Dual-Stack Split for SAP Systems Based on SAP NetWeaver 7.5, and Systems Upgraded to SAP Solution Manager 7.2 Java, on UNIX
The following table provides an overview on the most important document changes:

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
</table>
| 4.0     | 2023-10-09 | Updated version for software provisioning manager 1.0 SP39 (SL Toolset 1.0 SP39)  
Windows operating systems no longer supported for software provisioning manager 1.0 SP39 and higher, according to SAP Note 2998013, have been removed. |
| 3.9.1   | 2023-10-09 | Updated version for software provisioning manager 1.0 SP38 (SL Toolset 1.0 SP38): Last version containing information about no longer supported Windows operating systems according to SAP Note 3346502. |
| 3.9     | 2023-05-26 | Updated version for software provisioning manager 1.0 SP38 (SL Toolset 1.0 SP38)  
Updated version for software provisioning manager 1.0 SP37 (SL Toolset 1.0 SP37) |
| 3.8     | 2023-02-13 | Updated version for software provisioning manager 1.0 SP37 (SL Toolset 1.0 SP37)  
Updated version for software provisioning manager 1.0 SP36 (SL Toolset 1.0 SP36)  
Operating systems and CPU architectures no longer supported according to SAP Note 2998013, have been removed. |
<p>| 3.6.1   | 2022-10-10 | Updated version for software provisioning manager 1.0 SP35 (SL Toolset 1.0 SP35): Last version containing information about no longer supported operating systems and CPU architectures according to SAP Note 2998013. |
| 3.6     | 2022-05-24 | Updated version for software provisioning manager 1.0 SP35 (SL Toolset 1.0 SP35) |
| 3.5     | 2022-02-14 | Updated version for software provisioning manager 1.0 SP34 (SL Toolset 1.0 SP34) |
| 3.4     | 2021-10-11 | Updated version for software provisioning manager 1.0 SP33 (SL Toolset 1.0 SP33) |</p>
<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3</td>
<td>2021-06-21</td>
<td>Updated version for software provisioning manager 1.0 SP32 (SL Toolset 1.0 SP32)</td>
</tr>
<tr>
<td>3.2</td>
<td>2021-02-15</td>
<td>Updated version for software provisioning manager 1.0 SP31 (SL Toolset 1.0 SP31)</td>
</tr>
<tr>
<td>3.1</td>
<td>2020-10-05</td>
<td>Updated version for software provisioning manager 1.0 SP30 (SL Toolset 1.0 SP30)</td>
</tr>
<tr>
<td>3.0</td>
<td>2020-06-08</td>
<td>Updated version for software provisioning manager 1.0 SP29 (SL Toolset 1.0 SP29)</td>
</tr>
<tr>
<td>2.9</td>
<td>2020-01-20</td>
<td>Updated version for software provisioning manager 1.0 SP28 (SL Toolset 1.0 SP28)</td>
</tr>
<tr>
<td>2.8</td>
<td>2019-09-16</td>
<td>Updated version for software provisioning manager 1.0 SP27 (SL Toolset 1.0 SP27)</td>
</tr>
<tr>
<td>2.7</td>
<td>2019-05-27</td>
<td>Updated version for software provisioning manager 1.0 SP26 (SL Toolset 1.0 SP26)</td>
</tr>
<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:**
  - Digital 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*
  - Software provisioning manager Log Files Improvements, documented in: *New Features, Useful Information about the Software Provisioning Manager, Troubleshooting with the Software Provisioning Manager*
  - Enabling IPv6, documented in: *New Features, Prerequisites for Running the Software Provisioning Manager*
  - **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-UI - has been deprecated with SP22. As of SP22, SL-UI is the only available GUI of the software provisioning manager:
    - 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 Software Provisioning Manager (Java SDT GUI only), Starting the Java SDT GUI Separately, Running the Software Provisioning Manager in Accessibility Mode* (general accessibility information was moved to *Useful Information About the Software Provisioning Manager*).
    - The Java SDT GUI-specific information was removed from the common software provisioning manager sections: *Running the Software Provisioning Manager, Useful Information About the Software Provisioning Manager, Interrupted Processing of the Software Provisioning Manager, Troubleshooting with the Software Provisioning Manager*
  - A new section *Using the Step State Editor (SAP Support Experts Only) was added to section Additional Information About the Software Provisioning Manager*
  - Option to install the SCS instance with an embedded SAP Web Dispatcher, documented in: *New Features, SCS Instance with Embedded SAP Web Dispatcher, Additional Parameters for an SAP Web Dispatcher Installation Embedded in the SCS Instance (Optional)*

**i Note**

This feature was retroactively released on 2018-02-12.
<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2</td>
<td>2017-09-11</td>
<td>Updated version for software provisioning manager 1.0 SP21 (SL Toolset 1.0 SP21)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New Features:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Media Signature Check, documented in: <em>New Features, Running the Software Provisioning Manager, Preparing the Dual-Stack Split Media</em></td>
</tr>
<tr>
<td>2.1</td>
<td>2017-05-22</td>
<td>Updated version for software provisioning manager 1.0 SP20 (SL Toolset 1.0 SP20)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New Features:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New SAPUI5-based graphical user interface (GUI) “SL-UI”, documented in: <em>Prerequisites for Running the Software Provisioning Manager, Running the Software Provisioning Manager, Useful Information About the Software Provisioning Manager</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cleanup of operating system users, documented in: <em>SAP System Parameters, Creating Operating System Users and Groups</em></td>
</tr>
<tr>
<td>2.0</td>
<td>2017-02-06</td>
<td>Updated version for software provisioning manager 1.0 SP19 (SL Toolset 1.0 SP19)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New Features:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Verification of the integrity of data units in Software Provisioning Manager, documented in: <em>New Features, Downloading the Software Provisioning Manager Archive</em></td>
</tr>
<tr>
<td>1.9</td>
<td>2016-10-07</td>
<td>Updated version for software provisioning manager 1.0 SP18 (SL Toolset 1.0 SP18)</td>
</tr>
<tr>
<td>1.8</td>
<td>2016-06-06</td>
<td>Updated version for software provisioning manager 1.0 SP17 (SL Toolset 1.0 SP17):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New feature: Move of AS Java target system to different database type during dual-stack split.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Updated or newly created sections in this documentation:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <em>New Features</em> [page 13]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <em>Operating System and Database Migration During Dual-Stack Split</em> [page 21]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <em>Planning Checklist</em> [page 26]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <em>Preparing the Dual-Stack Split Media</em> [page 42]</td>
</tr>
<tr>
<td>1.7</td>
<td>2016-02-15</td>
<td>Updated version for software provisioning manager 1.0 SP10 (SL Toolset 1.0 SP16)</td>
</tr>
<tr>
<td>1.6</td>
<td>2015-10-12</td>
<td>Updated version for software provisioning manager 1.0 SP09 (SL Toolset 1.0 SP15)</td>
</tr>
<tr>
<td>1.5</td>
<td>2015-09-14</td>
<td>Updated version for software provisioning manager 1.0 SP09 (SL Toolset 1.0 SP14)</td>
</tr>
<tr>
<td>Version</td>
<td>Date</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1.4</td>
<td>2015-04-27</td>
<td>Updated version for software provisioning manager 1.0 SP08 (SL Toolset 1.0 SP13)</td>
</tr>
<tr>
<td>1.3</td>
<td>2014-11-24</td>
<td>Updated version for software provisioning manager 1.0 SP07 (SL Toolset 1.0 SP12)</td>
</tr>
<tr>
<td>1.2</td>
<td>2014-07-07</td>
<td>Updated version for software provisioning manager 1.0 SP06 (SL Toolset 1.0 SP11)</td>
</tr>
<tr>
<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>
</tr>
<tr>
<td>1.0</td>
<td>2013-10-28</td>
<td>Initial version</td>
</tr>
</tbody>
</table>
This document explains how to use software provisioning manager 1.0 SP39, which is part of SL Toolset 1.0 SP39, to **split** a dual-stack (ABAP+Java) system based on SAP NetWeaver 7.5, and systems upgraded to SAP Solution Manager 7.2 Java, on UNIX into one ABAP and one Java stack each with its own system ID. You can also use software provisioning manager 1.0 to **remove** the Java stack of your SAP dual-stack-system.

### Note

SAP products based on SAP NetWeaver AS Java 7.10 to 7.40 SR2 are only supported in mainstream maintenance until the end of 2020. Extended maintenance will **not** be provided.

For more information, see SAP Note [2980160](https://support.sap.com/note2980160).

You can download the last published version of the guide set for the last Software Provisioning Manager 1.0 SP30 for out-of-maintenance products (**SWPM10RMSP30_<Version>.SAR**) from SAP Note [2980160](https://support.sap.com/note2980160). The guide set attached to SAP Note [2980160](https://support.sap.com/note2980160) covers only the SAP product versions which have reached end of maintenance.

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 information about software provisioning manager 1.0, see [About Software Provisioning Manager 1.0](#page 11).

For information about SAP system products and releases covered by this guide, see [SAP Products Based on SAP NetWeaver 7.5, and Systems Upgraded to SAP Solution Manager 7.2, Supported for Dual-Stack Split Using Software Provisioning Manager 1.0](#page 12).

For information about supported operating system and database platforms, see the Product Availability Matrix at [https://support.sap.com/pam](https://support.sap.com/pam).

### Related Information

- [Use Cases of Dual-Stack Split](#page 10)
- [About Software Provisioning Manager 1.0](#page 11)
- [Naming Conventions](#page 12)
- [New Features](#page 13)
- [Constraints](#page 16)
- [SAP Notes for the Dual-Stack Split](#page 17)
- [Accessing the SAP Library](#page 18)
- [How to Use this Guide](#page 18)
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 19]
- Split Option: Keep Database [page 23]
- 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 95].
- 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 90].

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

The 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 the software provisioning manager 1.0. The 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 the 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” in this documentation, but the terms “SAPinst” and “sapinst” are still used in:

• The name of the technical framework of the software provisioning manager. For more information about the SAPinst Framework, see SAP Note 2393060.
• Texts and screen elements in the software provisioning manager GUI (SL Common GUI)
• Names of executables, for example sapinst
• Names of command line parameters, for example SAPINST_HTTPS_PORT
• Names of operating system user groups, such as the additional group sapinst

In the following, we generally refer to the software provisioning manager 1.0 as the “software provisioning manager”. We only use the term “software provisioning manager 1.0” if this is required for technical reasons.

Related Information

Preparing the Dual-Stack Split Media [page 42]
1.3 SAP Products Based on SAP NetWeaver 7.5, and Systems Upgraded to SAP Solution Manager 7.2, Supported for Dual-Stack Split Using Software Provisioning Manager 1.0

Here you can find a list of SAP products based on SAP NetWeaver 7.5, and systems upgraded to SAP Solution Manager 7.2, that are supported for dual-stack split using Software Provisioning Manager 1.0, on the specific operating system and database combination described in this guide.

<table>
<thead>
<tr>
<th>SAP Product</th>
<th>Based on the following SAP NetWeaver Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP Business Suite 7i 2013 Support Release 2:</td>
<td>SAP NetWeaver 7.5</td>
</tr>
<tr>
<td>• EHP3 for SAP CRM 7.0 Java Support Release 2 (exception: SAP CRM Application Server Java not supported on SAP NetWeaver 7.5)</td>
<td></td>
</tr>
<tr>
<td>• EHP7 for SAP ERP 6.0 Java Support Release 2 (exception: SAP XECO not supported on SAP NetWeaver 7.5)</td>
<td></td>
</tr>
<tr>
<td>• EHP3 for SAP SRM 7.0 Java Support Release 2</td>
<td></td>
</tr>
</tbody>
</table>

**i Note**

Only for SAP Solution Manager systems upgraded to SAP Solution Manager 7.2

1.4 Naming Conventions

• “usage type”, “technical usage”, and “product instance”
  
As of Software Provisioning Manager 1.0 SP07 (SL Toolset 1.0 SP12), the term “product instance” replaces the terms “usage type” and “technical usage”.

• SAP system refers to SAP NetWeaver system or SAP system based on SAP NetWeaver.

• Dual-stack system refers to SAP NetWeaver ABAP+Java system or SAP ABAP+Java system based on SAP NetWeaver.
## 1.5 New Features

This section provides an overview of the new features in software provisioning manager 1.0.


<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>New SAPinst Framework Version 753</td>
<td>The SAPinst framework patch level has been upgraded from version 749 (SAP Note 2393060 SAPinst Framework 749 Central Note) to 753. For more information, see SAP Note 3207613 SAPinst Framework 753 Central Note.</td>
<td>software provisioning manager 1.0 SP36 (SL Toolset 1.0 SP36)</td>
</tr>
<tr>
<td>Support of AIX 7.3</td>
<td>AIX 7.3 is now supported for all software lifecycle management options from software provisioning manager. For more information, see SAP Note 3104875.</td>
<td>software provisioning manager 1.0 SP34 (SL Toolset 1.0 SP34)</td>
</tr>
<tr>
<td>Switch from 7.21_EXT Kernel to 7.22_EXT Kernel</td>
<td>Kernel 7.21 has reached end of maintenance. In addition, some issues have been fixed with the new 7.22_EXT kernel media.</td>
<td>software provisioning manager 1.0 SP31 (SL Toolset 1.0 SP31)</td>
</tr>
<tr>
<td>Support of Oracle 19</td>
<td>You can now perform all software provisioning manager 1.0 tasks (installation, system copy, system rename) for SAP systems with the Oracle 19 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 SP28 (SL Toolset 1.0 SP28)</td>
</tr>
<tr>
<td>New Look and Feel of SL-UI</td>
<td>As of version 1.0 SP24 Patch Level (PL) 5, the software provisioning manager comes with a new look and feel of the SL-UI. For more information, see <a href="https://blogs.sap.com/2018/11/10/new-look-for-software-provisioning-manager/">https://blogs.sap.com/2018/11/10/new-look-for-software-provisioning-manager/</a>.</td>
<td>software provisioning manager 1.0 SP24, PL05 (SL Toolset 1.0 SP24)</td>
</tr>
<tr>
<td>software provisioning manager Log Files Improvements</td>
<td>software provisioning manager log files are now available immediately after software provisioning manager has been started, that is before a product has been selected on the Welcome screen. For more information, see <a href="https://support.sap.com/pam">Useful Information about Software Provisioning Manager</a> [page 63] and <a href="https://support.sap.com/pam">Troubleshooting with Software Provisioning Manager</a> [page 73].</td>
<td>software provisioning manager 1.0 SP22 (SL Toolset 1.0 SP22)</td>
</tr>
<tr>
<td>Digital Signature Check of Installation Archives</td>
<td>The digital signature of installation archives is checked automatically by software provisioning manager during the Define Parameters phase while processing the Software Package Browser screens. As of now software provisioning manager only accepts archives whose digital signature has been checked. For more information, see <a href="https://support.sap.com/pam">Downloading the SAP Kernel Archives Required for the Dual-Stack Split (Without Operating System and Database Migration)</a> [page 47] and <a href="https://support.sap.com/pam">Downloading the SAP Kernel Archives Required for Operating System and Database Migration</a> [page 48].</td>
<td>software provisioning manager 1.0 SP22 (SL Toolset 1.0 SP22)</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
<td>Availability</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Media Signature Check</td>
<td>The digital signature of media is checked automatically by the software provisioning manager during the <strong>Define Parameters</strong> phase while processing the <strong>Media Browser</strong> screens. The software provisioning manager only accepts media whose digital signature has been checked. For more information, see Preparing the Dual-Stack Split Media [page 42] and Running the software provisioning manager [page 58].</td>
<td>software provisioning manager 1.0 SP21 (SL Toolset 1.0 SP21)</td>
</tr>
<tr>
<td>Support of Oracle 12.2</td>
<td>software provisioning manager (the “software provisioning manager”) now supports dual-stack split for SAP systems with Oracle 12.2.</td>
<td>software provisioning manager 1.0 SP21 (SL Toolset 1.0 SP21)</td>
</tr>
<tr>
<td>SL-UI with SAPINST 7.49</td>
<td>With the new software provisioning manager framework version SAPINST 7.49, you can now use the new SAPUI5-based graphical user interface (GUI) “SL-UI”. For more information, see Useful Information about Software Provisioning Manager [page 63], Running Software Provisioning Manager [page 58].</td>
<td>software provisioning manager 1.0 SP20 (SL Toolset 1.0 SP20)</td>
</tr>
<tr>
<td>Cleanup of Operating System Users</td>
<td>You can now specify during the <strong>Define Parameters</strong> phase that the operating system users are to be removed from group sapinst after the execution of software provisioning manager has completed.</td>
<td>software provisioning manager 1.0 SP20 (SL Toolset 1.0 SP20)</td>
</tr>
<tr>
<td>Verification of Integrity of Data Units in software provisioning manager</td>
<td>The integrity of data units extracted from the software provisioning manager archive is verified. For more information, see Downloading and Extracting the Software Provisioning Manager 1.0 Archive [page 43]. In addition, check SAP Note 1680045 whether additional information is available.</td>
<td>software provisioning manager 1.0 SP19 (SL Toolset 1.0 SP19)</td>
</tr>
<tr>
<td>Support of Linux on IBM Power Systems (little endian)</td>
<td>software provisioning manager supports as of now Linux on IBM Power Systems (little endian) as operating system platform for SAP systems based on SAP NetWeaver 7.5 and higher on SAP HANA. For more information, see SAP Note 2378874.</td>
<td>software provisioning manager 1.0 SP19 (SL Toolset 1.0 SP19)</td>
</tr>
<tr>
<td>Move of AS Java Target System to Different Operating System and Database Type During Dual-Stack Split</td>
<td>When performing a dual-stack split, you can now move the Java stack of the dual-stack system being split to an AS Java system on an operating system or database type different from the operating system and database type of the original dual-stack system. For more information, see Operating System and Database Migration During Dual-Stack Split [page 21].</td>
<td>software provisioning manager 1.0 SP18 (SL Toolset 1.0 SP18)</td>
</tr>
</tbody>
</table>

**Note**

With software provisioning manager 1.0 SP17 this feature was already available but only supported for database migration to SAP Solution Manager 7.2 on SAP HANA database. It is now generally supported.
<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Provisioning for SAP NetWeaver 7.5 and SAP NetWeaver 7.5-based Products</td>
<td>All system provisioning tasks (installation, system copy, system rename) are available for the new SAP NetWeaver 7.5 release. The Dual Stack option, which integrates an AS ABAP and AS Java in a single system (common System ID <code>&lt;SAPSID&gt;</code>, common startup framework, common database), is no longer supported in SAP systems based on SAP NetWeaver 7.5. After upgrading to SAP NetWeaver 7.5 PI, you first have to split the still existing dual stack-system before you can use SAP NetWeaver 7.5 PI productively. For more information, see the Upgrade Master Guide - SAP NetWeaver 7.5 at: <a href="https://help.sap.com/nw75">https://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>
<tr>
<td>Usage Type Library Deprecation for SAP Systems Based on SAP NetWeaver 7.3 EHP1 and Higher</td>
<td>software provisioning manager 1.0 no longer uses the “Usage Types” definitions in its business logic for SAP systems based on SAP NetWeaver 7.3 EHP1 and higher. This is done to unify modeling and terminology across all SAP tools used during the planning, installation and maintenance activities. The “Product Instance” definition replaces “Usage Types” regarding product modeling. For more information, see SAP Notes 1970349 and 1877731.</td>
<td>software provisioning manager 1.0 SP07 (SL Toolset 1.0 SP12)</td>
</tr>
<tr>
<td>Feedback Evaluation Form</td>
<td>SAP SE’s aim is to provide fast and efficient procedures. To evaluate the procedure you just carried out, we need information generated by the tool during process execution and your experience with the tool itself. A new evaluation form contains a simple questionnaire and XML data generated during the procedure. Port 4239 is used for displaying the feedback evaluation form. For more information, see Prerequisites for Running Software Provisioning Manager [page 55].</td>
<td>software provisioning manager 1.0 SP07 (SL Toolset 1.0 SP12)</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
<td>Availability</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Option Verify Signed</td>
<td>The digital signature ensures that the signatory of a digital document can be identified unambiguously and signatory’s name is documented together with the signed document, the date, and the time.</td>
<td>software provisioning manager 1.0 SP06 (SL Toolset 1.0 SP11)</td>
</tr>
</tbody>
</table>

For more information, see SAP Note 1979965.

1.6 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:
  - Effective immediately, the software provisioning manager no longer supports the deprecated CPU architectures and/or operating system versions listed in SAP Note 2998013.

  **i Note**
  - If your current operating system is listed as deprecated in SAP Note 2998013, we strongly recommend that you migrate to a supported platform.
  - If you continue to run Software Provisioning Manager on the deprecated CPU architectures and/or operating system versions listed in SAP Note 2998013, you do so at your own risk and without support from SAP. The software provisioning manager 1.0 SP36 and higher will still run on the deprecated CPU architectures and/or operating system versions listed in SAP Note 2998013 but it may run into an error. When you start the software provisioning manager, you will see a warning like the following: "Platform Support : Support for SAP JVM on PPC64 big endian for Linux ends June 30 th, 2022. See SAP note 2998013." If you run into an issue, you must use the “frozen” software provisioning manager 1.0 SP35 software and the related dual-stack split guide. For more information, see SAP Note 3220901.

  - 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**
  A heterogeneous system setup for a distributed target Java system, where SCS and primary application server (PAS) instance run on different operating systems, is not supported by the Dual Stack Split, neither by split option Split Option: Keep Database [page 23] nor by Split Option: Move Java Database [page 19].

  - 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 19].
  - The dual-stack split procedure with software provisioning manager does not perform the following services provided:
    - Diagnostics Agent installation
For documentation about how to do this, see SAP Note 1858920.

- Installation of Additional Application Server instances
  For documentation about how to do this, see the software provisioning manager 1.0 installation guide for your OS platform and database at: https://support.sap.com/sitoolset

  ➤ System Provisioning ➤ System Provisioning Scenarios ➤ Install a System using Software Provisioning Manager ➤ Installation Guides - Application Server Systems.

**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.

The SAP Host Agent and the Prerequisite Checks are part of the dual-stack split procedure using the software provisioning manager, when you set up the target AS Java system. The Prerequisite Checks are executed always. For the SAP Host Agent, the software update manager offers to update it if it already available in the source system. Otherwise, the software provisioning manager prompts the SAPHOSTAGENT.SAR archive to install it.

- 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 7.9.

### 1.7 SAP Notes for the Dual-Stack Split

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

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

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

The references to the SAP NetWeaver Library documentation in this guide always refer to the following on SAP Help Portal. 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:
  http://help.sap.com/nw75 | Application Help | SAP NetWeaver Library: Function-Oriented View

- SAP Solution Manager 7.2 SR2 only:
  SAP systems based on SAP NetWeaver 7.4:
  http://help.sap.com/nw74 | Application Help | SAP NetWeaver Library: Function-Oriented View

1.9 How to Use this Guide

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

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


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

Procedure

1. You decide on the split option that you want to use. The following split options are available for central, distributed, and high-availability systems:
   - “Move Java Database” (non-MCOD)
   - “Keep Database” (MCOD)
   For more information, see Split Options Covered by this Guide [page 19].
2. You follow the list of steps at the beginning of each phase:
   - Planning [page 26]
   - Preparation [page 30]
   - Splitting [page 52]
   - Follow-up Activities [page 79]
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 19]
Split Option: Keep Database [page 23]

2.1 Split Option: Move Java Database

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

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

Move Java Database for Standard Systems

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

These are the following instances:

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

i Note

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

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

These are the following instances:

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

**Note**

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

After the installation has finished and the System Landscape Directory has been reconfigured, the tool removes all Java parts from the dual-stack system.
During the export of the Java stack in the “Move Database” scenario, you can specify an operating system and database type that is different from the original operating system and database type of the source dual-stack system.

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

**Recommendation**

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

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

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

**i Note**

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

**Related Information**

Split Option: Move Java Database [page 19]
Preparing the Dual-Stack Split Media [page 42]
2.2 Split Option: Keep Database

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

→ Recommendation

MCOD is generally available and there is no intention to de-support this installation feature. However, SAP recommends that customers should not use the MCOD feature when installing new systems. The major drawbacks are as follows:

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

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

Additional information is available in SAP Note 2146542.

Keep Database for Central and Distributed Systems

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

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

ASCS = ABAP Central Services Instance
SCS = Java Central Services Instance
PAS = Primary Application Server Instance
DB = Database Instance
Dual-Stack Split for SAP Systems Based on SAP NetWeaver 7.5, and Systems Upgraded to SAP Solution Manager 7.2 Java, on UNIX

Split Options Covered by this Guide

Split Option: Keep Database for Distributed Systems

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

3.1 Planning Checklist

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

→ Recommendation

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

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

i Note

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

https://support.sap.com/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.

Prerequisites

You have decided on your split option [page 19].

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 29].
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 29].
  - 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:**
  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 <SAPSIDS>, 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 <SAPSIDS>, but with the database schema named like the old <SAPSIDS>. 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.

• SAP Kernel archives (*.SAR files) downloaded from https://launchpad.support.sap.com/#/softwarecenter/repo.
  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 21].

4. Depending on your split option, proceed in one of the following ways:
   • “Move Java Database”
     • SAP MaxDB:
       • You plan your system configuration.
         For more information, see SAP MaxDB System Configuration in the installation guide.
       • For the database installation, you decide how to distribute your system components to disk.
         For more information, see Distribution of SAP System Components to Disk in the installation guide.
     • Oracle database: For the database installation, you decide how to distribute your database components to disk.
       To calculate how much storage is required for your Oracle database, see section Database System Configuration in the SAP Library [page 18] at:
       | Function-Oriented View > Database Administration > Database Administration for Oracle > SAP Database Guide: Oracle > Getting Started with Oracle and the SAP System |
     • IBM Db2 for Linux, UNIX, and Windows: You plan the setup of your database carefully.
       For more information, see Setup of Database Layout in the installation guide.
     • IBM Db2 for z/OS: You plan your system configuration.
       For more information, see System Configuration in the installation guide.
   • “Keep Database”
     • SAP MaxDB only: You plan your system configuration.
       For more information, see SAP MaxDB System Configuration in the installation guide.
     • IBM Db2 for z/OS only: You plan your system configuration.
       For more information, see System Configuration in the installation guide.

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

6. You plan for adapting the transport routes within your system landscape. For more information, see Splitting Within a System Landscape [page 90].

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

8. You can continue with Preparation [page 30].
3.2 User Management

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

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

In both cases, manual configuration is not required.

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

For more information, see SAP Note 718383.

**Note**

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

4.1 Preparation Checklist

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

**Note**

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

1. You make sure that the required operating system users and groups are created.
   To create the groups and users automatically, run the tool on the host where the SAP Java system is to be
   installed and choose | Dual-Stack Split | Operating System Users and Groups |
   For more information, see Creating Operating System Users and Groups [page 31].
2. You set up file systems and make sure that the required disk space is available for the directories to be
   created during the installation of the Java system.
   For more information, see Required File Systems and Directories in the installation guide.
3. IBM Db2 for Linux, UNIX, and Windows only: JSizeCheck requires monitoring functions that are no
   longer available with IBM Db2 for Linux, UNIX, and Windows version 10.5 by default. Before you start a Java
   export, you have to create these monitoring functions as follows:
   1. Log on as user db2<dbsid>.
   2. Execute the following command:
      `db2updv105 -t -d <DBSID> -u db2<dbsid> -p <password>`
4. IBM Db2 for z/OS: If you want to apply split option “Keep Database”, ensure that the path of the /sapmnt
directory is identical on both the source and the target application server. For example, do not use /sapfs/sapmnt
on the source application server and /sapmnt on the target application server.
5. If applicable, you set up virtual host names.
   For more information, see Using Virtual Host Names [page 41].
6. If you want to install a high-availability system, you perform switchover preparations.
   For more information, see Performing Switchover Preparations for High-Availability in the installation guide.
7. If you want to share the transport directory trans from another system, you export this directory to your
   installation hosts.
   For more information, see Exporting and Mounting the Transport Directory [page 77].
8. If the Java stack is used as non-ABAP target system, we recommend that you clean up the import queue by importing all transport requests in the queue. If this is not possible, you must copy the import buffer after performing the dual-stack split. For more information, see Configuring Target Systems for Non-ABAP Transports [page 88].

9. If you want to use customized UME data source configuration file, see the SAP Library [page 18] for your release at:

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

10. You make sure that the required media are available on each host.

   You can download the Java stack and database installation media from SAP Service Marketplace as described in Preparing the Dual-Stack Split Media [page 42].

11. You can continue with Splitting the Dual-Stack System [page 52].

### 4.2 Creating Operating System Users and Groups

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

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

<table>
<thead>
<tr>
<th>i Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Db2 for z/OS only:</td>
</tr>
<tr>
<td>Users and groups that need to be created on z/OS need to be created manually before the installation is started. For more information, see Necessary z/OS Group and User IDs [page 39].</td>
</tr>
</tbody>
</table>

End of ‘Platform’: z/OS

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

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

<table>
<thead>
<tr>
<th>△ Caution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The user ID (UID) and group ID (GID) of SAP users and groups must be identical for all servers belonging to an SAP system.</td>
</tr>
<tr>
<td>This does not mean that all users and groups have to be installed on all SAP servers.</td>
</tr>
</tbody>
</table>
IBM Db2 for z/OS only:

On z/OS, instead of NIS, RACF may be used. For more information, see section Security Settings for z/OS in the Security Guide for SAP on IBM Db2 for z/OS, which is available on the SAP Help Portal at http://help.sap.com/viewer/db2_security_guide.

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

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

Recommendation

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

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

- You start the software provisioning manager and choose Dual-Stack Split Operating System Users and Groups. For more information, see Running Software Provisioning Manager [page 58].
- You create operating system users and groups manually. Check the settings for these operating system users.

User Settings

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

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

- **HP-UX, Oracle Solaris:** Make sure that you have set the limits listed below for operating system users root, <sapsid>adm, and your database-specific operating system users (see also section Creating Operating System Users and Groups and Running the Software Provisioning Manager in the installation guide).

  **Linux:** Starting with SUSE Linux Enterprise Server 15, Red Hat Enterprise Linux 8, and Oracle Linux 8, and the respective SAP kernel patch levels, native support for the software suite systemd for Linux is available for SAP systems. If you use Linux with systemd, ignore the following procedures for setting limits.
because there’s no need to change the limits. Make sure that polkit is installed. systemd requires polkit for authorization checks for the `<sapsid>adm` user. For more information about Linux with systemd, see SAP Note 3139184.

If you are still using a Linux version or an SAP kernel patch that is not released for native systemd support with SAP systems (see 3139184), proceed as follows: Make sure that you have set the limits as outlined below for operating system users root, `<sapsid>adm`, and your database-specific operating system users (see also section Creating Operating System Users and Groups and Running the Software Provisioning Manager in the installation guide).

⚠️ Caution

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

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

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

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

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

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

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

Do not delete any shell initialization scripts in the home directory of the operating system users. This applies even if you do not intend to use the shells that these scripts are for.

**Oracle Database only:**
If you use NFS-V4 file system, you have to create the ora<dbsid> user and - if your database release is Oracle 12 - the oracle user on the NFS server. You can do this either manually or by running Operating System Users and Groups. This user must have the same user ID as the ora<dbsid> user and - if your database release is Oracle 12 - the oracle user on the database server. Otherwise, you see the error message FSL-02098 Could not change owner of ... during the installation of the database instance.

**SAP MaxDB only:**
If you create the sdb user manually, make sure that you lock it for the installation. In most cases, the software provisioning manager locks this user after it has been created.

If you install an SAP system with instances distributed over several hosts, make sure that the following requirements are met:

- The user ID (UID) and group ID (GID) of each operating system user must be unique and the same on each instance host that belongs to the same SAP system.
- Make sure that the group ID of group sapinst is always different from the group ID of any other group (for example, of group sapsys) used during the installation. For example, if you want to install an additional application server instance for an existing SAP system, you must make sure that the group ID of group sapinst created on the host of the additional application server instance is different from the group ID of any other group on the primary application server instance host of the existing SAP system.
- If you use local operating system user accounts instead of central user management (for example, NIS), users <sapsid>adm, sapadm, and the database operating system user must have the same password on all hosts.

**SAP HANA Database only:**
If you use local operating system user accounts, make sure that you install your SAP system in Custom mode and specify suitable IDs for user <sapsid>adm and group sapsys on all hosts. The IDs have to be the same on all hosts. If you choose Typical mode, you are not asked to specify the user and group IDs.
• If you create operating system users manually or use already existing operating system users, make sure that the home directory for each of these users is not the root directory (/).  
• Make sure that the home directory of user \(<\text{sapsid}>\text{adm}\) is not critical for recursive changes on permissions.  
When operating system users are created by the software provisioning manager, the permissions on the home directories of these users are changed recursively. This can cause unpredictable errors if you define a critical home directory.  
For example, the home directory must not be / or /usr/sap.  

• Only valid for 'Platform': HP-UX  
HP-UX: To prevent terminal query errors in the \(<\text{sapsid}>\text{adm}\) environment, comment out the line `eval 'tset -s -Q -m ':?hp'` in the /etc/skel/.login script. For more information, see SAP Note 1038842.  

End of 'Platform': HP-UX

Operating System Users and Groups

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

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

→ Recommendation

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

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

IBM Db2 for z/OS:

Users and Their Groups

<table>
<thead>
<tr>
<th>User</th>
<th>Primary Group</th>
<th>Secondary Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>(&lt;\text{sapsid}&gt;\text{adm})</td>
<td>sapsys</td>
<td>sapinst</td>
</tr>
<tr>
<td>root</td>
<td>sapsys</td>
<td>sapinst</td>
</tr>
</tbody>
</table>

Groups and Members

<table>
<thead>
<tr>
<th>Groups</th>
<th>Members</th>
</tr>
</thead>
</table>
| sapsys | • \(<\text{sapsid}>\text{adm}\)  
         | • root  |

Dual-Stack Split for SAP Systems Based on SAP NetWeaver 7.5, and Systems Upgraded to SAP Solution Manager 7.2 Java, on UNIX
### SAP MaxDB and SAP HANA Database:

#### Users and Groups

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

#### Groups and Members

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

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

#### Users and Groups

<table>
<thead>
<tr>
<th>User</th>
<th>Primary Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superuser of the UNIX</td>
<td>No primary group is assigned by the software provisioning manager (additional</td>
</tr>
<tr>
<td>operating system root</td>
<td>group is sapinst)</td>
</tr>
</tbody>
</table>

---

Dual-Stack Split for SAP Systems Based on SAP NetWeaver 7.5, and Systems Upgraded to SAP Solution Manager 7.2 Java, on UNIX

Preparation
<table>
<thead>
<tr>
<th>User</th>
<th>Primary Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP system administrator</td>
<td>sapsys (db&lt;dbsid&gt;ctl as secondary group)</td>
</tr>
</tbody>
</table>

**Java connect user sap<spsid>db**

<table>
<thead>
<tr>
<th>Members</th>
<th>db&lt;dbsid&gt;mon</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>i Note</strong></td>
<td>Only used on the database host.</td>
</tr>
</tbody>
</table>

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

| **i Note**                    | Only used on the database host.                               |

### Groups and Members

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

### Oracle:

**SAP System Users and Groups**

<table>
<thead>
<tr>
<th>User</th>
<th>Primary Group</th>
<th>Additional Groups</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>root</td>
<td>No primary group assigned by the software provisioning manager.</td>
<td>sapinst</td>
<td>Superuser of the UNIX operating system</td>
</tr>
<tr>
<td>&lt;spsid&gt;adm</td>
<td>sapsys</td>
<td>oper, dba, sapinst</td>
<td>SAP system administrator and for Oracle 12 and higher the default database administrator</td>
</tr>
<tr>
<td>ora&lt;dbsid&gt;</td>
<td>dba</td>
<td>oper, sapinst, oinstall</td>
<td>Database administrator This user is only required on the host where the database instance runs.</td>
</tr>
<tr>
<td>User</td>
<td>Primary Group</td>
<td>Additional Groups</td>
<td>Comment</td>
</tr>
<tr>
<td>----------</td>
<td>---------------</td>
<td>--------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>oracle</td>
<td>dba</td>
<td>oper,sapinst,asmoper,asmadmin,asmdba,oinsta</td>
<td>Oracle Software Owner and database administrator</td>
</tr>
<tr>
<td></td>
<td></td>
<td>l</td>
<td>This user is only required on the host where the database instance runs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>This user is only required for Oracle 12 and higher.</td>
</tr>
</tbody>
</table>

**SAP System Groups and Members**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Members</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>sapsys</td>
<td>&lt;sapsid&gt;adm</td>
<td></td>
</tr>
<tr>
<td>oper</td>
<td>&lt;sapsid&gt;adm, ora&lt;dbsid&gt;, oracle</td>
<td>(always required for Oracle 12 and higher)</td>
</tr>
<tr>
<td>dba</td>
<td>&lt;sapsid&gt;adm, ora&lt;dbsid&gt;, oracle</td>
<td>(always required for Oracle 12 and higher)</td>
</tr>
<tr>
<td>sapinst</td>
<td>root,&lt;sapsid&gt;adm, ora&lt;dbsid&gt;, oracle</td>
<td>(always required for Oracle 12 and higher)</td>
</tr>
<tr>
<td>asmoper</td>
<td>&lt;sapsid&gt;adm</td>
<td>(always required for Oracle 12 and higher), oracle</td>
</tr>
<tr>
<td>asmadmin</td>
<td>oracle</td>
<td>(always required for Oracle 12 and higher)</td>
</tr>
<tr>
<td>asmdba</td>
<td>&lt;sapsid&gt;adm</td>
<td>(always required for Oracle 12 and higher), oracle</td>
</tr>
<tr>
<td>oinstall</td>
<td>oracle</td>
<td>(always required for Oracle 12 and higher), ora&lt;dbsid&gt;</td>
</tr>
</tbody>
</table>

**SAP Adaptive Server Enterprise:**

**Users and Groups**

<table>
<thead>
<tr>
<th>User:</th>
<th>Primary Group:</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIX superuser root</td>
<td></td>
</tr>
<tr>
<td>No primary group assigned by SAPinst (group sapinst is assigned as secondary group).</td>
<td></td>
</tr>
<tr>
<td>SAP system administrator &lt;sapsid&gt;adm</td>
<td>sapsys</td>
</tr>
<tr>
<td>sapsys (sapinst as secondary group)</td>
<td></td>
</tr>
<tr>
<td>syb&lt;dbsid&gt;</td>
<td>sapsys</td>
</tr>
</tbody>
</table>

**SAP Host Agent:**
User and Groups of the SAP Host Agent

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

**Note**

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

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

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

End of 'Platform': AIX

Groups and Members of the SAP Host Agent User

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

4.3 Necessary z/OS Group and User IDs

This topic is only valid for 'Platform': z/OS

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

For more information, see https://help.sap.com/viewer/db2_security_guide

Users and Groups for z/OS

Necessary z/OS Group and User IDs

<table>
<thead>
<tr>
<th>Group/User ID</th>
<th>Description</th>
<th>Usage Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Administration User ID</td>
<td>Temporary user needed for the SAP installation.</td>
<td>AS Java</td>
</tr>
</tbody>
</table>
### Users and Groups for z/OS UNIX System Services

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

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

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

#### Necessary z/OS UNIX System Services Group and User IDs

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

⚠️ Caution

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

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

Enhanced ASCII Setup on z/OS

To enable enhanced ASCII support, see the procedure in the Planning Guide for SAP on IBM Db2 for z/OS, section `ASCII/EBCDIC Considerations`, which you can find under https://help.sap.com/viewer/db2_planning_guide.

End of 'Platform': z/OS

4.4 Using Virtual Host Names

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

Prerequisites

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

Context
Procedure

Assign the required virtual host names to the instance to be installed by specifying them in one of the following ways:

- By starting the software provisioning manager with the `SAPINST_USE_HOSTNAME` property. For more information, see Running Software Provisioning Manager [page 58].
- Alternatively by specifying virtual host names in the `<Instance Name> Host Name` field of the `<Instance Name> Instance` screen.

4.5 Performing a Full System Backup

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

- If you decided to use the split option “Keep Database”, you **must** perform a full system backup of the dual-stack system before you start the split procedure.
- If you decided to use the split option “Move Java Database”, you do not need to perform a backup before you start the split procedure.

More Information

For more information about backing up your database, see the database-specific backup and recovery documentation in the SAP Library [page 18] for your release and database under **Database Administration**.

4.6 Preparing the Dual-Stack Split Media

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

- The Software Provisioning Manager archive containing the software provisioning manager. 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 21]), 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.

**i Note**

The digital signature of media is checked automatically by the software provisioning manager during the **Define Parameters** phase while processing the **Media Browser** screens. The software provisioning manager only accepts media whose digital signature has been checked.

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

### Related Information

- Downloading and Extracting the Software Provisioning Manager 1.0 Archive [page 43]
- Using the Physical Media from the Installation Package [page 45]
- Downloading the SAP Kernel Archives Required for the Dual-Stack Split (Without Operating System and Database Migration) [page 47]
- Downloading the SAP Kernel Archives Required for Operating System and Database Migration [page 48]
- Downloading Complete Installation Media [page 49]

### 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.

### Prerequisites

- Make sure that you are logged on as a user with `root` authorizations, and that the download directory has at least the permissions 755.
- Make sure that you use the latest version of the SAPCAR tool when manually extracting the software provisioning manager archive. You need the SAPCAR tool to be able to unpack and verify software component archives (*.SAR files). *.SAR is the format of software lifecycle media and tools that you can download from the SAP Software Download Center.

**i Note**

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

1. Go to https://launchpad.support.sap.com/#/softwarecenter SUPPORT PACKAGES & PATCHES By Category SAP TECHNOLOGY COMPONENTS SAPCAR.

2. Select the SAPCAR for your operating system and download it to an empty directory.

3. Even if you have the latest SAPCAR already available, we strongly recommend that you verify its digital signature anyway, unless you downloaded it directly from https://launchpad.support.sap.com/#/softwarecenter yourself. You can do this by verifying the checksum of the downloaded SAPCAR tool:
   1. Depending on what operating system you are using, compute a hash of the downloaded SAPCAR tool, using the SHA-256 algorithm used by SAP.
   2. Now verify the digital signature of the downloaded SAPCAR tool by comparing the hash with the checksum (generated by SAP using the SHA-256 algorithm) from the Related Info column on the right-hand side of the place where you downloaded the SAPCAR tool.

4. To improve usability, we recommend that you rename the executable to sapcar.

For more information about SAPCAR, see SAP Note 212876.

Procedure

1. Download the latest version of the Software Provisioning Manager 1.0 archive SWPM10SP<Support_Package_Number>_<Version_Number>.SAR from:
   
https://support.sap.com/sltoolset System Provisioning Download Software Provisioning Manager

2. Using the latest version of SAPCAR, you can verify the digital signature of the downloaded SWPM10SP<Support_Package_Number>_<Version_Number>.SAR archive as follows:
   a. Get the latest version of the SAPCRYPTOLIB archive to your installation host as follows:
      1. Go to https://launchpad.support.sap.com/#/softwarecenter SUPPORT PACKAGES & PATCHES and search for “sapcryptolib”.
      2. Select the archive file for your operating system and download it to the same directory where you have put the SAPCAR executable.
      3. Use the following command to extract the SAPCRYPTOLIB archive to the same directory where you have put the SAPCAR executable:
         SAPCAR -xvf sapcryptolibp_84...sar -R <target directory>
      4. Download the Certificate Revocation List from https://tcs.mysap.com/crl/crlbag.p7s and move it to the same directory.
   b. Verify the digital signature of the downloaded SWPM10SP<Support_Package_Number>_<Version_Number>.SAR archive by executing the following command:

      Note
Check SAP Notes 2178665 and 1680045 whether additional information is available.
3. Unpack the Software Provisioning Manager archive to a local directory using the following command:

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

**Note**

Make sure that all users have at least read permissions for the directory to which you unpack the Software Provisioning Manager archive.

**Caution**

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

### 4.6.2 Using the Physical Media from the Installation Package

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

**Context**

The digital signature of installation media is checked automatically by the software provisioning manager during the Define Parameters phase while the Media Browser screens are processed (see also Running Software Provisioning Manager [page 58]). The software provisioning manager only accepts media whose digital signature has been checked.

**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>
</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 43].
   b. Make the installation media containing the software to be split available.

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

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

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

Context

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

i Note

The digital signature of installation archives is checked automatically by the software provisioning manager [page 58] during the Define Parameters phase while processing the Software Package Browser screens. The software provisioning manager only accepts archives whose digital signature has been checked. After scanning the archives and verifying the digital 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.

Procedure

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


→ Recommendation

It is highly recommended that you always choose the highest SP version of the SAPHOSTAGENT<SP-version>.SAR archive.
4.6.4 Downloading the SAP Kernel Archives Required for Operating System and Database Migration

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

Context

The digital signature of installation archives is checked automatically by the software provisioning manager [page 58] during the Define Parameters phase while processing the Software Package Browser screens. The software provisioning manager only accepts archives whose digital signature has been checked. After scanning the archives and verifying the digital 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.

Procedure

2. Choose the required software component and release:
   - For an SAP NetWeaver system choose SAP NetWeaver and complementary products SAP NetWeaver <Release> Application Server Java
   - For an SAP Business Suite system based on SAP NetWeaver, choose SAP Application Components <SAP CRM | SAP ERP | SAP SCM | SAP SRM> <Release> Entry by Component <Java Product Instance>
3. Choose the required package:

   **i Note**
   Select archives that correspond to the operating system type for the target Java system that is to be split off from the existing dual-stack.

   **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 **64-BIT UNICODE**, then `SAPEXEDB<Version>.SAR` must also be of version **64-BIT UNICODE**.

- `SAPEXE<Version>.SAR`:
  - `SAP KERNEL <Version> <UC | NUC> <Operating System> <Database independent>`
- `SAPEXEDB<Version>.SAR`:
  - `SAP KERNEL <Version> <UC | NUC> <Operating System> <Database>`
- `igsexe<version>.sar`:
  - `SAP IGS <Version> <Operating System>`
- `SAPJVM<Version>.SAR`:
  - `SAP JVM <Version> <Operating System>`
- 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 21]

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 43].
2. Identify all download objects that belong to one medium according to one of the following:

   i 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://launchpad.support.sap.com/#/softwarecenter/SUPPORT PACKAGES & PATCHES/By Category/ADDITIONAL COMPONENTS/SAP KERNEL/SAP KERNEL 64-BIT UNICODE/SAP KERNEL <Version> 64-BIT UNICODE/<Select your OS>.

- Select #DATABASE INDEPENDENT to download the database-independent parts of the kernel.

Example

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAPEXE_1110-80002623.SAR</td>
<td>Kernel Part I (753) (*)</td>
</tr>
<tr>
<td>SAPEXE_1118-80002612.SAR</td>
<td></td>
</tr>
</tbody>
</table>

- Select <Your DB> to download the database-independent parts of the kernel.

Example

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAPEXEDB_1110-80002623.SAR</td>
<td>Kernel II (753) (*)</td>
</tr>
</tbody>
</table>

Note

You can only download complete kernel media for kernel release 7.22, which can only be used for provisioning of SAP products based on SAP NetWeaver 7.3 EHP1. For all remaining SAP products, you have to download kernel media from https://launchpad.support.sap.com/#/softwarecenter.

- To download the remaining 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:

<Kernelpart>_<Sequence Number>-<Material Number>

Example

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAPEXE_1110-80002623.SAR</td>
<td>Kernel Part I (753) (*)</td>
</tr>
<tr>
<td>SAPEXE_1111-80002623.SAR</td>
<td>Kernel Part I (753) (*)</td>
</tr>
<tr>
<td>SAPEXE_1112-80002623.SAR</td>
<td>Kernel Part I (753) (*)</td>
</tr>
</tbody>
</table>
3. Download the objects to the download directory.

4. To correctly re-combine the media that are split into small parts, unpack all parts into the same directory. In the unpacking directory, the system creates a subdirectory with a short text describing the medium and copies the data into it. The data is now all in the correct directory, the same as on the medium that was physically produced. For more information, see SAP Note 1258173.

⚠️ Caution

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

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

5.1  Splitting Checklist

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

- “Move Java Database”
- “Keep Database”

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

Note

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

https://support.sap.com/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.

Move Java Database

Central System

1. You check the prerequisites [page 55] and export the Java stack using the software provisioning manager [page 58].

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 94].

2. If AS Java has been disabled, you restart the source system.
3. You check the prerequisites [page 55] and run the software provisioning manager [page 58] to install a Java only system using the export from the dual-stack 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. **Oracle**: You install the Oracle database software.
   For more information, see *Installing the Oracle Database Software* in the installation guide.

5. You continue with *Follow-Up Activities [page 79]*.

---

**Distributed and High-Availability System**

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

2. On the primary application server instance host of the dual-stack system, you check the prerequisites [page 55] and run the software provisioning manager [page 58] 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 94]*.

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

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

5. You check the prerequisites [page 55] and run the software provisioning manager [page 58] 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.

6. You check the prerequisites [page 55] and run the software provisioning manager [page 58] to install a database instance for the Java target system using the export from the dual-stack system.

7. You check the prerequisites [page 55] and run the software provisioning manager [page 58] to install a primary application server instance for the Java target system using the export from the dual-stack system.

8. You continue with *Follow-Up Activities [page 79]*.
Keep Database

1. On the **primary application server instance host** of the dual-stack system, you **check the prerequisites** [page 55] and **run the software provisioning manager** [page 58] 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 94].

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

3. You **check the prerequisites** [page 55] and **run the software provisioning manager** [page 58] to install a central services instance for the Java target system.

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

4. **All databases except IBM Db2 for z/OS:** On the **database instance host** of the dual-stack system, you **check the prerequisites** [page 55] and **run the software provisioning manager** [page 58] to adapt the database for the Java target system.

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

5. **IBM Db2 for z/OS only:** On the **primary application server instance host** of the dual-stack system, you **check the prerequisites** [page 55] and **run the software provisioning manager** [page 58] to adapt the database for the Java target system.

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

6. You **check the prerequisites** [page 55] and **run the software provisioning manager** [page 58] 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 79].
5.2 Prerequisites for Running Software Provisioning Manager

Make sure you fulfill the following prerequisites before running the software provisioning manager.

- For the SL-UI, 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-UI:
    - 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-UI 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-UI.

⚠️ Caution

The software provisioning manager uses a self-signed certificate, which is used temporarily only while the software provisioning manager is running. This certificate is not trusted by the browser unless it is imported manually by the user running the software provisioning manager. This behavior is intentionally designed in this way because - unlike ordinary public web servers - the software provisioning manager has different usage patterns. You must configure your browser to trust the self-issued certificate of the software provisioning manager after carefully performing the “thumbprint” verification described in Running Software Provisioning Manager [page 58]. For more information about adding trusted certificates, see the documentation of your browser.

For more information about the SL-UI, see Useful Information about Software Provisioning Manager [page 63].

- The software provisioning manager uses shell scripts to obtain the environment for user `<sapsid>adm`.
  - If user `<sapsid>adm` does not yet exist, a working `/bin/csh` must be available on the host where you run the software provisioning manager. For more information about recommended login shells, see SAP Note 202227.
  - If `<sapsid>` already exists and uses `csh`, before you start the software provisioning manager, execute the following command as user `<sapsid>` to make sure that the `csh` scripts are up-to-date, depending on your UNIX OS platform:
    ```
    /bin/csh -c "source /home/<sapsid>/cshrc;env" or /bin/csh -c "source /home/<sapsid>/login;env"
    ```
  - Make sure that your operating system does not delete the contents of the temporary directory `/tmp` or the contents of the directories to which the variables `TEMP`, `TMP`, or `TMPDIR` point, for example by using a `crontab` entry.
    - Make sure that the temporary directory has the permissions 755.
  - Make sure that you have at least 700 MB of free space in the installation directory for each installation option. In addition, you need 700 MB free space for the software provisioning manager executables. If you cannot provide 700 MB free space in the temporary directory, you can set one of the environment variables `TEMP`, `TMP`, or `TMPDIR` to another directory with 700 MB free space for the software provisioning manager executables.
You can set values for the TEMP, TMP, or TMPDIR environment variable to an alternative installation directory as described in section Useful Information about Software Provisioning Manager [page 63].

- Make sure that umask is set to 022 for the user with root permissions that you want to use for running the software provisioning manager.
  
  As the user with root permissions that you want to use for running the software provisioning manager, enter the following command: `umask 022`

- Only valid for ‘Platform’: AIX

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

  End of ‘Platform’: AIX

- Only valid for ‘Platform’: HP-UX, Linux, Oracle Solaris

  Linux: On Linux, starting with SLES 15, RHEL 8 and Oracle Linux 8, and respective recent SAP kernel patch levels, there is native integration into systemd. In this case, limits for operating system users root, <sapsid>adm, and your database-specific operating system users do not need to be set any longer. Make sure that polkit is installed. systemd requires polkit for authorization checks for the <sapsid>adm user. For older Linux versions and SAP kernel patch levels, however, you must still set these limits. For more information about how to proceed for older Linux versions, see the following instructions. For more information about Linux with systemd and the relevant SAP kernel patch levels, see SAP Note 3139184.

  HP-UX, Oracle-Solaris, Linux (versions lower than SLES 15, RHEL 8 and Oracle Linux 8 or lower SAP kernel patch levels): Make sure that you have set the limits for operating system users root, <sapsid>adm, and your database-specific operating system users (see also sections Creating Operating System Users and Groups and Running the Software Provisioning Manager in the installation guide).

⚠️ Caution

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

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

°F Example

The following table lists example output taken from SUSE Linux Enterprise Server 15 (x86_64).

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

Dual-Stack Split for SAP Systems Based on SAP NetWeaver 7.5, and Systems Upgraded to SAP Solution Manager 7.2 Java, on UNIX

Splitting the Dual-Stack System
• Using **sh** or **ksh** shell, the output of command `ulimit -a` needs to be at least as follows:


<table>
<thead>
<tr>
<th>Output</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>memoryuse</td>
<td>unlimited</td>
</tr>
</tbody>
</table>

---

**Example**

The following table lists example output taken from SUSE Linux Enterprise Server 15 (x86_64).

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

---

**End of Platform**: HP-UX, Linux, Oracle Solaris

• 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 software provisioning manager and the SL-UI.
  
  If this port cannot be used, you can assign a free port number by executing `sapinst` with the following command line parameter:

  `SAPINST_HTTPS_PORT=<Free Port Number>`

  • Port 4239 is used by default for displaying the feedback evaluation form at the end of the software provisioning manager processing.
  
  The filled-out evaluation form is then sent to SAP using HTTPS.
  
  If this port cannot be used, you can assign a free port number by executing `sapinst` with the following command line parameter:

  `SAPINST_HTTP_PORT=<Free Port Number>`

• If you want to change the host name of your system, change the computer name and the host name on OS level and make sure that the host name resolution and UNC paths work.
  
  For more information, see SAP Note 129997.
  
  If you want to change the virtual host name, see SAP Note 962955.

• Make sure that you have specified the most important SAP system parameters as described in **Basic SAP System Installation Parameters** in the installation documentation of your release **before** you start the software provisioning manager.
• **IBM Db2 for z/OS**: Check that your hosts meet the requirements for the software provisioning manager options that you want to perform.

• If you want to perform a distributed or a high-availability installation, make sure that you have exported and mounted global directories. For more information, see *Exporting and Mounting Global Directories* [page 75].

• **IBM Db2 for Linux, UNIX, and Windows**: Make sure that you have carefully planned your database layout, in particular the tablespace layout, as described in *Setup of Database Layout* in the installation documentation of your release.

• **IBM Db2 for Linux, UNIX, and Windows, Solaris SPARC only**: If you want to set up the Db2 high-availability cluster solution SA MP, make sure that you have read the document *IBM Db2 High Availability Solution: IBM Tivoli System Automation for Multiplatforms* (see *Online Information from SAP* [page 96]).

• 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 Software Provisioning Manager

This section describes how to run the software provisioning manager to perform the dual-stack split.

#### Prerequisites

For more information, see *Prerequisites for Running Software Provisioning Manager* [page 55].

#### Context

The software provisioning manager has a web browser-based GUI named “SL-UI of the software provisioning manager” - “SL-UI” for short.

This procedure describes an installation where you run the software provisioning manager and use the SL-UI, that is you can control the processing of the software provisioning manager from a browser running on any device.

For more information about the SL-UI, see *Useful Information about Software Provisioning Manager* [page 63].

#### Procedure

1. Log on to the host where you want to run the software provisioning manager.
Make sure that you log on as a user with root permissions.

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

⚠️ Caution
Do not use an existing <sapsid>adm user or built-in administrator.

If your security policy requires that the person running the software provisioning manager is not allowed to know the credentials of a user with root permissions on the host where the software provisioning manager is to perform the dual-stack split, you can specify another operating system user for authentication purposes. You do this using the SAPINST_REMOTE_ACCESS_USER parameter when starting the sapinst executable from the command line. You 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 42].

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

Only valid for 'Platform': Oracle Solaris

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

End of 'Platform': Oracle Solaris

3. Start the software provisioning manager as follows:

Open a command prompt and enter the following command:

/Path_To_Unpack_Directory/sapinst

The software provisioning manager GUI starts automatically by displaying the Welcome screen.

ℹ️ Note
If you want to use a virtual host name, start the software provisioning manager with the software provisioning manager property SAPINST_USE_HOSTNAME as follows:

/Path_To_Unpack_Directory/sapinst SAPINST_USE_HOSTNAME=<Virtual_Host_Name>

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

4. The software provisioning manager now starts and waits for the connection with the SL-UI.
You can find the URL you require to access the SL-UI at the bottom of the shell from which you are running the software provisioning manager.

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 software provisioning manager as described in Useful Information about Software Provisioning Manager [page 63].
2. Restart the software provisioning manager from the command line with the `SAPINST_GUI_HOSTNAME=<hostname>` property.
   You can use a fully-qualified host name.

If you have a supported web browser (see Prerequisites for Running Software Provisioning Manager [page 55]) installed on the host where you run the software provisioning manager, you can open this URL directly in the shell. Otherwise, open the URL in a supported web browser that runs on another device.

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

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

Proceed as follows to avoid security risks such as a man-in-the-middle attack:
1. Click on the certificate area on the left hand side in the address bar of your browser, and view the certificate.
2. Open the certificate fingerprint or thumbprint, and compare all hexadecimal numbers to the ones displayed in the console output of the software provisioning manager.

Proceed as follows to get the certificate fingerprint or thumbprint from the server certificate printed in the software provisioning manager console:
1. Go to the `sapinst_exe.xxxxxx.xxxx` directory in the temporary directory to which the software provisioning manager has extracted itself:
   `<User_Home>/.sapinst/`
2. In the `sapinst_exe.xxxxxx.xxxx` directory, execute the `sapgenpse` tool with the command line option `get_my_name -p`.
   As a result, you get the server fingerprint or thumbprint from the server certificate.
3. Accept the warning to inform your browser that it can trust this site, even if the certificate could not be verified.

The SL-UI opens in the browser by displaying the Welcome screen.

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

**i Note**

Products with the addition "SAP internal only" are only for SAP internal purposes and may not be used outside of this purpose.

6. Choose **Next**.

**i Note**

If there are errors during the self-extraction process of the software provisioning manager, you can find the log file `dev_selfex.out` in the temporary directory.

7. Follow the instructions in the software provisioning manager 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 software provisioning manager 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 digital 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 artifacts later on either during the remaining Define Parameters phase or later on during the Execute Service phase - the digital signature is not checked again.

For more information, see SAP Note 2393060.

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

If required, you can revise the parameters before starting the dual-stack split procedure.

9. To start the execution, choose **Next**.

The software provisioning manager starts the split procedure and displays its progress on the Task Progress screen.

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

10. If required, delete directories with the name `sapinst_exe.xxxxxx.xxxx` after the software provisioning manager has finished. Sometimes these remain in the temporary directory.
Recommendation

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

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

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

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

12. If you copied installation media to your hard disk, you can delete these files when the software provisioning manager 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 software provisioning manager:

   <User_Home>/sapinst/

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

   i Note
   
   This step is only required, if you did not specify during the Define Parameters phase that the operating system users are to be removed from the group sapinst after the execution of the software provisioning manager has completed.

15. The software provisioning manager 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 software provisioning manager log files in the sapinst_instdir directory. For more information, see Useful Information about Software Provisioning Manager [page 63].

Related Information

Useful Information about Software Provisioning Manager [page 63]
Restarting Interrupted Processing of Software Provisioning Manager [page 70]
Troubleshooting with Software Provisioning Manager [page 73]
5.4 Additional Information about Software Provisioning Manager

The following sections provide additional information about the software provisioning manager.

Useful Information about Software Provisioning Manager [page 63]
This section contains some useful technical background information about the software provisioning manager and the software provisioning manager’s SL-UI.

System Provisioning Using an Input Parameter File [page 65]
Provisioning with software provisioning manager, for example installation, of SAP systems in unattended mode with an input parameter file.

Restarting Interrupted Processing of Software Provisioning Manager [page 70]
Here you find information about how to restart the software provisioning manager if its processing has been interrupted.

Troubleshooting with Software Provisioning Manager [page 73]
This section tells you how to proceed when errors occur while the software provisioning manager is running.

Using the Step State Editor (SAP Support Experts Only) [page 74]
This section describes how to use the Step State Editor available in the software provisioning manager.

5.4.1 Useful Information about Software Provisioning Manager

This section contains some useful technical background information about the software provisioning manager and the software provisioning manager’s SL-UI.

- The software provisioning manager has a framework named “SAPinst”. For more information about the current SAPinst Framework version and its features, see SAP Note 3207613 (SAPinst Framework 753 Central Note).

- The software provisioning manager has the web browser-based “SL-UI of the software provisioning manager” - “SL-UI” for short. The SL-UI 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 foot print, 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, the software provisioning manager comes with a new look and feel of the SL-UI. For more information, see https://blogs.sap.com/2018/11/10/new-look-for-software-provisioning-manager/. The SL-UI 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-UI the software provisioning manager provides a pre-generated URL at the bottom of the shell from which you are running the software provisioning manager. If you have a supported web browser installed on the host where you run the software provisioning manager, you can start the SL-UI directly.
from this URL. Otherwise, open a web browser supported by the SL-UI on any device and run the URL from there.
For more information about supported web browsers see Prerequisites for Running Software Provisioning Manager [page 55].
If you need to run the SL-UI in accessibility mode, apply the standard accessibility functions of your web browser.

- As soon as you have started the sapinst executable, the software provisioning manager creates a .sapinst directory underneath the /home/<User> directory where it keeps its log files. <User> is the user with which you have started the software provisioning manager.
  After you have reached the Welcome screen and selected the relevant software provisioning manager option for the dual-stack system to be split, the software provisioning manager creates a directory sapinst_instdir where it keeps its log files, and which is located directly below the temporary directory. The software provisioning manager finds the temporary directory by checking the value of the TEMP, TMP, or TMPDIR environment variable. If no value is set for these variables, the software provisioning manager uses /tmp by default.
  All log files which have been stored so far in the .sapinst folder are moved to the sapinst_instdir directory as soon as the latter has been created.
  If you want the sapinst_instdir directory to be created in another directory than /tmp, set the environment variable TEMP, TMP, or TMPDIR to this directory before you start the software provisioning manager.

<table>
<thead>
<tr>
<th>Shell Used</th>
<th>Command</th>
</tr>
</thead>
</table>
| Bourne shell (sh) | TEMP=<Directory>  
|               | export TEMP                                   |
| C shell (csh)   | setenv TEMP <Directory>                     |
| Korn shell (ksh)| export TEMP=<Directory>                     |

⚠️ Caution

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

The software provisioning manager records its progress in the keydb.xml file located in the sapinst_instdir directory. Therefore, if required, you can continue with the software provisioning manager from any point of failure, without having to repeat the already completed steps and without having to reenter the already processed input parameters. For security reasons, a variable encryption key is generated as soon as the sapinst_instdir directory is created by the software provisioning manager. This key is used to encrypt the values written to the keydb.xml file.

👉 Recommendation

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

- The software provisioning manager extracts itself to the temporary directory. These executables are deleted again after the software provisioning manager has stopped running.

Dual-Stack Split for SAP Systems Based on SAP NetWeaver 7.5, and Systems Upgraded to SAP Solution Manager 7.2 Java, on UNIX
Splitting the Dual-Stack System
Directories called `sapinst_exe.xxxxxx.xxxx` sometimes remain in the temporary directory after the software provisioning manager 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 software provisioning manager, which might be useful if an error occurs.

⚠️ **Caution**

If the software provisioning manager cannot find a temporary directory, the installation terminates with the error `FCO-00058`.

- To see a list of all available software provisioning manager properties (command line options) and related documentation, start the software provisioning manager as described above with command line parameter `-p`:

  ```bash
  ./sapinst -p
  ```

- If required, stop the software provisioning manager by choosing the `Cancel` button.

**Note**

If you need to terminate the software provisioning manager, press `Ctrl + C`.

### 5.4.2 System Provisioning Using an Input Parameter File

Provisioning with software provisioning manager, for example installation, of SAP systems in unattended mode with an input parameter file.

**Prerequisites**

Provisioning of SAP systems can also be done in unattended mode without the user interface of software provisioning manager. This means that, after inserting the required parameters into a parameter-file and running the `sapinst` executable by providing the path to this parameter-file, the installation will run in the background and no further user interaction is required.

**Context**

This section describes the steps that you need to execute in addition to the procedure described in this guide, when running software provisioning manager in unattended mode using an input parameter file.

Since the new Web-based SL-UI (see [Useful Information about Software Provisioning Manager](page 63)) was introduced in 2017 there are two ways to run the unattended mode: “observer mode” and “non-observer mode”.

**Observer Mode**

If you are running an installation in unattended mode but you are sitting in front of the screen, you might want to check the progress from time to time. In this case the “observer mode” makes sense.
Start the installation as described below in the Solution section, using the following parameters:

```
SAPINST_INPUT_PARAMETERS_URL=<path_to_your_parameterfile>
SAPINST_EXECUTE_PRODUCT_ID=<product-id for the installation>
SAPINST_SKIP_DIALOGS=true
```

The software provisioning manager will start the installation in the background AND start a Web Dispatcher and provide an URL to access the SL-UI. The user who has started the installation can now connect to the URL and observe the progress of the installation, for example to look at the logfiles in the Web browser. However, all parameters will be taken from the input parameter file and can not be changed in the Web browser.

**Non-Observer Mode**

Choose that mode if you want to run a “scripted” or by other means automated scenario, for example overnight. In that case it is crucial that the process is started without a Web Dispatcher and therefore without the software provisioning manager’s SL-UI. Otherwise, the automation could be stuck if software provisioning manager encounters a situation that requires user interaction.

Start the installation as described below in the Solution section, using the following parameters (use the same parameters like for Observer Mode, but provide `SAPINST_START_GUISERVER=false` in addition):

```
SAPINST_INPUT_PARAMETERS_URL=<path_to_your_parameterfile>
SAPINST_EXECUTE_PRODUCT_ID=<product-id for the installation>
SAPINST_SKIP_DIALOGS=true
SAPINST_START_GUISERVER=false
```

This will start the installation but this time **NO** Web Dispatcher will be started and no URL to access the SL-UI will be provided either. So the user can not follow the processing of the installation in a Web browser and the installation will run completely in the background.

If the process runs into an error, the software provisioning manager will abort and you have to check for the reason in the log files.

**Restrictions**

In exceptional cases, parameters prompted or displayed in the Software Provisioning Manager UI are not maintainable in the input parameter file. If one of those parameters, that are only available in the UI mode of the Software Provisioning Manager, is needed for your unattended installations, you should create a ticket in the best fitting component below BC-INS to get the issue analyzed.

**Must Know about the Input Parameter File**

- The input parameter file only contains values that you entered in the software provisioning manager’s SL-UI.
- With the SAPinst 749.0.69 or by other means patch we provide a better encryption of passwords in software provisioning manager files:
  - If the input parameter file has parameters which are encrypted with Des25 encryption, the `instkey.pkey` file available in the installation directory contains the key for the encryption. The `instkey.pkey` file must be always located in the same directory as the input parameter file and is used to decrypt the values of the encrypted parameters. If you need to copy an input parameter file to another directory, you must also copy the `instkey.pkey` file to this directory.
- Not explicitly set parameters are documented as comments in the generated input parameter file.
- Each parameter has got a documentation assigned as a comment on top.
### Example

Example for a parameter that is not used and therefore commented out:

```plaintext
# Specify whether software provisioning manager is to drop the schema if it exists. <= Documentation
# HDB_Schema_Check_Dialogs.dropSchema = false
```

### Example

Example for a parameter that is used:

```plaintext
# The name of the database schema. <= Documentation
HDB_Schema_Check_Dialogs.schemaName = SAPABAP2
```

- You have to manually provide the media information, using the following convention:

  ```plaintext
  SAPINST.CD.PACKAGE.<unique_media_name>=<location>
  ```

- For each media location you must **manually** insert a dedicated line in your input parameter file. The software provisioning manager does not automatically take over the media locations you entered while processing the Media Browser dialog.
- For `<media_name>` you can choose any value, but the `<location>` must be unique.
- To find out the required media entries, open the summary.html file which you can find in the installation directory and go to the Dialog "Media" section.
- Make sure that you enter the full paths to all required media, relative paths are not sufficient.

### Example

**Example on UNIX:**

```plaintext
SAPINST.CD.PACKAGE.KERNEL = /mnt/KERNEL
SAPINST.CD.PACKAGE.LOAD = /mnt/LOAD
SAPINST.CD.PACKAGE.RDBMS = /mnt/RDBMS
```

### Example

**Example on Windows:**

```plaintext
SAPINST.CD.PACKAGE.KERNEL = C:\sapdvds\KERNEL
SAPINST.CD.PACKAGE.LOAD = C:\sapdvds\LOAD
SAPINST.CD.PACKAGE.RDBMS = C:\sapdvds\RDBMS
```

- If one media contains several subfolders, you can specify it in one of the following ways:

### Example

**The SAP Export DVDs/media:**

```plaintext
Installation Master    /usr/local/TESI/SWPM/slinst_d_stream/
IM_OS400_PPC64
Installation Export NW73 (folder EXP1) /sapmnt/mediaserver2/
arch04_6/51042309/DATA_UNITS/EXP1
Installation Export NW73 (folder EXP3) /sapmnt/mediaserver2/
arch04_6/51042309/DATA_UNITS/EXP3
```
Installation Export NW73 (folder EXP2) /sapmnt/mediaserver2/arch04_6/51042309/DATA_UNITS/EXP2

• By specifying each subfolder:
  
  SAPINST.CD.PACKAGE.ExportNW73EXP1=/sapmnt/mediaserver2/arch04_6/51042309/DATA_UNITS/EXP1
  SAPINST.CD.PACKAGE.ExportNW73EXP2=/sapmnt/mediaserver2/arch04_6/51042309/DATA_UNITS/EXP3
  SAPINST.CD.PACKAGE.ExportNW73EXP3=/sapmnt/mediaserver2/arch04_6/51042309/DATA_UNITS/EXP3

• By specifying only the root-folder:
  
  SAPINST.CD.PACKAGE.ExportNW73=/sapmnt/mediaserver2/arch04_6/51042309

• Restriction: Currently you can only specify complete media, not paths to single files like *.SAR archives.

• When performing a system copy, you need to add one additional media path:

  SAPINST.CD.PACKAGE.JMIG = <full path to Java Export media>

• Caution:
  
  If you want to use archives for your installation, you must copy all files that are to be used to a single directory. In the input parameter file you must specify this directory as a download basket, using the archives.downloadBasket parameter. Make sure that there is only one version of the same archive in the directory, for example SAPEXE_<Version>.SAR

Procedure

1. You plan and prepare the run as described in Planning Checklist [page 26] and Preparation Checklist [page 30].

2. Create your input parameter file as follows:
   
   1. Start software provisioning manager as described in .
   2. Choose the option you want to run, and follow the instructions on the screens by entering all parameter values.
   3. Stop after the Parameter Summary screen has been displayed.
   4. Find the input parameter file named “inifile.params” in the installation directory.
      
      • In the same directory, you will also find the instkey.pkey file with the keys for the encrypted parameters. For more information, see Must Know about the Input Parameter File above.
      
      • In the same directory, you will also find the summary.html file with the required media locations. For more information, see Must Know about the Input Parameter File above.
   5. If required, you can rename the “inifile.params” file as you wish.

3. Adjust the values of the input parameter file as follows:
   
   1. Edit your input parameter file and modify the parameters according to your needs.
   2. Add required media or archives information line by line.
4. Identify the Product-ID:
   • To start in unattended mode, you need to know the component ID for the option that are required for your provisioning scenario. Proceed as follows:
     1. Open the `sapinst_dev.log` in the installation directory.
     2. Check for the "product-id"

   \[\textit{Example}\]
   ```
   product-id=NW_ABAP_ASCS:NW750.ADA.ABAP
   ```

   • Alternatively, you can check the header of the generated input parameter file.

   \[\textit{Example}\]
   ```
   product id 'NW_ABAP_ASCS:NW750.ADA.ABAP'
   ```

5. Run the software provisioning manager [page 58] with the parameters required for unattended mode:
   • Make sure that the `instkey.pkey` file with the keys for the encrypted parameters is available in the same directory as the input parameter file. Otherwise the encrypted parameters cannot be decrypted. For more information, see Must Know about the Input Parameter File above.
   • In observer mode: Start the sapinst executable from an empty directory with the following parameters:

   ```
   SAPINST_INPUT_PARAMETERS_URL=<path_to_your_parameterfile>
   SAPINST_EXECUTE_PRODUCT_ID=<product-id for the installation>
   SAPINST_SKIP_DIALOGS=true
   ```

   • In non-observer mode: Start the sapinst executable from an empty directory with the following parameters:

   ```
   SAPINST_INPUT_PARAMETERS_URL=<path_to_your_parameterfile>
   SAPINST_EXECUTE_PRODUCT_ID=<product-id for the installation>
   SAPINST_SKIP_DIALOGS=true
   SAPINST_START_GUISERVER=false
   ```

6. After software provisioning manager has completed, perform follow-up activities as described in Follow-Up Activities Checklist [page 79].

### Related Information

- **SAP Note 2230669** Provisioning with software provisioning manager - for example installation - of SAP systems in unattended mode with an input parameter file.
- **SAP Note 2849054** Software Update Manager Automation with software provisioning manager.
- **SAP Note 2742212** Unattended installation fails with "Empty directory name is not allowed." message.
- **SAP Note 2626837** 'isUnicode': Radio group contains an invalid value ''. Valid values are: false|true.

Dual-Stack Split for SAP Systems Based on SAP NetWeaver 7.5, and Systems Upgraded to SAP Solution Manager 7.2 Java, on UNIX

Splitting the Dual-Stack System
5.4.3 Restarting Interrupted Processing of Software Provisioning Manager

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

Context

The processing of the software provisioning manager might be interrupted for one of the following reasons:

• An error occurred during the Define Parameters or Execute phase:
  The software provisioning manager 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 software provisioning manager by choosing Cancel in the SL-UI.

⚠️ Caution

If you stop an option in the Execute phase, any system or component installed by this option is incomplete and not ready to be used. Any system or component uninstalled by this option is not completely uninstalled.

The following table describes the options in the dialog box:

<table>
<thead>
<tr>
<th>Option</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retry</td>
<td>The software provisioning manager retries the installation from the point of failure without repeating any of the previous steps. This is possible because the software provisioning manager records its 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 software provisioning manager displays the same dialog box again.</td>
</tr>
<tr>
<td>Stop</td>
<td>The software provisioning manager stops the installation, closing the dialog box and the software provisioning manager’s SL-UI. The software provisioning manager records its progress in the keydb.xml file. Therefore, you can continue with the software provisioning manager from the point of failure without repeating any of the previous steps. See the procedure below.</td>
</tr>
<tr>
<td>Continue</td>
<td>The software provisioning manager continues the installation from the current point.</td>
</tr>
<tr>
<td>View Log</td>
<td>Access installation log files.</td>
</tr>
</tbody>
</table>
The following procedure describes the steps to restart an installation, which you stopped by choosing Stop, or to continue an interrupted installation after an error situation.

**Procedure**

1. Log on to the installation host as a user with the required permissions as described in Running Software Provisioning Manager [page 58].

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 42].

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

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

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 42].

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

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

4. Restart the software provisioning manager from the directory to which you unpacked the Software Provisioning Manager archive by executing the following command:

   `<Path_To_Unpack_Directory>/sapinst`

5. The software provisioning manager is restarting.

   You can find the URL you require to access the SL-UI at the bottom of the shell from which you are running the software provisioning manager.

   ```
   ...
   ************************************************************************
   Open your browser and paste the following URL address to access the GUI
   ```
Note

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

1. Terminate the software provisioning manager as described in Useful Information about Software Provisioning Manager [page 63].
2. Restart the software provisioning manager from the command line with the `SAPINST_GUI_HOSTNAME=<hostname>` property.
   You can use a fully-qualified host name.

If you have a supported web browser (see Prerequisites for Running Software Provisioning Manager [page 55]) installed on the host where you run the software provisioning manager, you can open this URL directly in the shell. Otherwise, open the URL in a supported web browser that runs on another device.

Caution

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

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

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

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

The SL-UI 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:
### Alternative Behavior

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

### 5.4.4 Troubleshooting with Software Provisioning Manager

This section tells you how to proceed when errors occur while the software provisioning manager is running.

#### Context

If an error occurs, the software provisioning manager:

- Stops processing
- Displays a dialog informing you about the error
Procedure

1. Check SAP Note SAP Note 3207613 (SAPinst Framework 753 Central Note) for known software provisioning manager 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 software provisioning manager 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 software provisioning manager 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 them in the .sapinst directory underneath the /home/<User> directory, where <User> is the user that you used to start the software provisioning manager.
       
       For more information, see Useful Information about Software Provisioning Manager [page 63].
     
     - To check the log and trace files of the software provisioning manager’s SL-UI for errors, go to the directory <User_Home>/.sapinst/
     
     - Then continue by choosing Retry.
     
     - If required, abort the software provisioning manager by choosing Cancel in the tool menu and restart the software provisioning manager. For more information, see Restarting Interrupted Processing of Software Provisioning Manager [page 70].

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.

5.4.5 Using the Step State Editor (SAP Support Experts Only)

This section describes how to use the Step State Editor available in the software provisioning manager.

**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 software provisioning manager meets the requirements listed in Prerequisites for Running Software Provisioning Manager [page 55].
Procedure

1. Start the software provisioning manager from the command line as described in Running Software Provisioning Manager [page 58] with the additional command line parameter `SAPINST_SET_STEPSTATE=true`.
2. Follow the instructions on the software provisioning manager 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 software provisioning manager during the Execute Service phase. By default all steps are in an initial state. Underneath each step, you see the assigned software provisioning manager 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 software provisioning manager to pause.
- Mark the checkbox in front of the Skip option of the steps which you want the software provisioning manager 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 software provisioning manager 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 software provisioning manager.
5. Continue until you have run through all the steps of the Execute Service phase of the software provisioning manager.

5.5 Exporting and Mounting Global Directories

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

Prerequisites

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

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

Example

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

Note

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

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

Procedure

- Exporting and Mounting Global Directories for a Homogeneous Installation
  a. Log on to the SAP global host as user root and export the following directories with read/write access for the root user to the host where you want to install the new instance:

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

  Make sure that the user root of the host where you want to install the new instance can access the exported directories.
  b. Log on to the host of the new instance that you want to install as user root.
  c. Create the following mount points and mount them from the SAP global host:

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

  Caution

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

- Exporting and Mounting Global Directories for a Heterogeneous Installation
With a heterogeneous installation, the instances of an SAP system are installed on hosts with different UNIX operating systems. If you need information about the installation of application servers on Windows in a UNIX environment, see Heterogeneous SAP System Installations [page 96].

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

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

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

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

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

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

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

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

   **Caution**  
   Make sure that these mount points are permanent. Otherwise automatic start of the instance services does not work when you reboot the system.

## 5.6 Exporting and Mounting the Transport Directory

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

### Context

Multiple SAP system can use the same transport directory. However, it is not required to have one global transport directory in your SAP system landscape. Depending on your security requirements, you must decide how you want to set up the transport directories in your landscape. Systems with lower security requirements can share a transport directory (DEV, QA, for example). For systems with higher security requirements (PROD, for example), you might want to have a separate transport directory.
The transport directory is used by the Change and Transport System (CTS). The CTS helps you to organize development projects, and then transport the changes between the SAP systems in your system landscape.

Consider the following:

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

Procedure

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

2. **Mounting the Transport Directory**

   **Note**
   If the transport directory resides on your local SAP instance installation host, you do not need to mount it.

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

6.1 Follow-Up Activities Checklist

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

Context

i Note

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

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

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

Procedure

1. On the Java target system, you install the SAP license.
   For more information, see Installing the SAP License Key [page 81].
2. On the Java target system, you maintain the connection to the system landscape directory [page 83].
3. On the Java target system, you generate the public-key certificates.
   For more information, see Generating Public-Key Certificates [page 82].
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 85].
5. You must recreate the JCo destinations as described in the documentation Creating JavaConnector (JCo) Destinations in the SAP Library [page 18] at: Application Server Application Server Java Developing Java Web Dynpro Applications Content Administration and Measurements Web Dynpro Content Administrator Functions for JCo Destinations.
6. On the Java target system, you perform product instance or usage type-specific follow-up activities as required. For more information, see the relevant sections in the product instance or usage type-specific follow-up activities in the system copy guide.

7. We recommend that you perform regression testing.

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

   • Standard system
     On the source system, you **run the software provisioning manager** [page 58] 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 software provisioning manager** [page 58] 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 software provisioning manager** [page 58] 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 software provisioning manager** [page 58] to remove the central services instance.

     4. "Move Java Database" only: On the **database host** of the source system, you **run the software provisioning manager** [page 58] to remove the Java database schema.

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

<table>
<thead>
<tr>
<th>i Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due to the large number of properties that can be included in the instance profile of the AS Java stack, there may also be remnants of these after the completion of the dual-stack split. You can comment them out if you consider them risky for the ABAP system.</td>
</tr>
</tbody>
</table>

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 86].

11. If required and not already done so, you **configure the CTS Deploy Web Service** [page 89] on the ABAP system.

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

13. You clean up the system landscape data [page 92].

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


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

16. You can install further additional application server instances to the ABAP and Java single stack systems which result from the dual-stack split.

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

   **i Note**

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

---

### 6.1.1 Installing the SAP License Key

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

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

**i Note**

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

For more information about ordering and installing the SAP license, see the [SAP Library][2] 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 18] , and then continue the navigation as described below.

**SAP Release and SAP Library Quick Link**

- **SAP Solution Manager 7.2 SR2 only:** SAP NetWeaver 7.4
  

- **SAP NetWeaver 7.5**
  

**SAP Library Path (Continued)**

- [Application Help][3] ➔ [SAP NetWeaver Library: Function-Oriented View ➔ Solution Life Cycle Management ➔ SAP Licenses](http://help.sap.com/nw74)
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

The public-key certificates need to be reconfigured on the target system

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 18] 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 18], and then continue the navigation as described below.

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 18] 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 18], and then continue the navigation as described below.
6.1.3 Applying Stronger Encryption Algorithms

If you have performed a dual-stack split with Split Option: Move Java Database [page 19] or Split Option: Keep Database [page 23] on an SAP system based on SAP NetWeaver Java 7.50 SP24 or higher, ensure that you apply the stronger encryption algorithms on the target system.

For more information, see SAP Note 3153525 - Improvement of SecureStoreFS encryption algorithms.

6.1.4 Maintaining the Connection to the System Landscape Directory

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

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

**Note**

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

**Prerequisites**

SLDAP USER credentials are available in the ABAP system.

**Local SLD**

1. Create users, groups, and roles as described in the SAP Library [page 18] 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. Configure the SLD Server as described in the SAP Library [page 18] for your release at:
   - Solution Life Cycle Management ➔ Configuring, Working with and Administering System Landscape Directory ➔ Administering the SLD ➔ Changing the SLD Configuration ➔ Configuring Server Parameters
3. Configure the ABAP Gateway in the SLD as described in the SAP Library [page 18] for your release at:
   - Solution Life Cycle Management ➔ Configuring, Working with and Administering System Landscape Directory ➔ Administering 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 18] 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 18] 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 RFC Destination for the SLD ABAP API on the Java Side

3. Maintain the HTTP connection parameters on the ABAP system as described in the SAP Library [page 18] 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 18] 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 18] 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 18] 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
6.1.5 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 the Db2 log file management solution. For more information, see the Database Administration Guide for SAP on IBM Db2 for Linux, UNIX, and Windows.

Procedure

1. Log on to the database server as user db2<dbsid>.
2. To activate log retention mode and to specify the log archiving method, you must set configuration parameter LOGARCHMETH1 to one of the following options:
   - LOGRETAIN
     No log archiving takes place. Log files remain in the log directory.
   - DISK:<log_archive_path>
     Log files are archived to a disk location. You can archive them to tape using the Db2 tape manager (db2tapemgr) at a later point in time.
   - TSM:<TSM_management_class>
     Log files are archived to Tivoli Storage Management (TSM)
   - VENDOR:<path_to_vendor_lib>
     Log files are archived to a library that is provided by your vendor storage management
   - USEREXIT
     For downward compatibility with the former user exit concept, you can specify value USEREXIT for parameter LOGARCHMETH1.

To set configuration parameter LOGARCHMETH1 for your preferred archiving method, enter the following command:

```
db2 update db cfg for <dbsid> using LOGARCHMETH1 <log_archiving_method>
```
For more information, see the *Database Administration Guide for SAP on IBM Db2 for Linux, UNIX, and Windows*.

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

4. To start the offline backup for a single-partitioned database, enter the following command:

   \[ \text{db2 backup db <dbsid> to <device>} \]

   **Example**

   For example, to perform an offline backup of database C11 to tapes in devices rmt0 and rmt1, enter the following command:

   \[ \text{db2 backup database C11 to /dev/rmt0, /dev/rmt1} \]

   **Note**

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

For more information about how to start a Db2 backup, see the 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 96].
- For access to online information about Db2 that is provided by IBM, see Online Information from IBM [page 97].

### 6.1.6 Follow-Up Activities for the Enhanced Change and Transport System

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

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

Also check the application-specific documentation for configuration details for CTS+ configuration. For SAP applications you can usually find this documentation at http://scn.sap.com/docs/DOC-8576.
6.1.6.1 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 18] of your release at:

   Application Help > Function-Oriented View > Solution Life Cycle Management by Key Capability

   i Note

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

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

   For more information about these parameters, see Parameters for non-ABAP transports in the SAP Library [page 18] of your release at:

   Application Help > Function-Oriented View > Solution Life Cycle Management by Key Capability
6.1.6.2 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 18] of your release at:


2. In the ABAP communication system, configure the CTS Deploy Web Service [page 89].

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 18] of your release at:


4. If you have not cleaned up the import queue as described in the Preparation Checklist [page 30], you must copy the import buffer of the ABAP system to the Java system. This ensures the processing of pending transport queues.

Proceed as follows:

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

Follow-Up Activities
6.1.6.3 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 18] 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.

6.1.6.4 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.
6.1.6.5 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.

### System Landscape Before Split

![System Landscape Diagram](image)

#### Process Flow

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

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

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

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

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

10. In the TMS, you create the transport routes between the previous Java system in the transport track (JDS) and the new Java system (JQS) and between JQS and the next system in the transport track (PRD).

---

**Follow-Up Activities**

Dual-Stack Split for SAP Systems Based on SAP NetWeaver 7.5, and Systems Upgraded to SAP Solution Manager 7.2 Java, on UNIX
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 \textit{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).

\begin{center}
\includegraphics[width=\textwidth]{system_landscape.png}
\end{center}

\textbf{System Landscape After the Last Split with Adapted Transport Routes}

\section*{Related Information}

- Configuring Source Systems for Non-ABAP Transports [page 87]
- Configuring Target Systems for Non-ABAP Transports [page 88]
- Configuring the CTS Deploy Web Service [page 89]
- Configuring Transport Routes [page 89]

\section*{6.1.7 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 or higher, the deletion of the Java system in the SLD is propagated automatically to LMDB and SMSY.
   • If you still operate an SAP Solution Manager 7.01 system, call transaction SMSY and delete the technical system of type “Java”.
   • If the Java system is still in use – for example, in a Product System or Logical Component – you must first remove it from all uses.

More Information

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

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

7.1 Move Java Database: Restoring Instances

Use

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

Note

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

Procedure

1. Edit the primary application server instance profile
   `<SAPSID>_DVEBMGS<Instance_Number>_<Host_Name>`: Replace the line `rdisp/j2ee_start=0` with `rdisp/j2ee_start=1`.
2. Restart the primary application server instance service. Log on to the system as `<sapsid>adm` and invoke `sapcontrol-nr <PAS_Instance Number>-function RestartService`.
3. Restart the instance by calling transaction SMICM.
4. Open the default profile and add the profile parameter:
   `icm/HTTP/ASJava/disable_url_session_tracking = TRUE`

7.2 Keep Database: Restoring Instances

Use

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

Note

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

1. If you have already executed the option Install Java Primary Application Server to install the AS Java target system, proceed as follows:
   1. **MS SQL Server, SAP MaxDB**: Rename the Java database schema to its original value (for example, SAP<SAPSID_Dual-Stack_System>DB), depending on your database vendor.
   2. Start the GUI ConfigTool and choose Tools >> Configuration Editor >> Open >> Configurations >> destinations >> RFC >> PropertySheet UMEBackendConnection and restore the default values of the properties jco.client.ashost and jco.client.sysnr.
   2. Edit the primary application server instance profile <SAPSID>_DVEBMGS<Instance_Number>_<Host_Name>: Replace the line rdisp/j2ee_start=0 with rdisp/j2ee_start=1.
   3. Restart the primary application server instance service.
   Log on to the primary application server instance host as <sapsid>adm and invoke sapcontrol-nr <PAS_Instance_Number>-function RestartService.
   4. Restart the instance by calling transaction SMICM.
   5. Open the default profile and add the profile parameter:
      icm/HTTP/ASJava/disable_url_session_tracking = TRUE

7.3 Removing the Java Stack

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**: 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 Software Provisioning Manager* [page 58].

2. Depending on your system variant, perform the steps listed below:
   - **Standard System**
     - Remove Java Stack from Dual-Stack System
   - **Distributed System**
     - Remove Java Stack from Dual-Stack Additional Application Server Instance
     - Remove Java Stack from Dual-Stack Primary Application Server Instance
     - Remove SCS Instance from Dual-Stack System
     - Remove Java Schema of Dual-Stack Database Instance

⚠️ **Caution**
You must skip the export and installation steps.

3. After you remove the Java stack, you have to remove the Java stack data from the SLD, transaction SMSY and LMDB in the SAP Solution Manager.
   For more information, see *Cleaning Up the System Landscape* [page 92].
   The removal of the technical Java system from the SLD is important for the system landscape data consistency.

### 7.4 Heterogeneous SAP System Installation

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

See SAP Note [1067221](https://support.sap.com) for more information on:
- Supported combinations of operating systems and database systems
- How to install an application server on Windows in a heterogeneous (UNIX) SAP system environment
- Heterogeneous SAP system landscapes with different UNIX operating systems

### 7.5 Online Information from SAP

More information is available online as follows:
7.6 Online Information from IBM

You can use the following IBM documentation landing page as a starting point to all kinds of documentation for your IBM Db2 for Linux, UNIX, and Windows version: https://www.ibm.com/docs/en/db2.

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

### IBM Db2 Documentation

<table>
<thead>
<tr>
<th>Database Version</th>
<th>Internet Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Db2 11.5</td>
<td><a href="https://www.ibm.com/docs/en/db2/11.5">https://www.ibm.com/docs/en/db2/11.5</a></td>
</tr>
<tr>
<td>IBM Db2 10.5</td>
<td><a href="https://www.ibm.com/docs/en/db2/10.5">https://www.ibm.com/docs/en/db2/10.5</a></td>
</tr>
</tbody>
</table>

### IBM Manuals

<table>
<thead>
<tr>
<th>Database Version</th>
<th>Internet Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Db2 11.5</td>
<td><a href="https://www.ibm.com/support/pages/node/627743">https://www.ibm.com/support/pages/node/627743</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>
</tbody>
</table>
Important Disclaimers and Legal Information

Hyperlinks

Some links are classified by an icon and/or a mouseover text. These links provide additional information.

About the icons:

- Links with the icon 🌐: You are entering a Web site that is not hosted by SAP. By using such links, you agree (unless expressly stated otherwise in your agreements with SAP) to this:
  - The content of the linked-to site is not SAP documentation. You may not infer any product claims against SAP based on this information.
  - SAP does not agree or disagree with the content on the linked-to site, nor does SAP warrant the availability and correctness. SAP shall not be liable for any damages caused by the use of such content unless damages have been caused by SAP’s gross negligence or willful misconduct.

- Links with the icon 🔗: You are leaving the documentation for that particular SAP product or service and are entering an SAP-hosted Web site. By using such links, you agree that (unless expressly stated otherwise in your agreements with SAP) you may not infer any product claims against SAP based on this information.

Videos Hosted on External Platforms

Some videos may point to third-party video hosting platforms. SAP cannot guarantee the future availability of videos stored on these platforms. Furthermore, any advertisements or other content hosted on these platforms (for example, suggested videos or by navigating to other videos hosted on the same site), are not within the control or responsibility of SAP.

Beta and Other Experimental Features

Experimental features are not part of the officially delivered scope that SAP guarantees for future releases. This means that experimental features may be changed by SAP at any time for any reason without notice. Experimental features are not for productive use. You may not demonstrate, test, examine, evaluate or otherwise use the experimental features in a live operating environment or with data that has not been sufficiently backed up.

The purpose of experimental features is to get feedback early on, allowing customers and partners to influence the future product accordingly. By providing your feedback (e.g. in the SAP Community), you accept that intellectual property rights of the contributions or derivative works shall remain the exclusive property of SAP.

Example Code

Any software coding and/or code snippets are examples. They are not for productive use. The example code is only intended to better explain and visualize the syntax and phrasing rules. SAP does not warrant the correctness and completeness of the example code. SAP shall not be liable for errors or damages caused by the use of example code unless damages have been caused by SAP’s gross negligence or willful misconduct.

Bias-Free Language

SAP supports a culture of diversity and inclusion. Whenever possible, we use unbiased language in our documentation to refer to people of all cultures, ethnicities, genders, and abilities.