Dual-Stack Split for SAP Systems Based on SAP NetWeaver 7.1 to 7.5 on Windows
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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/slttoolset > System Provisioning > Split a System using Software Provisioning Manager.

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

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description</th>
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<tbody>
<tr>
<td>2.6</td>
<td>2019-01-21</td>
<td>Updated version for Software Provisioning Manager 1.0 SP25 (SL Toolset 1.0 SP25)</td>
</tr>
<tr>
<td>2.5</td>
<td>2018-09-17</td>
<td>Updated version for Software Provisioning Manager 1.0 SP24 (SL Toolset 1.0 SP24)</td>
</tr>
<tr>
<td>2.4</td>
<td>2018-05-07</td>
<td>Updated version for Software Provisioning Manager 1.0 SP23 (SL Toolset 1.0 SP23)</td>
</tr>
</tbody>
</table>
Updated version for Software Provisioning Manager 1.0 SP22 (SL Toolset 1.0 SP22)

- New Features:
  - Signature check for installation archives, documented in: New Features, Downloading SAP Kernel Archives (Archive-Based Installation) Archive-Based Installation for Diagnostics Agent. Downloading the SAP Kernel Archives Required for the Dual-Stack Split (Without Operating System and Database Migration). Downloading the SAP Kernel Archives Required for Operating System and Database Migration
  - Installer Log Files Improvements, documented in: New Features, Useful Information about the Installer, Troubleshooting with the Installer
  - Enabling IPv6, documented in: New Features, Prerequisites for Running the Installer

- 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.

- 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:
  - The following sections which were explicitly related to Java SDT GUI were completely removed from this documentation: Performing a Remote Installation Remote Processing of the Installer (Java SDT GUI only), Starting the Java SDT GUI Separately, Running the Installer in Accessibility Mode (general accessibility information was moved to Useful Information About the Installer).
  - The Java SDT GUI-specific information was removed from the common installer sections: Running the Installer, Useful Information About the Installer, Interrupted Processing of the Installer, Troubleshooting with the Installer

- New section Using the Step State Editor (SAP Support Experts Only) was added to section Additional Information About the Installer

- Option to install the SCS instance with an integrated SAP Web Dispatcher, documented in: New Features, SCS Instance with Integrated SAP Web Dispatcher, Additional Parameters for an SAP Web Dispatcher Installation Integrated in the SCS Instance (Optional)

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

Updated version for Software Provisioning Manager 1.0 SP21 (SL Toolset 1.0 SP21)

- New Features:
  - Media Signature Check, documented in: New Features, Running the Installer, Preparing the Dual-Stack Split Media.
<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description</th>
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</table>
| 2.1     | 2017-05-22 | Updated version for Software Provisioning Manager 1.0 SP20 (SL Toolset 1.0 SP20)  
- **New Features:**  
  ○ New SAPUI5-based graphical user interface (GUI) "SL Common GUI", documented in: *Prerequisites for Running the Installer, Running the Installer, Useful Information About the Installer* |
| 2.0     | 2017-02-06 | Updated version for Software Provisioning Manager 1.0 SP19 (SL Toolset 1.0 SP19)  
- **New Features:**  
  Verification of the integrity of data units in Software Provisioning Manager, documented in: *New Features, Downloading the Software Provisioning Manager Archive* |
| 1.9     | 2016-10-07 | Updated version for Software Provisioning Manager 1.0 SP18 (SL Toolset 1.0 SP18) |
| 1.8     | 2016-06-06 | Updated version for Software Provisioning Manager 1.0 SP17 (SL Toolset 1.0 SP17):  
- **New feature:** Move of AS Java target system to different database type during dual-stack split.  
Updated or newly created sections in this documentation:  
  ○ *New Features* [page 10]  
  ○ *Operating System and Database Migration During Dual-Stack Split* [page 19]  
  ○ *Planning Checklist* [page 26]  
  ○ *Preparing the Dual-Stack Split Media* [page 37] |
<p>| 1.7     | 2016-02-15 | Updated version for Software Provisioning Manager 1.0 SP10 (SL Toolset 1.0 SP16) |
| 1.6     | 2015-10-12 | Updated version for Software Provisioning Manager 1.0 SP09 (SL Toolset 1.0 SP15) |
| 1.5     | 2015-09-14 | Updated version for Software Provisioning Manager 1.0 SP09 (SL Toolset 1.0 SP14) |
| 1.4     | 2015-04-27 | Updated version for Software Provisioning Manager 1.0 SP08 (SL Toolset 1.0 SP13) |
| 1.3     | 2014-11-24 | Updated version for Software Provisioning Manager 1.0 SP07 (SL Toolset 1.0 SP12) |
| 1.2     | 2014-07-07 | Updated version for Software Provisioning Manager 1.0 SP06 (SL Toolset 1.0 SP11) |</p>
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<td>1.1</td>
<td>2014-03-17</td>
<td>Updated version for Software Provisioning Manager 1.0 SP05 (SL Toolset 1.0 SP10)</td>
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<tr>
<td>1.0</td>
<td>2013-10-28</td>
<td>Initial version</td>
</tr>
</tbody>
</table>
1 About This Document

This document explains how to use Software Provisioning Manager 1.0 SP25, which is part of SL Toolset 1.0 SP25, 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 21]
- 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 77].
- 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 72].

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.
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.
- Only valid for Microsoft Failover Clustering: As of Windows Server 2008 the cluster feature is called Failover Clustering. For practical reasons we are continuing to use the previous terminology Microsoft Cluster Service and abbreviation MSCS in some sections of this guide and the corresponding installation documentation of your release.

1.4 New Features

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Support of Oracle 18</strong></td>
<td>You can now perform all Software Provisioning Manager 1.0 tasks (installation, system copy, system rename) for SAP systems with the Oracle 18 database. For more information, see <a href="https://support.sap.com/pam">https://support.sap.com/pam</a>.</td>
<td>Software Provisioning Manager 1.0 SP25 (SL Toolset 1.0 SP25)</td>
</tr>
<tr>
<td><strong>Installer Log Files Improvements</strong></td>
<td>Installer log files are now available immediately after the installer has been started, that is before a product has been selected on the Welcome screen. For more information, see Useful Information about the Installer [page 54] and Troubleshooting with the Installer [page 59].</td>
<td>Software Provisioning Manager 1.0 SP22 (SL Toolset 1.0 SP22)</td>
</tr>
<tr>
<td><strong>Signature Check of Installation Archives</strong></td>
<td>The signature of installation archives is checked automatically by the installer during the Define Parameters phase while processing the Software Package Browser 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 41] and Downloading the SAP Kernel Archives Required for Operating System and Database Migration [page 42].</td>
<td>Software Provisioning Manager 1.0 SP22 (SL Toolset 1.0 SP22)</td>
</tr>
<tr>
<td><strong>Media Signature Check</strong></td>
<td>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, see Preparing the Dual-Stack Split Media [page 37] and Running the Installer [page 50].</td>
<td>Software Provisioning Manager 1.0 SP21 (SL Toolset 1.0 SP21)</td>
</tr>
<tr>
<td><strong>Support of Oracle 12.2</strong></td>
<td>Software Provisioning Manager (the “installer”) now supports dual-stack split for SAP systems with Oracle 12.2.</td>
<td>Software Provisioning Manager 1.0 SP21 (SL Toolset 1.0 SP21)</td>
</tr>
<tr>
<td><strong>SL Common GUI with SAPINST 749</strong></td>
<td>With the new installer framework version SAPINST 749, you can now use the new SAPUI5-based graphical user interface (GUI) “SL Common GUI”. For more information, see Useful Information about the Installer [page 54], Running the Installer [page 50].</td>
<td>Software Provisioning Manager 1.0 SP20 (SL Toolset 1.0 SP20)</td>
</tr>
<tr>
<td><strong>Verification of Integrity of Data Units in Software Provisioning Manager</strong></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 38]. 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>Feature</td>
<td>Description</td>
<td>Availability</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Move of AS Java Target System to Different Operating System and Database Type During Dual-Stack Split</td>
<td>When performing a dual-stack split, you can now move the Java stack of the dual-stack system being split to an AS Java system on an operating system or database type different from the operating system and database type of the original dual-stack system. For more information, see Operating System and Database Migration During Dual-Stack Split [page 19].</td>
<td>Software Provisioning Manager 1.0 SP18 (SL Toolset 1.0 SP18)</td>
</tr>
<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>
</tr>
<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>  &gt; Installation and Upgrade</td>
<td>Software Provisioning Manager 1.0 SP09 (SL Toolset 1.0 SP15)</td>
</tr>
<tr>
<td>System Provisioning for SAP Solution Manager 7.2</td>
<td>All system provisioning tasks (installation, system copy, system rename) are available for the new SAP Solution Manager 7.2 release. Compared to previous SAP Solution Manager releases, SAP Solution Manager 7.2 is no longer provided as a classical dual-stack system (ABAP system with Java Add-in), but consists of a separate ABAP and Java stack.</td>
<td>Software Provisioning Manager 1.0 SP09 (SL Toolset 1.0 SP15)</td>
</tr>
<tr>
<td>Reusing Server Ports from the original dual-stack system that is being split</td>
<td>You can now reuse specific ports from the original dual-stack system in the target Java system, such as the ICM server ports and the message server ports. For more information, see Planning Checklist [page 26].</td>
<td>Software Provisioning Manager 1.0 SP10 (SL Toolset 1.0 SP14)</td>
</tr>
</tbody>
</table>
### Feature

<table>
<thead>
<tr>
<th>Usage Type Library Deprecation for SAP Systems Based on SAP NetWeaver 7.3 EHP1 and Higher</th>
</tr>
</thead>
<tbody>
<tr>
<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>
</tr>
<tr>
<td>Availability: Software Provisioning Manager 1.0 SP07 (SL Toolset 1.0 SP12)</td>
</tr>
</tbody>
</table>

### Feedback Evaluation Form

<table>
<thead>
<tr>
<th>Feedback Evaluation Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP SE’s aim is to provide fast and efficient procedures. To evaluate the procedure you just carried out, we need information generated by the tool during process execution and your experience with the tool itself. A new evaluation form contains a simple questionnaire and XML data generated during the procedure. Port 4239 is used for displaying the feedback evaluation form. For more information, see Prerequisites for Running the Installer [page 49].</td>
</tr>
<tr>
<td>Availability: Software Provisioning Manager 1.0 SP07 (SL Toolset 1.0 SP12)</td>
</tr>
</tbody>
</table>

### Option Verify Signed Media

<table>
<thead>
<tr>
<th>Option Verify Signed Media</th>
</tr>
</thead>
<tbody>
<tr>
<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.</td>
</tr>
<tr>
<td>For more information, see SAP Note 1979965.</td>
</tr>
<tr>
<td>Availability: Software Provisioning Manager 1.0 SP06 (SL Toolset 1.0 SP11)</td>
</tr>
</tbody>
</table>

### 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 21]) 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].

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

About This Document

PUBLIC 13
• 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**

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

### 1.7 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
add the path of this reference to the basic URL for the SAP NetWeaver release your SAP product is based on, as given in the list below:

- SAP systems based on SAP NetWeaver 7.5:

- SAP systems based on SAP NetWeaver 7.4:

### 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 26]
   - Preparation [page 31]
   - Splitting [page 46]
   - Follow-up Activities [page 61]
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 21]

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).

Only valid for Microsoft Failover Clustering: If your system is a high-availability system with Microsoft Failover Clustering (previously known as MSCS), the split option “Move Java Database” offers the possibility to split a clustered dual-stack system into one ABAP cluster system and one Java cluster system each with its own database (non-MCOD).

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

Move Java Database for Standard Systems

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

These are the following instances:

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

**Note**

If required, you can install the primary application server instance and the central services instance on the ABAP system host again.
Once the installation has finished and after the System Landscape Directory has been reconfigured, the tool removes all Java parts from the dual-stack system.

**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.
When you choose the “Move Java Database” option for a high-availability system, the tool exports the Java stack of the dual-stack cluster system, and uses this export to reinstall all mandatory instances on a separate cluster system for Java.

These are the mandatory instances:

- Central services instance for Java (SCS instance)
- Enqueue replication server instance (ERS instance) for the SCS instance
- Database instance (DB)
- Primary application server instance (PAS instance)
- Additional application server instance

After the installation has finished and the System Landscape Directory has been reconfigured, the tool removes all Java parts from the dual-stack cluster 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.
If you decide to change the operating system and database type, you must provide the following SAP kernel archives for the target AS Java system. These archives must be Unicode and match the version of the SAP kernel which is used by the dual-stack system. You can download the archives from http://support.sap.com/swdc either beforehand or during the dual-stack split procedure:

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

**Note**

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

**Related Information**

Split Option: Move Java Database [page 16]
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).

Only valid for Microsoft Failover Clustering: If your system is a high-availability system with Microsoft Failover Clustering (MSCS), the split option “Keep Database” offers the possibility to split a clustered dual-stack system into one ABAP cluster system and one Java cluster system both using the same database (MCOD).

→ 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

ABAP
Java

ASCS = ABAP Central Services Instance
SCS = Java Central Services Instance
PAS = Primary Application Server Instance
DB = Database Instance
When you choose the “Keep Database” option for a high-availability system, you can choose between the following scenarios:

- **Move SCS to New or Other Cluster**
  The tool exports the Java stack of the dual-stack cluster system and uses this export to install a central services instance and a primary application server instance on a separate cluster system for Java. Additionally, the tool adapts the Java schema of the database of the former dual-stack cluster system to the target Java cluster system.

---

**Keep Database for High-Availability Systems**

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

SAP Global Host

- ASCS
- SCS

DB

- ABAP Schema
- Java Schema

Primary Application Server Instance Host

- PAS

Primary Application Server Instance Host

- PAS

Export and Install SCS

Export and Install Java PAS

MCOD

Split Option: Keep Database for Distributed Systems
Split Option: Keep Database for High-Availability Systems — Move SCS to New or Other Cluster

- **Keep SCS on the Source Cluster System**
  The tool exports the Java central services instance of the source cluster system and uses this export to install the SCS with a new system ID in a separate cluster on the target cluster system. Additionally, the tool adapts the Java schema of the database to the target Java SID.

---

**i Note**
This scenario is supported as of Windows Server 2008.
After the installation has finished and the System Landscape Directory has been reconfigured, the tool removes all Java parts from the dual-stack cluster system except the Java database schema.
3 Planning

3.1 Planning Checklist

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

→ Recommendation

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

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

Note

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 30].
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 30].  
  - 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 19].

4. You decide whether you want to perform a domain or local installation.
   For more information, see Domain or Local Installation [page 29].

5. 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.
       For more information, see Distribution of SAP System Components to Disk in the installation guide.

     ○ 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.

     ○ MS SQL Server: For the database installation, you decide how to distribute your database components to disk.
       For more information, see Distribution of SAP System Components to Disk 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.

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

7. You plan for adapting the transport routes within your system landscape. For more information, see Splitting Within a System Landscape [page 72].

8. Oracle only: You decide if you want to use Multiple Oracle Homes.
   For more information, see Multiple Oracle Homes in the installation guide.

9. To install a high-availability system with Microsoft Cluster Service (MSCS), you perform the MSCS-specific planning steps as described in the installation guide.

10. You can continue with Preparation [page 31].
3.2 Domain or Local Installation

Use

Before you install the SAP system, you have to decide whether you want to perform a domain or local installation, since this affects how the user account information is stored and accessed.

For more information about the differences between a local and domain installation, go to Start Help and Support and search for What is the difference between a domain and a workgroup?.

Domain Installation

In a domain installation, the user account information is stored centrally in one database on the domain controller and is accessible to all hosts in the system.

You have to perform a domain installation if one of the following applies:

- You install a distributed system.
- You install a high-availability system with Microsoft Failover Clustering.
- You use a common transport host for several SAP systems running on different computers.

Local Installation

In a local installation, all Windows account information is stored locally on one host and is not visible to any other hosts in the system.

If the SAP system is to run on a single machine (standard system), you can perform a local installation.

i Note

If your SAP system was installed as a local installation and you want to later change to a domain installation, you can use the system rename option. For more information, see the System Rename Guide for your SAP system at:

https://support.sap.com/sitoolset System Provisioning

More Information

Required User Authorization for Running the Installer [page 34]
3.3 User Management

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

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

In both cases, manual configuration is not required.

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

For more information, see SAP Note 718383.

**Note**

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

4.1 Preparation Checklist

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

**Note**

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

**Installation Guides - Application Server Systems** - [Software Provisioning Manager 1.0 SP <Current Number>](https://support.sap.com/sitoolset)


1. You disable the Windows Server firewall on each host. For more information about disabling the Windows firewall, see the relevant section in the installation guide.
2. You perform basic preparations on Windows. For more information, see Performing Basic Windows Preparation Steps [page 32].
3. Make sure that you use an account with the required user authorization to run the installer. For more information, see Required User Authorization for Running the Installer [page 34].
4. **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>
      ```
5. If applicable, you set up virtual host names. For more information, see Using Virtual Host Names [page 36].
6. If required, you prepare the SAP system transport host for your SAP system. For more information, see Preparing the SAP System Transport Host in the installation guide.
7. 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 70].
8. 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

9. 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 37].

10. **High-availability with Microsoft Cluster Service (MSCS):** To install a high-availability system with Microsoft Cluster Service (MSCS), you also perform the MSCS-specific preparation tasks as described in the installation guide.

11. **High-availability with Microsoft Cluster Service (MSCS):** If you choose the split option “Keep Database” with the scenario “Keep SCS on the Source Cluster System”, you perform the following steps:
    - You provide additional disk storage on the target cluster system. For more information, see Distribution of SAP System Components to Disks for MSCS, Directories in an MSCS Configuration, and IP Addresses in an MSCS Configuration in the installation guide.
    - You provide an additional IP address and an additional virtual host name for the Java system. For more information, see Mapping Host Names to IP Addresses for MSCS in the installation guide.

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

### 4.2 Performing Basic Windows Preparation Steps

**Use**

This section informs you about basic preparation steps that you have to perform before you install the SAP system, including the following:

- Checking the Windows file system
- Checking the Windows domain structure (domain installation only)
- Deciding whether you want to use organizational units (OUs) in the Windows domain (domain installation only)

**Procedure**

**Checking the Windows File System**

You need to check which Windows file system you are using on hosts where you want to install the SAP system. As of Windows Server 2012 R2, you should use the Windows file system ReFs or NTFS. Older Windows Server versions must use NTFS.

**Note**

Do **not** install the SAP system on a FAT partition.
Perform the check as follows:

- Windows Server 2012 R2 and higher:
  1. Open PowerShell in elevated mode, and enter the following command:
     ```
     get-volume
     ```
  2. Check that the value *FileSystem* is ReFs or NTFS.

- Windows Server 2008 (R2) and Windows Server 2012:
  1. Open the Windows Explorer.
  2. Select the relevant disk.
  3. Choose *Properties* ➤ *General*.
     The system displays the type of file system in use.
  4. Check that the file system is NTFS.

### Checking the Windows Domain Structure

**Note**

You do **not** need this step for a local installation.

For a domain installation, we recommend that you check that all SAP system hosts are members of a single Windows domain. We recommend this for all SAP system setups.

We assume that you are familiar with checking Windows domain structures. For more information, see the Windows documentation.

In Windows, you can implement either of the following domain models for the SAP system:

- **Extra domain**
  In this model, the SAP system is embedded in its own domain, which is specially defined for SAP. A second domain exists for the user accounts.
  In Windows, the SAP domain and user domain must be incorporated in a domain tree. In this tree, the user accounts must form the root domain and the SAP domain must be a child domain of this.

- **Single domain**
  In this model, the SAP system, and the user accounts are included in a single domain.

**Caution**

You cannot create local users and groups on the host that is used as domain controller. Therefore, we do **not** support running an SAP instance (including the database instance) on the host where the domain controller is installed.

### Deciding Whether to Use Organizational Units (OUs) in the Windows Domain

**Note**

You do **not** need this step for a local installation.

For a domain installation, the installer needs to create certain OS users for SAP and database operations in the Windows domain, also called the “Active Directory” (AD). These users are created by default in the AD container “Users”.

Depending on a customer’s AD landscape and security policy, there are certain restrictions on where to store users and groups in AD. Contact the administrator of your AD infrastructure to understand where to store all SAP and database-related domain users and domain groups.
The SAP installer offers to define an existing OU in AD to create all needed SAP and database users in this OU. There are many different scenarios and prerequisites concerning how to use OUs. For more information, see SAP Note 2247673, which explains these issues in detail and shows some examples of how to use them.

⚠️ Caution

The installer does not create OUs. The installer does not move existing domain users or groups. The installer does not delete existing users, groups, OUs, nor any other object in a Windows domain. The only exception to this rule is the Uninstall option in SWPM.

4.3 Required User Authorization for Running the Installer

Although the installer automatically grants the rights required for the installation to the user account used for the installation, you have to check whether this account has the required authorization to perform the installation. The authorization required depends on whether you intend to perform a domain or local installation. If necessary, you have to ask the system administrator to grant the account the necessary authorization before you start the installation. If you attempt the installation with an account that does not have the required authorization, the installation aborts.

This section informs you about the authorization required for a domain and a local installation.

Procedure

⚠️ Caution

Do not use the user <sapsid>adm for the installation of the SAP system.

Domain Installation

For a domain installation the account used for the installation needs to be a member of the local Administrators and the domain Admins group of the relevant domain. All machines in the system must belong to the same domain. In a domain installation, the user information is stored centrally on the domain controller and is accessible to all hosts in the system.

If the SAP system is to be distributed across more than one machine, SAP strongly recommends you to perform a domain installation to avoid authorization problems.

⚠️ Caution

- If you install a distributed system as a local installation, this can lead to authorization problems for the operating system users <sapsid>adm and SAPService<SAPSID>. It can also lead to problems with the transport directory, which is usually shared by several SAP systems. SAP does not support distributed SAP systems running with local user accounts.
- In a high-availability configuration, you always have to perform a domain installation.
- For performance and security reasons, SAP does not support an SAP system installation on a domain controller.
If for any reason, the account used for the installation is not a member of the domain Admins group, you can perform the installation with a domain user who is a member of the local Administrators group. However, the domain administrator has to prepare the system appropriately for you. For more information, see Performing a Domain Installation without being a Domain Administrator [page 78].

For a domain installation, you need to:
1. Check that the account used for the installation is a member of the domain Admins group.
2. If required, obtain these rights by asking the system administrator to enter the account as a member of the domain Admins group.

Local Installation

For a local installation the account used for the installation needs to be a member of the local Administrators group of the machine involved. In a local installation, all Windows account information is stored locally on one host and is not visible to any other hosts in the system.

If the SAP system is to run on a single machine, you can perform a local installation.

⚠️ Caution

Do not use the Windows built-in account Administrator or the renamed built-in account to install your SAP system. The built-in account only has restricted network access rights that are required by the installer. If you renamed the built-in account Administrator, do not create a new account named Administrator.

For a local installation, you need to:
1. Check that the account used for the installation is a member of the local Administrators group.
2. If required, obtain these rights by asking the system administrator to enter the account as a member of the local Administrators group.

Related Information

Performing a Domain Installation Without Being a Domain Administrator [page 78]
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.
- Make sure that you configured the Windows operating system properly to use virtual host names. For more information, see SAP Note 1564275.
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 19]), 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.

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.
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
   \[\text{SWPM10SP}<\text{Support\_Package\_Number}>\_<\text{Version\_Number}>.SAR\] from:
   
   \[https://support.sap.com/sitoolset\] ➔ 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. To check the validity of the downloaded executable, right-click the executable and choose Properties. On the Digital Signatures tab you can find information about the SAP signature with which the executable was signed.
   d. Rename the executable to \textit{sapcar.exe}.

   For more information about SAPCAR, see SAP Note \textit{212876}.

3. Using the latest version of SAPCAR, you can verify the signature of the downloaded \[\text{SWPM10SP}<\text{Support\_Package\_Number}>\_<\text{Version\_Number}>.SAR\] 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:
   
   \(\text{SAPCAR –xvf sapcryptolib_<version>.sar –R <target directory>}\)

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 SWPM1OSP<Support_Package_Number>_<Version_Number>.SAR archive by executing the following command:

   \(<\text{Path to SAPCAR}>\text{\sapcar.exe -tvvf<Path to Download Directory> \SWPM1OSP<Support_Package_Number>_<Version_Number>.SAR -crl <file name of revocation list>}\>

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

   \(<\text{Path to SAPCAR}>\text{\sapcar.exe -xvf <Path to Download Directory> \SWPM1OSP<Support_Package_Number>_<Version_Number>.SAR -R <Path to Unpack Directory>}\>

   \(\begin{tabular}{|l|}
   \hline
   \textbf{i Note} \\
   \text{Check SAP Notes 2178665 and 1680045 whether additional information is available.} \\
   \hline
   \end{tabular}\)

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 50]). 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 “U” 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 “U” 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>
<tr>
<td>Move Java Database only: Database</td>
<td>○ Software Provisioning Manager archive</td>
</tr>
<tr>
<td>instance</td>
<td>○ UC Kernel (folder K_U_&lt;Version_Number&gt;_&lt;OS&gt;) where “U” means Unicode.</td>
</tr>
<tr>
<td></td>
<td>○ SAP NetWeaver Java Component (folders JAVA_*)</td>
</tr>
<tr>
<td></td>
<td>○ MS SQL Server, Oracle Database: RDBMS media</td>
</tr>
<tr>
<td></td>
<td>○ MS SQL Server, Oracle Database: RDBMS patch media (if available)</td>
</tr>
</tbody>
</table>

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 38].
   b. Make the installation media containing the software to be split available.

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

   **Caution**
   ○ If you copy the media to disk, make sure that the paths to the destination location of the copied media do not contain any blanks and commas.
   ○ If you perform a domain installation and do not want to copy the media but use network drives for mapping the installation media, make sure that the <sapsid>adm user has access to the UNC paths of the network drives.
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.

Note

The signature of installation archives is checked automatically by the installer 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:

http://support.sap.com/swdc

→ 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, igsexe <version>.sar archives for the target operating system and database.

Context

The signature of installation archives is checked automatically by the installer [page 50] 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 complimentary 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>
  - igsex<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:
○ 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.

Related Information

Operating System and Database Migration During Dual-Stack Split [page 19]
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 38].
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/sltoolset ➔ System Provisioning ➔ Software Provisioning Manager 1.0 SP<Current Version> ➔ Download Kernel releases delivered for SL Toolset ➔ SL TOOLSET 1.0 (INSTALLATIONS AND UPGRADES) ➔ KERNEL FOR INSTALLATION/SWPM.
     ○ To download all media required for your SAP product, you can use one of the following navigation paths:
       ○ https://launchpad.support.sap.com/#/softwarecenter ➔ INSTALLATIONS & UPGRADES ➔ By Category ➔ SAP NETWEAVER AND COMPLEMENTARY PRODUCTS ➔ <Product> ➔ <Product Release> ➔
   ○ 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
   ...

   ○ 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.

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

2. Oracle: If required, you set up multiple Oracle Homes. For more information, see Setting Up Multiple Homes in the installation guide.

3. MS SQL Server: You install the MS SQL Server database software. For more information, see Installing the SQL Server Database Software in the installation guide.

4. You check the prerequisites [page 49] and export the Java stack using the installer [page 50].

△ 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 76].

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

6. You check the prerequisites [page 49] and run the installer [page 50] to install a Java only system using the export from the dual-stack system.

**Note**

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

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

7. You continue with Follow-Up Activities [page 61].

### Distributed and High-Availability System

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

2. **Oracle**: If required, you set up multiple Oracle Homes on the database instance host. For more information, see Setting Up Multiple Homes in the installation guide.

3. On the primary application server instance host of the dual-stack system, you check the prerequisites [page 49] and run the installer [page 50] 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 76].

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

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

6. You check the prerequisites [page 49] and run the installer [page 50] 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.

7. You check the prerequisites [page 49] and run the installer [page 50] to install a database instance for the Java target system using the export from the dual-stack system.

8. You check the prerequisites [page 49] and run the installer [page 50] to install a primary application server instance for the Java target system using the export from the dual-stack system.

9. You continue with Follow-Up Activities [page 61].
Keep Database

1. On the **primary application server instance host** of the dual-stack system, you check the prerequisites [page 49] and run the installer [page 50] 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 76].

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

3. You check the prerequisites [page 49] and run the installer [page 50] to install a central services instance for the Java target system.

   i Note
   
   Make sure that you choose a system ID for the Java target system that is different from the dual-stack source system ID.
   
   For a list of forbidden system IDs, see also the [F1] help in the tool dialog.

4. All databases except IBM Db2 for z/OS: On the **database instance host** of the dual-stack system, you check the prerequisites [page 49] and run the installer [page 50] to adapt the database for the Java target system.

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

5. IBM Db2 for z/OS only: On the **primary application server instance host** of the dual-stack system, you check the prerequisites [page 49] and run the installer [page 50] to adapt the database for the Java target system.

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

6. You check the prerequisites [page 49] and run the installer [page 50] 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 61].
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 50]. 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 54].

- You need 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. The installer creates an installation directory
sapinst_instdir, where it keeps its log files, and which is located directly in the %ProgramFiles%
directory. For more information, see Useful Information About the Installer [page 54].

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

- If you want to change the host name of your system, change the computer name and the host name on OS
  level and make sure that the host name resolution and UNC paths work.
  For more information, see SAP Note 23538.
  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.
• 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 49].

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 54].

Procedure

1. Log on to the host where you want to run the installer.
   Make sure that you log on as a user with the required authorization for running the installer.
   For more information, see Required User Authorization for Running the Installer [page 34].

   △ 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 administrator credentials 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 sapinst.exe from the command line. You must 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 37].

3. Start the installer as follows:

   Double-click sapinst.exe from the directory to which you unpacked the Software Provisioning Manager archive file.

   **Note**
   By default, the SL Common GUI uses the default browser defined for the host where you run the installer. However, you can also specify another supported web browser available on the host where you start the installer. You can do this by starting the sapinst executable with command line option
   
   ```
   SAPINST_BROWSER=<Path to Browser Executable>, for example
   SAPINST_BROWSER=firefox.exe.
   ```

   The installer GUI starts automatically by displaying the Welcome screen.

4. The installer is starting up.

   The installer now starts and waits for the connection with the SL Common GUI. If you have a supported web browser (see Prerequisites for Running the Installer [page 49]) installed on the host where you run the installer, the SL Common GUI starts automatically by displaying the Welcome screen.

   If the SL Common GUI does not open automatically, you can find the URL you require to access the SL Common GUI at the bottom of the Program Starter window of the installer. You find the icon of the Program Starter window in the taskbar of your Windows host. Open a supported web browser and run the URL from there.

   ```
   ************************************************************************
   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 54].
   2. Restart the installer from the command line with the `SAPINST_GUI_HOSTNAME=<hostname>` property.
   You can use a fully-qualified host name.

   **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.xxxxx.xxxx directory in the temporary directory to which the installer has extracted itself:
      %userprofile%\.sapinst\%
   2. In the sapinst_exe.xxxxx.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.

5. In the Welcome screen, choose Dual-Stack Split » Keep Database » Move Java Database » <Standard System|Distributed System|High-Availability System>
   Perform the related dual-stack split options exactly in the order they appear.

6. Choose Next.

   **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. If the installer prompts you to log off from your system, log off and on again.
   The installer restarts automatically.

8. 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.

   **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.

9. 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.

10. 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.

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:

   %userprofile%\sapinst\%

14. 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 54].

Related Information

Useful Information about the Installer [page 54]
Interrupted Processing of the Installer [page 55]
Troubleshooting with the Installer [page 59]

5.4 Additional Information about the Installer

The following sections provide additional information about the installer.

Useful Information about the Installer [page 54]
This section contains some useful technical background information about the installer and the installer GUI.
Interrupted Processing of the Installer [page 55]
Here you find information about how to restart the installer if its processing has been interrupted.

Troubleshooting with the Installer [page 59]
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 60]
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.

As of version 1.0 SP24 Patch Level (PL) 5, Software Provisioning Manager comes with a new look and feel of the SL Common GUI. For more information, see https://blogs.sap.com/2018/11/10/new-look-for-software-provisioning-manager/. 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 in the Program Starter window. If you have a supported web browser installed on the host where you run the installer, the SL Common GUI starts automatically.

By default, the SL Common GUI uses the default browser defined for the host where you run the installer. However, you can also specify another supported web browser available on the host where you start the installer. You can do this by starting the sapinst executable with command line option SAPINST_BROWSER=<Path to Browser Executable>, for example SAPINST_BROWSER=firefox.exe. Alternatively you can open a supported web browser on any device and run the URL from there.

For more information about supported web browsers see Prerequisites for Running the Installer [page 49]. If 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.exe executable, the installer creates a .sapinst directory underneath the <Drive>:\Users\<User> directory where it keeps its log files. <User> is the user which you used to start 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 in the %ProgramFiles% directory. If the installer is not able to create sapinst_instdir there, it tries to create sapinst_instdir in the directory defined by the TEMP environment variable.

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.
Recommendation

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

- The installer extracts itself to a temporary directory (TEMP, TMP, TMPDIR, or SystemRoot). These executables are deleted after the installer has stopped running. Directories called sapinst_exe.xxxxxx.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, go to the directory %TEMP%\sapinst_exe.xxxxxx.xxxx after you have started the installer, and enter the following command:
  sapinst.exe -p

- If required, stop the installer by choosing the Cancel button.

Note

- If you need to terminate the installer, choose File Exit in the menu of the Program Starter window.

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>
</table>
| **Retry** | 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 **Retry**.  
If the same or a different error occurs, the installer displays the same dialog box again. |
| **Stop** | 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. |
| **Continue** | The installer continues the installation from the current point. |
| **View Log** | Access installation log files. |

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 50).
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 37).

→ **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.

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 37).

→ **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.
4. Restart the installer by double-clicking `sapinst.exe` from the directory to which you unpacked the Software Provisioning Manager archive.

By default, the SL Common GUI uses the default browser defined for the host where you run the installer. However, you can also specify another supported web browser available on the host where you start the installer. You can do this by starting the `sapinst` executable with command line option `SAPINST_BROWSER=<Path to Browser Executable>`, for example `SAPINST_BROWSER=firefox.exe`.

5. The installer is restarting.

The installer now starts and waits for the connection with the SL Common GUI. If you have a supported web browser (see Prerequisites for Running the Installer [page 49]) installed on the host where you run the installer, the SL Common GUI starts automatically by displaying the Welcome screen.

If the SL Common GUI does not open automatically, you can find the URL you require to access the SL Common GUI at the bottom of the Program Starter window of the installer. You find the icon of the Program Starter window in the taskbar of your Windows host. Open a supported web browser and run the URL from there.

```plaintext
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 54].
2. Restart the installer from the command line with the `SAPINST_GUI_HOSTNAME=<hostname>` property.
   You can use a fully-qualified host name.

---

**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:
   ```bash
   %userprofile%\sapinst
   ```

---

---
2. In the `sapinst_exe.xxxxx.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>
</table>
| **Perform a new run**               | The installer does not continue the interrupted dual-stack split option. Instead, it moves the content of the old installer directory and all installer-specific files to a backup directory. Afterwards, you can no longer continue the old option. The following naming convention is used for the backup directory: `log_<Day>_Month_<Year>_Hours_Minutes_Seconds`
| 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. |
| **Continue with the existing one**  | The installer continues the interrupted dual-stack split from the point of failure. |
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 2393060 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.
     
     i Note
     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.
     
     If you need to access the log files before you have done this selection, you can find the files in the .sapinst directory underneath the <Drive>:\Users\<User> directory, where <User> is the user that you used to start the installer.
     
     For more information, see Useful Information about the Installer [page 54].
     
     - To check the log and trace files of the installer GUI for errors, go to the directory %userprofile%\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 55].
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 49].

**Procedure**

1. Start the installer from the command line as described in Running the Installer [page 50] 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.
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.
   High-Availability System only: If your system is a high-availability system, you install a license on each cluster node of the Java target system.
   For more information, see Installing the SAP License Key [page 63].
2. On the Java target system, you maintain the connection to the system landscape directory [page 65].
3. On the Java target system, you generate the public-key certificates.
   For more information, see Generating Public-Key Certificates [page 64].
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 66].
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.

See also SAP Note 899144.

6. On the Java target system, you perform product instance or usage type-specific follow-up activities as required.

For more information, see the relevant sections in the product instance or usage type-specific follow-up activities in the system copy guide.

7. We recommend that you perform regression testing.

8. Depending on your system variant, proceed in one of the following ways:

   ○ Standard system
     On the source system, you run the installer [page 50] 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 50] to remove the Java parts from the additional application server instance.

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

     2. On the primary application server instance host of the source system, you run the installer [page 50] 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 50] to remove the central services instance.

     4. On the enqueue replication server instance host of the source system, you run the installer [page 50] to remove the enqueue replication server instance.

     5. “Move Java Database” only: On the database host of the source system, you run the installer [page 50] 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 68].

11. If required and not already done so, you configure the CTS Deploy Web Service [page 71] on the ABAP system.

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

    For more information, see the SAP Library at http://help.sap.com/nw75 ➤ SAP NetWeaver Security Guide ➤ Security Guides for Connectivity and Interoperability Technologies ➤ Security Settings in the Gateway ➤ Configuring Connections between Gateway and External Programs Securely ➤ SAP Gateway Security Files secinfo and reginfo and SAP Note 1408081. For SAP Process Integration 7.5, see SAP Note 2367160.

13. You clean up the system landscape data [page 74].

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

SLDAPUSER 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 ➔ Administarting 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 ➔ Administarting 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 ➔ Administarting 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
   2. Maintain the RFC destination as described in the SAP Library [page 14] for your release at:
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:
   
   ```bash
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. If you plan to make a backup to tape on Windows, you have to initialize the tape drive by entering the following command:
   
   ```bash
db2 initialize tape on \\.<tape_device>
```
5. To start the offline backup for a single-partitioned database, enter the following command:
   
   ```bash
db2 backup db <dbsid> to <device>
```
**Example**

For example, to perform an offline backup of database C11 to tapes in devices TAPE0 and TAPE1, enter the following command:

```
db2 backup database C11 to \\TAPE0, \\TAPE1
```

**i Note**

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

For more information about how to start a Db2 backup, see the IBM Db2 online documentation.

**More Information**

- For access to the Database Administration Guide for SAP on IBM Db2 for Linux, UNIX, and Windows and more documentation about SAP systems on IBM Db2 for Linux, UNIX, and Windows, see Online Information from SAP [page 85].
- For access to online information about Db2 that is provided by IBM, see Online Information from IBM [page 85].

### 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](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:


   **Note**

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

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

   For more information about these parameters, see Parameters for non-ABAP transports in the SAP Library [page 14] of your release at:

6.1.5.2 Configuring Target Systems for Non-ABAP Transports

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

Procedure

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

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

   For general information about how to create a non-ABAP target system, see the SAP Library [page 14] of your release at:


2. In the ABAP communication system, configure the CTS Deploy Web Service [page 71].

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 31], 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:

   Copy the buffer file to a file named <SAPSID of new Java system> and move it to the following directory: <Drive>:\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.
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.

Process Flow

1. You split the first system in the transport track.
   In this example this means that you split the dual-stack system DEV into an ABAP system DEV and a Java system JDS.
2. In the Transport Management System (TMS), you create a Java system (JDS) with the ABAP system (DEV) as communication system, and select the Activate Transport Organizer flag.
3. In the TMS, you delete the configuration settings of the Java system in the ABAP system (DEV).
4. In the TMS, you create the transport route between the new Java system (JDS) and the next system in the transport track (QAS).
5. You split the next system in the transport track.
   In this example this means that you split the dual-stack system QAS into an ABAP system QAS and a Java system JQS.

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

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

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

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

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

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

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

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

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

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

---

**Related Information**

- Configuring Source Systems for Non-ABAP Transports [page 69]
- Configuring Target Systems for Non-ABAP Transports [page 70]
- Configuring the CTS Deploy Web Service [page 71]
- Configuring Transport Routes [page 71]

---

**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.

iNote
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.
   In SAP MMC, choose All tasks Restart service.
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.

iNote
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.
   - In SAP MMC, choose All tasks Restart service.

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 50].
2. Depending on your system variant, perform the steps listed below:
   - **Standard System**
   - **Distributed System**
     - Remove Java Stack from Dual-Stack 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
   - **High-Availability 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 ERS 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 74].
The removal of the technical Java system from the SLD is important for the system landscape data consistency.

7.4 Performing a Domain Installation Without Being a Domain Administrator

You normally perform a domain installation of the SAP system with a user who is a member of the domain Admins group, as described in Required User Authorization for Running the Installer [page 34]. If for any reason, the account used for the installation is not a member of the domain Admins group, you can perform the installation with a domain user who is a member of the local Administrators group. In this case, the domain administrator has to prepare the system appropriately for you. The domain administrator can perform the following steps either using the installer or manually:

1. Create the new global group SAP_<SAPSID>_GlobalAdmin.
2. Create the two new SAP system users `<sapsid>adm` and `SAPService<SAPSID>`.
3. Add the users `<sapsid>adm` and `SAPService<SAPSID>` to the newly created group `SAP_<SAPSID>_GlobalAdmin`.
4. The following steps are only required for IBM Db2 for Linux, UNIX, and Windows:
   1. Create the database administration group `db<dbsid>adm`, the database control group `db<dbsid>ctl`, the database maintenance group `db<dbsid>mnt`, and the database monitoring group `db<dbsid>mon`.
   2. Create the new Db2 database administrator `db2<dbsid>`.
   3. Add users `<sapsid>adm` and `SAPService<SAPSID>` to the group `db<dbsid>ctl`. Add the user `db2<dbsid>` to the group `db<dbsid>adm`.
   4. If you want the database connect user (`sap<sapsid>db`) to be part of the `<sapsid>adm` domain, you have to add it to the group `db<dbsid>mon` manually.

⚠️ Caution

You can specify the name of the Java connect user (`sap<sapsid>db`) independently from the SAP schema name during the dialog phase of the installer.

We recommend, however, that you keep the names of the connect user and the database schema identical in standard use cases. If you are performing a system copy using database means, Db2 is not able to change the schema name and you can then choose a connect user name that is different from the schema name.

Make sure that you choose the correct value during the dialog phase of the installer.

5. Create the database extended security groups `DB2ADMNS_<DBSID>` and `DB2USERS_<DBSID>`.
6. Add users `db2<dbsid>` and `SAPService<SAPSID>` to the database extended security group `DB2ADMNS_<DBSID>`.

⚠️ Note

The installer creates the operating system user for the SAP Host Agent by default as a local user that is not a member of the local Administrators group. If you want to create this user manually as a domain user, you must perform the following steps:

Creating the SAP Host Agent User and Group Manually

1. Create the new global group `SAP_SAP_GlobalAdmin`.
2. Create the SAP system user `sapadm`.
3. Add the user `sapadm` to the newly created group `SAP_SAP_GlobalAdmin`.

However, for security reasons we strongly recommend you to create this user as a local user.

**Prerequisites**

- You must be domain administrator to perform the required steps.
- You must have installed the feature `Remote Server Administration Tools` as follows:
  - Windows Server 2012 (R2) and higher:
    - Open PowerShell in elevated mode, and enter the following command:
      `add-windowsfeature RSAT-ADDS`
○ Windows Server 2008 (R2):
1. Choose [Start] [Administrative Tools] [Server Manager].
2. In the Server Manager window, select Features.
3. Select the feature [Remote Server Administration Tools] [Role Administration Tools] [Active Directory Domain Services Tools].

Procedure

Creating the Required Users and Groups Using the Installer

On the host where the SAP system is to be installed, the domain administrator starts the installer as described in Running the Installer [page 50] and chooses [Generic Installation Options] [Database] [Preparations] [Operating System Users and Groups] to have the group and users created automatically.

Creating the Required Users and Groups Manually

<table>
<thead>
<tr>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>To create the users and groups specific to the SAP Host Agent, you must follow the procedure below, and replace the users and groups with those for the SAP Host Agent.</td>
</tr>
</tbody>
</table>

Creating the New Global Group SAP_<SAPSID>_GlobalAdmin

Perform the following steps:

- Windows Server 2012 (R2) and higher:
  Open PowerShell in elevated mode, and enter the following command:
  ```none```
  net group SAP_<SAPSID>_GlobalAdmin /add /domain
  ```none```
- Windows Server 2008 (R2):
  1. Log on as domain administrator.
  2. Start the Active Directory Users and Computers Console by choosing:
     ```none```
     Start [Control Panel] [Administrative Tools] [Active Directory Users and Computers].
  3. Right-click Users in Tree, and choose [New] [Group].
  4. Enter the following:
     Group name: SAP_<SAPSID>_GlobalAdmin
  5. Select the following:
     1. Group scope: Global
     2. Group type: Security
  6. Choose OK.

Creating the New SAP System Users <sapsid>adm and SAPService<SAPSID>

Perform the following steps:

- Windows Server 2012 (R2) and higher:
  1. Open PowerShel in elevated mode.
  2. Create the <sapsid>adm user with the following command:
     ```none```
     net user <sapsid>adm <Password> /add /domain
3. Create the SAPService<SAPSID> user with the following command:
   ```
   net user SAPService<SAPSID> <Password> /add /domain
   ```

   - **Windows Server 2008 (R2):**
     1. In **Active Directory Users and Computers Console**, right-click **Users in Tree** and choose:
        - `New` → `User`
     2. Enter the following:
        | Field          | Input for <sapsid>adm | Input for SAPService<SAPSID> |
        |----------------|------------------------|-------------------------------|
        | First name:    | None                   | None                          |
        | Initials:      | None                   | None                          |
        | Last name:     | None                   | None                          |

     3. Choose `Next` and enter the following:
        - **Password**: <Password>
        - **Confirm password**: <Password>
     4. Select **Password never expires**.
     5. Choose `Next` → `Finish`.

   **Adding the Manually Created Users to Groups**

   **i Note**
   
   To add the users specific to the SAP Host Agent to the relevant groups, you must follow the procedure below, and replace the users and groups with those for the SAP Host Agent.

   **Adding the <sapsid>adm User to the SAP_<SAPSID>_GlobalAdmin Group**

   - **Windows Server 2012 (R2) and higher:**
     Open PowerShell in elevated mode, and enter the following command:
     ```
     net group SAP_<SAPSID>_GlobalAdmin <sapsid>adm /add /domain
     ```
   - **Windows Server 2008 (R2):**
     1. In the **Users** folder, double-click the newly created user account <sapsid>adm in the list on the right.
     2. Choose `Member` → `Add`.
     3. Select the new **SAP_<SAPSID>_GlobalAdmin** group and choose `Add` to add it to the list.
     4. Choose `OK` twice.

   **Adding the SAPService<SAPSID> User to the SAP_<SAPSID>_GlobalAdmin Group**
● Windows Server 2012 (R2) and higher:
Open PowerShell in elevated mode, and enter the following command:
```
net group SAP_<SAPSID>_GlobalAdmin SAPService<SAPSID> /add /domain
```

● Windows Server 2008 (R2):
1. In the Users folder, double-click the newly created user account SAPService<SAPSID> in the list on the right.
2. Choose Member Add.
3. Select the new SAP_<SAPSID>_GlobalAdmin group.
4. Choose Add to add it to the list, and then OK.
5. Choose OK to close SAPService<SAPSID>Properties.

### 7.5 Using PowerShell

SAP uses Windows PowerShell to run and describe Windows commands.

For Windows Server 2012 (R2) and higher, SAP only uses Windows PowerShell to run and describe Windows commands.

Windows PowerShell is a powerful tool integrated in the Windows operating system. It uses object-oriented methodology, which allows fast and stable script development.

For more information about the Windows PowerShell, see:


There you can find links to the online help, online documentation, scripting repository, downloads, and blogs.

If you want to use the PowerShell feature, note the following:

- **Windows Server 2016**
  Windows Server 2016 contains PowerShell 5.0
  You can update to PowerShell 5.0 (search the internet for Windows Management Framework 5.0).

- **Windows Server 2012 R2**
  Windows Server 2012 R2 contains PowerShell 4.0.

- **Windows Server 2012**
  You can update to PowerShell 4.0 (search the internet for Windows Management Framework 4.0).

- **Windows Server 2008 R2**
  Windows Server 2008 R2 contains PowerShell 2.0.
  For more information about PowerShell 2.0, see http://support.microsoft.com/kb/968929.
  You can update to PowerShell 3.0 or 4.0 (search the internet for Windows Management Framework 3.0 or Windows Management Framework 4.0).

- **Windows Server 2008**
  You have to activate the PowerShell feature with Start Administrative Tools Server Manager Features.
How to Start PowerShell

⚠️ Caution

Make sure that you start the PowerShell in administrator mode.

- Windows Server 2012 (R2) and higher
  
  Open the command prompt and enter the command:
  
  `powershell.exe`

To start PowerShell on Windows Server 2008 (R2), you have the following options:

- From the command prompt, by entering the command:
  
  `powershell.exe`

- From the Start Menu:
  
  ○ PowerShell 1.0:
    
    Choose `Start > All Programs > Windows PowerShell 1.0 > Windows PowerShell`.
  
  ○ PowerShell 2.0:
    
    Choose `Start > All Programs > Windows PowerShell > Windows PowerShell`.

How to Work with PowerShell

Most commands that are used in `cmd.exe` are also available in the PowerShell (defined as aliases).

You can use well-known commands, such as `cd`, `type`, `copy`, `move`, `mkdir`, `delete`, `rmdir`. There is also online help available, which you can access by typing the command: `help` (or `help <command>`).

This is a list of differences between PowerShell and `cmd.exe`:

- Before you can run PowerShells scripts (text files with the file extension `.ps1` that contain PowerShell statements), you might have to change the default security setting to allow the execution of non-signed scripts as follows:
  
  `set-executionpolicy "unrestricted"`

- By default, when double-clicking PowerShell scripts (.PS1 files) in the Windows explorer, this does not execute the script as is the default for .cmd files, but opens the script in an editor. If you want to activate automatic script execution after a double-click, you have to change the value `HKEY_CLASSES_ROOT\Microsoft.Powershellscript.1\Shell\Open\Command` from `notepad.exe` to the full path of the PowerShell executable.

- The output of PIPE commands is not just a stream of characters (strings) but a stream of objects. You can easily access the properties and methods for these objects (see the process list DLL example below).

- The current working directory is not part of the directory search path that the PowerShell looks at for scripts and programs. The PowerShell only searches directories listed in the environment variable path. Therefore, you might have to run a local program with `.sapcontrol.exe` or specify its full path.

- You can use the UNIX-like directory delimiters, such as `cd /usr/sap/C11`.

- You can have your current working directory in a UNC path (`cd \sapglobalhost\sapmnt`).

- The shell distinguishes between environment variables and shell variables:
  
  ○ Use of shell variables:
    
    Definition: `$x="hello"`
Reference: `write-host $x`

- Use of an environment variable:
  - **Definition:** `$env:x="hello"`
  - Reference: `write-host $env:x`

- The PowerShell has an interesting container concept called **ps-drives**. Within **ps-drives** you can navigate in other objects, such as the registry or shell internal lists in the same way as you typically navigate in a file system (cd, dir, del and so on).
  - `dir env:` to get a list of environment variables
  - `dir variable:` to get the list of shell variables
  - `dir HKLM:` to get a list of registry keys in HKEY_LOCAL_MACHINE
  - `get-psdrive` to get a list of available ps-drives

- Windows PowerShell has full access to the .NET runtime. You can directly access missing functions in the PowerShell via .NET.

- With Windows PowerShell, you can create GUI-class user interfaces using Windows forms.

### PowerShell Commands

The following table lists some PowerShell commands that are available on Windows Server 2012 (R2) and higher:

<table>
<thead>
<tr>
<th>Command</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>stop-service sap</strong>*</td>
<td>Stops all Windows services with service name starting with “SAP”</td>
</tr>
<tr>
<td><strong>get-process</strong></td>
<td>Lists currently started processes on your system</td>
</tr>
<tr>
<td>**get-process</td>
<td>sort starttime</td>
</tr>
<tr>
<td>**get-process</td>
<td>sort starttime</td>
</tr>
<tr>
<td>**get-process</td>
<td>sort starttime</td>
</tr>
<tr>
<td>**get-process</td>
<td>%{$_.name;&quot;----------&quot;}; $$_modules**</td>
</tr>
<tr>
<td>`$processes = (get-process</td>
<td>sort starttime)`</td>
</tr>
<tr>
<td><code>$processes.length</code></td>
<td>The number of processes in the array (is equivalent to the number of processes on your computer)</td>
</tr>
</tbody>
</table>
### Command Explanation

<table>
<thead>
<tr>
<th>Command</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>$processes[$processes.length-1].kill()</code></td>
<td>Invokes the kill method (terminate process) of the last started process</td>
</tr>
<tr>
<td><code>(dir a.txt).set_attributes(&quot;readonly&quot;)</code></td>
<td>Sets the file <code>a.txt</code> to “read-only”</td>
</tr>
</tbody>
</table>

### 7.6 Online Information from SAP

More information is available online as follows:

<table>
<thead>
<tr>
<th>Titel</th>
<th>Internet Address</th>
</tr>
</thead>
<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>
</tr>
</tbody>
</table>

### 7.7 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 version: [http://www.ibm.com/support/knowledgecenter/en/SSEPGG](http://www.ibm.com/support/knowledgecenter/en/SSEPGG)

The following tables provide direct links to IBM Db2 online documentation and manuals, listed by database version:

<table>
<thead>
<tr>
<th>IBM Db2 Knowledge Center</th>
<th>Internet Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Version</td>
<td>Internet Address</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>IBM Db2 11.1</td>
<td><a href="http://www-01.ibm.com/support/docview.wss?uid=swg27050624">http://www-01.ibm.com/support/docview.wss?uid=swg27050624</a></td>
</tr>
<tr>
<td>IBM Db2 10.5</td>
<td><a href="http://www.ibm.com/support/docview.wss?uid=swg27038855">http://www.ibm.com/support/docview.wss?uid=swg27038855</a></td>
</tr>
<tr>
<td>IBM Db2 10.1</td>
<td><a href="http://www.ibm.com/support/docview.wss?uid=swg27024478">http://www.ibm.com/support/docview.wss?uid=swg27024478</a></td>
</tr>
</tbody>
</table>
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