNEL <Version><UC | NUC> <Operating System> Database`
- `igsexec<version>.sar`:
  - `SAP IGS <Version> <Operating System>`
- `SAPJVM<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:

  - `Support Packages & Patches By Category Additional Components SAPCRYPTOLIB COMMONCRYPTOLIB<Version> <Operating System>`

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

  - `Support Packages & Patches By Category SAP TECHNOLOGY COMPONENTS SAP HOST AGENT SAP HOST AGENT 7.21 <Operating System>`

→ Recommendation

It is highly recommended that you always choose the highest SP version of the `SAPHOSTAGENT<Version>.SAR` archive.
4.6.5 Downloading Complete Installation Media

This section describes how you can 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 1.0 Archive [page 40].
2. Identify all download objects that belong to one medium according to one of the following:

   - **Note**
     - Installation media might be split into several files. In this case, you have to reassemble the required files after the download.

   - Download path or location:
     - To download the complete kernel media, go to [https://support.sap.com/sitoolset](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:

   - Material number
     - All download objects that are part of an installation medium have the same material number and an individual sequence number:
       - `<Material_Number>_<Sequence_Number>`

   - **Example**
     - 51031387_1
     - 51031387_2
     - ...

Related Information

Operating System and Database Migration During Dual-Stack Split [page 18]
○ 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 1258173.

⚠️ 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

The references to the “installation guide” in this section refer to the documentation Installation Guide - Installation of SAP Systems Based on the Application Server Java of SAP NetWeaver 7.1 to 7.5 on <Your Target OS Platform>:<Your Target Database>, which you can download here:

https://support.sap.com/sltoolset System Provisioning Install a System using Software Provisioning Manager Installation Option of Software Provisioning Manager 1.0 SP<Current Number> Installation Guides - Application Server Systems Installation Guides - Application Server Systems - Software Provisioning Manager 1.0 SAP Application Server Systems Based on SAP NetWeaver

In the table, filter for the following: Database = <Your Target Database>, Product Release = SAP NetWeaver 7.X, Operating System Platform = <Your Target OS Platform>, Technical Stack = Java.

Move Java Database

Central System

1. You check the prerequisites [page 51] and export the Java stack using the installer [page 54].

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 51] and run the installer [page 54] to install a Java only system using the export from the dual-stack system.
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 70]**.

### Distributed and High-Availability System

**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 51]** and **run the installer [page 54]** 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 51]** and **run the installer [page 54]** 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 51]** and **run the installer [page 54]** to install a database instance for the Java target system using the export from the dual-stack system.

7. You **check the prerequisites [page 51]** and **run the installer [page 54]** 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 70]**.
Keep Database

1. On the **primary application server instance host** of the dual-stack system, you check the prerequisites [page 51] and run the installer [page 54] 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 51] and run the installer [page 54] 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 51] and run the installer [page 54] 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 51] and run the installer [page 54] 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 51] and run the installer [page 54] 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 70].
5.2 Prerequisites for Running the Installer

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

- For 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 (recommended)
    - Mozilla Firefox
    - Microsoft Edge
    - Microsoft Internet Explorer 11 or higher.
  - Always use the latest version of these web browsers.
  - 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.

⚠️ Caution

The installer uses a self-signed certificate, which is used temporarily only while the installer is running. This certificate is not trusted by the browser unless it is imported manually by the user running the installer. This behavior is intentionally designed in this way because - unlike ordinary public web servers - the installer has different usage patterns. You must configure your browser do trust the self-issued certificate of the installer after carefully performing the “thumbprint” verification described in Running the Installer [page 54]. For more information about adding trusted certificates, see the documentation of your browser.

For more information about the SL Common GUI, see Useful Information about the Installer [page 58].

- 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 755.

- 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 58].

- 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

  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>Output sh</td>
<td>Output ksh</td>
<td>Properties</td>
</tr>
<tr>
<td>----------------------</td>
<td>------------------------</td>
<td>--------------------</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:
  - 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:
    ```bash
    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:
    ```bash
    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 66].

- **IBM Db2 for Linux, 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, 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 (see Online Information from SAP [page 88]).
- First, make sure that you have installed Db2 for z/OS. For more information, see the Database Administration Guide for SAP on IBM Db2 for z/OS at https://help.sap.com/viewer/db2_administration_guide.
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 51].

Context

The installer has a web browser-based GUI named “SL Common GUI of the Software Provisioning Manager” - “SL Common GUI” for short.

This procedure describes an installation where you run the installer and use the SL Common GUI, that is you can control the processing of the installer from a browser running on any device.

For more information about the SL Common GUI, see Useful Information About the Installer [page 58].

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.

   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 39].
→ Recommendation

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

Only valid for 'Platform': Oracle Solaris

**Note**

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

End of 'Platform': Oracle Solaris

3. Start the installer as follows:

   Open a command prompt and enter the following command:

   ```markdown
   /<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:

   ```markdown
   /<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.

   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.

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

   **Note**

   If the host specified by `<hostname>` cannot be reached due to a special network configuration, proceed as follows:
   1. Terminate the installer as described in *Useful Information about the Installer* [page 58].
   2. Restart the installer from the command line with the `SAPINST_GUI_HOSTNAME=<hostname>` property.
      You can use a fully-qualified host name.
If you have a supported web browser (see Prerequisites for Running the Installer [page 51]) 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.

⚠️ Caution

After opening the browser URL, make sure that the URL in the browser starts with “https://” to avoid security risks such as SSL stripping.

Before you reach the Welcome screen, your browser warns you that the certificate of the sapinst process on this computer could not be verified.

Proceed as follows to avoid security risks such as a man-in-the-middle attack:

1. Click on the certificate area on the left hand side in the address bar of your browser, and view the certificate.
2. Open the certificate fingerprint or thumbprint, and compare all hexadecimal numbers to the ones displayed in the console output of the installer.
   Proceed as follows to get the certificate fingerprint or thumbprint from the server certificate printed in the installer console:
   1. Go to the sapinst_exe.xxxxxx.xxxx directory in the temporary directory to which the installer has extracted itself:
      <User_Home>/sapinst/
   2. In the sapinst_exe.xxxxxx.xxxx directory, execute the sapgenpse tool with the command line option get_my_name -p.
      As a result, you get the server fingerprint or thumbprint from the server certificate.
3. Accept the warning to inform your browser that it can trust this site, even if the certificate could not be verified.

The SL Common GUI opens in the browser by displaying the Welcome screen.

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

6. Choose Next.

   **i Note**
   If there are errors during the self-extraction process of the installer, you can find the log file dev_selfex.out in the temporary directory.

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

   **i Note**
   To find more information on each parameter during the Define Parameters phase, position the cursor on the required parameter input field, and choose either F1 or the HELP tab. Then the available help text is displayed in the HELP tab.

   **i Note**
   If the installer asks for the Java media, make sure that you provide a Java media with the same release level as your dual-stack system.
i Note

**IBM Db2 for Linux, UNIX, and Windows only**: When you are asked for the security administrator, enter a user that has `DB2_SECADM` authorities. By default, `db2<dbsid source>` has these authorities.

**Caution**

The signature of installation media and installation archives is checked automatically during the *Define Parameters* phase while processing the *Media Browser* and - if you perform an archive-based installation - the *Software Package Browser* screens.

Note that this automatic check is only committed once and not repeated if you modify artifacts such as SAR archives or files on the media after the initial check has been done. This means that - if you modify artefacts later on either during the remaining *Define Parameters* phase or later on during the *Execute Service* phase - the signature is not checked again.

For more information, see SAP Note 2393060.

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.

   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.

→ **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.

i 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. For security reasons, we recommend that you delete the `.sapinst` directory within the home directory of the user with which you ran the installer:

   `<User_Home>/.sapinst/`
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.

15. The installer log files contain IP addresses and User IDs such as the ID of your S-User. For security, data protection, and privacy-related reasons we strongly recommend that you delete these log files once you do not need them any longer.

You find the installer log files in the `sapinst_instdir` directory. For more information, see Useful Information about the Installer [page 58].

**Related Information**

Useful Information about the Installer [page 58]

Interrupted Processing of the Installer [page 60]

Troubleshooting with the Installer [page 64]

### 5.4 Additional Information about the Installer

The following sections provide additional information about the installer.

- **Useful Information about the Installer [page 58]**
  
  This section contains some useful technical background information about the installer and the installer GUI.

- **Interrupted Processing of the Installer [page 60]**
  
  Here you find information about how to restart the installer if its processing has been interrupted.

- **Troubleshooting with the Installer [page 64]**
  
  This section tells you how to proceed when errors occur while the installer is running.

- **Using the Step State Editor (SAP Support Experts Only) [page 65]**
  
  This section describes how to use the Step State Editor available in 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” for short) has the web browser-based “SL Common GUI of the Software Provisioning Manager” - “SL Common GUI” for short.
The SL Common GUI 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 51]. If you need to run the SL Common GUI in accessibility mode, apply the standard accessibility functions of your web browser.

- As soon as you have started the sapinst executable, the installer creates a .sapinst directory underneath the /home/<User> directory where it keeps its log files. <User> is the user with which you have started the installer.

After you have reached the Welcome screen and selected the relevant installer option for the dual-stack system to be split, the installer creates a directory sapinst_instdir where it keeps its log files, and which is located 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 by default.

All log files which have been stored so far in the .sapinst folder are moved to the sapinst_instdir directory as soon as the latter has been created.

If you want the sapinst_instdir directory to be created in another directory than /tmp, set the environment variable TEMP, TMP, or TMPDIR to this directory before you start the installer.

<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, or there might be problems when the Java Virtual Machine is started.

➡️ Recommendation

We recommend that you keep all installation directories until the system is completely and correctly installed.

- The installer extracts itself to the temporary directory. These executables are deleted again after the installer has stopped running.
Directories called sapinst_exe.xxxxx.xxxx sometimes remain in the temporary directory after the installer has finished. You can safely delete them. The temporary directory also contains the log file dev_selfex.out from the self-extraction process of the installer, 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`:
  ```
  ./sapinst -p
  ```
- If required, stop the installer by choosing the Cancel button.

ℹ️ 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 processing of the installer by choosing Cancel in the SL Common 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>
<thead>
<tr>
<th>Option</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Retry</strong></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 keydb.xml file. We recommend that you view the entries in the log files, try to solve the problem, and then choose <strong>Retry</strong>. If the same or a different error occurs, the installer displays the same dialog box again.</td>
</tr>
<tr>
<td><strong>Stop</strong></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 keydb.xml 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><strong>Continue</strong></td>
<td>The installer continues the installation from the current point.</td>
</tr>
<tr>
<td><strong>View Log</strong></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 54].
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 39].

**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. 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 39].

→ 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.

i 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

4. 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

5. The installer is restarting.

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.

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

i Note

If the host specified by <hostname> cannot be reached due to a special network configuration, proceed as follows:

1. Terminate the installer as described in Useful Information about the Installer [page 58].
2. Restart the installer from the command line with the SAPINST_GUI_HOSTNAME=<hostname> property.
   You can use a fully-qualified host name.

If you have a supported web browser (see Prerequisites for Running the Installer [page 51]) 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.

⚠️ Caution

After opening the browser URL, make sure that the URL in the browser starts with “https://” to avoid security risks such as SSL stripping.

Before you reach the Welcome screen, your browser warns you that the certificate of the sapinst process on this computer could not be verified.
Proceed as follows to avoid security risks such as a man-in-the-middle attack:

1. Click on the certificate area on the left hand side in the address bar of your browser, and view the certificate.
2. Open the certificate fingerprint or thumbprint, and compare all hexadecimal numbers to the ones displayed in the console output of the installer.

Proceed as follows to get the certificate fingerprint or thumbprint from the server certificate printed in the installer console:

1. Go to the sapinst_exe.xxxxxx.xxxx directory in the temporary directory to which the installer has extracted itself:
   <User_Home>/sapinst/

2. In the sapinst_exe.xxxxxx.xxxx directory, execute the sapgenpse tool with the command line option `get_my_name -p`.
   As a result, you get the server fingerprint or thumbprint from the server certificate.
3. Accept the warning to inform your browser that it can trust this site, even if the certificate could not be verified.

The SL Common GUI opens in the browser by displaying the **Welcome** screen.

6. 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.

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

<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: <code>log_&lt;Day&gt;_&lt;Month&gt;_&lt;Year&gt;_&lt;Hours&gt;_&lt;Minutes&gt;_&lt;Seconds&gt;</code></td>
</tr>
</tbody>
</table>

   **Example**

   `log_01_Oct_2016_13_47_56`

   **Note**

   All actions taken by the dual-stack split before you stopped it (such as creating directories or users) are not revoked.

   **Caution**

   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.
5.4.3 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.

<table>
<thead>
<tr>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>The LOG FILES tab is only available if you have selected on the Welcome screen the relevant installer option for the dual-stack system to be split.</td>
</tr>
<tr>
<td>If you need to access the log files before you have done this selection, you can find them in the .sapinst directory underneath the /home/&lt;User&gt; directory, where &lt;User&gt; is the user which you used to start the installer.</td>
</tr>
<tr>
<td>Fore more information, see Useful Information about the Installer [page 58].</td>
</tr>
</tbody>
</table>
   - To check the log and trace files of the installer GUI for errors, go to the directory <User_Home>/.sapinst/ |
   - Then continue by choosing Retry. |
   - If required, abort the installer by choosing Cancel in the tool menu and restart the installer. For more information, see Interrupted Processing of the Installer [page 60]. |
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.
5.4.4 Using the Step State Editor (SAP Support Experts Only)

This section describes how to use the Step State Editor available in the installer.

**i Note**

Only use the Step State Editor if the SAP Support requests you to do so, for example to resolve a customer incident.

**Prerequisites**

- SAP Support requests you to use the Step State Editor.
- Make sure that the host where you run the installer meets the requirements listed in Prerequisites for Running the Installer [page 51].

**Procedure**

1. Start the installer from the command line as described in Running the Installer [page 54] with the additional command line parameter `SAPINST_SET_STEPSTATE=true`.
2. Follow the instructions on the installer screens and fill in the parameters prompted during the Define Parameters phase until you reach the Parameter Summary screen.
3. Choose Next.

   The Step State Editor opens as an additional dialog. Within this dialog you see a list of all steps to be executed by the installer during the Execute Service phase. By default all steps are in an initial state. Underneath each step, you see the assigned installer component. For each step you have a Skip and a Break option.
   - Mark the checkbox in front of the Break option of the steps where you want the installer to pause.
   - Mark the checkbox in front of the Skip option of the steps which you want the installer to skip.
4. After you have marked all required steps with either the Break or the Skip option, choose OK on the Step State Editor dialog.

   The installer starts processing the Execute Service phase and pauses one after another when reaching each step whose Break option you have marked. You can now choose one of the following:
   - Choose OK to continue with this step.
   - Choose Step State Editor to return to the Step State Editor and make changes, for example you can repeat the step by marking the checkbox in front of the Repeat option.
   - Choose Cancel to abort the installer.
5. Continue until you have run through all the steps of the Execute Service phase of the installer.
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.

Example

You install an SAP system distributed over several hosts. You decide that the host with the Java central services instance (SCS instance) is the SAP global host. You then install the SCS instance with the physical global directories on the SAP global host. Before you install the remaining instances (primary application server instance, a database instance, additional application server instances), you have to export the global directories from the SAP global host and mount them on the installation hosts for the remaining instances.

Note

IBM Db2 for z/OS only: There is no need to create the directories prior to the installation when you install a standard system. The global directories must be exported only when installing additional application server instances.

Choose one of the following ways to proceed, depending on whether you are performing a homogeneous or heterogeneous installation:

Procedure

- Exporting and Mounting Global Directories for a Homogeneous Installation
  a. 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
     ```
Make sure that the user root of the host where you want to install the new instance can access the exported directories.

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

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

\(<\text{sapmnt}>/<\text{SAPSID}>/\text{exe}\)
\(<\text{sapmnt}>/<\text{SAPSID}>/\text{profile}\)
\(<\text{sapmnt}>/<\text{SAPSID}>/\text{global}\)

⚠️ Caution
Make sure that the mount points under \(<\text{sapmnt}>/<\text{SAPSID}>/\) are permanent. Otherwise, automatic start of the instance services does not work when you reboot the system.

Exporting and Mounting Global Directories for a Heterogeneous Installation

With a heterogeneous installation, the instances of an SAP system are installed on hosts with different UNIX operating systems. If you need information about the installation of application servers on Windows in a UNIX environment, see Heterogeneous SAP System Installations [page 87].

Note
Mounting the directories between different system types, for example mounting a Windows file system on a Linux host, requires a 3rd party product such as Samba. The installation and configuration of Samba is not covered by in this guide.

Proceed as follows for a heterogeneous installation with different UNIX operating systems:

a. Log on to the SAP global host as user root and export the following directories with root access to the host on which you want to install the new instance:

\(<\text{sapmnt}>/<\text{SAPSID}>/\text{profile}\)
\(<\text{sapmnt}>/<\text{SAPSID}>/\text{global}\)

IBM Db2 for z/OS only: Make sure that the user root of the host on which you want to install the new instance can access the exported directories.

⚠️ Caution
Do not export \(<\text{sapmnt}>/<\text{SAPSID}>/\text{exe}\).

b. Log on to the host of the new instance as user root.

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

\(<\text{sapmnt}>/<\text{SAPSID}>/\text{profile}\)
\(<\text{sapmnt}>/<\text{SAPSID}>/\text{global}\)

⚠️ Caution
Make sure that these mount points 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 system 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 can share a transport directory (DEV, QA, for example). 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

   i Note
   If the transport directory resides on your local SAP instance installation host, you do not need to mount it.
a. Create the mount point `/usr/sap/trans`.

b. Mount `/usr/sap/trans` using Network File System (NFS) from the exporting host.
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

_i Note_

The references to the “system copy guide” in this section refer to the documentation System Copy Guide - System Copy for SAP Systems Based on the Application Server Java of SAP NetWeaver 7.1 to 7.5 on <Your Target OS Platform>, which you can download here:

https://support.sap.com/sltoolset │ System Provisioning │ Copy a System using Software Provisioning Manager │ System Copy Option of Software Provisioning Manager 1.0 SP<Current Number> │ System Copy Guides - Software Provisioning Manager 1.0 │ System Copy - Target Databases Other than SAP HANA │ SAP Application Server Systems Based on SAP NetWeaver

In the table, filter for the following: Product Release = SAP NetWeaver 7.X, Operating System Platform = <Your Target OS Platform>, Technical Stack = Java.

Procedure

1. On the Java target system, you install the SAP license.
   For more information, see Installing the SAP License Key [page 72].
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 75].
5. You must recreate the JCo destinations as described in the documentation Creating JavaConnector (JCo) Destinations in the SAP Library [page 14] at: Application Server │ Application Server Java │ Developing Java Web Dynpro Applications │ Content Administration and Measurements │ Web Dynpro Content Administrator │ Functions for JCo Destinations.
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 54] 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 54] to remove the Java parts from the additional application server instance.

   ![i Note](image)
   **“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 54] 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 54] to remove the central services instance.
   4. “Move Java Database” only: On the database host of the source system, you run the installer [page 54] 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 77].
11. If required and not already done so, you configure the CTS Deploy Web Service [page 79] on the ABAP system.
12. Maintain the secinfo and reginfo files in the ABAP system.
13. You clean up the system landscape data [page 83].
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.
16. You can install further additional application server instances to the ABAP and Java single stack systems which result from the dual-stack split.

Proceed as described in the respective installation guide for your database and operating system platform.

**i Note**

In case of a Java system with Db2 for z/OS database, follow the instructions in SAP Note 2709131.

---

### 6.1.1 Installing the SAP License Key

Once the installation of the target system is completed, you have to install a new SAP license key.

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

**i 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 14] for your release at:

**i Note**

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section Accessing the SAP Library [page 14], and then continue the navigation as described below.

---

<table>
<thead>
<tr>
<th>SAP Release and SAP Library Quick Link</th>
<th>SAP Library Path (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- SAP NetWeaver 7.3</td>
<td>Application Help</td>
</tr>
<tr>
<td>- SAP NetWeaver 7.3 including Enhancement Package 1</td>
<td>Solution</td>
</tr>
<tr>
<td>- SAP NetWeaver 7.4</td>
<td>SAP Licenses</td>
</tr>
<tr>
<td>- SAP NetWeaver 7.5</td>
<td></td>
</tr>
</tbody>
</table>
More Information

For more information about how to order permanent SAP license keys, see https://support.sap.com/licensekey.

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 14] for your release at:

**i Note**

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section Accessing the SAP Library [page 14], and then continue the navigation as described below.

- SAP NetWeaver 7.3 and higher:
  - Single Sign-On for Web-Based Access > Using Logon Tickets > Using Logon Tickets with AS Java > Configuring the AS Java to Issue Logon Tickets > Replacing the Key Pair to Use for Logon Tickets

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 14] for your release at:

**i Note**

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section Accessing the SAP Library [page 14], and then continue the navigation as described below.

- SAP NetWeaver 7.3 and higher:
  - Single Sign-On for Web-Based Access > Using Logon Tickets > Using Logon Tickets with AS Java > Configuring the AS Java to Issue Logon Tickets
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**

SLDAPiUser credentials are available in the ABAP system.

**Local SLD**

1. Create users, groups, and roles as described in the SAP Library [page 14] 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 14] 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 14] 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 14] 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
3. Maintain the HTTP connection parameters on the ABAP system as described in the SAP Library [page 14] 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 14] 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 14] for your release at:
   - Solution Life Cycle Management ➤ Configuring, Working with and Administering System Landscape Directory ➤ Administering 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 14] 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 for 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 for 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
```
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 14] 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 ➤ Change and
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 14] of your release at:

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 14] of your release at:

2. In the ABAP communication system, configure the CTS Deploy Web Service [page 79].

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 14] of your release at:


4. If you have not cleaned up the import queue as described in the Preparation Checklist [page 27], 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 14] 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 14] of your release at:

- Application Help
- Function-Oriented View <Language>
- 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.
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).

System Landscape After the First Split with Adapted Transport Routes

System Landscape After the Second Split with Adapted Transport Routes
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 Active 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).

Related Information

Configuring Source Systems for Non-ABAP Transports [page 77]
Configuring Target Systems for Non-ABAP Transports [page 78]
Configuring the CTS Deploy Web Service [page 79]
Configuring Transport Routes [page 80]

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.

i 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 `<sapsid>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.

i 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 54].
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 83].
   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:

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<tr>
<th>Titel</th>
<th>Internet Address</th>
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<tbody>
<tr>
<td>Central access to all guides for SAP on IBM Db2</td>
<td><a href="https://help.sap.com/viewer/p/DB6">https://help.sap.com/viewer/p/DB6</a></td>
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</tbody>
</table>

7.6 Online Information from IBM

You can use the following IBM Knowledge Center welcome page as a starting point to all kinds of documentation for your IBM Db2 for Linux, UNIX, and Windows: 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:

IBM Db2 Knowledge Center

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IBM Manuals

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