



Installation Guide | PUBLIC

Software Provisioning Manager 1.0 SP40

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# Installation of SAP Systems Based on the Application Server ABAP of SAP NetWeaver 7.3 EHP1 to 7.52 on UNIX: SAP Adaptive Server Enterprise

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# Document History

## 📘 Note



Before you start reading, make sure you have the latest version of this installation guide, which is available at <https://support.sap.com/sltoolset> > > > [System Provisioning](#) > [Install a System using Software Provisioning Manager](#) > [Installation Option of Software Provisioning Manager 1.0](#) > .

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



Version	Date	Description
1.0	2012-12-17	First version for Software Provisioning Manager 1.0
1.1 - 1.3	2013-04-02 - 2013-10-28	Updated Versions: SL Toolset 1.0 SPS 07 - SPS 09
1.4	2014-03-17	Instead of a separate installation guide for each UNIX-based operating system, we now deliver a single installation guide for all UNIX-based operating systems. Sections that are only relevant for one or more operating systems are highlighted accordingly.
1.5 - 2.1	2014-07-07 - 2016-06-06	Updated Versions: SL Toolset 1.0 SPS 11 - SPS 17
2.2	2016-10-07	Updated version for software provisioning manager 1.0 SP18 (SL Toolset 1.0 SP18): <ul style="list-style-type: none"><li>• New Features: Option to choose installing an embedded SAP Web Dispatcher during the ASCS instance installation, documented in: <a href="#">ASCS Instance with Embedded SAP Web Dispatcher [page 32]</a>. Using RMOSSWPM*.SAR instead of SWPM*.SAR for outdated OS versions not supported by SAP kernel 7.40 and higher, documented in: &gt; &gt; <a href="#">Introduction</a> &gt; <a href="#">Constraints</a> &gt;</li><li>• Support for synchronous, near-synchronous and asynchronous replication for SAP Business Suite on SAP ASE 16.0. For more information, see <a href="#">Disaster Recovery Setup with SAP Business Suite on SAP ASE 16.0 [page 178]</a> .</li></ul>

Version	Date	Description
2.3	2017-02-06	<p>Updated version for software provisioning manager 1.0 SP19 (SL Toolset 1.0 SP19)</p> <ul style="list-style-type: none"> <li>New Features: <ul style="list-style-type: none"> <li>Verification of the integrity of data units in Software Provisioning Manager, documented in: <i>New Features, Downloading the Software Provisioning Manager Archive</i></li> <li>Archive-based Language Installation, documented in: <i>Additional Parameters When Using a Stack XML File</i></li> </ul> </li> </ul>
2.4	2017-05-22	<p>Updated version for software provisioning manager 1.0 SP20 (SL Toolset 1.0 SP20)</p> <ul style="list-style-type: none"> <li>New Features: <ul style="list-style-type: none"> <li>New SAPUI5-based graphical user interface (GUI) "SL-UI", documented in: <i>Prerequisites for Running the Software Provisioning Manager, Running the Software Provisioning Manager, Useful Information About the Software Provisioning Manager</i></li> <li>Option for choosing to install an embedded gateway during the ASCS instance installation, documented in: <i>Installation Options Covered by this Guide, SAP System Parameters, Parameters for Additional Components to be Included in the ASCS Instance, Post-Installation Checklist, SAP Gateway Configuration</i></li> <li>Cleanup of operating system users, documented in: <i>SAP System Parameters, Creating Operating System Users and Groups</i></li> </ul> </li> </ul>
2.5	2017-09-11	<p>Updated version for software provisioning manager 1.0 SP21 (SL Toolset 1.0 SP21)</p> <ul style="list-style-type: none"> <li>New Features: <ul style="list-style-type: none"> <li>Media Signature Check, documented in: <i>New Features, Running the Software Provisioning Manager, Preparing the Installation Media</i>. This feature implies that section <i>Creating Kernel Archives from an Existing SAP System</i> has been deleted from this documentation because the related option in the software provisioning manager had to be removed.</li> <li>Download Media for a Maintenance Plan, documented in: <i>New Features, Downloading Media for a Maintenance Plan</i></li> <li>SAP Host Agent Upgrade, documented in: <i>New Features, SAP System Parameters, Downloading SAP Kernel Archives (Archive-Based Installation)</i></li> <li>Load tools are now available as <code>LOADTOOLS.SAR</code> in the Software Provisioning Manager archive, documented in: <i>New Features, Downloading and Extracting the Software Provisioning Manager Archive</i></li> <li>Simplified additional application server instance installation, documented in: <i>New Features, Preparing the Installation Media, Downloading SAP Kernel Archives (Archive-Based Installation)</i></li> <li>Support of SSL, documented in: <i>New Features, Enabling SSL encrypted data transfer</i>.</li> </ul> </li> </ul>

Version	Date	Description
2.6	2018-01-15	<p>Updated version for Software Provisioning Manager 1.0 SP22 (SL Toolset 1.0 SP22)</p> <ul style="list-style-type: none"> <li>New Features: <ul style="list-style-type: none"> <li>Digital signature check for installation archives, documented in: <i>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</i></li> <li>Software provisioning manager Log Files Improvements, documented in: <i>New Features, Useful Information about the Software Provisioning Manager, Troubleshooting with the Software Provisioning Manager</i></li> <li>Secure ABAP message server connection, documented in: <i>New Features, SAP System Parameters</i></li> <li>Enabling IPv6, documented in: <i>New Features, Prerequisites for Running the Software Provisioning Manager</i></li> </ul> </li> <li><i>New Features</i> section restructured: As of SP22, a dedicated subsection for each new SP has been created. New features below SP22 remain in a common table.</li> <li>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: <ul style="list-style-type: none"> <li>The following sections which were explicitly related to Java SDT GUI were completely removed from this documentation: <i>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</i> (general accessibility information was moved to <i>Useful Information About the Software Provisioning Manager</i>).</li> <li>The Java SDT GUI-specific information was removed from the common software provisioning manager sections: <i>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, Deleting an SAP System or Single Instances</i></li> </ul> </li> <li>New section <i>Using the Step State Editor (SAP Support Experts Only)</i> was added to section <i>Additional Information About the Software Provisioning Manager</i></li> </ul>

Version	Date	Description
2.7	2018-05-07	<p>Updated version for Software Provisioning Manager 1.0 SP23 (SL Toolset 1.0 SP23)</p> <ul style="list-style-type: none"> <li>New Features: <ul style="list-style-type: none"> <li>New Software Provisioning Manager Option <a href="#">Download Media for a Maintenance Plan</a>, documented in: <i>New Features, Downloading the Media for a Maintenance Planner Transaction</i></li> <li>Validity Check for SUM* .SAR Archive, documented in: <i>New Features, Additional Parameters When Using a Stack XML File</i></li> </ul> </li> <li>Information "enqueue server" versus "enqueue server 2", "enqueue replication server" versus "enqueue replication server 2" added: <i>High-Availability System , System Based on SAP NetWeaver AS for ABAP 7.52 only: Switching to Enqueue Server 2 and Enqueue Replication Server 2</i></li> </ul>
2.8	2018-09-17	Updated version for Software Provisioning Manager 1.0 SP24 (SL Toolset 1.0 SP24)
2.9	2019-01-21	Updated version for Software Provisioning Manager 1.0 SP25 (SL Toolset 1.0 SP25)
3.0	2019-05-27	<p>Updated version for Software Provisioning Manager 1.0 SP26 (SL Toolset 1.0 SP26)</p> <ul style="list-style-type: none"> <li>New Chapter For advanced SAP ASE audit options, you must adapt the size according to the enabled options and the workload of your system. You can place the devices containing the optional database sybsecurityarchive at this location. For more information, see <a href="#">SAP ASE 16.0: Auditing with SAP Adaptive Server Enterprise [page 177]</a>.</li> </ul>
3.2	2019-09-16	Updated version for Software Provisioning Manager 1.0 SP27 (SL Toolset 1.0 SP27)
3.3	2020-01-20	Updated version for Software Provisioning Manager 1.0 SP28 (SL Toolset 1.0 SP28)
3.4	2020-06-08	Updated version for Software Provisioning Manager 1.0 SP29 (SL Toolset 1.0 SP29)
3.5	2020-10-05	Updated version for Software Provisioning Manager 1.0 SP30 (SL Toolset 1.0 SP30)
3.6	2021-02-15	Updated version for Software Provisioning Manager 1.0 SP31 (SL Toolset 1.0 SP31)
3.7	2021-06-21	Updated version for Software Provisioning Manager 1.0 SP32 (SL Toolset 1.0 SP32)
3.8	2021-10-11	Updated version for Software Provisioning Manager 1.0 SP33 (SL Toolset 1.0 SP33)
3.9	2022-02-14	Updated version for Software Provisioning Manager 1.0 SP34 (SL Toolset 1.0 SP34)
3.95	2022-03-25	<b>Linux only:</b> Updated version of the installation guide with systemd released (see SAP Note <a href="#">3139184</a>  .
4.0	2022-05-24	Updated version for Software Provisioning Manager 1.0 SP35 (SL Toolset 1.0 SP35)
4.0.1	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 <a href="#">2998013</a>  .



Version	Date	Description
4.1	2022-10-10	Updated version for Software Provisioning Manager 1.0 SP36 (SL Toolset 1.0 SP36)
4.2	2023-02-13	Updated version for Software Provisioning Manager 1.0 SP37 (SL Toolset 1.0 SP37)
4.3	2023-05-26	Updated version for Software Provisioning Manager 1.0 SP38 (SL Toolset 1.0 SP38)
4.3.1	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 <a href="#">3346502</a>  .
4.4	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 <a href="#">2998013</a>  , have been removed.
4.5	2024-02-12	Updated version for Software Provisioning Manager 1.0 SP40 (SL Toolset 1.0 SP40)

# 1 About this Document

This installation guide describes how to install an SAP system based on the application server **ABAP** of SAP NetWeaver 7.3 EHP1 to 7.52 using the installation tool software provisioning manager 1.0 SP40, which is part of SL Toolset 1.0 SP40.

This guide is valid for the operating systems AIX, HP-UX, Linux, and Solaris, and covers the SAP system products and releases listed in [SAP Products Based on SAP NetWeaver 7.3 EHP1 to 7.52 Supported for Installation Using Software Provisioning Manager 1.0 \[page 11\]](#).

## Note

As an alternative to using Software Provisioning Manager, you can install your system with a completely automated end-to-end framework available using SAP Landscape Management. For more information, see SAP Note [1709155](#) and [https://help.sap.com/docs/SAP\\_LANDSCAPE\\_MANAGEMENT\\_ENTERPRISE](https://help.sap.com/docs/SAP_LANDSCAPE_MANAGEMENT_ENTERPRISE).

For information about **maintenance of SAP Business Suite and corresponding SAP NetWeaver versions**, see SAP Note [1648480](#).

For information about supported operating system and database platforms for the SAP product you want to install, see the Product Availability Matrix at <http://support.sap.com/pam>.

## Caution

Make sure you have read [Before You Start \[page 14\]](#) before you continue with this installation guide.

### [SAP Products Based on SAP NetWeaver 7.3 EHP1 to 7.52 Supported for Installation Using Software Provisioning Manager 1.0 \[page 11\]](#)

Here you can find a list of the SAP products based on SAP NetWeaver 7.3 EHP1 to 7.52 ABAP that are supported for installation using Software Provisioning Manager 1.0, on the specific operating system and database combination described in this guide.

### [Naming Conventions \[page 11\]](#)

This section lists the naming conventions that are currently apply for the software provisioning manager 1.0 and terms used in this documentation.

### [Constraints \[page 12\]](#)

This section lists the naming constraints that are currently valid for the software provisioning manager 1.0 and this documentation.

### [Before You Start \[page 14\]](#)

Make sure that you have read the release-specific “Master Guide” for your SAP Business Suite application, SAP NetWeaver application , or SAP Solution Manager system before you continue with this installation guide.

### [SAP Notes for the Installation \[page 15\]](#)

This section lists the most important SAP Notes relevant for an installation using Software Provisioning Manager

### [New Features \[page 17\]](#)

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

## 1.1 SAP Products Based on SAP NetWeaver 7.3 EHP1 to 7.52 Supported for Installation Using Software Provisioning Manager 1.0

Here you can find a list of the SAP products based on SAP NetWeaver 7.3 EHP1 to 7.52 ABAP that are supported for installation using Software Provisioning Manager 1.0, on the specific operating system and database combination described in this guide.

SAP Product	Based on the following SAP NetWeaver Release
SAP Business Suite 7i 2016:	SAP NetWeaver 7.5
<ul style="list-style-type: none"><li>• EHP4 for SAP CRM 7.0 ABAP</li><li>• EHP8 for SAP ERP 6.0 ABAP</li><li>• EHP8 for SAP ERP 6.0 ABAP including SAP S/4HANA Finance 1605 SP03</li><li>• EHP4 for SAP SRM 7.0 ABAP</li><li>• EHP4 for SAP SCM 7.0 ABAP</li></ul>	<div>SAP NetWeaver 7.4 Support Release 2</div> <div>SAP NetWeaver 7.3 EHP1</div>
SAP Business Suite 7i 2013 Support Release 2:	SAP NetWeaver 7.5
<ul style="list-style-type: none"><li>• EHP3 for SAP CRM 7.0 ABAP Support Release 2</li><li>• EHP7 for SAP ERP 6.0 ABAP Support Release 2</li><li>• EHP7 for SAP ERP 6.0 ABAP including SAP Simple Finance 1.0 / 1503</li><li>• EHP3 for SAP SRM 7.0 ABAP Support Release 2</li><li>• EHP3 for SAP SCM 7.0 ABAP Support Release 2</li></ul>	<div>SAP NetWeaver 7.4 Support Release 2</div> <div>SAP NetWeaver 7.3 EHP1</div>
SAP NetWeaver 7.5	SAP NetWeaver 7.5
SAP Solution Manager 7.2 Support Release 2	SAP NetWeaver 7.4 Support Release 2
AS ABAP 7.4, OEM version 1.0	SAP NetWeaver 7.4 Support Release 2
SAP NetWeaver 7.4 Support Release 2	SAP NetWeaver 7.4

## 1.2 Naming Conventions

This section lists the naming conventions that are currently apply for the software provisioning manager 1.0 and terms used in this documentation.

- The software provisioning manager 1.0 is the successor of the product- and release-specific delivery of provisioning tools, such as “SAPinst”.  
Before you perform an installation from scratch or a target system installation in the context of a system copy, we strongly recommend that you always download the latest version of the software provisioning

manager 1.0 which is part of the Software Logistics Toolset 1.0 ("SL Toolset" for short). For more information, see [Preparing the Installation Media \[page 93\]](#).

This way, you automatically get the latest version with the latest fixes of the tool and supported processes. For more information about the software provisioning manager 1.0 as well as products and releases supported by it, see SAP Note [1680045](#) and <https://wiki.scn.sap.com/wiki/display/SL/Software+Provisioning+Manager+1.0+and+2.0>.

The "SAPinst" tool has been renamed to "software provisioning manager", 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 current SAPinst Framework version, see SAP Note [3207613](#) (*SAPinst Framework 753 Central Note*).
- Texts and screen elements in the the software provisioning manager's SL-UI
- Names of executables, for example `sapinst`
- Names of command line parameters, for example `SAPINST_STACK_XML`
- Names of operating system user groups, such as the additional group `sapinst`
- "usage type", "technical usage", and "product instance"  
As of software provisioning manager 1.0 SP07 (SL Toolset 1.0 SP12), the term "product instance" replaces the terms "usage type" and "technical usage". For more information, see SAP Note [1970349](#).  
For more information, see [New Features \[page 17\]](#).
- "SAP system" refers to SAP system based on the application server of 7.3 including Enhancement Package 1 / Application Server ABAP 7.4 / SAP NetWeaver 7.4 / SAP NetWeaver 7.5 / SAP NetWeaver Application Server for ABAP 7.51 innovation package / SAP NetWeaver Application Server for ABAP 7.52 .
- "Diagnostics Agent" refers to the SAP Solution Manager Diagnostics Agent which is the remote component of End-to-End Root Cause Analysis. It allows having a connection between SAP Solution Manager and managed systems, and then to collect information from the managed systems for reporting purposes.

## 1.3 Constraints

This section lists the naming constraints that are currently valid for the software provisioning manager 1.0 and this documentation.

- Effective immediately, the software provisioning manager no longer supports the deprecated CPU architectures and/or operating system versions listed in SAP Note [2998013](#).

### ⓘ 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 installation guide. For more information, see SAP Note [3220901](#).

- End of support for SAP products based on SAP NetWeaver 7.10, 7.11, 7.20, 7.30, 7.40 **SR1**

#### Note

SAP products based on SAP NetWeaver 7.10, 7.11, 7.20, 7.30, 7.40 **SR1** (with the exception of SAP Solution Manager 7.2 ABAP, which will continue to be supported ) are only supported in mainstream maintenance until the end of 2020. Extended maintenance will **not** be provided.

For more information, see SAP Note [2980160](#).

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 (SWPM10RMSPP30\_<Version>.SAR) from SAP Note [2980160](#). The guide set attached to SAP Note [2980160](#) covers only the SAP product versions which have reached end of maintenance.

- The Dual Stack option, which integrates an AS ABAP and AS Java in a single system (common System ID <SAPSID>, common startup framework, common database), is no longer supported in SAP systems based on SAP NetWeaver 7.5. So if you want to install a new SAP NetWeaver 7.5 Process Integration (PI) system which is based on SAP NetWeaver 7.5, do not use the documentation *Installation Guide - SAP Systems Based on the Application Server ABAP+Java of SAP NetWeaver on <OS>: <DB>*. Instead, use the *Installation Guide - SAP Systems Based on the Application Server ABAP of SAP NetWeaver on <OS>: <DB>* to install the ABAP stack with its own <SAPSID> and the *Installation Guide - SAP Systems Based on the Application Server Java of SAP NetWeaver on <OS>: <DB>* to install the Java stack with its own <SAPSID>. For more information, see the implementation sequence in the *Master Guide - SAP NetWeaver 7.5* at <http://help.sap.com/netweaver> > <Release> > *Installation and Upgrade*.
- Not all SAP NetWeaver releases or SAP Business Suite applications that are available in Software Provisioning Manager 1.0 and are described in this installation guide have already been released. Always check the [list of supported products \[page 11\]](#) and SAP Note [1680045](#) to ensure that the installation options you want to perform are already supported. For information about supported operating system and database platforms, see the Product Availability Matrix at <http://support.sap.com/pam>.
- Note that a complete system installation from scratch is not available for every product. For some products - such as SAP NetWeaver 7.5 - a complete new system installation from scratch is only provided for the highest support release. If there are one or more support releases, then a complete system installation is only available for the highest of these support releases. As for the lower support releases, only options for system copy and additional application server instances are provided.
- Your operating system platform must be **64-bit**.
- The SAP Adaptive Server Enterprise Cluster Edition is not supported.
- Raw devices are not supported.
- The `startsap` and `stopsap` commands have been deprecated. For more information and for information on alternatives, see [Starting and Stopping SAP System Instances Using Commands \[page 196\]](#).
- Client 066 is no longer available in newly installed SAP systems based on SAP NetWeaver 7.5 or higher. For more information, see SAP Note [1749142](#).









## 1.4 Before You Start




Make sure that you have read the release-specific “Master Guide” for your SAP Business Suite application, SAP NetWeaver application, or SAP Solution Manager system before you continue with this installation guide.

The “Master Guide” is the central document leading you through the overall implementation process for your SAP system installation. It contains crucial information about the overall implementation sequence, that is activities you have to perform before and after the installation process described in this installation guide.

You can find a printed version of this guide in your installation package or you can download the latest version from <https://help.sap.com>.

The following table lists the “Master Guide” of the SAP system application for which you can use this installation guide, along with the available quick link or path to the appropriate download location:

Document	Internet Address
Master Guide – SAP NetWeaver AS for ABAP 7.52	<a href="http://help.sap.com/nw752abap">http://help.sap.com/nw752abap</a> 
	▶▶ Installation and Upgrade ▶
Master Guide – SAP NetWeaver AS for ABAP 7.51 innovation package	<a href="http://help.sap.com/nw751abap">http://help.sap.com/nw751abap</a> 
	▶▶ Installation and Upgrade ▶
Master Guide – SAP NetWeaver 7.5	<a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a> 
	▶▶ Installation and Upgrade ▶
Master Guide – SAP Solution Manager 7.2	<a href="http://help.sap.com/solutionmanager">http://help.sap.com/solutionmanager</a> 
	▶▶ 7.2 <SP> ▶ Installation and Upgrade ▶
Master Guide SAP Supply Chain Management 7.0 <Including SAP Enhancement Package <Number> Powered by SAP NetWeaver	<a href="http://help.sap.com/scm">http://help.sap.com/scm</a> 
	▶▶ <Release> ▶ Installation and Upgrade ▶
Master Guide (Including Upgrade Information) - SAP Customer Relationship Management 7.0 <Including SAP Enhancement Package <Number>	<a href="http://help.sap.com/crm">http://help.sap.com/crm</a> 
	▶▶ <Release> ▶ Installation and Upgrade ▶
Master Guide (Including Upgrade Information) - SAP Supplier Relationship Management 7.0 <Including SAP Enhancement Package <Number>	<a href="http://help.sap.com/srm">http://help.sap.com/srm</a> 
	▶▶ <Release> ▶ Installation and Upgrade ▶
Master Guide - SAP Enhancement Package <Number> for SAP ERP 6.0	<a href="http://help.sap.com/erp">http://help.sap.com/erp</a> 
	▶▶ <Release> ▶ Installation and Upgrade ▶

Document	Internet Address
Master Guide – SAP Enhancement Package 1 for SAP NetWeaver 7.3	<a href="http://help.sap.com/nw731">http://help.sap.com/nw731</a> 
	 <a href="#">Installation and Upgrade</a> 








## 1.5 SAP Notes for the Installation

This section lists the most important SAP Notes relevant for an installation using Software Provisioning Manager

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

Make sure that you have the up-to-date version of each SAP Note, which you can find at <https://support.sap.com/notes>.

SAP Notes for the Installation

SAP Note Number	Title	Description
<a href="#">1680045</a> 	Release Note for software provisioning manager 1.0	software provisioning manager 1.0 with installation and system copy for SAP NetWeaver-based systems
<a href="#">1748888</a> 	Inst. Systems Based on SAP NetWeaver 7.3 and higher: SAP ASE	software provisioning manager 1.0: SAP NetWeaver 7.3 and higher
<a href="#">1554717</a> 	Planning Information for SAP on ASE 16.0	SAP release information for customers deploying SAP on SAP ASE 16.0
<a href="#">1619967</a> 	SYB: DBA Cockpit Correction Collection SAP Basis 7.31	The implementation of SAP Note <a href="#">1619967</a> directly after the installation is strongly recommended for SAP ASE 16.0.
<a href="#">1882376</a> 	SYB: DBA Cockpit Correction Collection SAP Basis 7.4	The implementation of SAP Note <a href="#">1882376</a> directly after the installation is strongly recommended for SAP ASE 16.0.
<a href="#">2293673</a> 	SYB: DBA Cockpit Correction Collection SAP Basis 7.5	The implementation of SAP Note <a href="#">2293673</a> directly after the installation is strongly recommended for SAP ASE 16.0.
<a href="#">2380028</a> 	SYB: DBA Cockpit Correction Collection SAP Basis 7.51	The implementation of SAP Note <a href="#">2380028</a> directly after the installation is strongly recommended for SAP ASE 16.0.

SAP Note Number	Title	Description
<a href="#">1245200</a> 	ICF Service Activation for Web Dynpro DBA Cockpit	The Web browser-based version of the DBA Cockpit does not start correctly.
<a href="#">1585981</a> 	Backup Instructions for SAP on ASE 16.0	Information about backup and recovery (valid for SAP ASE 16.0)
<a href="#">1650511</a> 	High Availability Offerings with SAP ASE	Information about high availability cluster solutions for SAP ASE 16.0
<a href="#">73606</a> 	Supported Languages and Code Pages	Information on possible languages and language combinations in SAP systems
<a href="#">1972803</a> 	SAP on AIX: Recommendations	This SAP Note contains recommendations and clarifications for many topics relevant for SAP on AIX.
<a href="#">1075118</a> 	SAP on HP-UX: FAQ	This SAP Note contains information that is specific to the SAP system installation on HP-UX
<a href="#">2369910</a> 	SAP Software on Linux: General information	This SAP Note contains Linux-specific information about the SAP system installation
<a href="#">1669684</a> 	SAP on Oracle Solaris 11	This SAP Note contains information and references to SAP Notes relevant for Solaris 11
<a href="#">1067221</a> 	Composite SAP Note for heterogeneous installation	This SAP Note and its related SAP Notes describe the released operating system and database combinations for heterogeneous SAP systems landscapes.
<a href="#">789220</a> 	Support Package levels for SAP NetWeaver installations/upgrades	Information about the ABAP Support Package levels and kernel patch levels contained in the current SAP NetWeaver release
<a href="#">1990240</a> 	Support of mixed landscapes (Unicode and Non-Unicode)	Temporarily your system landscape is mixed with Unicode and Non-Unicode systems. You have third party software in your system landscape which does not support Unicode at all. You wonder whether such a heterogeneous system landscape is supported without restrictions.
<a href="#">886535</a> 	Downloading multispanning archives	Downloading multispanning archives





## 1.6 New Features




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


Make sure that you also read the [Release Notes](#) for your SAP product at <https://help.sap.com> > <Search your SAP Product> > <Select your SAP Product Version> > [What's New](#) >.

Feature	Description	Availability
New SAPinst Framework Version 753	The SAPinst framework patch level has been upgraded from version 749 (SAP Note <a href="#">2393060</a> SAPinst Framework 749 Central Note) to 753. For more information, see SAP Note <a href="#">3207613</a> .	software provisioning manager 1.0 SP36 (SL Toolset 1.0 SP36)
Linux: Native systemd support	<b>Linux only:</b> 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. For more information about Linux with systemd, see SAP Note <a href="#">3139184</a> . When you install SAP systems using software provisioning manager 1.0 SP34 or higher, native systemd support is automatically activated.	software provisioning manager 1.0 SP34 (SL Toolset 1.0 SP34)
Support of AIX 7.3	AIX 7.3 is now supported for all software lifecycle management options from software provisioning manager. For more information, see SAP Note <a href="#">3104875</a> .	software provisioning manager 1.0 SP34 (SL Toolset 1.0 SP34)
Switch from 7.21_EXT Kernel to 7.22_EXT Kernel	Kernel 7.21 has reached end of maintenance. In addition, some issues have been fixed with the new 7.22_EXT kernel media.	software provisioning manager 1.0 SP31 (SL Toolset 1.0 SP31)
Configuring the Number of Work Processes during the Installation	You can now enter the number of work processes interactively when performing an installation in custom mode.  For more information, see <a href="#">Basic Installation Parameters [page 54]</a> .	software provisioning manager 1.0 SP30 (SL Toolset 1.0 SP30)
New Look and Feel of SL-UI	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> .	software provisioning manager 1.0 SP24, PL05 (SL Toolset 1.0 SP24)
New software provisioning manager Option <a href="#">Download Software Packages for Maintenance Planner Transaction</a>	If you perform an installation using a Stack XML file, you can now download media according to a Maintenance Plan. For more information, see <a href="#">Installation Using a Stack XML File [page 37]</a> , <a href="#">Downloading Software Packages for a Maintenance Planner Transaction [page 103]</a> , and <a href="https://blogs.sap.com/2018/06/01/software-provisioning-manager-new-option-for-standalone-download-service/">https://blogs.sap.com/2018/06/01/software-provisioning-manager-new-option-for-standalone-download-service/</a> .	software provisioning manager 1.0 SP23 (SL Toolset 1.0 SP23)


Feature	Description	Availability
Validity Check for SUM* .SAR Archive	If you perform an installation using a Stack XML file and choose to extract the SUM* .SAR archive, the validity of this archive is now checked by the software provisioning manager. For more information, see entry <i>Extract the SUM* .SAR Archive</i> in <a href="#">Additional Parameters When Using a Stack XML File [page 67]</a> .	software provisioning manager 1.0 SP23 (SL Toolset 1.0 SP23)
Secure ABAP Message Server Connection	The software provisioning manager now uses secure connections to the ABAP message server of the SAP system being installed. For more information, see the <i>ABAP Message Server Port</i> entry within the <i>Ports</i> table in <a href="#">SAP System Parameters [page 55]</a> .	software provisioning manager 1.0 SP22 (SL Toolset 1.0 SP22)
software provisioning manager Log Files Improvements	software provisioning manager log files are now available immediately after software provisioning manager has been started, that is <b>before</b> a product has been selected on the <i>Welcome</i> screen. For more information, see <a href="#">Useful Information about Software Provisioning Manager [page 128]</a> and <a href="#">Troubleshooting with Software Provisioning Manager [page 139]</a> .	software provisioning manager 1.0 SP22 (SL Toolset 1.0 SP22)
Digital Signature Check of Installation Archives	The digital signature of installation archives is checked <b>automatically</b> by software provisioning manager during the <i>Define Parameters</i> phase while processing the <i>Software Package Browser</i> screens. As of now software provisioning manager only accepts archives whose digital signature has been checked. For more information, see <a href="#">Downloading SAP Kernel Archives (Archive-Based Installation) [page 100]</a> and SAP Note <a href="#">2541751</a> - SYB: Software Provisioning Manager RDBMS content has been tampered.	software provisioning manager 1.0 SP22 (SL Toolset 1.0 SP22)
LOADTOOLS .SAR archive in software provisioning manager enabled for NUC	<p>The load tools in SWPM10SP&lt;<a href="#">Support_Package_Number</a>&gt;_&lt;<a href="#">Version_Number</a>&gt; .SAR are now also enabled for an installation using <b>non</b>-Unicode (NUC) SAP kernel version 7.40 or higher.</p> <p>For more information, see <a href="#">Downloading and Extracting the Software Provisioning Manager 1.0 Archive [page 98]</a></p> <div> <h4>Note</h4> </div> <div> <p>This feature enhances feature <i>LOADTOOLS .SAR archive in Software Provisioning Manager</i> of software provisioning manager 1.0 SP21 (SL Toolset 1.0 SP21) (see entry <i>LOADTOOLS .SAR archive in software provisioning manager</i> below in this table).</p> </div>	software provisioning manager 1.0 SP22 (SL Toolset 1.0 SP22)
Enabling IPv6	<p>You can now set up a new SAP system or SAP system instance using Internet Protocol Version 6 (IPv6).</p> <p>For more information, see <a href="#">Prerequisites for Running Software Provisioning Manager [page 117]</a>.</p>	software provisioning manager 1.0 SP22 (SL Toolset 1.0 SP22)

Feature	Description	Availability
Media Signature Check	<p>The digital signature of media is checked <b>automatically</b> by the software provisioning manager during the <a href="#">Define Parameters</a> phase while processing the <a href="#">Media Browser</a> screens. The software provisioning manager only accepts media whose digital signature has been checked.</p> <p>For more information, see <a href="#">Preparing the Installation Media [page 93]</a> and <a href="#">Running the software provisioning manager [page 121]</a>.</p>	software provisioning manager 1.0 SP21 (SL Toolset 1.0 SP21)
SAP Host Agent Upgrade During the Installation (Optional)	<p>During the <a href="#">Define Parameters</a> phase of the installation, software provisioning manager prompts you whether you want to upgrade an existing version of the SAP Host Agent on the installation host. If there is no SAP Host Agent on the installation host, it is installed automatically without prompt. For more information, see the <i>General Parameters</i> table in <a href="#">SAP System Parameters [page 55]</a> .</p>	software provisioning manager 1.0 SP21 (SL Toolset 1.0 SP21)
Simplified Additional Application Server Instance Installation	<p>During an additional application server installation, SAP kernel archives are only prompted if they cannot be retrieved from the primary application server instance of the existing SAP system. For more information, see <a href="#">Preparing the Installation Media [page 93]</a>.</p>	software provisioning manager 1.0 SP21 (SL Toolset 1.0 SP21)
LOADTOOLS .SAR archive in software provisioning manager	<p>An up-to-date version of the load tools - such as R3load, R3szchk, R3ldctl, SAPu001 - which were available so far only in the SAPEXEDB .SAR archive of the kernel media, has now been made available in the software provisioning manager archive. For more information, see SAP Note <a href="#">2472835</a> . For an installation using Unicode kernel version 7.40 or higher, the load tools from the SWPM10SP&lt;Support_Package_Number&gt;_&lt;Version_Number&gt; .SAR are used automatically.</p> <p>For more information, see <a href="#">Downloading and Extracting the Software Provisioning Manager 1.0 Archive [page 98]</a></p>	software provisioning manager 1.0 SP21 (SL Toolset 1.0 SP21)
Secure Sockets Layer (SSL) encrypted data transfer	<p>The feature <i>SSL encrypted data transfer</i> is available for SAP ASE 16.0 SP02 starting with PL6. For general limitations and prerequisites refer to SAP Note <a href="#">2481596</a>  - <i>SYB: Encrypted data transfer between SAP System and SAP ASE database</i>. The SAP software provisioning manager offers the possibility to enable the SSL encrypted data transfer via a checkbox. The SSL certificates are generated by the SAP software provisioning manager and enabled for the database server and the SAP application server. There are no manual steps necessary to configure the usage of SSL for the purpose of encrypted data transfer. For more information see <a href="#">Enabling SSL Encrypted Data Transfer [page 200]</a></p>	software provisioning manager 1.0 SP21 (SL Toolset 1.0 SP21)
SL-UI with SAPINST 7.49	<p>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 <a href="#">Useful Information about Software Provisioning Manager [page 128]</a>, <a href="#">Running Software Provisioning Manager [page 121]</a> .</p>	software provisioning manager 1.0 SP20 (SL Toolset 1.0 SP20)

Feature	Description	Availability
Cleanup of Operating System Users	<p>You can now specify during the <a href="#">Define Parameters</a> phase that the operating system users are to be removed from group <code>sapinst</code> after the execution of software provisioning manager has completed.</p> <p>For more information, see <i>Operating System Users</i> in <a href="#">SAP System Parameters [page 55]</a>.</p>	software provisioning manager 1.0 SP20 (SL Toolset 1.0 SP20)
Option to install an SAP Gateway in an ASCS instance	<p>You can now install an SAP Gateway in an ASCS instance. You can choose this option while running the ASCS instance installation.</p> <p>For more information, see <a href="#">ASCS Instance with Embedded Gateway [page 34]</a></p>	software provisioning manager 1.0 SP20 (SL Toolset 1.0 SP20)
Verification of Integrity of Data Units in software provisioning manager	<p>The integrity of data units extracted from the software provisioning manager archive is verified. For more information, see <a href="#">Downloading and Extracting the Software Provisioning Manager 1.0 Archive [page 98]</a> .</p> <p>In addition, check SAP Note <a href="#">1680045</a>  whether additional information is available.</p>	software provisioning manager 1.0 SP19 (SL Toolset 1.0 SP19)
Archive-based Language Installation	<p>If you perform an installation using a Stack XML file, you can now add language archives to the download basket and use them for language installation. This feature is currently restricted to the latest products only. For more information, see <a href="#">Additional Parameters When Using a Stack XML File [page 67]</a></p>	software provisioning manager 1.0 SP19 (SL Toolset 1.0 SP19)
Option to install an SAP Web Dispatcher in an ASCS instance	<p>You can now install an SAP Web Dispatcher in an ASCS instance. You can choose this option while running the ASCS instance installation.</p> <p>For more information, see <a href="#">ASCS Instance with Embedded SAP Web Dispatcher [page 32]</a></p>	software provisioning manager 1.0 SP18 (SL Toolset 1.0 SP18)
Archive-Based Installation	<p>You can now download the required <b>installation archives</b> instead of the complete SAP kernel installation media. For more information, see section <i>Downloading Specific Installation Archives (Archive-Based Installation)</i> in <a href="#">Preparing the Installation Media [page 93]</a> .</p>	software provisioning manager 1.0 SP17 (SL Toolset 1.0 SP17)
Diagnostics Agent	<p>The Diagnostics Agent is no longer installed automatically with the SAP system. The <a href="#">Install Diagnostics Agent</a> check box on the <a href="#">Install Diagnostics Agent</a> screen is no longer available.</p> <p>You now have to install the Diagnostics Agent always separately. We recommend that you install it prior to the installation of your SAP system(s).</p> <p>For more information, see the Diagnostics Agent Installation Strategy attached to SAP Note <a href="#">1365123</a>  , to SAP Note <a href="#">1833501</a>  , and to SAP Note <a href="#">1858920</a>  and the attached <i>Diagnostics Agent Setup Guide</i>.</p>	software provisioning manager 1.0 SP10 (SL Toolset 1.0 SP16)

Feature	Description	Availability
System Provisioning for SAP NetWeaver 7.5 and SAP NetWeaver 7.5-based Products	<p>All system provisioning tasks (installation, system copy, system rename) are available for the new SAP NetWeaver 7.5 release.</p> <p>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.</p> <ul style="list-style-type: none"> <li>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 <i>Upgrade Master Guide - SAP NetWeaver 7.5</i> at: <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a> ►► <i>Installation and Upgrade</i> ►</li> <li>SAP NetWeaver 7.5 is Unicode only</li> <li>The primary application server instance directory has been renamed from <code>/usr/sap/&lt;SAPSID&gt;/DVEBMGS&lt;Instance_Number&gt;</code> to <code>/usr/sap/&lt;SAPSID&gt;/D&lt;Instance_Number&gt;</code>. For more information, see <a href="#">SAP Directories [page 82]</a>.</li> <li>Declustering and depooling of tables during the installation is enabled by default. For more information, see SAP Note <a href="#">1892354</a> .</li> </ul>	software provisioning manager 1.0 SP09 (SL Toolset 1.0 SP15)
System Provisioning for SAP Solution Manager 7.2	<p>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.</p>	software provisioning manager 1.0 SP09 (SL Toolset 1.0 SP15)

Feature	Description	Availability
Creating Kernel Archives from existing SAP System	<p>You can reuse the binaries of a dedicated SAP system for a new SAP system installation or target system installation in the context of a system copy by creating *.SAR archives based on the *.lst files from the executable (exe) directories of the source SAP system.</p> <div> <p><b>Note</b></p> <p>This feature is only available for Unicode systems.</p> </div> <div> <p><b>Caution</b></p> <p>This feature has been deprecated with Software Provisioning Manager 1.0 SP21 (SL Toolset 1.0 SP21) and the related option has been removed from the <a href="#">Welcome</a> screen. This deprecation has been accomplished to ensure compliancy with the new feature "Media Signature Check" of Software Provisioning Manager 1.0 SP21 (SL Toolset 1.0 SP21) described above in this table.</p> </div>	software provisioning manager 1.0 SP09 (SL Toolset 1.0 SP14)
Installation Using a Stack XML File	<p>You can start software provisioning manager using a Stack XML file generated by the Maintenance Planner. The configuration parameters in this file can then be used by software provisioning manager to improve the integration with SUM and to simplify the process of installation for a new system on target software level.</p> <p>For more information, see <a href="#">Installation Using a Stack XML File [page 37]</a>.</p>	software provisioning manager 1.0 SP07 (SL Toolset 1.0 SP12)
Adaptive Installation	<p>You can assign virtual host names to SAP system instances during the input phase of the installation directly on the screens where you define the instance parameters.</p> <p>For more information, see <a href="#">SAP System Parameters [page 55]</a>.</p>	software provisioning manager 1.0 SP07 (SL Toolset 1.0 SP12)
Feedback Evaluation Form	<p>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.</p> <p>Port 4239 is used for displaying the feedback evaluation form. For more information, see <a href="#">Prerequisites for Running Software Provisioning Manager [page 117]</a>.</p>	software provisioning manager 1.0 SP07 (SL Toolset 1.0 SP12)

Feature	Description	Availability
Option <a href="#">Verify Signed Media</a>	<p>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.</p> <p>For more information, see SAP Note <a href="#">1979965</a> .</p>	<p>software provisioning manager 1.0 SP06 (SL Toolset 1.0 SP11)</p>

## 2 Installation Options Covered by this Guide

This section shows the installation options covered by this installation guide. You have to decide what exactly you want to install because the steps you have to perform vary according to the installation option you choose.

After you have decided on the installation option that you want to use, continue with [Planning \[page 36\]](#).

[Standard System \[page 24\]](#)

[Distributed System \[page 25\]](#)

[High-Availability System \[page 26\]](#)

[Additional Application Server Instance \[page 28\]](#)

[Splitting off an ABAP Central Services Instance from an Existing Primary Application Server Instance \[page 31\]](#)

[ASCS Instance with Embedded SAP Web Dispatcher \[page 32\]](#)

[ASCS Instance with Embedded Gateway \[page 34\]](#)

### 2.1 Standard System

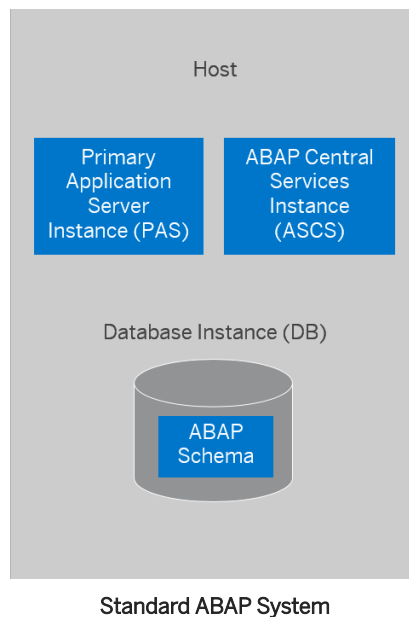
You can install a **standard** system on a **single** host.

There are the following instances:

- ABAP Central services instance (ASCS instance)  
Contains the ABAP message server and the Standalone Enqueue Server  
In a standard
  - Optionally, you can install the ASCS instance with an embedded SAP Web Dispatcher. For more information, see [ASCS Instance with Embedded SAP Web Dispatcher \[page 32\]](#).
  - Optionally, you can install the ASCS instance with an embedded gateway. For more information, see [ASCS Instance with Embedded Gateway \[page 34\]](#).
- Database instance (DB)
- Primary application server instance (PAS instance)

Additionally, you can install one or more additional application server instances. For more information, see [Additional Application Server Instance \[page 28\]](#).





## 2.2 Distributed System

An SAP system consists of SAP instances. An SAP instance is a group of processes that are started and stopped at the same time.

In a **distributed** system, every instance can run on a separate host:

### Note

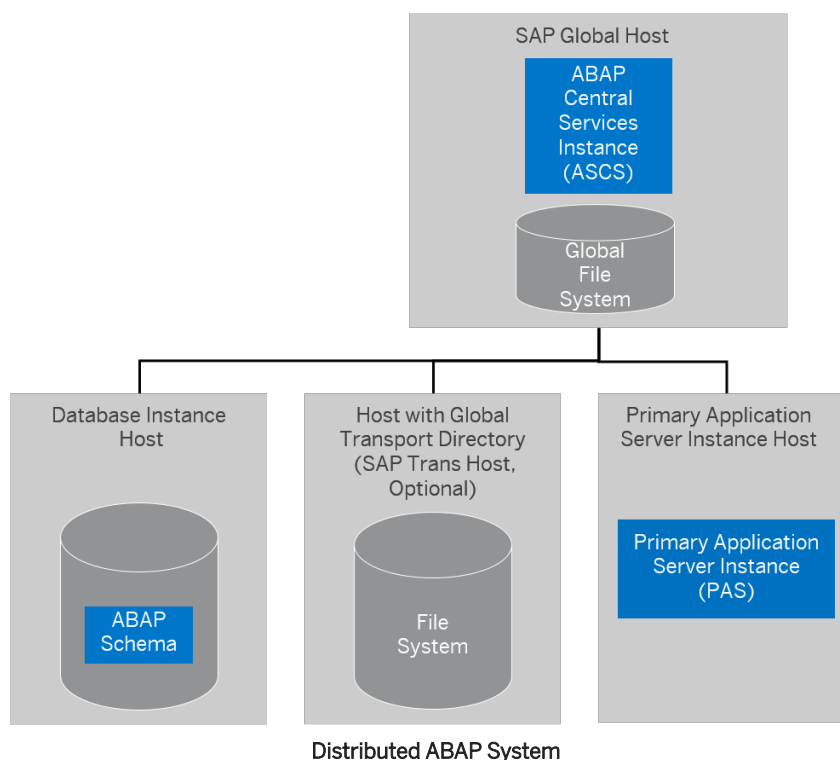
We strongly recommend installing the ASCS instance on the same host as the primary application server. The installation of the ASCS instance on a separate host is reserved for high-availability configurations on Windows that are not using Microsoft Failover Clustering.

- ABAP Central services instance (ASCS instance)  
Contains the ABAP message server and the Standalone Enqueue Server
  - Optionally, you can install the ASCS instance with an embedded SAP Web Dispatcher. For more information, see [ASCS Instance with Embedded SAP Web Dispatcher \[page 32\]](#).
  - Optionally, you can install the ASCS instance with an embedded gateway. For more information, see [ASCS Instance with Embedded Gateway \[page 34\]](#).
- Database instance (DB)  
The ABAP stack uses its own database schema in the database.
- Primary application server instance (PAS)

The graphics below assume that you use the global directories of the ASCS instance as global file system. That means that the host with the ASCS instance is the SAP global host. However, you can also separately install the global directories on any host of your SAP system landscape.

You can also use the SAP transport host or the host with the global file system (SAP global host) as your primary application server instance host.

Optionally, you can install one or more additional application server instances. For more information, see [Installation of an Additional Application Server Instance \[page 28\]](#).



## 2.3 High-Availability System

An SAP system consists of SAP instances. An SAP instance is a group of processes that are started and stopped at the same time.

In a **high-availability** system, every instance can run on a separate host.

### Note

The High-Availability System is valid only for SAP ASE 16.0.

There are the following instances:

- ABAP central services instance (ASCS instance)  
Contains the ABAP message server and the Standalone Enqueue Server

### Note

**ASCS instance with “Standalone Enqueue Server” versus ASCS instance with new “Standalone Enqueue Server 2”:** Software Provisioning Manager 1.0 installs the “Standalone Enqueue Server” by default for all SAP system releases in the ASCS instance. However, if you have installed the ASCS instance for an SAP system based on SAP NetWeaver AS for ABAP 7.52, you can switch to the new “Standalone Enqueue Server 2” after the installation has completed. For more information, see <https://help.sap.com/nw752abap> ➤ *Application Help* ➤ *SAP NetWeaver Library: Function-Oriented View* ➤ *SAP NetWeaver Application Server for ABAP* ➤ *Components of SAP NetWeaver Application Server for ABAP* ➤ *Standalone Enqueue Server 2* ➤ *High Availability with Standalone Enqueue Server 2* ➤, and *Systems Based on SAP NetWeaver AS for ABAP 7.52 only: Switching to Standalone Enqueue Server 2 and Enqueue Replicator 2 [page 160]* .

- Optionally you can install the ASCS instance with an embedded SAP Web Dispatcher. For more information, see [ASCS Instance with Embedded SAP Web Dispatcher \[page 32\]](#).
- Optionally you can install the ASCS instance with an embedded gateway. For more information, see [ASCS Instance with Embedded Gateway \[page 34\]](#).
- ERS instance for the ASCS instance (mandatory)  
The ERS instance contains the replication table, which is a copy of the lock table of the Standalone Enqueue Server in the ASCS instance.

#### 📘 Note

**ERS instance with “Enqueue Replication Server” versus ERS instance with new “Enqueue Replicator 2”:** Software Provisioning Manager 1.0 installs the ERS instance with the classic “Enqueue Replication Server” by default for all SAP system releases. However, if you have installed the ERS instance for an SAP system based on SAP NetWeaver AS for ABAP 7.52, you can switch to “Enqueue Replicator 2” after the installation has completed. For more information, see <https://help.sap.com/nw752abap> ➤ *Application Help* ➤ *SAP NetWeaver Library: Function-Oriented View* ➤ *SAP NetWeaver Application Server for ABAP* ➤ *Components of SAP NetWeaver Application Server for ABAP* ➤ *Standalone Enqueue Server 2* ➤ and *Systems Based on SAP NetWeaver AS for ABAP 7.52 only: Switching to Standalone Enqueue Server 2 and Enqueue Replicator 2 [page 160]*.

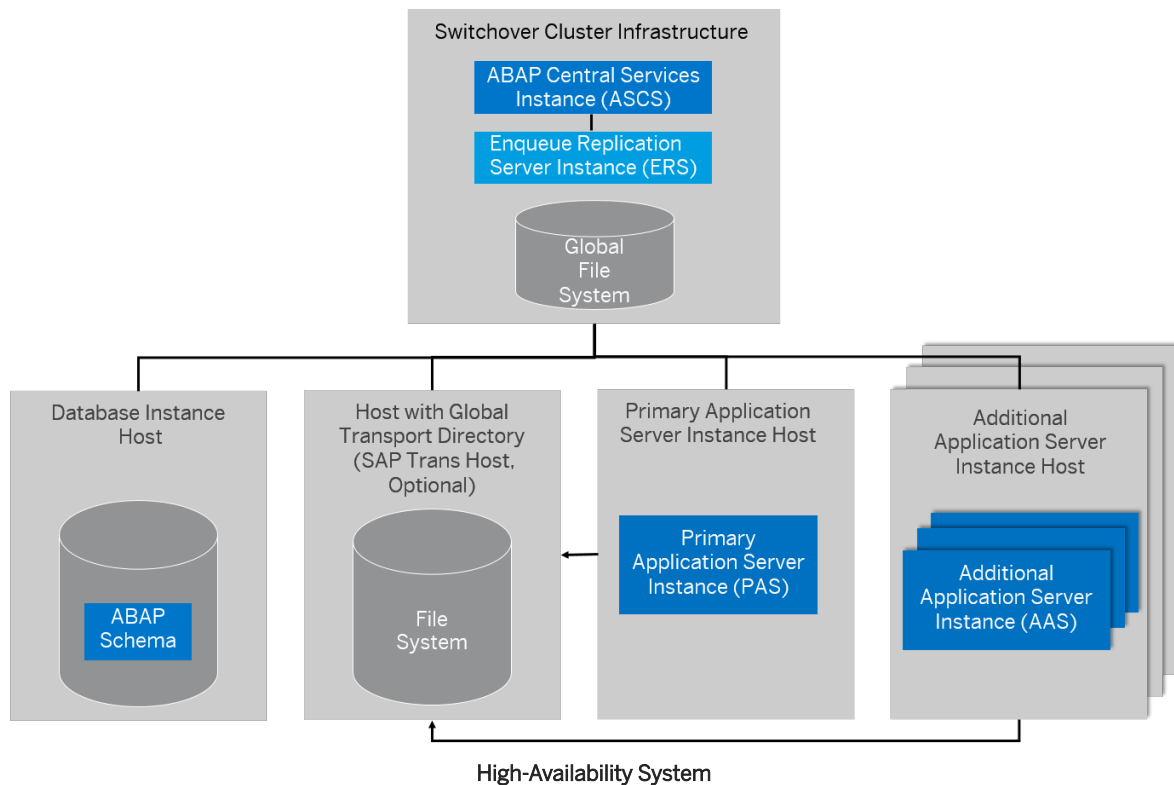
- Database instance (DB)
- Primary application server instance (PAS)

The graphics below each assumes that you run the ASCS instance and the ERS instance on the switchover cluster infrastructure. However, you can also run other SAP system instances that are a single point of failure (SPOF) on a switchover cluster infrastructure, for example the database instance.

We recommend that you run the ASCS instance in a switchover cluster infrastructure.

To increase high availability by creating redundancy, we recommend that you install additional application server instances on hosts different from the primary application server instance host. For more information, see [Installation of an Additional Application Server Instance \[page 28\]](#).

The following figure shows an example for the distribution of the SAP system instances in a high-availability system.



## 2.4 Additional Application Server Instance

You can install one or more additional application server instances for an existing SAP system. Additional application server instances are optional and can be installed on separate hosts.

An additional application server instance can run on:

- The host of any instance of the existing SAP system (exceptions see below)
- On a dedicated host

### Note

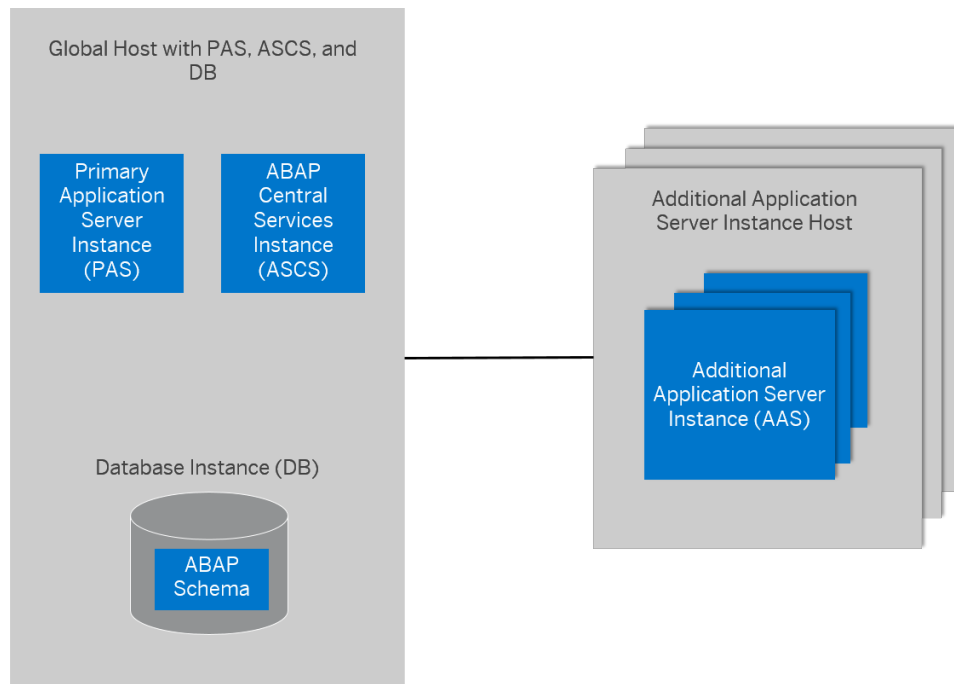
If you want to install additional application server instances running on an operating system other than the primary application server instance, see [Heterogeneous SAP System Installation \[page 200\]](#). For example, you need to do this if your primary application server instance runs on Linux for z System but the additional application server instance is to run on Windows.

### Additional Application Server Instance for a Standard System

For example, the following figure shows a standard system with additional application server instances that run:

- On the main host of the SAP system, that is, on the host on which the primary application server instance and the database instance run

- On dedicated hosts



Additional Application Server Instance for a Standard ABAP System

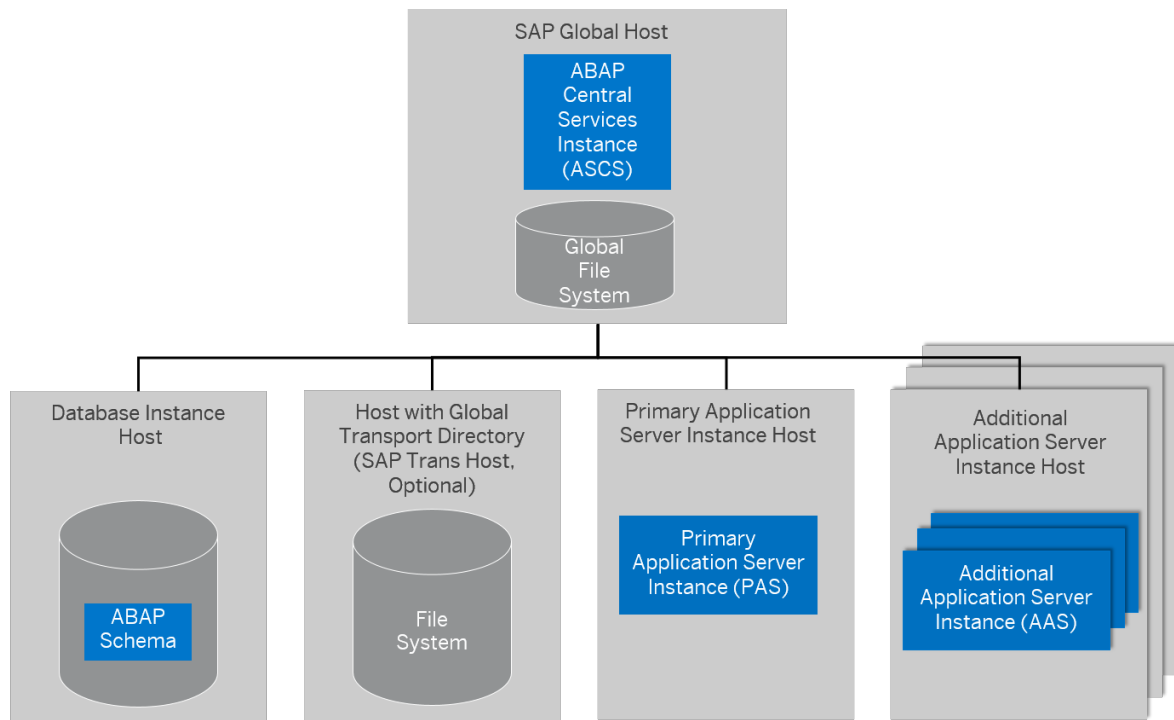
For more information, see [Standard System \[page 24\]](#).

## Additional Application Server Instance for a Distributed System

The following figure shows a distributed system with additional application server instances that run:

- On the main host of the SAP system, that is, on the host on which the primary application server instance runs
- On dedicated hosts

We do **not** recommend installing additional application server instances on the SAP global host.



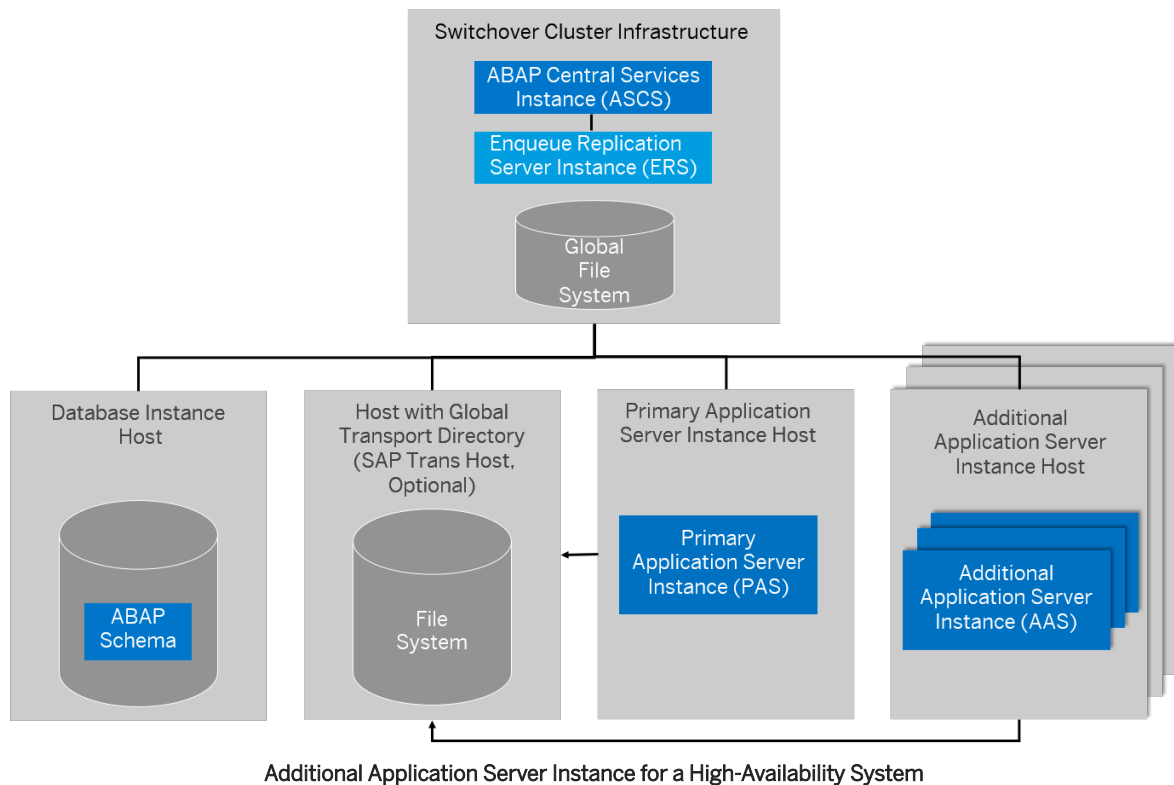
Additional Application Server Instance for a Distributed ABAP System

For more information, see [Distributed System \[page 25\]](#).

## Additional Application Server Instance for a High-Availability System

The following figure shows a high-availability system with additional application server instances that run:

- On the host of the primary application server instance
- On dedicated hosts



For more information, see [High-Availability System \[page 26\]](#).

## 2.5 Splitting off an ABAP Central Services Instance from an Existing Primary Application Server Instance

The ABAP central services instance (ASCS instance) consists of the essential ABAP enqueue and message system services only. With a separate ASCS instance, it is easier for you to later turn your SAP system into a high-availability system.

The benefit of having a separate ASCS instance is mainly in the area of high-availability. This approach concentrates the possible single points of failure of a system into a single instance and, therefore, restricts failure to a single instance.

Every newly installed SAP system based on SAP NetWeaver 7.3 and higher is automatically installed with an ASCS instance, even if you install all SAP system instances on one host (standard system).

However, if you upgraded your SAP system from a release based on a SAP NetWeaver release lower than 7.3, your SAP system might not yet have a separate ASCS instance.

The section [Splitting Off an ABAP Central Services Instance from an Existing Primary Application Server Instance \[page 180\]](#) describes how you can move the message server and the enqueue work process from an existing primary application server instance to a newly installed ABAP central services instance (ASCS instance).

## 2.6 ASCS Instance with Embedded SAP Web Dispatcher

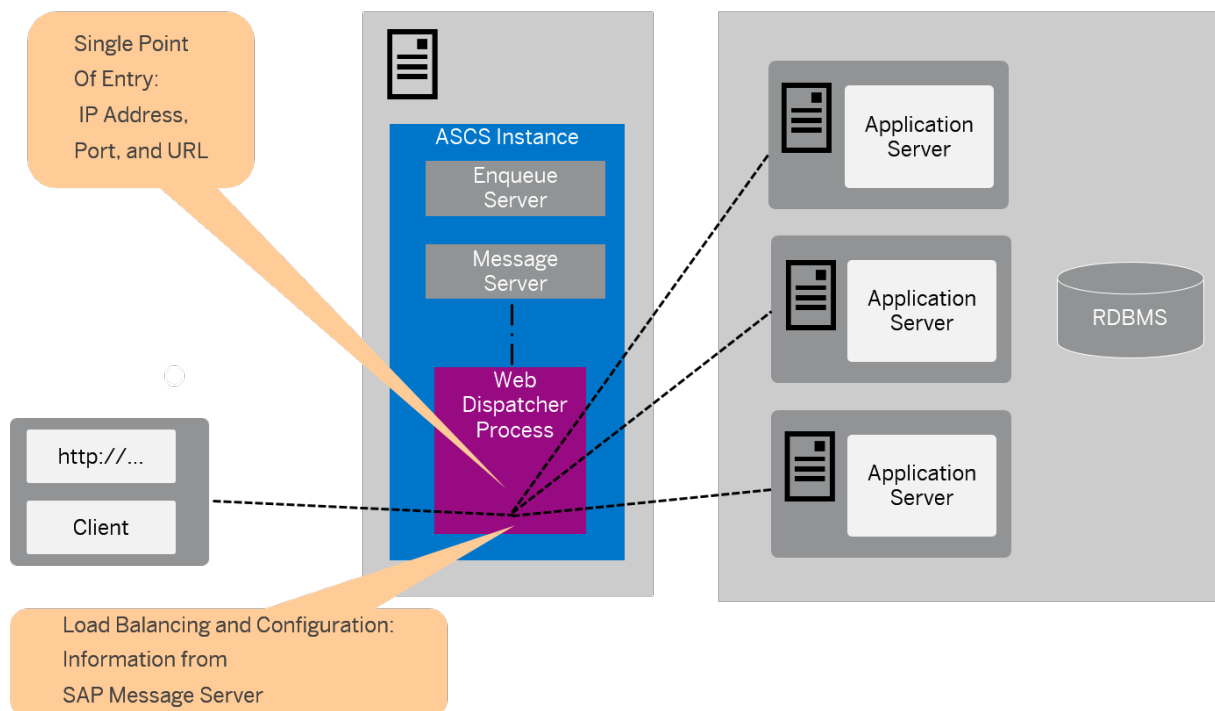
You can install an SAP Web Dispatcher embedded in the ASCS instance. If you select this option, an SAP Web Dispatcher is installed running within the ASCS instance. No separate SAP Web Dispatcher instance and no dedicated <SAPSID> are created for the SAP Web Dispatcher.

### → Recommendation

The embedded SAP Web Dispatcher is subject to a number of limitations. For more information, see SAP Note [3115889](#). It is a convenience option for small systems, but is not recommended for production systems. The general recommendation is to install a standalone SAP Web Dispatcher instead.

### ⓘ Note

We only recommend this option for special scenarios. For more information, see SAP Note [908097](#). The embedded SAP Web Dispatcher is subject to a number of limitations. For more information, see SAP Note [3115889](#). It is a convenient option for small systems, but is not recommended for production systems. The general recommendation is to install a standalone SAP Web Dispatcher instead. For an SAP Web Dispatcher installation, a standalone installation (see below) continues to be the default scenario.



ASCS Instance with Embedded SAP Web Dispatcher






The SAP Web Dispatcher is located between the Web client (browser) and your SAP system that is running the Web application.

It acts as single point of entry for incoming requests (HTTP, HTTPS), defined by the IP address, port, and URL, and forwards them in turn to the application server (AS) of the SAP system.















The SAP Web Dispatcher receives information about the SAP system that it needs for load distribution (load balancing) from the message server and application server via HTTP.

## Installation of “Standalone” SAP Web Dispatcher with its own <SAPSID> and Instance

If you want to install an SAP Web Dispatcher for another system - that is not for the system for which you use the ASCS instance and with its own SAP system ID and instance number - you have to install SAP Web Dispatcher separately as described in the documentation [Installation of SAP Web Dispatcher for SAP Systems Based on SAP NetWeaver 7.0 to 7.52 on <OS>](#) which you can find at <https://support.sap.com/slttoolset>  [Installation Option of Software Provisioning Manager 1.0](#)  [Installation Option of Software Provisioning Manager 1.0](#)  [Installation Guides - Standalone Engines and Clients - Software Provisioning Manager 1.0](#)  [SAP Web Dispatcher](#) .

## More Information

For more information about the architecture and the functions of SAP Web Dispatcher, see the SAP Web Dispatcher documentation in the SAP Library at:

SAP Release and SAP Library Quicklink	SAP Library Path (Continued)
<ul style="list-style-type: none"> <li>SAP NetWeaver 7.3 including Enhancement Package 1 <a href="http://help.sap.com/nw731">http://help.sap.com/nw731</a> </li> <li>SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a> </li> <li>SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a> </li> <li>SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a>  SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a> </li> </ul>	<p> <a href="#">Application Help</a>  <a href="#">Function-Oriented View</a>  <a href="#">Application Server</a>  <a href="#">Application Server Infrastructure</a>  <a href="#">Components of SAP NetWeaver Application Server</a>  <a href="#">SAP Web Dispatcher</a> </p>

## Related Information

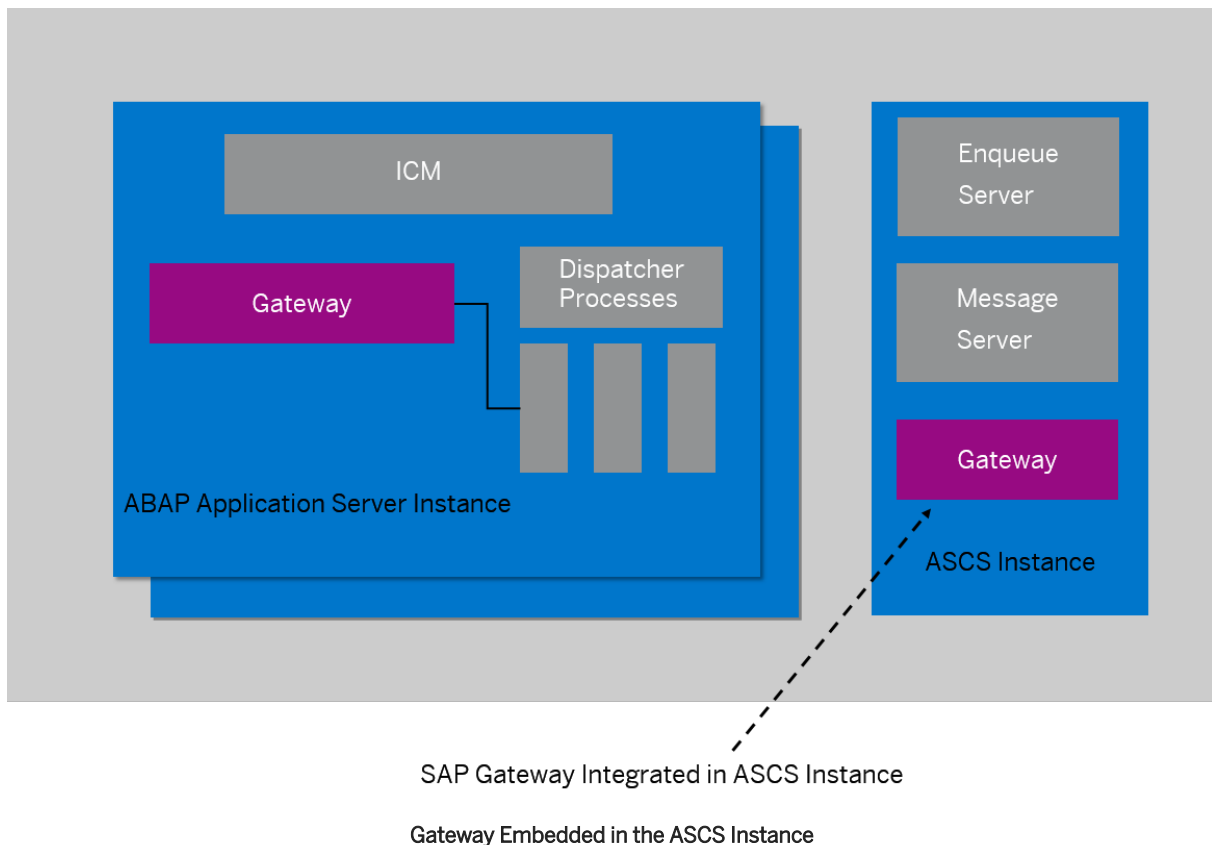
[Parameters for Additional Components to be Included in the ASCS Instance \[page 69\]](#)

## 2.7 ASCS Instance with Embedded Gateway

You can install a gateway embedded in the ASCS instance. If you select this option, a gateway is installed **within the ASCS instance**.

### Note

No separate standalone gateway instance and no dedicated <SAPSID> are created for the gateway.



The gateway enables communication between work processes and external programs, as well as communication between work processes from different instances or SAP systems.

You can also install a **standalone** gateway instance. For more information, see the documentation [Installation Guide – Installation of a Standalone Gateway Instance for SAP Systems Based on SAP NetWeaver 7.1 to 7.5x](#) at <https://support.sap.com/sltoolset> >> [Installation Option of Software Provisioning Manager 1.0](#) > [Installation Guides - Standalone Engines and Clients - Software Provisioning Manager 1.0](#) > [Standalone Gateway Instance](#) >.

## Related Information

[Parameters for Additional Components to be Included in the ASCS Instance \[page 69\]](#)

# 3 Planning

## 3.1 Planning Checklist

This section includes the planning steps that you have to complete for the following installation options.

- Standard, distributed, or high-availability system
- Additional application server instance

Detailed information about the steps are available in the linked sections.

### Prerequisites

1. You have planned your SAP system landscape according to the Master Guide available at the appropriate download location as described in [Before You Start \[page 14\]](#).
2. You have decided on your installation option (see [Installation Options Covered by this Guide \[page 24\]](#)).

### Standard, Distributed, or High-Availability System

#### Note

In a standard system, all mandatory instances are installed on one host. Therefore, if you are installing a standard system, you can ignore references to other hosts. Since an SAP system on IBM Db2 for z/OS system is always a distributed constellation, we only offer two installation options: standard or high-availability.

#### 1. [Installation Using a Stack XML File \[page 37\]](#):

If you want to install an SAP ABAP system along with the required Support Package stack and ABAP Add-Ons in one implementation run, you need to plan the desired installation target using the maintenance planner at <https://apps.support.sap.com/sap/support/mp>.

In the maintenance planner, a stack XML file with the desired Support Package stack and Add-On information is generated, which you then hand over to the software provisioning manager by calling it with command line parameter `SAPINST_STACK_XML=<Absolute_Path_To_Stack_XML_File>`. Included constraints and defaults defined in the stack XML file are then used for the initial installation by Software Provisioning Manager and for the application of Support Package stacks and Add-Ons by the Software Update Manager (SUM).

#### → Recommendation

We recommend that you perform the installation using a stack configuration file for all new products such as SAP S/4HANA SAP on Premise.

## 2. [Installation Using a Stack XML File \[page 37\]](#):

If you want to install an SAP Process Integration 7.5 system or an SAP Solution Manager 7.2 system comprising ABAP and Java, both the ABAP and the Java system must be installed with the identical Support Package (SP) level.

3. You [check the hardware and software requirements \[page 39\]](#) on every installation host.
4. You [plan how to set up user and access management \[page 53\]](#).
5. You identify [Basic SAP System Installation Parameters \[page 54\]](#).
6. You [carefully plan the setup of your database \[page 70\]](#).
7. You [decide on the transport host to use \[page 72\]](#).
8. You decide whether you want to [integrate LDAP Directory Services in your SAP system \[page 183\]](#).
9. To install a high-availability system, you read [Planning the Switchover Cluster for High Availability \[page 73\]](#).
10. Continue with [Preparation \[page 76\]](#).

## Additional Application Server Instance

1. You check the [hardware and software requirements \[page 39\]](#) for every installation host on which you want to install one or more additional application server instances.
2. You identify [Basic SAP System Installation Parameters \[page 54\]](#).
3. Continue with [Preparation \[page 76\]](#).

## 3.2 Installation Using a Stack XML File

The option to perform an installation using a Stack XML file (also called “up-to-date installation” or “UDI” for short) improves the process of provisioning an up-to-date SAP system by creating a unified consumption experience and a direct close collaboration between the involved tools, namely:

- The Maintenance Planner
- software provisioning manager (the “software provisioning manager” for short)
- Software Update Manager (abbreviated as “SUM”)

The software provisioning manager then can take over more default settings that are already predefined in the Maintenance Planner.

### → Recommendation

We recommend that you perform the installation using a Stack XML file for new products, such as SAP S/4HANA or [SAP Solution Manager 7.2](#).

## Restrictions

You cannot perform a target system installation in the context of a system copy as an installation with a Stack XML file.

## Prerequisites

- You must have an S-User with the authorization to access and use the Maintenance Planner at <https://apps.support.sap.com/sap/support/mp>.
- For additional information about involved tools and supported SAP system releases, see SAP Note [2277574](https://support.sap.com/en/tools/software-logistics-tools/landscape-management-process.html).

## Features

An installation using a Stack XML file provides the following features:

- You can use a Stack XML file generated by the Maintenance Planner at <https://apps.support.sap.com/sap/support/mp>. The parameters contained in the Stack XML file can then be processed by software provisioning manager to get better integrated with SUM and to simplify the process of installation for a new system on a target software level. This makes IT administration easier by reducing the efforts in Total Cost of Ownership (TCO). For more information, see the *Best Practice Guide to Planning Landscape Changes* at <https://support.sap.com/en/tools/software-logistics-tools/landscape-management-process.html>.
- When processing a Stack XML file, software provisioning manager can take over more default settings that are already predefined in the Maintenance Planner and offers more possibilities for automation as compared to when running without it. For more information about the benefits by comparing the existing process with the new improved process, see *Up-To-Date Installation* at <https://blogs.sap.com/2016/10/21/up-to-date-installation-2/>.

### Note

The procedure and the screenshots provided in the linked document are **only an example** to show how an up-to-date installation works in general for an example SAP product, and what the benefits are. This document is **not** intended to serve as a detailed instruction for an up-to-date-installation of any supported SAP product.





- You can also run an installation using a Stack XML file in **unattended mode** as described in [System Provisioning Using an Input Parameter File \[page 130\]](#).
- You can use software provisioning manager to directly download the installation software from SAP by providing the Maintenance Plan to software provisioning manager while running software provisioning manager option *Download Software Packages for Maintenance Planner Transaction*. For more information, see [Downloading Software Packages for a Maintenance Planner Transaction \[page 103\]](#).

## Integration

For the additional input parameters that you need to specify, see *Additional Parameters When Using a Stack XML File (Optional)*. You can find the link to this section in *Related Information* below.

If you want to install an SAP Process Integration 7.5 system or an SAP Solution Manager 7.2 system comprising ABAP and Java, consider the following additional requirements:

- Both the ABAP and the Java system must be installed with the identical Support Package (SP) level.
- The SAP system ID (SAPSID) of the ABAP system must be different from the SAPSID of the Java system.
- The installation with Stack XML file must be run separately, first for the ABAP system, then for the Java system.

The Software Update Manager (SUM) is started by the software provisioning manager at the end of the installation process. A browser window opens with a link to UI of the SUM that is already running. Follow the instructions on the SUM dialogs and in the SUM Guide at <https://support.sap.com/sltoolset>    *System Maintenance* .


Each section in this guide describing steps that are completely or at least partially automatized when using a Stack XML files is marked with an appropriate note at the beginning. These are the following sections:

- [Planning Checklist \[page 36\]](#)
- [Additional Parameters When Using a Stack XML File \[page 67\]](#)
- [Downloading Software Packages for a Maintenance Planner Transaction \[page 103\]](#)
- [Running Software Provisioning Manager \[page 121\]](#)
- [Configuring the Change and Transport System \[page 153\]](#)
- [Applying the Latest Kernel and Support Package Stacks \[page 156\]](#)
- [Installing Additional Languages and Performing Language Transport \[page 162\]](#)

## 3.3 Hardware and Software Requirements

Ensure that your hosts meet the hardware and software requirements for your operating system and the SAP instances. Otherwise you might experience problems when working with the SAP system.

### Prerequisites

- Make sure that the host name meets the requirements listed in SAP Note [611361](#) .
- Contact your OS vendor for the latest OS patches.
- Check your keyboard definitions.
- If you want to install a printer on a host other than the primary application server instance host (for example, on a separate database instance host), check whether the printer can be accessed under UNIX.

## Procedure

1. Check the *Product Availability Matrix* at <http://support.sap.com/pam> for supported operating system releases.
2. Check the hardware and software requirements using:
  - The **Prerequisite Checker**:
    - Standalone (optional) before the installation process  
For more information, see [Running the Prerequisites Check Standalone \[page 40\]](#).
    - Integrated in the installation tool (mandatory) as part of the installation process  
For more information, see [Running Software Provisioning Manager \[page 121\]](#).
  - The hardware and software requirements tables in [Requirements for the SAP System Hosts \[page 41\]](#).
3. If you want to install a **production** system, the values provided by the Prerequisite Checker and the hardware and software requirements checklists are not sufficient. In addition, do the following:
  - You use the **Quick Sizer** tool available at <http://sap.com/sizing>.
  - You contact your hardware vendor, who can analyze the load and calculate suitable hardware sizing depending on:
    - The set of applications to be deployed
    - How intensively the applications are to be used
    - The number of users

### 3.3.1 Running the Prerequisites Check in Standalone Mode (Optional)

This section describes how to run the prerequisites check in standalone mode. Running the prerequisites check in standalone mode is optional.

## Context

When you install an SAP system, the software provisioning manager automatically starts the prerequisites check and checks the hardware and software requirements in the background. As an optional step during planning, you can also run the prerequisites check in standalone mode to check the hardware and software requirements for your operating system and the SAP instances before the actual installation.

#### → Recommendation

We recommend that you use **both** the prerequisites check and the requirements tables for reference.



## Procedure

1. Download and unpack the Software Provisioning Manager archive to a local directory as described in [Downloading and Extracting the Software Provisioning Manager 1.0 Archive \[page 98\]](#).
2. Make either the separate `SAPPEXE<Version>.SAR` archive or the complete kernel medium available as described in [Preparing the Installation Media \[page 93\]](#).
3. Start the software provisioning manager as described in [Running Software Provisioning Manager \[page 121\]](#).
4. On the *Welcome* screen, choose **>> <SAP\_Product> > <Database> > Preparations > Prerequisites Check >**.
5. Follow the instructions in the software provisioning manager dialogs and enter the required parameters.

### 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.

After you have finished, the *Parameter Summary* screen appears. This screen summarizes all parameters that you have entered and that you want to have checked. If you want to make a change, select the relevant parameters and choose *Revise*.

6. To start the prerequisites check, choose *Next*.

## Results

The *Prerequisite Checker Results* screen displays the results found. If required, you can also check the results in file `prerequisite_checker_results.html`, which you can find in the installation directory.

## Related Information

[Downloading and Extracting the Software Provisioning Manager 1.0 Archive \[page 98\]](#)  
[Preparing the Installation Media \[page 93\]](#)

## 3.3.2 Requirements for the SAP System Hosts

Every installation host must meet at least the requirements listed in the following tables. Most of the requirements are valid for every installation host whereas some requirements are instance-specific and are marked accordingly.

## Note

The information here and in the following sections is **not** intended to replace the operating system documentation. For more information, see your operating system documentation.

## Related Information

[General Installation Information for Your Operating System \[page 42\]](#)

[Hardware Requirements \[page 43\]](#)

[Software Requirements \[page 47\]](#)

[Other Requirements \[page 52\]](#)

### 3.3.2.1 General Installation Information for Your Operating System

Before checking the hardware and software requirements, we recommend that you make yourself familiar with some general information about installation of SAP systems on your operating system platform.

General Installation Information for Your Operating System

Operating System	Information
AIX	<p>Before you start the installation, make sure that you have read SAP Note In addition to the hardware and software requirements listed here, make sure that you also consult the hardware and software requirements provided by IBM at <a href="#">1972803</a>.</p> <p>In addition, we also recommend that you check the information available in the <i>SAP on AIX</i> space on the SAP Community Network at <a href="https://www.sap.com/community/topic/aix.html">https://www.sap.com/community/topic/aix.html</a>.</p>
HP-UX	<p>In addition to the hardware and softwareBefore you start the installation, make sure that you have read SAP Note <a href="#">1075118</a>.</p> <p>SAP on ASE uses Concurrent I/O on HP-UX. The Veritas File System (Online JFS 5.0.1 or above) must be installed on your system prior to installing SAP applications on ASE and HP-UX. For more information, see SAP Note <a href="#">1077887</a>.</p> <p>SAP Adaptive Server Enterprise 16.0: Install the following AioEnh patch: <a href="https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.de?productNumber=AioEnh">https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.de?productNumber=AioEnh</a>.</p> <p>SAP only supports the use of native binaries. Always use the appropriate SAP binaries for your processor.</p>

Operating System	Information
Linux	<p>Before you start the installation, make sure that you have read the SAP Notes for your Linux distribution listed in the central SAP Note <a href="#">2369910</a> .</p> <p>In addition, we also recommend that you check the information available in the <i>SAP on Linux</i> space on the SAP Community Network at <a href="https://www.sap.com/community/topic/linux.html">https://www.sap.com/community/topic/linux.html</a> .</p>
Solaris	Before you start the installation, make sure that you have read SAP Note <a href="#">1669684</a> .

## 3.3.2.2 Hardware Requirements

Every installation host must meet at least the hardware requirements listed in the following tables. Most of the requirements are valid for every installation host whereas some requirements are instance-specific and are marked accordingly.







### Hardware Requirements

Requirement	Values and Activities
Processing units	<p><b>For application server instances and database instances:</b> The number of physical or virtual processing units usable by the operating system image must be equal to or greater than 2.</p> <p>Database Instance:</p> <p>SAP ASE 16.0: All 64-bit processors that are capable of running the supported operating system versions for SAP ASE 16.0.</p> <p>All other instances: 2 dual core CPUs or 4 single core CPUs.</p> <p><b>For an ASCS instance running on a separate host:</b> One physical or virtual processing unit usable by the operating system image might be sufficient.</p> <p>Examples of processing units are processor cores or hardware threads (multithreading).</p> <p>In a virtualized environment, ensure that adequate processor resources are available to support the workloads of the running SAP systems.</p>
Optical media drive	ISO 9660 compatible

Requirement	Values and Activities
Hard disk space	<ul style="list-style-type: none"> <li>• <b>General Requirements:</b> <ul style="list-style-type: none"> <li>• 2 GB of temporary disk space for each required physical installation media - or alternatively the downloaded SAP kernel archives - that you have to copy to a local hard disk. For more information, see <a href="#">Preparing the Installation Media [page 93]</a>.</li> <li>• If you prefer downloading the separate SAP kernel archives instead of using the complete SAP kernel media, you require 2 GB of temporary disk space for the set of SAP kernel archives that you have to copy to a local hard disk. For more information, see <a href="#">Downloading SAP Kernel Archives (Archive-Based Installation) [page 100]</a>.</li> <li>• 2 GB of temporary disk space for the installation.</li> <li>• If an advanced disk array is available (for example, RAID), contact your hardware vendor to make sure that the data security requirements are covered by this technology.</li> </ul> </li> <li>• <b>Instance-Specific Requirements:</b> <p>If you install <b>several instances</b> on <b>one host</b>, you have to add up the requirements accordingly.</p> <ul style="list-style-type: none"> <li>• For more information about space requirements for the file systems and directories of the instances, see <a href="#">SAP Directories [page 82]</a> and the appropriate database-specific information listed below. <ul style="list-style-type: none"> <li>• ABAP central services instance (ASCS): Minimum 2 GB <ul style="list-style-type: none"> <li>• If you install the ASCS instance with an embedded SAP Web Dispatcher, for the installation as such you require at least 1 GB of hard disk space in addition. For production use of the SAP Web Dispatcher, you need to reserve at least 5 GB.</li> <li>• If you install the ASCS instance with an embedded gateway, you require at least 1 GB of hard disk space in addition.</li> </ul> </li> <li>• ERS instance for the ASCS instance (if required): Minimum 2 GB</li> <li>• Database Instance: Database instance valid only for SAP ASE 16.0: Minimum 40 GB (depending on the SAP product to be installed) Database Software: 8 GB For safety reasons (system failure), the file systems must be physically distributed over several disks or RAID-technology must be used.</li> <li>• Primary application server instance: Minimum 2 GB (SAP NetWeaver BW server: Minimum 30 GB)</li> <li>• Additional application server instance: Minimum 2 GB (SAP NetWeaver BW server: Minimum 30 GB)</li> <li>• SAP Host Agent: Minimum 0.5 GB</li> </ul> </li> </ul> </li> </ul>

Requirement	Values and Activities
RAM	<div>Only valid for 'Platform': AIX</div> <div> <p><b>Note</b></p> <p><b>AIX:</b> Keep in mind that the operating system itself requires about 10% of the available RAM.</p> </div> <div>End of 'Platform': AIX</div> <p>The following lists the RAM requirements for each SAP instance.</p> <p>If you install <b>several instances on one host</b>, you have to add up the requirements accordingly.</p> <ul style="list-style-type: none"> <li>ABAP central services instance (ASCS instance) Minimum 1 GB If you install the ASCS instance with an embedded SAP Web Dispatcher, see SAP Note <a href="#">2007212</a> for memory consumption in productive use.</li> <li>ERS instance for the ASCS instance (if required): Minimum 1 GB</li> <li>Database Instance: SAP ASE 16.0: 7 GB</li> <li>Primary application server instance Minimum 3 GB (BW server: Minimum 2 GB)</li> <li>Additional application server instance: Minimum 3 GB</li> <li>SAP Host Agent: Minimum 1 GB</li> </ul> <div>Only valid for 'Platform': HP-UX</div> <p><b>HP-UX:</b> Refer to SAP Note <a href="#">1112627</a> for the commands to display the RAM size on HP-UX.</p> <div>End of 'Platform': HP-UX</div> <div>Only valid for 'Platform': Linux</div> <p><b>Linux:</b> For more information about how to evaluate main memory consumption on Linux, see SAP Note <a href="#">1382721</a>.</p> <div>End of 'Platform': Linux</div>


Requirement	Values and Activities
<b>AIX:</b> Paging space	<p>You need hard disk drives with sufficient paging space. You can calculate the required paging space as follows:</p> <ul style="list-style-type: none"> <li>• Optimistic strategy: You need at least 20 GB for the <b>primary application server instance</b> and at least another 10 GB for every <b>additional application server instance</b>.</li> <li>• Defensive strategy: 3 * RAM, at least 20 GB</li> </ul> <p>In addition, for the <b>database instance</b> you need:</p> <ul style="list-style-type: none"> <li>• 0.75 * RAM, if RAM is greater than 8 GB</li> <li>• 1 * RAM, if RAM is less than 8 GB</li> </ul> <p>For the latest information about recommended paging space, see SAP Note <a href="#">1121904</a>.</p>
<b>HP-UX:</b> Swap space	<p>You need hard disk drives with sufficient space for swap. You can calculate the required swap space as follows:</p> <p>2 * RAM, at least 20 GB</p> <p><b>SAP NetWeaver Process Integration 7.5 or higher:</b> 2 * RAM or 80 GB, whichever is higher</p> <p>For more information about HP-UX swap space recommendations and about how to set up swap space, see SAP Note <a href="#">1112627</a>.</p>
<b>Linux:</b> Swap space	<p>You need hard disk drives with sufficient space for swap. We recommend that you use the amount of swap space as described in SAP Note <a href="#">1597355</a>. You might decide to use more or less swap space based on your individual system configuration and your own experience during daily usage of the SAP system.</p>
<b>Oracle Solaris:</b> Swap space	<p>You need hard disk drives with sufficient space for swap.</p> <p>At least 20 GB are required. For more information, see SAP Note <a href="#">570375</a>.</p>

Requirement	Values and Activities
Verifying paging space size and kernel settings using <code>memlimits</code>	<p>To verify paging space size and kernel settings, you can execute <code>memlimits</code> as follows:</p> <ol style="list-style-type: none"> <li>1. Make sure that the <code>SAPCAR</code> program is available on the installation host. If <code>SAPCAR</code> is not available, you can download it from <a href="https://me.sap.com/softwarecenter">https://me.sap.com/softwarecenter</a>   <a href="#">SUPPORT PACKAGES &amp; PATCHES</a>  <a href="#">By Category</a>  <a href="#">SAP TECHNOLOGY COMPONENTS</a>  <a href="#">SAPCAR</a> .</li> <li>2. Make the <code>SAPEXE.SAR</code> archive available on the installation host. Either download it as described in <a href="#">Downloading SAP Kernel Archives (Archive-Based Installation)</a> [page 100] or take it from the kernel media, where this archive is contained in the folder <code>K_&lt;Kernel_Version&gt;_&lt;U/N&gt;_&lt;OS&gt;/DBINDEP</code>.</li> <li>3. To unpack the file <code>memlimits</code>, enter the following command: <code>SAPCAR -xvfg SAPEXE.SAR memlimits</code></li> <li>4. Start <code>memlimits</code> using the following command: <code>./memlimits -l 20000</code> In case of error messages, increase the paging space and rerun <code>memlimits</code> until there are no more errors.</li> </ol>

### 3.3.2.3 Software Requirements

Every installation host must meet at least the software requirements listed in the following tables. Most of the requirements are valid for every installation host whereas some requirements are instance-specific and are marked accordingly.

Software Requirements

Requirement	Values and Activities
	<p>SAP ASE 16.0 FOR BUS.SUITE</p> <p>The database software is automatically installed by the software provisioning manager.</p> <p>Check the Product Availability Matrix (PAM) at <a href="http://support.sap.com/pam">http://support.sap.com/pam</a>  for supported database platforms.</p>

Requirement	Values and Activities									
AIX: Operating system version	<p>Your operating system platform must be 64-bit.</p> <p>Check the Product Availability Matrix (PAM) at <a href="http://support.sap.com/pam">http://support.sap.com/pam</a> for supported operating system versions.</p> <p>Contact your OS vendor for the latest OS patches.</p> <p>Minimal OS requirements for the specific SAP Kernel releases are listed in SAP Note <a href="#">1780629</a>.</p> <p>You require at least AIX 7.1 TL1 SP1 to be able to run the software provisioning manager.</p> <ul style="list-style-type: none"><li><b>SAP ASE 16.0 for Bus.Suite</b> AIX 7.2 AIX 7.1 TL1 SP1 and higher To check the operating system version, enter the following command: <b>oslevel -s</b></li></ul> <p>Required SPs</p> <table><thead><tr><th>AIX Level:</th><th>Required SP:</th><th>oslevel -s</th></tr></thead><tbody><tr><td>AIX 7.1 TL 1</td><td>SP6</td><td>7100-01-06-1241</td></tr><tr><td>AIX 7.1 TL 2</td><td>SP2</td><td>7100-02-02-1316</td></tr></tbody></table> <p>AIX 7.1 requires a patch that fixes APARIV10828. Contact IBM directly to obtain the patch.</p>	AIX Level:	Required SP:	oslevel -s	AIX 7.1 TL 1	SP6	7100-01-06-1241	AIX 7.1 TL 2	SP2	7100-02-02-1316
AIX Level:	Required SP:	oslevel -s								
AIX 7.1 TL 1	SP6	7100-01-06-1241								
AIX 7.1 TL 2	SP2	7100-02-02-1316								
HP-UX: Operating system version	<p>Your operating system platform must be 64-bit.</p> <p>Check the Product Availability Matrix (PAM) at <a href="http://support.sap.com/pam">http://support.sap.com/pam</a> for supported operating system versions.</p> <p>To check the operating system version on your installation hosts, use the following command:</p> <p><b>uname -r</b></p> <p>See SAP Note <a href="#">939891</a> for information about support time frames of HP-UX.</p> <p>The following patches are required for HP-UX 11.31: PHSS_37493, PHSS_36352, PHKL_37802, PHKL_42687</p>									



Requirement	Values and Activities
Linux: Operating system version	<p>Your operating system platform must be 64-bit.</p> <p>Check the Product Availability Matrix (PAM) at <a href="http://support.sap.com/pam">http://support.sap.com/pam</a> for supported operating system versions.</p> <p>Contact your OS vendor for the latest OS patches.</p> <p>To check the operating system version on your installation hosts, use the following command:</p> <pre>cat /etc/*-release</pre> <div> Only valid for 'Platform': Linux </div> <p>If you are installing on SUSE Linux Enterprise Server (SLES), see SAP Note <a href="#">1275776</a> to prepare SLES for SAP environments.</p> <div> End of 'Platform': Linux </div>
Linux Secure Enabled Linux (SELinux) Mode	Set Linux Secure Enabled Linux (SELinux)   SELinux mode to <i>Permissive</i> or <i>Disabled</i> on all SAP System hosts for the installation procedure. For more information, see SAP Note <a href="#">3247790</a> .
Oracle Solaris: Operating system version	<p>Your operating system platform must be 64-bit.</p> <p>Check the Product Availability Matrix (PAM) at <a href="http://support.sap.com/pam">http://support.sap.com/pam</a> for supported operating system versions.</p> <p>To check the operating system version on your installation hosts, use the following command:</p> <pre>/bin/uname -r</pre>
SAP Kernel Releases and Versions	<p>For more information about release and roadmap information for the SAP Kernel versions, and how this relates to SAP system support packages - including important notes on downward compatibility and release dates - see the central SAP Kernel notes:</p> <p>To use regular software provisioning manager (SWPM10&lt;Version&gt;.SAR) with SAP kernel up to 7.53 on RHEL 6 or SLES 11 or Oracle Linux 6, you must install the required <code>libstdc++</code> RPM packages. For more information, see SAP Note <a href="#">2195019</a>.</p>
AIX: Kernel parameters	<p>To adjust the settings for asynchronous I/O if the database is installed using file systems, see SAP Note <a href="#">1972803</a>.</p> <p>To adjust AIX Virtual Memory Management settings, see SAP Note <a href="#">973227</a>.</p>




Requirement	Values and Activities
HP-UX: Kernel parameters	<p>To run an SAP system, make sure that you check and, if necessary, modify the HP-UX kernel.</p> <div> <div>⚠ Caution</div> <p>We recommend that a UNIX system administrator performs all kernel modifications.</p> </div> <p>Proceed as follows:</p> <ol style="list-style-type: none"> <li>1. Check SAP Note <a href="#">172747</a> for recommendations on current HP-UX kernel parameters.</li> </ol> <div> <div>⚠ Caution</div> <p>If a kernel value is already larger than the one suggested in the SAP Note, do not <b>automatically</b> reduce it to match the SAP requirement.</p> <p>You have to analyze the exact meaning of such a parameter and, if required, to reduce the parameter value. In some cases this might improve the performance of your SAP applications.</p> </div> <ol style="list-style-type: none"> <li>2. If necessary, modify the kernel parameters in one of the following ways: <ul style="list-style-type: none"> <li>• Manually, as described in SAP Note <a href="#">172747</a>.</li> <li>• Interactively, using the HP-UX System Administrator Manager (SAM) or System Management Homepage (SMH).</li> </ul> </li> </ol>
Linux: Kernel parameters	<p>Check SAP Note <a href="#">2369910</a> for Linux kernel versions certified by SAP.</p> <p>To check the Linux kernel parameters for your Linux distribution, see one of the following SAP Notes:</p> <ul style="list-style-type: none"> <li>• SLES 15: SAP Note <a href="#">2578899</a></li> <li>• SLES 12: SAP Note <a href="#">1984787</a></li> <li>• RHEL8: SAP Note <a href="#">2772999</a></li> <li>• RHEL7: SAP Note <a href="#">2002167</a></li> <li>• RHEL6: SAP Note <a href="#">1496410</a></li> </ul>
Oracle Solaris: Kernel parameters	<p>To run an SAP system, you must check and, if necessary, modify the Oracle Solaris kernel parameters or resource controls.</p> <ul style="list-style-type: none"> <li>• Oracle Solaris 10: SAP Note <a href="#">724713</a></li> <li>• Oracle Solaris 11: SAP Note <a href="#">1797712</a></li> </ul>
HP-UX: OS patches	<p>To check the minimum required OS patches, see SAP Note <a href="#">837670</a>.</p>
Oracle Solaris: OS patches	<p>Check the relevant SAP Note for required Oracle Solaris patches:</p> <ul style="list-style-type: none"> <li>• Oracle Solaris 10 on SPARC: SAP Note <a href="#">832871</a></li> <li>• Oracle Solaris 11: SAP Note <a href="#">1797712</a></li> </ul>

Requirement	Values and Activities
<b>AIX:</b> National Language Support (NLS)	Make sure that National Language Support (NLS) and corresponding locales are installed.
<b>HP-UX:</b> National Language Support (NLS)	<p>Make sure that National Language Support (NLS) and corresponding locales are installed.</p> <p>You can check this as follows:</p> <ul style="list-style-type: none"> <li>Enter the following commands to check whether National Language Support (NLS) is installed:  <code>swlist -v   grep -i nls</code>  The output should contain the string NLS-AUX . . .</li> <li>Enter the following commands to check which locales are available:  <code>locale -a</code>  The following files must be available: de_DE.iso88591, en_US.iso88591.</li> </ul>
<b>Linux:</b> National Language Support (NLS)	<p>Make sure that National Language Support (NLS) and corresponding locales are installed.</p> <p>You can check this as follows:</p> <ul style="list-style-type: none"> <li>Ensure that the required locales such as the following are available:  de_DE, en_US</li> <li>Check SAP Note <a href="#">187864</a> for information about corrected operating system locales and SAP blended Code Pages.</li> </ul>
<b>Oracle Solaris:</b> National Language Support (NLS)	<p>Make sure that National Language Support (NLS) and corresponding locales are installed.</p> <p>Enter the following command to check which locales are available:</p> <code>locale -a</code> <p>The following locale must be available: en_US.ISO8859-1</p>
System language	For the installation, you must choose English as the operating system language on all hosts that run SAP software.

## 3.3.2.4 Other Requirements

Every installation host must meet at least the requirements listed in the following tables. Most of the requirements are valid for every installation host whereas some requirements are instance-specific and are marked accordingly.

### Other Requirements

Requirement	Values and Activities
Minimum Web Browser	<p>Make sure that you have at least one of the following web browsers installed on the host where you run the software provisioning manager's SL-UI:</p> <ul style="list-style-type: none"><li>• Microsoft Internet Explorer 11 or higher</li><li>• Microsoft Edge</li><li>• Mozilla Firefox</li><li>• Google Chrome</li></ul> <p>Always use the latest version of these web browsers.</p> <p>You need a web browser to be able to run the SL-UI, and to display the Evaluation Form and send it to SAP.</p>
AIX: Additional software	<p>Make sure that the following additional file sets are installed:</p> <ul style="list-style-type: none"><li>• <code>bos.adt.*</code> – Base Application Development</li><li>• <code>bos.perf.*</code> – performance and diagnostics tools</li><li>• <code>perfagent.tools</code> – performance monitoring tools</li></ul>
Host name	<p>To find out <b>physical</b> host names, open a command prompt and enter <b>hostname</b>.</p> <p>For more information about the allowed host name length and characters allowed for SAP system instance hosts, see SAP Note <a href="#">611361</a> .</p> <div><p>Only valid for 'Platform': HP-UX</p><p>For HP-UX, see SAP Note <a href="#">1503149</a>  in addition.</p><p>End of 'Platform': HP-UX</p></div> <p>If you want to use <b>virtual</b> host names, see SAP Note <a href="#">962955</a> .</p>

Requirement	Values and Activities
Login shell	<p>The software provisioning manager only prompts you for this parameter if you use a login shell other than C shell (csh).</p> <p>For more information, see SAP Note <a href="#">202227</a>.</p> <div>Only valid for 'Platform': HP-UX</div> <p>For HP-UX, see SAP Note <a href="#">1038842</a> in addition.</p> <div>End of 'Platform': HP-UX</div> <p><b>SAP Host Agent installation:</b></p> <ul style="list-style-type: none"> <li>Make sure that <code>/bin/false</code> can be used as a login shell.</li> <li> <div>Only valid for 'Platform': AIX</div> <p><b>AIX only:</b> Add <code>/bin/false</code> to the list of valid login shells (attribute <code>shells</code>) in <code>/etc/security/login.cfg</code>.</p> <div>End of 'Platform': AIX</div> </li> </ul>
<b>HP-UX:</b> Mount and file system configuration	For recommendations about block size and mount option configuration, see SAP Note <a href="#">1077887</a> .
Shared file systems for decentralized systems	If application servers are installed decentralized, a "shared" file system must be installed, for example Network File System (NFS).
<b>AIX:</b> C++ Runtime environment	Minimal C++ runtime requirements for the specific SAP Kernel releases are listed in SAP Note <a href="#">1780629</a> .

## 3.4 Planning User and Access Management

You have to plan how to configure user and access management for the SAP system to be installed.

Before you add a newly installed SAP system to your system landscape, you must decide which kind of user management you want to use:

- Central User Administration (CUA)
- An LDAP directory as the data source for user data

### Procedure

To specify the initial data source of the User Management Engine (UME), proceed as described in [Specifying the Initial Data Source of the User Management Engine \[page 116\]](#).

## More Information

For more information about configuring the user management of your SAP system to be installed, see the SAP Library at:

SAP Release and SAP Library Quicklink	SAP Library Path (Continued)
<ul style="list-style-type: none"><li>• SAP NetWeaver 7.3 including Enhancement Package 1 <a href="http://help.sap.com/nw731">http://help.sap.com/nw731</a></li><li>• SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li><li>• SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li><li>• SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li><li>• SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li></ul>	<p>► <i>Application Help</i> ► <i>SAP NetWeaver Library: Function-Oriented View</i> ► <i>Security</i> ► <i>Identity Management</i> ► <i>User and Role Administration of Application Server ABAP</i> ► <i>Configuration of User and Role Administration</i> ► <i>Directory Services</i> ► <i>LDAP Connector</i></p>

## 3.5 Basic Installation Parameters

The software provisioning manager prompts for input parameters during the *Define Parameters* phase of the installation.

You can install your SAP system either in *Typical* or *Custom* mode:

- *Typical*  
If you choose *Typical*, the installation is performed with default settings. This means that the software provisioning manager prompts you only for a small selection of installation parameters. These parameters include at least the following:
  - SAP system ID and database connectivity parameters
  - Master password
  - SAP system profile directory – only for systems with instances on separate hosts
  - **SAP systems based on SAP NetWeaver 7.40 and higher:** Individual encryption key for the secure storage

For more information about the installation parameters, see the corresponding tables below in this document. If you want to change any of the default settings, you can do so on the *Parameter Summary* screen.

- *Custom*  
If you choose *Custom*, you are prompted for all parameters. At the end, you can still change any of these parameters on the *Parameter Summary* screen.

### Note

You cannot change from *Custom* to *Typical* mode or from *Typical* to *Custom* mode on the *Parameter Summary* screen.

### Note

- If you want to [ASCS Instance with Embedded SAP Web Dispatcher \[page 32\]](#), you must choose *Custom*. Otherwise, you are not prompted for the [SAP Web Dispatcher installation parameters \[page 69\]](#) during the *Define Parameters* phase of the ASCS instance installation.
- If you want to [ASCS Instance with Embedded Gateway \[page 34\]](#), you must choose *Custom*. Otherwise, you are not prompted for the SAP Gateway installation during the *Define Parameters* phase of the ASCS instance installation.

The tables in the sections below list the basic SAP system installation parameters that you need to specify before installing your SAP system. For all other installation parameters, use the tool help on the software provisioning manager screens.

## Related Information

[SAP System Parameters \[page 55\]](#)

[SAP System Database Parameters \[page 65\]](#)

[Additional Parameters when Installing SAP Process Integration 7.5 or SAP Solution Manager 7.2 \[page 66\]](#)

[Additional Parameters When Using a Stack XML File \[page 67\]](#)

[Parameters for Additional Components to be Included in the ASCS Instance \[page 69\]](#)

## 3.5.1 SAP System Parameters

The tables in this section lists the basic SAP system installation parameters that you need to specify before installing your SAP system. For all other installation parameters, use the tool help on the software provisioning manager screens.

General Parameters

Parameter	Description
Unicode System	<p>Every <b>new</b> installation of an SAP system is Unicode.</p> <p><b>SAP systems based on SAP NetWeaver 7.5 or higher</b> are Unicode only.</p> <p>If you install an additional application server instance in an existing non-Unicode system (that has been upgraded to the current release), the additional application server instance is installed automatically as a non-Unicode instance. The software provisioning manager checks whether a non-Unicode system exists and chooses the right executables for the system type.</p>

Parameter	Description
SAP System ID <SAPSID>	<p>The SAP system ID (&lt;SAPSID&gt;) identifies the entire SAP system.</p> <p>The software provisioning manager prompts you for the &lt;SAPSID&gt; when you execute the <b>first</b> installation option to install a new SAP system.</p> <p>If there are further installation options to be executed, the software provisioning manager prompts you for the <code>profile</code> directory. For more information, see the description of the parameter <i>SAP System Profile Directory</i>.</p> <div> <p>❖ <b>Example</b></p> <p>This prompt appears when you install the ASCS instance, which is the first instance to be installed in a distributed system.</p> </div> <div> <p>⚠ <b>Caution</b></p> <p>Choose your SAP system ID carefully since renaming requires considerable effort.</p> </div> <p>Make sure that your SAP system ID:</p> <ul style="list-style-type: none"> <li>• Is unique throughout your organization. Do not use an existing &lt;SAPSID&gt; when installing a new SAP system.</li> <li>• Consists of exactly three alphanumeric characters</li> <li>• Contains only uppercase letters</li> <li>• Has a letter for the first character</li> <li>• Does not include any of the reserved IDs listed in SAP Note <a href="#">1979280</a>.</li> <li>• If you want to install an additional application server instance, make sure that no Gateway instance with the same SAP System ID (SAPSID) exists in your SAP system landscape.</li> </ul>



Parameter	Description
SAP System Instance Numbers	<p>Technical identifier for internal processes. It consists of a two-digit number from 00 to 97.</p> <p>The instance number must be unique on a host. That is, if more than one SAP instance is running on the same host, these instances must be assigned different numbers.</p> <p>If you do not enter a specific value, the instance number is set automatically to the next free and valid instance number that has not yet been assigned to the SAP system to be installed or to SAP systems that already exist on the installation host.</p> <p>To find out instance numbers of SAP systems that already exist on the installation host, look for subdirectories ending with <code>&lt;Instance Number&gt;</code> of local (not mounted) <code>/usr/sap/&lt;SAPSID&gt;</code> directories.</p> <p>For more information about the naming of SAP system instances, see <a href="#">SAP Directories [page 82]</a>.</p> <p>Only valid for 'Platform': AIX</p> <div> <p><b>⚠ Caution</b></p> <p><b>AIX only:</b> If you are using NIM Service Handler (NIMSH), do not use 01 or 02 for the instance number. The software provisioning manager uses the instance number for the internal message server port <code>39&lt;Instance Number&gt;</code>. The NIM client daemon uses reserved ports 3901 and 3902.</p> </div> <p>End of 'Platform': AIX</p> <p>Only valid for 'Platform': HP-UX</p> <div> <p><b>⚠ Caution</b></p> <p><b>HP-UX only:</b> Do <b>not</b> use:</p> <ul style="list-style-type: none"> <li>75 for the instance number because this number is already used by the operating system. For more information, see SAP Note <a href="#">29972</a>.</li> <li>02 as the instance number because this number is used to determine the port number for report <code>RSLGCOLL</code>, which is <code>14&lt;Instance Number&gt;</code> by default. However, port 1402 is already used by the OS process <code>rstlisten</code>. If you still decide to use 02 as the instance number, the instance fails to start during the installation process. You then have to manually change the port number for report <code>RSLGCOLL</code> to continue with the installation. For more information, see <a href="#">Running Software Provisioning Manager [page 121]</a>.</li> </ul> </div> <p>End of 'Platform': HP-UX</p>

Parameter	Description
Virtual Host Name	<p>Virtual host name (network name) of the SAP&lt;SAPSID&gt; cluster group</p> <p>You can assign a virtual host name to an SAP instance in one of the following ways:</p> <ul style="list-style-type: none"> <li>You can assign a virtual host name for the instance to be installed, by specifying it in the &lt;Instance Name&gt; <i>Host Name</i> field of the &lt;Instance Name&gt; <i>Instance</i> screen. Then this instance is installed with this virtual host name.</li> <li>Alternatively you can assign virtual host names also by starting the software provisioning manager with the <code>SAPINST_USE_HOSTNAME</code> property. For more information, see <a href="#">Running Software Provisioning Manager [page 121]</a>.</li> </ul> <p>After the installation has completed, all application servers can use this virtual host name to connect to the instance. If you do not provide the virtual host name, the instance is installed automatically using the physical host name of the host where you run the software provisioning manager.</p> <p>You must have already reserved the virtual host name (network name) and its IP address on a DNS server before you run the software provisioning manager. For more information, see <a href="#">Using Virtual Host Names [page 91]</a>.</p> <div> <p><b>Note</b></p> <p>Fully qualified host names, IPv4, IPv6 are not accepted as virtual host names.</p> </div>
<b>SAP Process Integration (PI) 7.5, SAP Solution Manager 7.2:</b> Application Server Gateway Communication Setup	<p><b>Java</b> system on a host If you want to install the primary application server instance of the <b>different</b> from the host of the primary application server instance of the ABAP system, then you must specify the host of the Java primary application server instance during the <a href="#">Define Parameters</a> phase of the primary application server instance installation of the ABAP system.</p> <p>This is to set up the connection between the ABAP and the Java system.</p>
SAP System Profile Directory	<p><code>/&lt;sapmnt&gt;/&lt;SAPSID&gt;/profile</code> If you want to install the primary application server instance of the or <code>/usr/sap/&lt;SAPSID&gt;/SYS/profile</code></p> <p>The software provisioning manager retrieves parameters from the SAP system profile directory of an existing SAP system.</p> <p>SAP profiles are operating system files that contain instance configuration information.</p> <p>The software provisioning manager prompts you to enter the location of the <code>profile</code> directory when the installation option that you execute is not the first one belonging to your SAP system installation, for example, if you are installing a distributed system or an additional application server instance to an existing SAP system. See also the description of the parameters <i>SAP System ID</i> and <i>Database ID</i>.</p> <p><code>/usr/sap/&lt;SAPSID&gt;/SYS/profile</code> is the soft link referring to <code>/&lt;sapmnt&gt;/&lt;SAPSID&gt;/profile</code>.</p>

Parameter	Description
Master Password	<p>Common password for all users that are created during the installation:</p> <ul style="list-style-type: none"> <li>Operating system users (for example <code>&lt;sapsid&gt;adm</code>)</li> </ul> <div> <p><b>⚠ Caution</b></p> <p>If you did not create the operating system users manually before the installation, the software provisioning manager creates them with the common master password (see <i>Operating System Users</i>). In this case, make sure that the master password meets the requirements of your operating system.</p> </div> <ul style="list-style-type: none"> <li>ABAP users: <code>SAP*</code>, <code>DDIC</code>, and <code>EARLYWATCH</code>.</li> <li>Secure Store key phrase</li> </ul> <p><b>SAP systems based on SAP NetWeaver 7.4 and Higher:</b> For more information, see line <i>Key Phrase for Secure Store Settings</i> and line <i>Individual Encryption Key for the Secure Storage</i> in this table.</p> <div> <p><b>⚠ Caution</b></p> <p>The software provisioning manager applies the master password to users <code>SAP*</code> and <code>DDIC</code> for SAP system clients 000 and 001 only, but not to users <code>SAP*</code>, <code>DDIC</code>, and <code>EARLYWATCH</code> in SAP system client 066.</p> <p>Instead, the software provisioning manager always assigns the following passwords to these users in client 066:</p> <p><code>SAP*</code>: 06071992</p> <p><code>EARLYWATCH</code>: support</p> <p>See also <a href="#">Ensuring User Security</a>.</p> </div> <p><b>Basic Password policy</b></p> <p>The master password must meet the following requirements:</p> <ul style="list-style-type: none"> <li>It can be 8 to 30 characters long</li> <li>It must contain at least one letter (a-z, A-Z)</li> <li>It must contain at least one digit (0-9)</li> <li>It must not contain <code>\</code> (backslash) or <code>"</code> (double quote).</li> </ul> <p><b>Additional restrictions depending on SAP Adaptive Server Enterprise:</b></p> <ul style="list-style-type: none"> <li>It must be at least 6 characters long</li> <li>It can only contain the following characters: <code>a-z</code>, <code>A-Z</code>, <code>0-9</code>, <code>&lt;space&gt;</code>, <code>!#\$%&amp;'()*+,-./:;&lt;=&gt;?@[]^_`{ }~</code></li> </ul> <p>Depending on the installation option, additional restrictions may apply.</p> <div> <p><b>→ Recommendation</b></p> <p>The Master Password feature can be used as a simple method to obtain customer-specific passwords for all newly created users. A basic security rule is not to have identical passwords for different users. Following this rule, we strongly recommend individualizing the values of these passwords after the installation is complete.</p> </div>

Parameter	Description
	For more information, see <a href="#">Ensuring User Security [page 164]</a> .
Message Server Access Control List	<p>You can specify if you want to have a message server Access Control List (ACL) created.</p> <p>The ACL is created as a file in the <code>/ &lt;sapmnt&gt; / &lt;SAPSID&gt; / global</code> directory. If it exists, it defines the hosts from which the message server accepts requests.</p> <div> <p><b>⚠ Caution</b></p> <p>Only trigger the creation of this file if you do not plan to install any additional instances for this system. With the creation of this ACL, you overwrite existing settings and prevent instances from being installed on additional hosts. If you decide to install an additional instance later, you need to remove this file manually before the installation and create it again after the installation of the additional instance.</p> </div> <p>For more information, see the information about <code>ms/ac1_info</code> in SAP Notes <a href="#">1495075</a> and <a href="#">826779</a>.</p>
<b>SAP systems based on SAP NetWeaver 7.4 and Higher only:</b>  Individual Encryption Key for the Secure Storage	<p>You can set a randomly generated individual encryption key for the secure storage in the file system and the secure storage in the database. If you skip this step, the system is installed with a default key which provides obfuscation only, but it can be changed later.</p> <ul style="list-style-type: none"> <li>For more information on the secure storage in the file system, see the SAP Library - depending on the SAP NetWeaver release your SAP system is based on - at:               <ul style="list-style-type: none"> <li><a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li> <li><a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li> <li><a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li> <li><a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li> </ul> <p>▶ <i>Application Help</i> ▶ <i>Function-Oriented View</i> ▶ <i>Security</i> ▶ <i>System Security</i> ▶ <i>System Security for SAP NetWeaver AS ABAP Only</i> ▶ <i>Secure Storage in the File System (AS ABAP)</i> ▶</p> </li> <li>For more information on the secure storage in the database, see the SAP Library - depending on the SAP NetWeaver release your SAP system is based on - at:               <ul style="list-style-type: none"> <li><a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li> <li><a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li> <li><a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li> <li><a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li> </ul> <p>▶ <i>Application Help</i> ▶ <i>Function-Oriented View</i> ▶ <i>Security</i> ▶ <i>System Security</i> ▶ <i>System Security for SAP NetWeaver AS ABAP Only</i> ▶ <i>Secure Storage (ABAP)</i> ▶ <i>Key Management</i> ▶ <i>Using Individual Encryption Keys</i> ▶ <i>Generating Encryption Keys</i> ▶</p> </li> </ul>

Parameter	Description
DNS Domain Name for SAP System	<p>If you want to use HTTP-based URL frameworks such as Web Dynpro applications, you have to specify the DNS domain name for the SAP system.</p> <p>The DNS Domain Name is used to calculate the Fully Qualified Domain Name (FQDN), which is configured in profile parameter <code>SAPLOCALHOSTFULL</code>. FQDN is the fully qualified domain name for an IP address. It consists of the host name and the domain name:</p> <pre>&lt;Host_Name&gt;.&lt;Domain_Name&gt;</pre> <p>The DNS Domain Name is needed to define the URLs for the ABAP application servers. It is appended to the server name to calculate the FQDN.</p> <div> <p>❖ Example</p> <p>If your application server host is called <code>kirk.wdf.sap.com</code>, the DNS Domain Name is <code>wdf.sap.com</code>.</p> </div>
SAP Host Agent Upgrade (Optional)	<p>If there already exists an SAP Host Agent on the installation host, the software provisioning manager asks you if you want to upgrade it to a newer patch level version. If you want the existing version to be upgraded, you must provide the new target version of the <code>SAPHOSTAGENT&lt;Version&gt;.SAR</code> archive.</p> <p>For more information, see <a href="#">Downloading SAP Kernel Archives (Archive-Based Installation) [page 100]</a></p>

## Ports

Parameter	Description
ABAP Message Server Port	<div> <p>⚠ Caution</p> <p>The message server port number must be unique on the host where the message server for the SAP system is running. If there are several message servers running on one host, the message server ports must all be unique.</p> </div> <p>If you do not specify a value, the default port number is used.</p> <p><b>ABAP Message Server Port</b></p> <p>There is an external message server port and an internal message server port.</p> <p>The ABAP message server uses both the internal and the external message server ports. The default profile contains the configuration for both message server ports.</p> <p>The <b>external</b> message server port uses the parameter <code>rdisp/msserv</code> with default value <code>36&lt;ABAP_Message_Server_Instance_Number&gt;</code>.</p> <p>The <b>internal</b> message server port uses the parameter <code>rdisp/msserv_internal</code> with default value <code>39&lt;ABAP_Message_Server_Instance_Number&gt;</code>.</p> <p>During the installation of an SAP system from scratch or an additional application server instance to an existing SAP system, the message server is configured to only accept secure connections. The DEFAULT.PFL profile parameter <code>system/secure_communication</code> is set to ON (<b>system/secure_communication = ON</b>) if the kernel supports secure connections to the message server. For more information, see SAP Note <a href="#">2040644</a>.</p>

## Operating System Users

Parameter	Definition
Operating System Users and Groups	<p>The software provisioning manager processes the operating system users as follows:</p> <ul style="list-style-type: none"> <li>If the operating system users do not exist, the software provisioning manager creates the following users: <ul style="list-style-type: none"> <li>The SAP system administrator user <code>&lt;sapsid&gt;adm</code></li> <li>Database administrator users</li> </ul> <p>The software provisioning manager sets the master password for these users by default. You can overwrite and change the passwords either by using the parameter mode Custom or by changing them on the parameter summary screen.</p> </li> <li>If the operating system users already exist, the software provisioning manager prompts you for the existing password, except if the password of these users is the same as the master password.</li> <li>Make sure that the user ID and group ID of these operating system users are unique and the same on each relevant application server instance host.</li> </ul> <p>The <code>sapinst_instdir</code> directory belongs to a group named <code>sapinst</code>. If this group is not available, it is created automatically as a local group. For security reasons, we recommend removing the operating system users from the group <code>sapinst</code> after the execution of the software provisioning manager has completed.</p> <p>During the <a href="#">Define Parameters</a> phase of the software provisioning manager, you can specify that the operating system users are to be removed <b>automatically</b> from the group <code>sapinst</code> <b>after</b> the execution of the software provisioning manager has completed.</p> <p>For more information about the group <code>sapinst</code>, see <a href="#">Creating Operating System Users and Groups [page 77]</a>.</p> <p>For more information about the <code>sapinst_instdir</code> directory, see <a href="#">Useful Information about Software Provisioning Manager [page 128]</a>.</p>

## User Management Engine Parameters

Parameter	Definition
Java Administrator User	<p>The software provisioning manager creates this user in the ABAP system.</p> <p>After the installation, this user is available both in the ABAP and in the Java system.</p> <p>The software provisioning manager sets the user name <code>J2EE_ADMIN</code> and the master password by default.</p> <p>If required, you can choose another user name and password according to your requirements.</p>

### Note

This user is only created during the installation of the application server ABAP for an SAP NetWeaver 7.5 Process Integration (PI) system or for an SAP Solution Manager 7.2 system.

Parameter	Definition
<p>Java Guest User</p> <div> <p><b>Note</b></p> <p>This user is only created during the installation of the application server ABAP for an SAP NetWeaver 7.5 Process Integration (PI) system or for an SAP Solution Manager 7.2 system.</p> </div>	<p>This user is for employees who do not belong to a company or who have registered as company users and who are waiting for approval. Guest users belong to the default group <code>Authenticated Users</code>.</p> <p>The software provisioning manager creates this user in the ABAP system.</p> <p>After the installation, it is available both in the ABAP and in the Java system.</p> <p>The software provisioning manager sets the user name <code>J2EE_GUEST</code> and the master password by default.</p> <p>If required, you can choose another user name and password according to your requirements.</p> <p>For more information about supported UME data sources and change options, see SAP Note <a href="#">718383</a>.</p>
<p>Communication User</p> <div> <p><b>Note</b></p> <p>This user is only created during the installation of the application server ABAP for an SAP NetWeaver 7.5 Process Integration (PI) system or for an SAP Solution Manager 7.2 system.</p> </div>	<p>The software provisioning manager creates this user in the ABAP system.</p> <p>After the installation, it is available both in the ABAP and in the Java system</p> <p>This user is used for the communication between the ABAP system and the Java system.</p> <p>The software provisioning manager sets the user name <code>SAPJSEF</code> and the master password by default.</p> <p>If required, you can choose another user name and password according to your requirements.</p> <p>For more information about supported UME data sources and change options, see SAP Note <a href="#">718383</a>.</p>

## System Landscape Directory

Parameter	Definition
SLD Destination for the System	<p>The System Landscape Directory (SLD) registers the systems and the installed software of your entire system landscape.</p> <p>You can choose between the following options:</p> <ul style="list-style-type: none"> <li>• <a href="#">Register in existing SLD</a> Choose this option to register the SAP system you are installing in an existing SAP System Landscape Directory (SLD) by specifying the SLD connection parameters listed below in this table.</li> <li>• <a href="#">No SLD destination</a> Choose this option if you do <b>not</b> want to register the SAP system you are installing in an existing SAP System Landscape Directory (SLD). You then have to configure the SLD destination manually after the installation has finished.</li> </ul> <p>For more information, see <a href="#">Performing Post-Installation Steps for the ABAP Application Server [page 158]</a></p>
SLD Host	The host name of the existing SLD.
SLD HTTP(S) Port	<p>HTTP port of the SAP system based on AS Java on which the System Landscape Directory (SLD) resides. The following naming convention applies: 5&lt;Primary_Application_Server_Instance_Number&gt;00.</p> <div> <p>❖ Example</p> <p>If the primary application server instance number of the AS Java on which the System Landscape Directory (SLD) resides is 01, the SLD HTTP Port is 50100.</p> </div>
SLD Data Supplier User and password	The existing SLD Data Supplier user and password of the existing SLD







## 3.5.2 SAP System Database Parameters

Parameters	Description
Database ID <DBSID>	<p>The &lt;DBSID&gt; identifies the database instance. The software provisioning manager prompts you for the &lt;DBSID&gt; when you are installing the database instance.</p> <p>The &lt;DBSID&gt; must be the same as the &lt;SAPSID&gt;.</p> <div> <p><b>⚠ Caution</b></p> <p>Choose your database ID carefully. Renaming is difficult and requires you to reinstall the SAP system.</p> <ul style="list-style-type: none"> <li>If you want to install a new database: Make sure that your database ID: <ul style="list-style-type: none"> <li>Is unique throughout your organization</li> <li>Consists of exactly three alphanumeric characters</li> <li>Contains only uppercase letters</li> <li>Has a letter for the first character</li> <li>Does not include any of the reserved IDs listed in SAP Note <a href="#">1979280</a>.</li> </ul> </li> </ul> </div>
ABAP Database User (SAPSR3)	The user name corresponds to the owner of the database tables.
Database user for database system administration (sapsa)	This is the default user for database monitoring and administration.
Database user for database system security tasks (sapssso)	This is the default user for security relevant tasks such as user creation and password setup.
Database Communication Port	The database server communication port is used for TCP/IP communication between the database server and remote clients. In a standard system installation and for the database instance in a distributed installation, the software provisioning manager always proposes 4901 as default.
Add sapdata/saplog Directories	<p>Database devices are stored in the following directories:</p> <div> <p>Only valid for 'Platform': Linux</p> <p>//&lt;DBSID&gt;/sapdata_&lt;n&gt; and</p> <p>End of 'Platform': Linux</p> <p>Only valid for 'Platform': Linux</p> <p>//&lt;DBSID&gt;/saplog_&lt;n&gt;</p> <p>End of 'Platform': Linux</p> </div> <p>You can create additional sapdata, saplog directories before you start the software provisioning manager. To distribute database devices, use separate file systems for the directories.</p>

Parameters	Description
Database Memory	2.1 GB RAM (hard-coded)

### 3.5.3 Additional Parameters when Installing SAP Process Integration 7.5 or SAP Solution Manager 7.2

The parameters in this section are only required if you want to install SAP Process Integration 7.5 or SAP Solution Manager 7.2.

Parameter	Description
When Using a Stack XML File:  SAP System ID <SAPSID>	When <a href="#">Installation Using a Stack XML File [page 37]</a> , in addition to the requirements listed in <a href="#">using a stack configuration file [page 55]</a>  <a href="#">General Parameters</a>  <a href="#">SAP System ID</a>  , make sure that the SAP system ID (SAPSID) of the ABAP system must be different from the SAPSID of the Java system.
Communication Port for ABAP	<p>For a secure communication of connected SAP systems to the ABAP stack you have to define the HTTPS port that is to be configured in the application server instance profile. Further <a href="#">post-installation steps [page 161]</a> are required to fully enable HTTPS communication. For more information about HTTPS enablement, see SAP Note <a href="#">510007</a> .</p> <p>In addition you can configure an HTTP port. However, this is not recommended for productive SAP systems due to security reasons.</p> <div> <p>→ Recommendation</p> <p>If you are about to install an <b>SAP NetWeaver 7.5 Process Integration</b> system and you intend to run automated configuration using the Central Technical Configuration (CTC) Wizard after the installation, it is strongly recommended that you configure the ABAP communication port for ABAP already during the installation process, because you can only run the CTC Wizard if the ABAP port is either completely configured for HTTPS or optionally for HTTP. For more information, see <i>PI: Configuring the Process Integration System After the Installation in Installation of SAP Systems Based on the Application Server Java of SAP NetWeaver 7.5 and SAP Solution Manager 7.2 SR2 Java on UNIX: &lt;Database&gt;</i>.</p> </div>

Parameter	Description
Application Server Gateway Communication Setup	<p>If you want to install the primary application server instance of the <b>Java</b> system on a host <b>different</b> from the host of the primary application server instance of the ABAP system, then you must specify the host of the Java primary application server instance during the <a href="#">Define Parameters</a> phase of the primary application server instance installation of the ABAP system.</p> <p>This is to set up the connection between the ABAP and the Java system.</p>

## 3.5.4 Additional Parameters When Using a Stack XML File

The parameters in this section are only required if you use a Stack XML file generated from the Maintenance Planner.

Parameter	Description
<b>SAP Process Integration (PI) 7.5, SAP Solution Manager 7.2:</b> SAP System ID <SAPSID>	<p>In addition to the requirements listed in <a href="#">SAP System Parameters [page 55]</a> ► ► <a href="#">General Parameters</a> ► <a href="#">SAP System ID</a> ►, make sure that the SAP system ID (SAPSID) of the ABAP system must be different from the SAPSID of the Java system.</p>
Transport Domain	<p>The ABAP Transport Management System (TMS) must be configured before ABAP correction packages can be applied. You can also run the configuration or even reconfigure the TMS after the installation has finished.</p> <p>To be able to transport changes between the SAP systems in your system landscape, you need to configure the Transport Management System (TMS) for all SAP systems in your system landscape and configure one transport domain controller. To start the TMS in your ABAP system for later reconfiguration, call transaction STMS. At least one transport landscape with this system as transport domain controller is required before you can apply corrections, support packages, or upgrades to the SAP system.</p> <p>The name of the Transport Domain must not contain blank characters. You cannot change the name afterwards without reconfiguring the transport domain controller and thereby the entire Transport Domain.</p> <p>By default use DOMAIN_&lt;SAPSID&gt; for the Transport Domain of a single transport landscape with this system as transport domain controller.</p>

Parameter	Description
Directory with Transport Files	Location of the ABAP transport files that are to be included after the ABAP load during the installation. All transport files in this directory are imported with the transport control program (tD).
Location of SPAM/SAINT Update Archive	<p>A SPAM/SAINT update contains updates and improvements to the Support Package Manager (SPAM) and the Add-On Installation Tool (SAINT). Provide the full path to the SPAM/SAINT update archive.</p> <p>SPAM/SAINT is delivered with the ABAP load. SAP recommends that you always use the latest version of SPAM/SAINT before applying Support Packages.</p>
Decide whether you want to prepare for the Software Update Manager run at the end of the installation	<p>With the Software Update Manager (SUM), you can apply support packages stacks at the end of the installation.</p> <ul style="list-style-type: none"> <li>Do not start SUM automatically</li> <li>Start SUM automatically at the end of the installation</li> </ul> <p>Choose to start SUM automatically, if you want to have the SUM STARTUP script called in the default &lt;Update Directory&gt;/SUM/ directory at the end of the installation.</p>
Extract the SUM* .SAR Archive	<p>If you choose to extract the SUM* .SAR archive, the provided archive is validated and extracted to the default update directory:</p> <p><b>UNIX and IBM i:</b> /usr/sap/&lt;SAPSID&gt;/</p>
SUM HTTP port	<p>If you are running several SAP system updates on the same host, you have to use different port numbers for each update. You can adjust the default SUM HTTP port by entering the required port number in the SUM HTTP Port field. When doing so you set the SUM GUI Port number to (= &lt;HTTP port number+2&gt;). Dependencies See also the Software Update Manager documentation at: <a href="https://support.sap.com/en/tools/software-logistics-tools/software-update-manager.html">https://support.sap.com/en/tools/software-logistics-tools/software-update-manager.html</a> </p>
SUM Batch Input File	<p>You can specify a batch file with some default values for the update. SUM then starts with parameter batchfile=&lt;XML file with input parameters&gt;.</p> <p>Enter the full path to the existing batch file.</p> <p>Placeholders like @PARAMETER_VALUE@ inside the file are replaced by values known from the installation.</p>

Parameter	Description
Install Additional SAP System Languages	<p>A set of default languages is delivered with the ABAP load. From the language media delivered with your product version or - if already provided by the Maintenance Planner for the respective product - using language archives, you can select additional languages that you want to have installed during SAP system installation.</p> <p>If you want to install additional languages, you must provide the directory with the additional language packages for the ABAP installation load, for example with subdirectories like <code>DATA_UNITS/ES</code>.</p>

For more information, see [Installation Using a Stack XML File \(Optional\) \[page 37\]](#).

## Related Information

[Installation Using a Stack XML File \[page 37\]](#)

### 3.5.5 Parameters for Additional Components to be Included in the ASCS Instance

You only need to specify the following parameters during the ASCS instance installation if you perform an embedded installation of additional components.

#### Note

You must choose *Custom* parameter mode. Otherwise you are not prompted for the parameters related to these additional components during the *Define Parameters* phase.

Parameters	Description
Install a gateway embedded in the ASCS instance	When processing the screens for the ASCS instance installation, you are prompted to mark this checkbox on the screen <i>Additional Components to be Included in the ASCS Instance</i> .
Install an SAP Web Dispatcher embedded in the ASCS instance	<p>When processing the screens for the ASCS instance installation, you are prompted to mark this checkbox on the screen <i>Additional Components to be Included in the ASCS Instance</i>.</p> <p>If you mark the checkbox for SAP Web Dispatcher, you are prompted for the additional parameters required for the SAP Web Dispatcher installation on the subsequent screens:</p>

Parameters	Description
	<p>Message Server Host</p> <p>The name of the host on which the message server is located (profile parameter <code>rdisp/mshost</code>)</p>
	<p>Message Server HTTP Port</p> <p>HTTP port of the message server (profile parameter <code>ms/server_port_&lt;xx&gt;</code>)</p>
	<p>Password for the Internet Communication Management (ICM) user</p> <p>In order to use the web administration interface for the Internet Communication Manager (ICM) and SAP Web Dispatcher, an administration user <code>webadm</code> is created by the software provisioning manager.</p> <p>You have to assign a password for this user.</p>

## Related Information

[ASCS Instance with Embedded SAP Web Dispatcher \[page 32\]](#)

[ASCS Instance with Embedded Gateway \[page 34\]](#)

## 3.6 Setup of Database Layout

### Note

The following sections apply especially to the installation of a production system.

When you plan your SAP system installation, it is essential to consider the setup of your database layout with regard to the distribution of SAP directories or database file systems to disks. The distribution depends on your specific environment and you must take factors into consideration, such as storage consumption of the software components involved, safety requirements and expected workload.

## Required File Systems for SAP ASE

To ensure that your SAP system performs well in a production environment, you have to create separate file systems manually for the directories listed in the following table before you start the software provisioning manager. The file systems must have the permission value 750, the owner `syb<dbsid>`, and the group `sapsys`.

The software provisioning manager creates the file systems, user, group and permissions automatically, if the directories have not been created before the installation.

During the installation of your SAP system, you can specify the number and names of the `sapdata` directories. The software provisioning manager allows to place several data or log devices in one `sapdata` or `saplog` folder. You can create additional `sapdata` and `saplog` directories before you start the software provisioning manager.

The following table lists the file systems that are required by the SAP ASE database:

File System / Logical Volume:	Description:
/sybase/<DBSID>	SAP ASE software (\$SYBASE)  Size: at least 6 GB
/sybase/<DBSID>/sybssystem	Location for devices <code>master.dat</code> , <code>sybmgmt.db.dat</code> , <code>sybsysdb.dat</code> , <code>sysprocs.dat</code>  Size: at least 1 GB
/sybase/<DBSID>/sybtemp	Location for device <code>tempdb</code>  Size: at least 4 GB
/sybase/<DBSID>/saptemp	Location for device <code>saptempdb</code>  Size: at least 6 GB
/sybase/<DBSID>/sapdiag	Location for devices containing the database <a href="#">saptools</a> .  Size: at least 5 GB
/sybase/<DBSID>/sapdata_<n>	Location for devices containing data  For more information, see SAP Note <a href="#">1748888</a> .
/sybase/<DBSID>/saplog_<n>	Location for devices containing logs  For more information, see SAP Note <a href="#">1748888</a> .
/sybase/<DBSID>/sybsecurity	Location for devices containing the database <a href="#">sybsecurity</a>  Size: at least 1 GB for monitoring SAP ASE configuration changes  For advanced SAP ASE audit options, you must adapt the size according to the enabled options and the workload of your system. You can place the devices containing the optional database <code>sybsecurityarchive</code> at this location. For more information, see <a href="#">SAP ASE 16.0: Auditing with SAP Adaptive Server Enterprise [page 177]</a> .

For information about SAP file systems, see [SAP Directories \[page 82\]](#).

## 3.7 SAP System Transport Host

The transport host contains the transport directory used by the SAP transport system to store transport data and change SAP system information, such as software programs, write dictionary data, or customizing data. If you have several SAP systems it depends on your security requirements whether you want them to share a transport directory or whether you use separate directories.

When you install an SAP system, you have to decide which transport host and directory you want to use for your SAP system:

- Use the transport directory that the software provisioning manager creates during the installation of the SAP system by default on the global host.

The software provisioning manager by default creates the transport directory on the global host in `/usr/sap/trans`.

- Use a transport directory located on a host other than the default host:
  - You can use an **existing** transport directory and host in your SAP system landscape.
  - You can set up a **new** transport directory on a different host.

In either case, you must prepare this host for use by the new SAP system. For more information, see [Exporting and Mounting the Global Transport Directory \[page 113\]](#).

### More Information

- [Required File Systems and Directories \[page 82\]](#)
- See the SAP Library at:

Release	SAP Library Path
<ul style="list-style-type: none"><li>• SAP NetWeaver 7.3 including Enhancement Package 1 <a href="http://help.sap.com/nw731">http://help.sap.com/nw731</a></li><li>• SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li><li>• SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li><li>• SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li><li>• SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li></ul>	<p>► <a href="#">Application Help</a> ► <a href="#">Function-Oriented View</a> ► <a href="#">Solution Life Cycle Management</a> ► <a href="#">Software Logistics</a> ► <a href="#">Change and Transport System</a></p> <p>► <a href="#">Change and Transport System – Overview</a> ► <a href="#">Basics of the Change and Transport System</a> ► <a href="#">Transport Management System – Concept</a></p>



## 3.8 Planning the Switchover Cluster for High Availability

This section describes basic aspects of planning the switchover cluster for a high-availability system.

You can reduce unplanned downtime for your SAP system by setting up a switchover cluster. This setup installs critical software units – known as “single points of failure” (SPOFs) – across multiple host machines in the cluster. In the event of a failure on the primary node, proprietary switchover software automatically switches the failed software unit to another hardware node in the cluster. Manual intervention is not required. Applications trying to access the failed software unit might experience a short delay but can then resume processing as normal.

Switchover clusters also have the advantage that you can deliberately initiate switchover to release a particular node for planned system maintenance. Switchover solutions can protect against hardware failure and operating system failure but **not** against human error, such as operator errors or faulty application software. Additional downtime might be caused by upgrading your SAP system or applying patches to it.

Without a switchover cluster, the SAP system SPOFs – central services instance, the database instance, and the central file share – are vulnerable to failure because they cannot be replicated. All of these can only exist **once** in a normal SAP system.

You can protect software units that are **not** SPOFs against failure by making them redundant, which means simply installing multiple instances. For example, you can add additional application server instances. This complements the switchover solution and is an essential part of building high availability (HA) into your SAP system.

### → Recommendation

We recommend switchover clusters to improve the availability of your SAP system.

A switchover cluster consists of:

- A hardware cluster of two or more physically separate host machines to run multiple copies of the critical software units, in an SAP system the SPOFs referred to above
- Switchover software to detect failure in a node and switch the affected software unit to the standby node, where it can continue operating
- A mechanism to enable application software to seamlessly continue working with the switched software unit – normally this is achieved by virtual addressing (although identity switchover is also possible)

## Prerequisites

You must first discuss switchover clusters with your hardware partner because this is a complex technical area. In particular, you need to choose a proprietary switchover product that works with your operating system.

We recommend that you read the following documentation before you start:

- Check the *SAP High Availability* pages at <https://wiki.scn.sap.com/wiki/display/SI/SAP+High+Availability>. They contain crucial information about high-availability cluster certification and certified high-availability partners.
- The ERS instance is essential for a high-availability system and should be controlled by the cluster software. You need one ERS instance for the ASCS instance installed in your system.

## Features

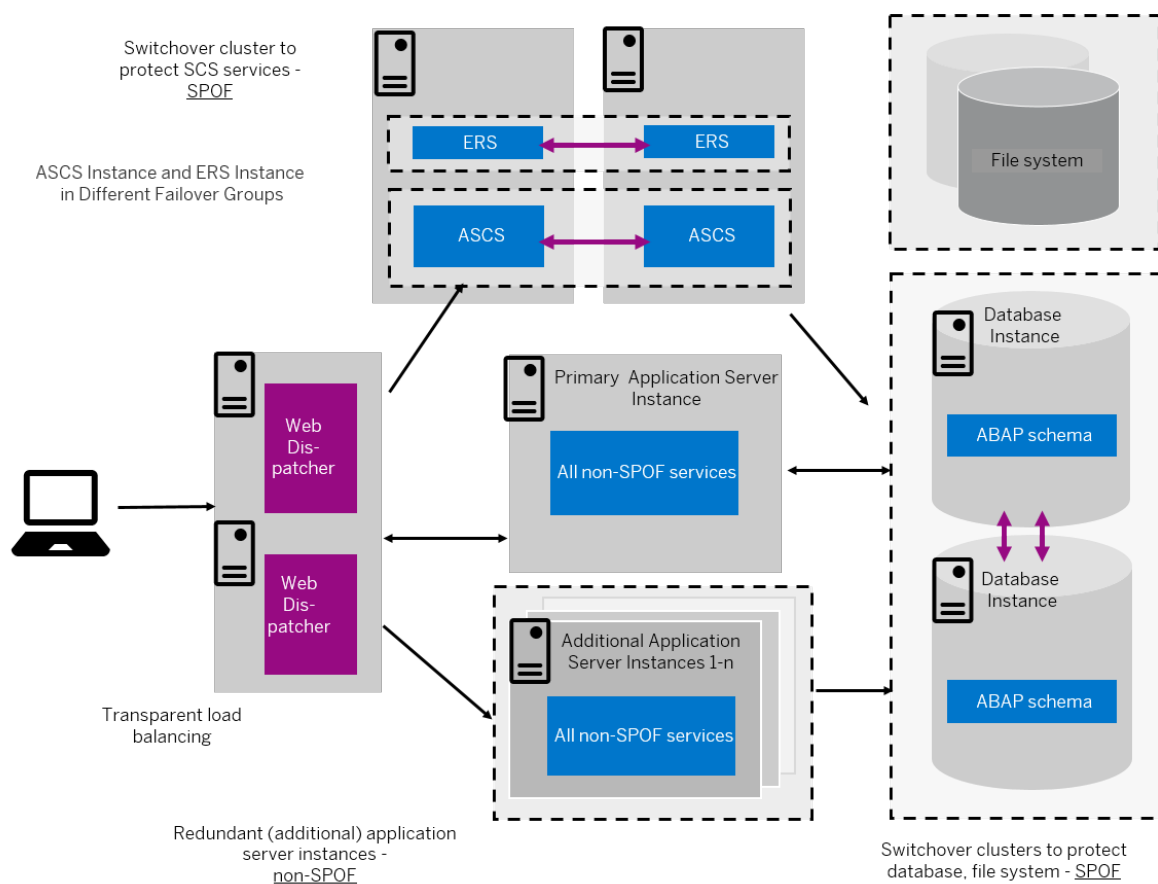
### Note

The diagrams in this section are only **examples**. Only the instances relevant to the switchover are shown.

These diagrams summarize the overall setup and do not show the exact constellation for an installation based on one of the available technologies.

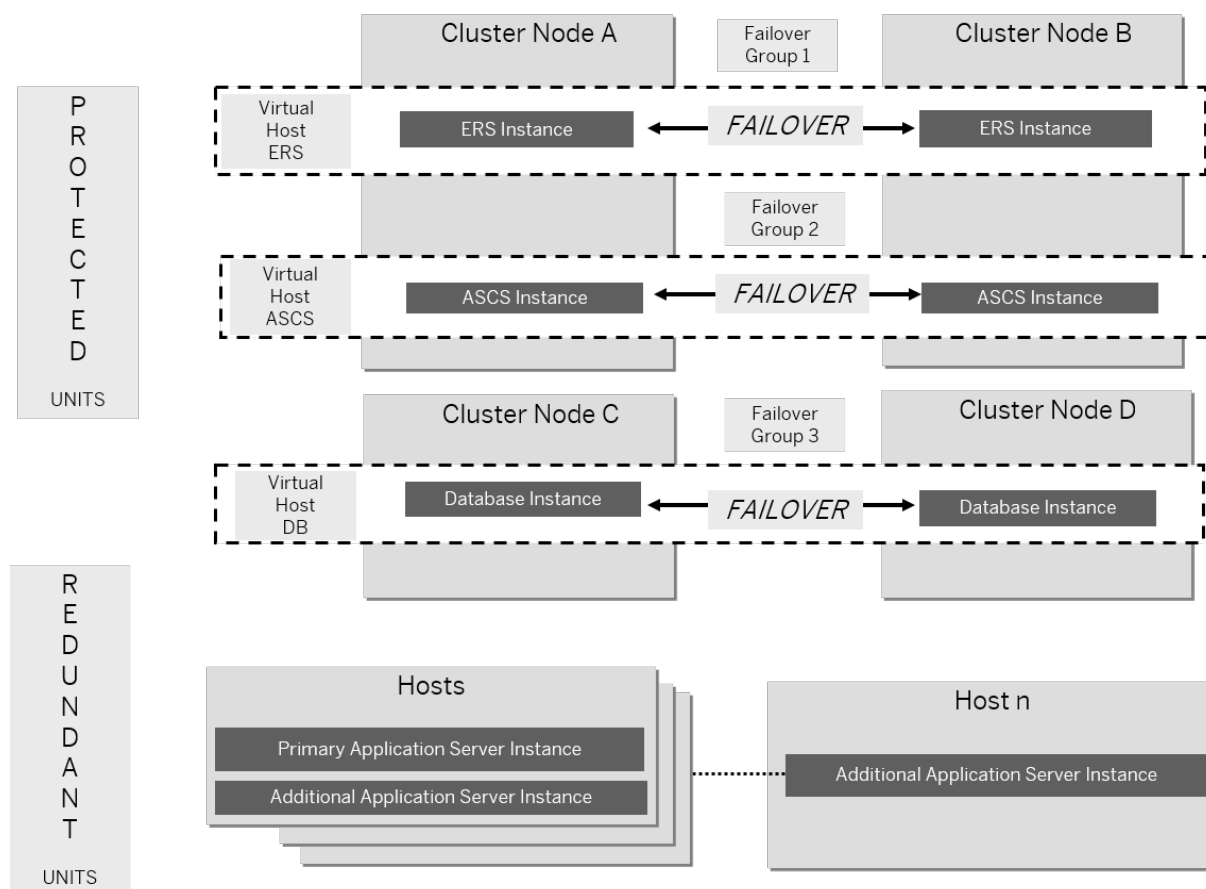
You need to discuss your individual HA setup with your HA partner.

The following diagram shows the essential features of a switchover setup:



Switchover Setup with ERS Instance and ASCS Instance in Different Failover Groups (Overview)

The following diagram shows an example of a switchover setup in more detail:



Switchover Setup with ERS Instance and ASCS Instance in Different Failover Groups (Schematic View)

## Constraints

This documentation concentrates on the switchover solution for the central services instance. For more information about how to protect the Network File System (NFS) software and the database instance by using switchover software or (for the database) replicated database servers, contact your HA partner.

This documentation concentrates on the switchover solution for the central services instance. For more information about how to protect the central file share and the database instance by using switchover software or (for of the database) replicated database servers, contact your HA partner.

Make sure that your hardware is powerful enough and your configuration is robust enough to handle the increased workload after a switchover. Some reduction in performance might be acceptable after an emergency. However, it is not acceptable if the system comes to a standstill because it is overloaded after switchover.

# 4 Preparation

## 4.1 Preparation Checklist

This section includes the preparation steps that you have to perform for the following installation options:

- Standard, distributed, or high-availability system
- Additional application server instance

Detailed information about the steps are available in the linked sections.

### Standard, Distributed, or High-Availability System

#### Note

In a standard system, all mandatory instances are installed on one host. Therefore, if you are installing a standard system, you can ignore references to other hosts.

1. You check that the required [Creating Operating System Users and Groups \[page 77\]](#) are created.
2. You [operating systemset up file systems \[page 82\]](#) and make sure that the required disk space is available for the directories to be created during the installation.
3. If you want to use virtual host names, you have to [set the environment variable SAPINST\\_USE\\_HOSTNAME \[page 91\]](#).  
Alternatively, you can specify a virtual host name either in the command to start the software provisioning manager or - after the software provisioning manager has started - in the relevant field on the respective instance screen (see [Running Software Provisioning Manager \[page 121\]](#)).
4. If you want to install a high-availability system, you [perform switchover preparations \[page 92\]](#).
5. If you want to share the transport directory `trans` from another system, [export \[page 113\]](#) this directory to your installation hosts.
6. You [install the SAP front-end software \[page 92\]](#) on the desktop of the user.
7. You check that the required [installation media \[page 93\]](#) are available for each installation host.
8. If you decided to use a generic LDAP directory, you have to [create a user for LDAP directory access \[page 199\]](#).
9. You continue with [Installation \[page 108\]](#).

## Additional Application Server Instance

You have to perform the following preparations on the host where you install the additional application server instances:

1. You check that the required [operating system users and groups \[page 77\]](#) are created.
2. You [set up file systems \[page 82\]](#) and make sure that the required disk space is available for the directories to be created during the installation.
3. If you want to use virtual host names, you have to [set the environment variable SAPINST\\_USE\\_HOSTNAME \[page 91\]](#).  
Alternatively you can specify a virtual host name either in the command to start the software provisioning manager or - after the software provisioning manager has started - in the relevant field on the respective instance screen (see [Running Software Provisioning Manager \[page 121\]](#)).
4. If you want to share the transport directory `trans` from another system, [export \[page 113\]](#) this directory to your installation hosts.
5. You [install the SAP front-end software \[page 92\]](#) on the desktop of the user.
6. You check that the required [installation media \[page 93\]](#) are available on each installation host.
7. You continue with [Installation \[page 108\]](#).

## 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.

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 installation :

### 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.

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 ► *Generic Installation Options* ► *<Database>* ► *Preparation* ► *Operating System Users and Groups* ► .  
For more information, see [Running Software Provisioning Manager \[page 121\]](#).
- You create operating system users and groups manually. Check the settings for these operating system users.

## User Settings

- Only valid for 'Platform': Oracle Solaris  
**Oracle Solaris:** If your operating system is Oracle Solaris 10 or higher, follow the parameter recommendations for SAP applications in SAP Note [724713](#) .  
End of 'Platform': Oracle Solaris
- Only valid for 'Platform': AIX  
**AIX:** Make sure that you have set the limits for operating system users as described in SAP Note [323816](#) .  
End of 'Platform': AIX
- Only valid for 'Platform': HP-UX, Linux, Oracle Solaris  
**HP-UX, 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 .  
**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 .

### ⚠ 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 `cs` shell, the output of command `limit` needs to be at least as follows:

#### ❖ Example

The following table lists example output taken from SUSE Linux Enterprise Server 11 (x86\_64).

Output	Properties
<code>cputime</code>	unlimited
<code>filesize</code>	unlimited
<code>datasize</code>	unlimited
<code>stacksize</code>	8192 KB
<code>coredumpsize</code>	unlimited
<code>descriptors</code>	8192
<code>memoryuse</code>	unlimited

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

#### ❖ Example

The following table lists example output taken from SUSE Linux Enterprise Server 11 (x86\_64).

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

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

- All users **must** have identical environment settings. Any change to the environment – such as variables, or paths – is at your own responsibility.
- 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.
- 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.
- If you create operating system users manually or use already existing operating system users, make sure that the home directory for each of these users is **not** the root directory ( `/` ).
- Make sure that the home directory of user `<sapsid>adm` is not critical for recursive changes on permissions.  
When operating system users are created by the 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 `<sapsid>adm` environment, comment out the line `eval 'tset -s -Q -m ':?hp'` in the `/etc/skel/.login` script. For more information, see SAP Note [1038842](#).

End of 'Platform': HP-UX

## Operating System Users and Groups

The 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.

You can specify the name of the ABAP connect user (`sap<sapsid>`) independently from the SAP schema name during the dialog phase of the software provisioning manager.

### → Recommendation

We recommend, however, that you keep the names of the connect user and the database schema identical in standard use cases.



## → Recommendation

For security reasons, we recommend that you remove the operating system users from the group `sapinst` **after** the software provisioning manager has completed. For more information, see [Ensuring User Security \[page 164\]](#).

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. For more information, see [Cleanup of Operating System Users](#) in [SAP System Parameters \[page 55\]](#).

### Users and Groups

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

### SAP Host Agent:

#### User and Groups of the SAP Host Agent

User	Primary Group	Additional Group	Comment
<code>sapadm</code>	<code>sapsys</code>	–	SAP Host Agent administrator

#### Note

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

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

Only valid for 'Platform': AIX

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

End of 'Platform': AIX

#### Groups and Members of the SAP Host Agent User

Groups	Members
<code>sapsys</code>	<code>sapadm</code>

Groups	Members
sapinst	sapadm

## 4.3 Required File Systems and Directories

The following sections describe the directory structures for the SAP system, how to set up SAP file systems for the SAP system and, if required, raw devices on operating system level:

### Note

The installation of any SAP system does not require a special file system setup or separate partitions.

## Related Information

[SAP Directories \[page 82\]](#)

[Setting Up File Systems for a High-Availability System \[page 87\]](#)

### 4.3.1 SAP Directories

Depending on the installation option you have chosen, the software provisioning manager automatically creates the directories listed in the following figures and tables. Before running the installation, you have to set up the required file systems manually. In addition, you have to make sure that the required disk space for the directories to be installed is available on the relevant hard disks.

The software provisioning manager creates the following types of directories:

- Physically shared directories
- Logically shared directories
- Local directories

Only valid for 'Platform': HP-UX

**HP-UX only:** For recommendations about block size and mount option configuration, see SAP Note [1077887](#).

End of 'Platform': HP-UX

## Directories of the SAP System

The figure below assumes that you have set up one file system for the SAP system mount directory `<sapmnt>` and one file system for the `/usr/sap` directory. However, you have to decide for which directories you want

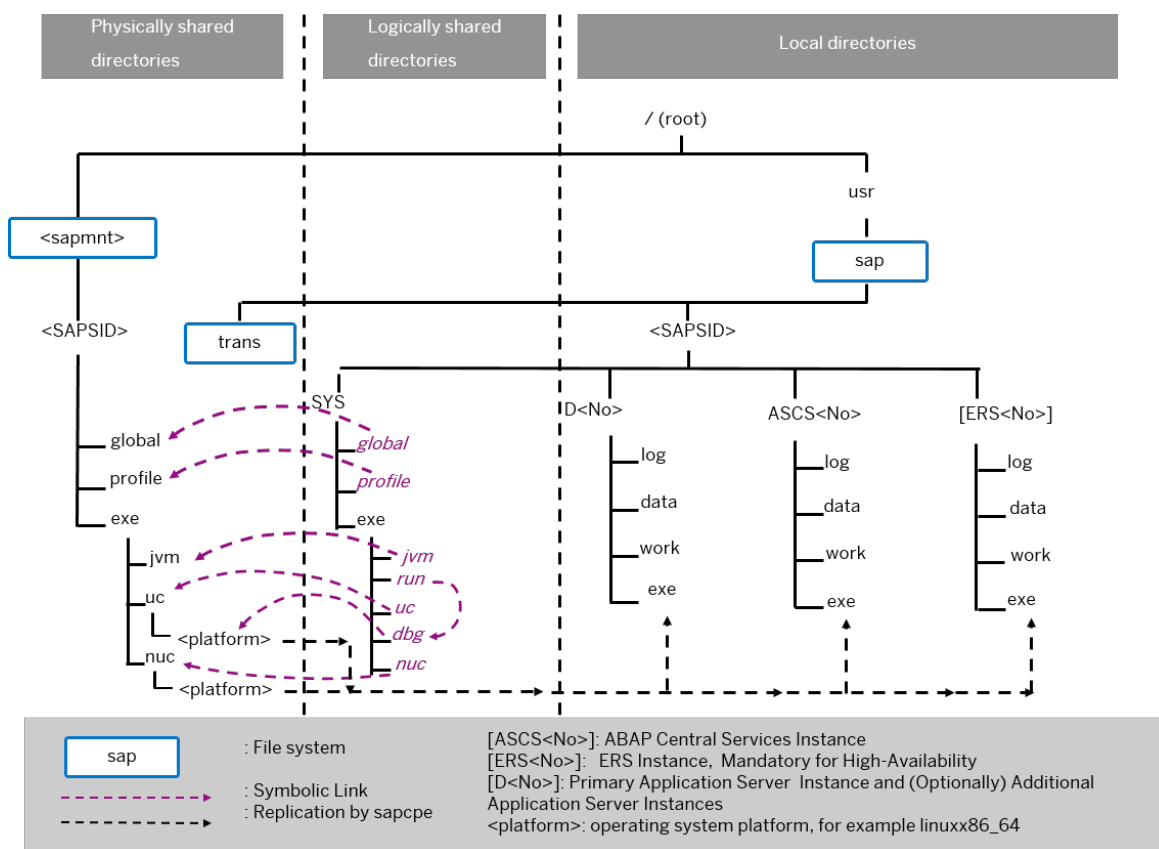
to set up separate file systems. If you do not set up any file system on your installation host, the software provisioning manager creates all directories in the root directory ( / ). A high-availability setup might influence the file system structure. Contact your HA partner for their recommendation. For more information, see [Setting Up File Systems for a High-Availability System \[page 87\]](#) .

The software provisioning manager prompts you only for the `<sapmnt>` directory during the installation.

The following figures show the directory structure of SAP systems based on SAP NetWeaver 7.5 and the directory structure of SAP systems based on SAP NetWeaver 7.3 EHP1 to 7.4:

- **Directory Structure for an ABAP System Based on SAP NetWeaver 7.5:**

In SAP systems based on SAP NetWeaver 7.5 or higher, all application server instances, including the primary application server instance, are named `D<Instance_Number>`.



**Directory Structure for an ABAP System Based on SAP NetWeaver 7.5 or Higher**

- **Directory Structure for an ABAP System Based on SAP NetWeaver 7.3 EHP1 to 7.4:**

In SAP systems based on SAP NetWeaver 7.3 EHP1 to 7.4 the primary application server instance is named `DVEBMGS<Instance_Number>`.



- The directory `/usr/sap/trans`  
The `/usr/sap/trans` directory is physically separated from the server directories. This is to ensure that the ability of the server to run is not affected if the `/usr/sap/trans` directory is full.  
If you want to use an existing transport directory, you have to mount it before you install the relevant application server instance. Otherwise, the software provisioning manager creates `/usr/sap/trans` locally.

#### → Recommendation

We recommend that you set up your global transport directory as a shared file system.

For more information about the global transport directory, see [Exporting and Mounting the Global Transport Directory \[page 113\]](#).

#### Physically Shared SAP Directories

Directory	Required Minimum Disk Space
<code>&lt;sapmnt&gt;/&lt;SAPSID&gt;</code>	Minimum 2.5 GB
<code>/usr/sap/trans</code>	<p>This value heavily depends on the use of your SAP system.</p> <p>For production systems, we recommend to use as much free space as available (at least 2 GB), because the space requirement normally grows dynamically.</p> <p>For the installation, it is sufficient to use 2 GB for each SAP system instance. You can enlarge the file system afterwards.</p>

#### Logically Shared Directories (SAP System)

Logically shared directories reside on the local hosts with symbolic links to the global host. The software provisioning manager creates the directory `/usr/sap/<SAPSID>/SYS` on each host.

This directory contains the following symbolic links to physically shared directories:

- Symbolic link `profile` points to `<sapmnt>/<SAPSID>/profile`
- Symbolic link `global` points to `<sapmnt>/<SAPSID>/global`

This directory contains the `exe` subdirectory with symbolic links pointing to the corresponding subdirectories of `<sapmnt>/<SAPSID>/exe` on the SAP global host:

- Symbolic link `uc` (for Unicode) points to `<sapmnt>/<SAPSID>/exe/uc`
- Symbolic link `nuc` (for non-Unicode) points to `<sapmnt>/<SAPSID>/exe/nuc`
- Symbolic link `run` points to another symbolic link `/usr/sap/<SAPSID>/SYS/exe/dbg` in the same directory, and symbolic link `dbg` finally points to `<sapmnt>/<SAPSID>/exe/uc/<platform>`

Whenever a local instance is started, the `sapcpe` program checks the executables against those in the logically shared directories and, if necessary, replicates them to the local instance.

The software provisioning manager uses `sapcpe` to replicate the kernel automatically from `/usr/sap/<SAPSID>/SYS/exe/run/DIR_CT_RUN` to `/usr/sap/<SAPSID>/<INSTANCE>/exe/DIR_EXECUTABLE` for each SAP system instance.

#### Local Directories (SAP System)

The software provisioning manager also creates local directories that reside on the local hosts. The directory `/usr/sap/<SAPSID>` contains files for the operation of a local instance as well as symbolic links to the data for one system. This directory is physically located on each host in the SAP system and contains the following subdirectories:

- `SYS`

#### Note

The subdirectories of `/usr/sap/<SAPSID>/SYS` have symbolic links to the corresponding subdirectories of `/sapmnt/<SAPSID>`, as shown in the figure above.

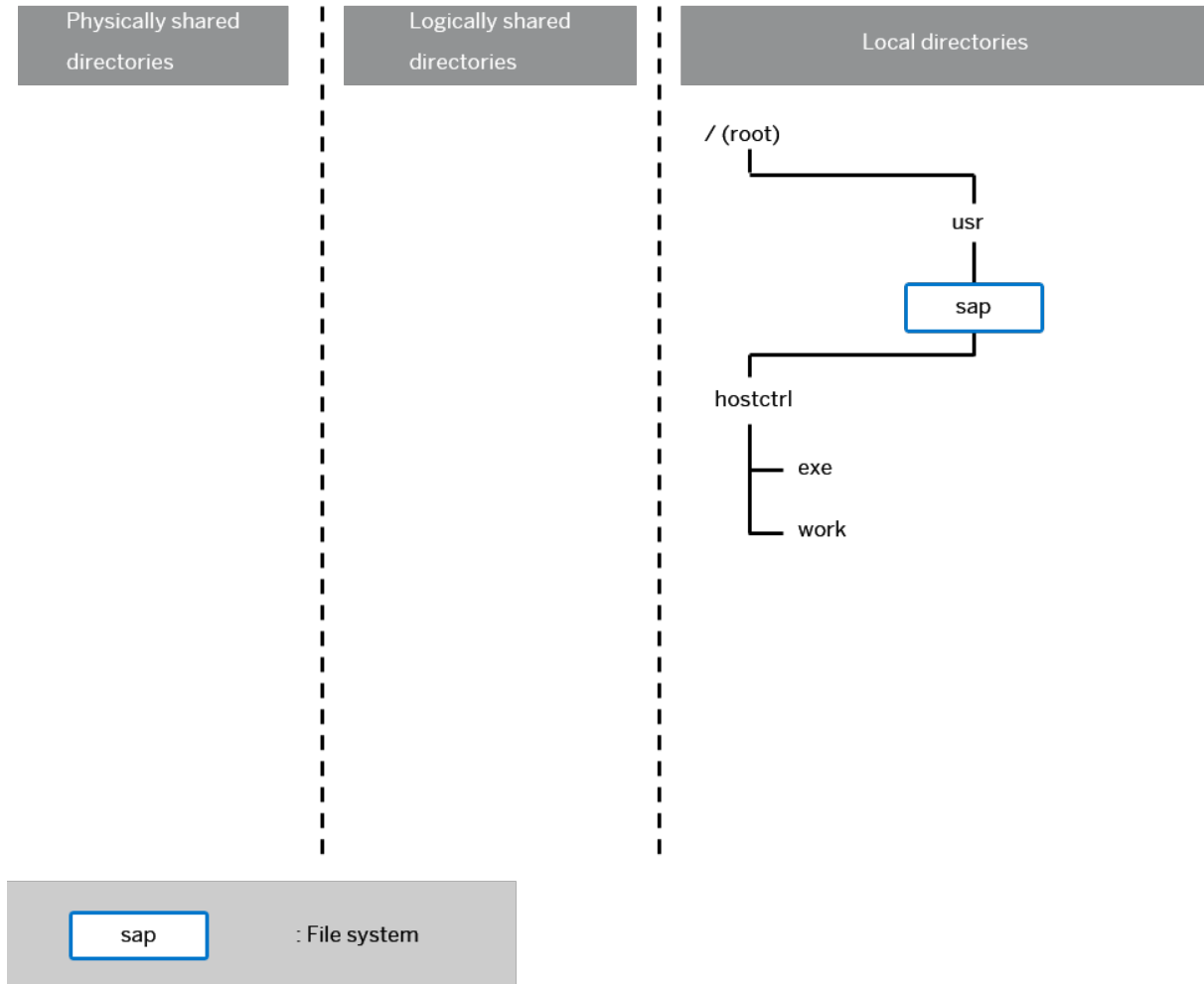
- Instance-specific directories with the following names:
  - **SAP systems based on SAP NetWeaver 7.3 EHP1 to 7.4:**
    - The directory of the primary application server instance is called `DVEBMGS<Instance_Number>`.
    - The directory of an additional application server instance is called `D<Instance_Number>`.
  - The directory of an application server instance (primary application server instance and additional application server instances) is called `D<Instance_Number>`.
- The directory of the ABAP central services instance (ASCS) instance is called `ASCS<Instance_Number>`.
- The directory of an ERS instance is called `ERS<Instance_Number>`.  
If you install a high-availability system, you must install an ERS instance for the ASCS instance.

#### Local SAP Directories

Directory	Description	Required Minimum Disk Space
<b>SAP systems based on SAP NetWeaver 7.3 EHP1 to 7.4:</b>  <code>/usr/sap/&lt;SAPSID&gt;/DVEBMGS&lt;Instance Number&gt;</code>	Primary application server instance directory	<ul style="list-style-type: none"> <li>• SAP Business Warehouse server only: minimum 25 GB</li> <li>• Other installations: minimum 18 GB</li> </ul>
<b>SAP systems based on SAP NetWeaver 7.5 or higher:</b>  <code>/usr/sap/&lt;SAPSID&gt;/D&lt;Instance Number&gt;</code>	Additional application server instance directory	<ul style="list-style-type: none"> <li>• SAP Business Warehouse server only: minimum 25 GB</li> <li>• Other installations: minimum 18 GB</li> </ul>
<code>/usr/sap/&lt;SAPSID&gt;/ASCS&lt;Instance Number&gt;</code>	ABAP central services instance (ASCS instance) directory	Minimum 2 GB
<code>/usr/sap/&lt;SAPSID&gt;/ERS&lt;Instance Number&gt;</code>	ERS instance directory for the ASCS instance (high availability only)	Minimum 2 GB

## Directories of the SAP Host Agent

The SAP Host Agent has only local directories as shown in the following figure:



Directory Structure for the SAP Host Agent

### Local Directories (SAP Host Agent)

The SAP Host Agent directory `/usr/sap/hostctrl` requires 100 MB of disk space. It contains the following subdirectories:

- `exe`  
Contains the profile `host_profile`
- `work`  
Working directory of the SAP Host Agent

## 4.3.2 Setting Up File Systems for a High-Availability System

Third-party technology is used to make the SAP directories available to the SAP system. The technologies of choice are NFS, shared disks, and cluster file system. If you have decided to use a high-availability (HA)

solution for your SAP system, make sure that you properly address the HA requirements of the SAP file systems in your SAP environment with the HA partner of your choice.

## Prerequisites

You have already installed the hardware – that is, hosts, disks, and network – and decided how to distribute the database, SAP instances, and – if required – Network File System (NFS) server over the cluster nodes (that is, over the host machines). For more information, see [Planning the Switchover Cluster \[page 73\]](#) and contact your HA partner.

## Context

From the perspective of an SAP application, there are the following types of [SAP Directories \[page 82\]](#):

- Physically shared directories: `/<sapmnt>/<SAPSID>` and `/usr/sap/trans`  
In an HA setup, `/<sapmnt>` should be a highly available file system, and `/usr/sap/trans` should be a shared file system.
- Logically shared directories that are bound to a node such as `/usr/sap` with the following local directories:
  - `/usr/sap/<SAPSID>`
  - `/usr/sap/<SAPSID>/SYS`
  - `/usr/sap/hostctrl`In an HA Setup, no special actions are required for these local directories.
- Local directories that contain the SAP instances such as `/usr/sap/<SAPSID>/ASCS<Instance Number>`.  
In an HA setup, the directories of the clustered instances (`/usr/sap/<SAPSID>/<Instance Type><Instance Number>`) should be mounted as cluster-controlled file systems and reside on highly available file systems.

Only valid for 'Platform': HP-UX

**HP-UX only:** For recommendations about block size and mount option configuration, see SAP Note [1077887](#).

End of 'Platform': HP-UX

## Procedure

1. Create the file systems or raw partitions for the SAP instances you can switch over in such a way that the content can be made available to all nodes that can run the service. .

At least the ABAP central services (ASCS) instance and the ERS instance must be part of the switchover cluster

The SAP directories `/<sapmnt>/<SAPSID>` and `/usr/sap/trans` are usually mounted from a Network File System (NFS). Especially for `/<sapmnt>/<SAPSID>` you should think of using a highly available



file system. However, an SAP instance directory `/usr/sap/<SAPSID>/<Instance Type><Instance Number>` that you want to prepare for HA must always be mounted on the cluster node that is currently running the instance.

### ⚠ Caution

To start or stop an SAP instance, you have to do one of the following:

- Make the physically shared SAP directories under `/<sapmnt>/<SAPSID>/` available to the server beforehand.
- Consult your HA partner to clarify the best solution for the cluster software.

2. Use the following approach for the file system for the `/usr/sap/<SAPSID>` directory:

The `/usr/sap/<SAPSID>` directory contains at least two subdirectories (see also [SAP Directories \[page 82\]](#)):

- `SYS/sapmnt/<SAPSID>`
- `<Instance Type> <Instance Number>` – where the name is defined by the type of services and the application server number:
  - **SAP systems based on SAP NetWeaver 7.5 or higher:** `D<Instance Number>` – which contains data for the primary application server instance **or** an additional application server instance
  - **SAP systems based on SAP NetWeaver 7.3 EHP1 to 7.4:** `DVEBMGS<Instance Number>` – which contains data for the primary application server instance
  - **SAP systems based on SAP NetWeaver 7.3 EHP1 to 7.4:** `D<Instance Number>` – which contains data for an additional application server instance
  - `ASCS<Instance Number>` – which contains data for the ABAP central services instance (ASCS instance)
  - `ERS<Instance Number>` – which contains the replication table, which is a copy of the lock table

Only `<Instance Type><Instance Number>` directories of clustered instances need to be migrated with the SAP instances during the switchover.

Create cluster-controlled file systems for `/usr/sap/<SAPSID>/<Instance Type><Instance Number>` of clustered instances.

The instance-specific directory name for the ABAP central services instance is normally `ASCS<Instance Number>`. Migrating only these directories avoids mount conflicts when switching over to a node on which another application server instance is already running. The `ASCS<Instance Number>` directory can join the `/usr/sap/<SAPSID>` tree instead of mounting on top of it. The same is true for all other clustered instances.

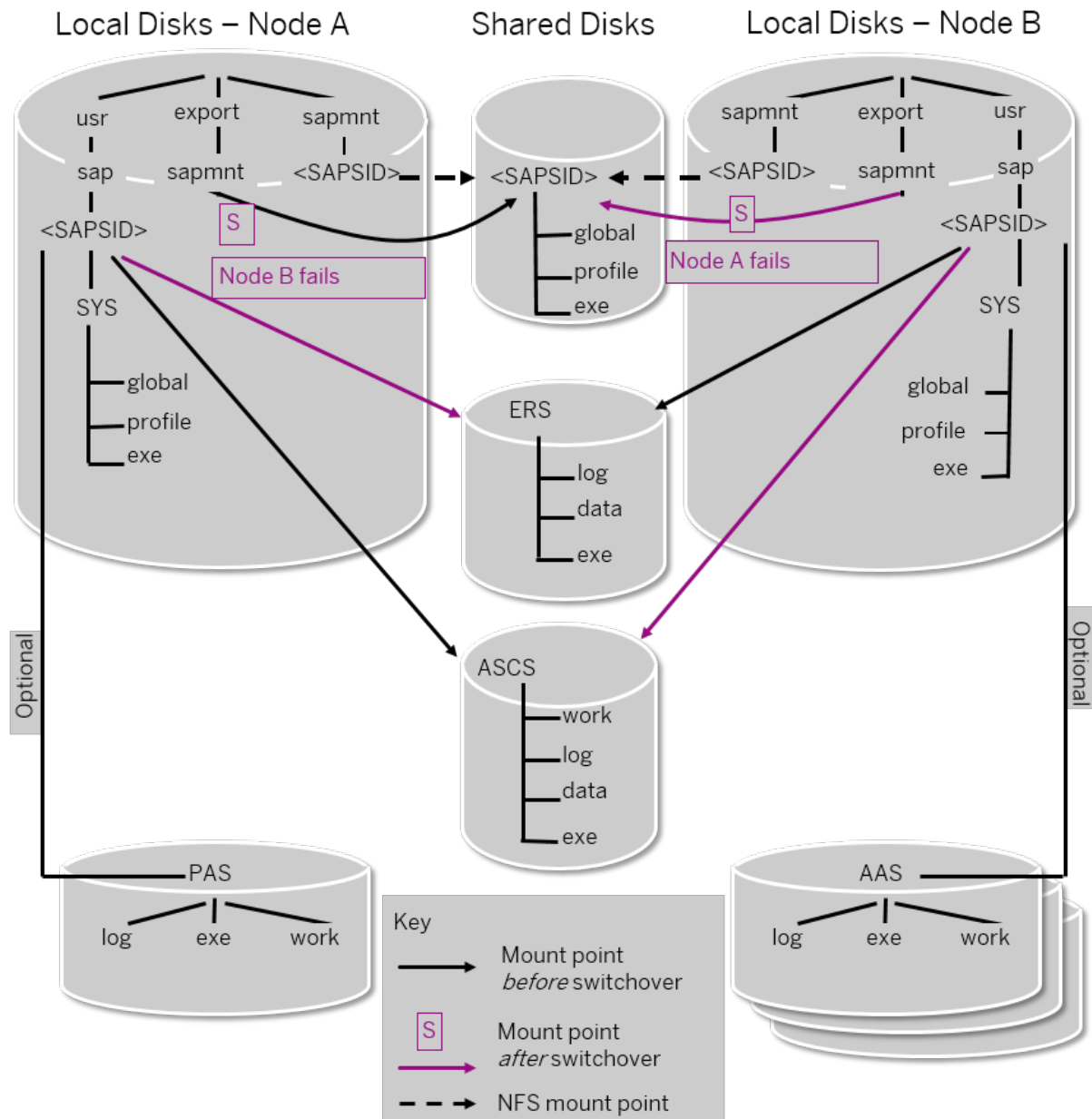
### ℹ Note

This approach becomes increasingly important when you want to cluster the central services instances with other local instances running on the cluster hosts outside the control of the switchover software. This applies to the ERS instance and additional ABAP application server instances. The result is a more efficient use of resources. Use this approach for integrated installations of the application server with ABAP stacks.

3. You assign the **local** (not switching) file systems to **permanent** mount points.
4. You assign the **shared** file systems as documented by your HA partner.

## Example

The graphic below shows a scenario of the file systems and disks in an HA setup with an integrated NFS server. Such a setup is not mandatory. For more information about a setup that meets your needs, consult your HA partner.



File Systems and Disks in an HA Setup

## 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

If you want to install a [high-availability \(HA\) system \[page 26\]](#), you need the virtual host name when you install the ASCS instance in a cluster.

### 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 \[page 121\]](#).
- Alternatively by specifying virtual host names in the `<Instance Name> Host Name` field of the `<Instance Name> Instance` screen

For more information, see the *Virtual Host Name* parameter description in [SAP System Parameters \[page 55\]](#) and SAP Note [962955](#) .

## 4.5 Performing Switchover Preparations for High Availability

You have to assign virtual host names to prepare the switchover for high availability.

### Context

To be able to use the required [virtual host names \[page 91\]](#), you must set the software provisioning manager property `SAPINST_USE_HOSTNAME` to specify the required virtual host name. You can do this 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 \[page 121\]](#).
- Alternatively by specifying virtual host names in the `<Instance Name> Host Name` field of the `<Instance Name> Instance` screen

For more information, see *Virtual Host Name* in [SAP System Parameters \[page 55\]](#).

### Procedure

Assign the virtual IP addresses and host names for the ASCS instance, and (if required) NFS to appropriate failover groups.

#### 📌 Note

For more information on virtual addresses and virtual host names and how to assign resources to failover groups, ask your HA partner.

## 4.6 Installing the SAP Front-End Software

Before you start the installation, make sure that the SAP front-end software is installed on at least **one** computer in your system environment to be able to log on to the SAP system after the installation has finished.

### Procedure

1. Check SAP Note [147519](#)  for the recommended SAP front-end release.

2. Install the SAP front-end software required for your SAP system release as described in the documentation *SAP Frontend Installation Guide* - <Release> at: <https://wiki.scn.sap.com/wiki/display/ATopics/SAP+GUI+Family>

## 4.7 Preparing the Installation Media

This section describes how to prepare the installation media.

Installation media are available as follows:

- The software provisioning manager 1.0 archive containing the software provisioning manager software. You always have to download the latest version of the software provisioning manager 1.0 archive. For more information, see [Downloading and Extracting the Software Provisioning Manager 1.0 Archive \[page 98\]](#).
- The media containing the software to be installed. These are the following:
  - Kernel media:  
You can make them available in one of the following ways:
    - Make yourself familiar with current SAP Kernel releases and SAP's Kernel strategy:

### Central SAP Notes

[2083594](#) - SAP Kernel Versions and SAP Kernel Patch Levels

[3116151](#) - SP Stack Kernel Schedule Forecast

[1744209](#) - SAP Kernel 720, 721 and 722: Versions and Kernel Patch Levels

[1969546](#) - Release Roadmap for Kernel 74x and 75x

[1802333](#) - Finding information about regressions in the SAP kernel

[19466](#) - Downloading SAP kernel patches

[2966761](#) - Overview of SAP Kernel Correction Archives

[2966621](#) - Overview of Kernel-Related Software Components

[953653](#) - Rolling Kernel Switch

The white paper [Update Strategy for the Kernel of the Application Server ABAP in On Premise Landscapes](#) provides SAP recommendations on how to patch the SAP kernel.

- Download the **SAP Kernel Archives** (SAR files) from the SAP Software Download Center - this is the recommended way.  
For more information, see [Downloading SAP Kernel Archives \(Archive-Based Installation\) \[page 100\]](#).  
If you are performing an [Installation Using a Stack XML File \[page 37\]](#), you can directly download the artefacts (SAR archives) as specified in the Maintenance Plan.
- Use the physical installation media as part of the installation package.  
For more information, see [Media Required for the Installation - Listed by SAP System Instance \[page 94\]](#).
- Download the complete kernel media from the SAP Software Download Center.  
For more information, see [Downloading Complete Installation Media \[page 105\]](#).

- RDBMS and export media.

You can make them available in one of the following ways:

- Use the physical installation media as part of the installation package.
- Download the complete kernel media from the SAP Software Download Center.

For detailed information about how to obtain these media, see [Media Required for the Installation - Listed by SAP System Instance \[page 94\]](#).

#### Media Required for the Installation - Listed by SAP System Instance [page 94]

This section provides a list of the media required for the installation, listed by SAP system instance to be installed.

## 4.7.1 Media Required for the Installation - Listed by SAP System Instance

This section provides a list of the media required for the installation, listed by SAP system instance to be installed.

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 \[page 121\]](#)). The software provisioning manager only accepts media whose digital signature has been checked.

For more information about which kernel version to use, see the following information sources::

### Central SAP Notes

[2083594](#) - SAP Kernel Versions and SAP Kernel Patch Levels

[3116151](#) - SP Stack Kernel Schedule Forecast

[1744209](#) - SAP Kernel 720, 721 and 722: Versions and Kernel Patch Levels

[1969546](#) - Release Roadmap for Kernel 74x and 75x

[1802333](#) - Finding information about regressions in the SAP kernel

[19466](#) - Downloading SAP kernel patches

[2966761](#) - Overview of SAP Kernel Correction Archives

[2966621](#) - Overview of Kernel-Related Software Components

[953653](#) - Rolling Kernel Switch

The white paper [Update Strategy for the Kernel of the Application Server ABAP in On Premise Landscapes](#) provides SAP recommendations on how to patch the SAP kernel.

In addition, check the Product Availability Matrix at: <http://support.sap.com/pam>.

For more information about release and roadmap information for the SAP Kernel versions, and how this relates to SAP system support packages - including important notes on downward compatibility and release dates - see the central SAP Kernel notes:

Proceed as follows to make the media available:

1. Identify the required media [for your installation \[page 24\]](#) as listed below.

**Every installation of an SAP system on SAP Adaptive Server Enterprise is Unicode.**

SAP Instance Installation	Required Software Packages from Installation Media
ABAP Central services instance (ASCS instance)	<ul style="list-style-type: none"> <li>• Software Provisioning Manager 1.0 archive</li> <li>• UC or NUC Kernel (folder <code>κ_&lt;Version&gt;_&lt;N or U&gt;_&lt;OS&gt;</code>) where <code>U</code> means Unicode and <code>N</code> means non-Unicode.</li> </ul> <div> <p><b>Note</b></p> <p>Every <b>new</b> installation of an SAP system is Unicode. You can only use the non-Unicode kernel if you perform the system copy for a non-Unicode SAP system that has been upgraded to the current release.</p> </div>
Database instance	<ul style="list-style-type: none"> <li>• Software Provisioning Manager 1.0 archive</li> <li>• UC or NUC Kernel (folder <code>κ_&lt;Version&gt;_&lt;N or U&gt;_&lt;OS&gt;</code>) where <code>U</code> means Unicode and <code>N</code> means non-Unicode.</li> </ul> <div> <p><b>Note</b></p> <p>Every <b>new</b> installation of an SAP system is Unicode. You can only use the non-Unicode kernel if you perform the system copy for a non-Unicode SAP system that has been upgraded to the current release.</p> </div> <ul style="list-style-type: none"> <li>• Database software</li> <li>• Installation Export (folders <code>EXP*</code>)</li> </ul>
Enqueue Replication Server	<ul style="list-style-type: none"> <li>• Software Provisioning Manager 1.0 archive</li> <li>• UC or NUC Kernel (folder <code>κ_&lt;Version&gt;_&lt;N or U&gt;_&lt;OS&gt;</code>) where <code>U</code> means Unicode and <code>N</code> means non-Unicode.</li> </ul> <div> <p><b>Note</b></p> <p>Every <b>new</b> installation of an SAP system is Unicode. You can only use the non-Unicode kernel if you perform the system copy for a non-Unicode SAP system that has been upgraded to the current release.</p> </div>
Primary application server instance	<ul style="list-style-type: none"> <li>• Software Provisioning Manager 1.0 archive</li> <li>• UC or NUC Kernel (folder <code>κ_&lt;Version&gt;_&lt;N or U&gt;_&lt;OS&gt;</code>) where <code>U</code> means Unicode and <code>N</code> means non-Unicode.</li> </ul> <div> <p><b>Note</b></p> <p>Every <b>new</b> installation of an SAP system is Unicode. You can only use the non-Unicode kernel if you perform the system copy for a non-Unicode SAP system that has been upgraded to the current release.</p> </div> <ul style="list-style-type: none"> <li>• Installation Export (folders <code>EXP*</code>)</li> <li>• <b>SAP SCM only:</b> SAP MaxDB liveCache</li> <li>• Database Client Software</li> </ul>

## SAP Instance

### Installation Required Software Packages from Installation Media

- |  |   |
|--|---|
| Additional application server instance | <ul style="list-style-type: none"><li>• Software Provisioning Manager 1.0 archive</li><li>• UC or NUC Kernel (folder <math>\kappa_{&lt;Version&gt;_{&lt;N \text{ or } U&gt;_{&lt;OS&gt;}}</math> where <math>\mathfrak{U}</math> means Unicode and <math>\mathfrak{N}</math> means non-Unicode.</li></ul> |
|--|---|

#### Note

If you install an additional application server instance in an existing non-Unicode system, the additional application server instance is created automatically as a non-Unicode instance. The software provisioning manager checks whether a non-Unicode system exists and chooses the right executables for the system type.

- **SAP SCM only:** SAP MaxDB liveCache
- Database Client Software

SAP Host Agent (Separate Installation Only)

### SAP Instance Installation

### Required Media

- |   |   |
|---|---|
| SAP Host Agent (separate installation only) | <ul style="list-style-type: none"><li>• Software provisioning manager 1.0 archive</li><li>• UC Kernel (folder <math>\kappa_{&lt;Version&gt;_{\mathfrak{U}_{&lt;OS&gt;}}</math> where <math>\mathfrak{U}</math> means Unicode.</li></ul> |
|---|---|

## 2. Make the installation media available on each installation host as follows:

1. Download and unpack the latest version of Software Provisioning Manager as described in [Downloading and Extracting the Software Provisioning Manager 1.0 Archive \[page 98\]](#).
2. Make the kernel media available.

You can do this in one of the following ways:

- Download the dedicated kernel archives - this is the recommended way.  
For more information, see [Downloading SAP Kernel Archives \(Archive-Based Installation\) \[page 100\]](#).

#### Note

If you are using a Stack XML file (see [Installation Using a Stack XML File \[page 37\]](#)), you have the installation media defined when generating the Landscape Plan. The media link provided in the Landscape Plan guides you to the location in the SAP Software Download Center at <https://me.sap.com/softwarecenter> where you can download the installation media required for your SAP product, operating system and database.

Using the software provisioning manager, you can also directly download the artefacts (SAR archives) as specified in the Maintenance Plan. For more information, see [Downloading Software Packages for a Maintenance Planner Transaction \[page 103\]](#).

- Use the physical kernel medium from the installation package.  
You can do this in one of the following ways:
  - Copy the required media folders directly to the installation hosts.
  - Mount the media on a central media server that can be accessed from the installation hosts.



### ⚠ Caution

If you copy the media to disk, make sure that the paths to the destination location of the copied media do not contain any blanks.

- Download the kernel medium from the Software Download Center.  
For more information, see [Downloading Complete Installation Media \[page 105\]](#).

### 📌 Note

Even if you use the complete kernel media, the software provisioning manager might prompt you during the provisioning process for additional archives (\*.SAR files) due to special Patch Level (PL) requirements depending on categories such as the product, operating system, and database platform at the end of this section.

For example: The software provisioning manager might require a certain PL of <x> of the SAPEXEDB.SAR (for DBTYPE <y>), but this PL of the SAPEXEDB.SAR is not contained in the SAP kernel media. In this case you have to download the required PL from <https://me.sap.com/softwarecenter> following the instructions in [Downloading SAP Kernel Archives \(Archive-Based Installation\) \[page 100\]](#).

### 📌 Note

If you perform an additional application server installation, kernel archives, such as SAPEXE<Version>.SAR, SAPEXEDB<Version>.SAR, IGSEXE<Version>.SAR, igshelper<version>.sar, are only prompted if they cannot be retrieved from the primary application server instance or the ASCS instance of the existing SAP system. The release and patch versions must match those used for the primary application server instance and the ASCS instance.

3. Make the RDBMS and export media. available.  
You can do this in one of the following ways:
  - Copy the required media folders directly to the installation hosts.
  - Mount the media on a central media server that can be accessed from the installation hosts.

### ⚠ Caution

If you copy the media to disk, make sure that the paths to the destination location of the copied media do not contain any blanks.

3. If you want to perform target system installation in the context of a **heterogeneous system copy** you need a migration key. You can generate it at <https://support.sap.com/en/my-support/keys.html>.

## Related Information

[Downloading and Extracting the Software Provisioning Manager 1.0 Archive \[page 98\]](#)

[Downloading SAP Kernel Archives \(Archive-Based Installation\) \[page 100\]](#)

[Downloading Software Packages for a Maintenance Planner Transaction \[page 103\]](#)

[Downloading Complete Installation Media \[page 105\]](#)

## 4.7.1.1 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.

#### 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://me.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://me.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 **Content Info** button in 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](#) .

### Context

An up-to-date version of the load tools - such as `R3load`, `R3szchk`, `R3ldctl`, `SAPuption` - which were available so far only in the `SAPXEDB_<...>.SAR` archive of the kernel media, has now been made available in the software provisioning manager archive (`software provisioning manager10SP<Support_Package_Number>_<Version_Number>.SAR`), in a sub-archive named `LOADTOOLS.SAR`, located in the `COMMON/LOADTOOLS` folder. For an installation using kernel version 7.40 or higher, the load tools from the `software provisioning`

manager10SP<Support\_Package\_Number>\_<Version\_Number>.SAR are used **automatically** instead of the loadtools available in the SAPEXEDB\_<...>.SAR archive of the kernel media. **There is no action required from your side**, the software provisioning manager uses the relevant loadtools automatically once you run it from the extracted software provisioning manager10SP<Support\_Package\_Number>\_<Version\_Number>.SAR archive. For more information, see SAP Note [2472835](#).

## 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://me.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.

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

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.

## 4.7.1.2 Downloading SAP Kernel Archives (Archive-Based Installation)

Instead of downloading the complete SAP kernel media, we recommend that you download the SAP kernel archives specifically required for your installation option. During the installation, you can either specify the path to each archive separately, or provide the path to a download basket with all downloaded archives.

#### 📘 Note

If you are performing an installation using a Stack XML file, you can use the service [Downloading Software Packages for a Maintenance Planner Transaction \[page 103\]](#).

## Context

The digital signature of **installation archives** is checked **automatically** by the [software provisioning manager \[page 121\]](#) 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

1. Download and unpack the latest version of software provisioning manager as described in [Downloading and Extracting the Software Provisioning Manager 1.0 Archive \[page 98\]](#).
2. Make yourself familiar with current SAP Kernel releases and SAP's Kernel strategy:

#### Central SAP Notes

[2083594](#) 📄 - SAP Kernel Versions and SAP Kernel Patch Levels

[3116151](#) 📄 - SP Stack Kernel Schedule Forecast

[1744209](#) 📄 - SAP Kernel 720, 721 and 722: Versions and Kernel Patch Levels

[1969546](#) 📄 - Release Roadmap for Kernel 74x and 75x

[1802333](#) 📄 - Finding information about regressions in the SAP kernel

[19466](#) - Downloading SAP kernel patches

[2966761](#) - Overview of SAP Kernel Correction Archives

[2966621](#) - Overview of Kernel-Related Software Components

[953653](#) - Rolling Kernel Switch

The white paper [Update Strategy for the Kernel of the Application Server ABAP in On Premise Landscapes](#) provides SAP recommendations on how to patch the SAP kernel.

3. To get all downloadable software component archives required for your SAP product, go to <https://me.sap.com/softwarecenter> **SUPPORT PACKAGES & PATCHES** **By Category**

You can also search for dedicated software component archives by choosing **SUPPORT PACKAGES & PATCHES** **By Downloads** **Search**

4. Choose the required software component, release, and technical stack:

- If you want to install AS ABAP for SAP S/4HANA Frontend, choose **SAP NetWeaver and complementary products** **AS ABAP FOR S/4HANA FRONTEND** **AS ABAP <Release> FOR S/4 HANA <Release>**
- If you want to install SAP NetWeaver AS for ABAP 7.52, choose **SAP NetWeaver and complementary products** **NW AS ABAP INNOVATION PKG** **NW AS ABAP 7.52**
- If you want to install SAP NetWeaver AS for ABAP 7.51 innovation package, choose **SAP NetWeaver and complementary products** **NW AS ABAP INNOVATION PKG** **NW AS ABAP 7.51 INNOVATION PKG**
- If you want to install AS ABAP FOR OEM, choose **SAP NetWeaver and complementary products** **SAP NETWEAVER ABAP FOR OEM**
- If you want to install the ABAP part of an SAP Process Integration 7.5 system, choose **SAP NetWeaver and complementary products** **SAP NetWeaver** **<Release>** **Application Server ABAP**
- If you want to install an SAP NetWeaver ABAP system, choose **SAP NetWeaver and complementary products** **SAP NetWeaver** **<Release>** **[For releases lower than 7.5: Entry by Component]** **Application Server ABAP**
- If you want to install 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** **<ABAP Product Instance>**

5. Choose the required package:

#### Note

If you perform an additional application server installation, kernel archives, such as `SAPEXE<Version>.SAR`, `SAPEXEDB<Version>.SAR`, `IGSEXE<Version>.SAR`, `igshelper<version>.sar`, are only prompted if they cannot be retrieved from the primary application server instance or the ASCS instance of the existing SAP system. The release and patch versions must match those used for the primary application server instance and the ASCS instance.

### ⚠ 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](#) ►

#### 📌 Note

[SAP KERNEL <Version> <NUC>](#) is only available for SAP systems based on SAP NetWeaver 7.4 or lower.

- SAPEXEDB<Version>.SAR

Choose the version corresponding to the SAPEXE<Version>.SAR from ► [SAP KERNEL <Version> <UC | NUC>](#) ► [<Operating System>](#) ► [<DATABASE>](#) ►

#### 📌 Note

[SAP KERNEL <Version> <NUC>](#) is only available for SAP systems based on SAP NetWeaver 7.4 or lower.

- igsexe<Version>.sar

► [SAP IGS <Version>](#) ► [<Operating System>](#) ►

- You require the igshelper<Version>.sar.

Choose ► [SAP IGS HELPER](#) ► [# OS independent](#) ►

- SAPHOSTAGENT<Version>.SAR

► [SAP HOST AGENT 7.22](#) ► [<Operating System>](#) ►

#### → Recommendation

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

#### 📌 Note

The SAPHOSTAGENT<Version>.SAR archive is only prompted if there is either no SAP Host Agent available on the installation host or you specified during the Define Parameters phase that you want to upgrade an existing version of the SAP Host Agent already available on the installation host. In the latter case, you must specify a higher version of the SAPHOSTAGENT<Version>.SAR. Otherwise, the existing SAP Host Agent is not upgraded.

6. If you want to install an SAP system based on SAP NetWeaver 7.3 EHP1 - that is you have to use SAP kernel 7.22 - download the latest patch level of SAPCRYPTOLIB <Version>.SAR from the following path:

<https://me.sap.com/softwarecenter> » [Support Packages and Patches](#) » [By Category](#) » [Additional Components](#) » [SAPCRYPTOLIB](#) » [COMMONCRYPTOLIB](#) <Version> » <Operating System> »

7. Make the RDBMS and the export media available - either by using physical media as described in [Media Required for the Installation - Listed by SAP System Instance \[page 94\]](#) or by downloading them as described in [Downloading Complete Installation Media \[page 105\]](#).

## Related Information

[Downloading Software Packages for a Maintenance Planner Transaction \[page 103\]](#)

### 4.7.1.3 Downloading Software Packages for a Maintenance Planner Transaction

The software provisioning manager is now enabled to download all software packages that have been defined in a Maintenance Planner Transaction.

#### Note

This feature is only available if you perform an installation using a stack configuration file.

## Prerequisites

Plan your new SAP system including the required Support Package level (applicable for SAP S/4 HANA, SAP NetWeaver, SAP Business Suite, and SAP Financials) as available in the Maintenance Planner and run **sapinst** **SAPINST\_STACK\_XML=<Stack XML file>** in order to benefit from an automated installation process.

## Procedure

1. Specify a download directory for the artifacts (SAP archives) to be downloaded.
2. Start the software provisioning manager as described in [Running Software Provisioning Manager \[page 121\]](#).
3. On the *Welcome* screen, choose [Generic Options](#) » [Download Software Packages for Maintenance Planner Transaction](#).
4. Follow the instructions on the software provisioning manager screens.

The software provisioning manager prompts you for the following input parameters:

- Maintenance Planner Transaction ID

You can find the Maintenance Planner Transaction ID by one of the following ways:

- In the MP\_Plan\_<Transaction ID>\_<Generation Date>\_.pdf file which you can download during the *Completed* step in the Maintenance Planner by choosing the *Download PDF* button.
- From the *Transaction ID* column in the list of transactions displayed in the *Transactions* panel in the maintenance planner.
- From the parameter mopz-transaction-id in the Stack XML file MP\_Stack\_<Transaction ID>\_<Generation Date>\_.xml which you can download during the *Download Files* step in the Maintenance Planner by choosing the *Download Stack XML* button.


#### Note

If you started the software provisioning manager using a Stack XML file, the Maintenance Planner Transaction ID is only displayed.

- Your S-UserID and password  
You call *Software Provisioning Manager* with command line parameter `SAPINST_STACK_XML=<Absolute_Path_To_Stack_XML_File>` to get the *Maintenance Planner Transaction ID* extracted from the Stack XML file.  
You must perform this option directly after creating the Maintenance Planner Transaction, because the contained download links usually expire soon.  
Ensure the following for your S-User:
    1. You have download permissions for all artifacts on <https://me.sap.com/softwarecenter> to be able to download them.
    2. Consider the SAP Support Portal and the SAP ONE Support Launchpad *password policies*: Your **password must be the same** for both of them. If the passwords are not the same, you will lock the S-User in the SAP Support Portal. The **password must meet all of the following requirements**:
      - Must be **exactly** eight characters long
      - Contains at least one upper-case letter (A-Z)
      - Contains at least one lower-case letter (a-z)
      - Contains at least one decimal digit (0-9)
      - Contains at least one of the following special characters: ! \ @ \$ % / ( { [ ] } ) + - \* = ? ' ~ # \_ . , ; : < >
      - Must not start with ? or !
      - Must not contain any blanks
      - Must not begin with three identical characters
      - Must be different from the last five passwords you have already used
      - Only one password change is allowed per dayIf required, request a change of your SAP Support Portal Password **and** of your SAP ONE Support Password at <https://support.sap.com/en/my-support/users.html>.
  - Location of download folder for the installation software packages to be downloaded
  - If you have a proxy configured in your network, provide the proxy host and port.
5. You get a list of all downloadable artifacts (SAP archives) as specified in the Stack XML file along with their file size.
- You can still deselect downloadable artifacts (SAP archives) that you do not need to be downloaded.
6. Choose *Next* to start the download.



If you get a download error, this is the result of an unsuccessful network connection. Check your network connection and proxy configuration. If the download of some artifacts finishes without any error, but still with a status other than **OK**, you must do one of the following:

- Create an up-to-date Maintenance Plan and perform again the download of the files which were not downloaded successfully. In case of an error, the software provisioning manager skips the download of the artifact (SAR archive) in question and continue with the next one in the list.
- Download the still missing files directly from the SAP Software Center at <https://me.sap.com/softwarecenter> .

## Results

You have downloaded the artifacts (SAP archives) required for your SAP system installation with the software provisioning manager - corresponding to the archives listed in section [Downloading SAP Kernel Archives \(Archive-Based Installation\) \[page 100\]](#) - and for applying the required kernel and support packages using Software Update Manager (SUM) after the installation has completed.

**SAP BW/4HANA 1.0 SR1 only:** RDBMS and export **media** are **not** covered by this feature. You have to provide them either as physical media or download them from the SAP Software Center as described in [Downloading Complete Installation Media \[page 105\]](#) .

## 4.7.1.4 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 \[page 98\]](#).
2. Create a download directory on the host where you want to run the software provisioning manager.
3. You identify the required media as listed in [Media Required for the Installation - Listed by SAP System Instance \[page 94\]](#) .
4. Identify **all** download objects that belong to one medium according to one of the following:

#### Note

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

- Download path or location:
  - To download the complete kernel media, go to <https://me.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

```
SAPEXE_1110-80002623.SAR
Kernel Part I (753) (*)
```

```
SAPEXE_1118-80002612.SAR
```

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

#### ❖ Example

```
SAPEXEDB_1110-80002623.SAR
Kernel Part II (753) (*)
```

#### 📌 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://me.sap.com/softwarecenter/> as described in [Downloading SAP Kernel Archives \(Archive-Based Installation\) \[page 100\]](#).

- To download the remaining media required for your SAP product, you can use one of the following navigation paths:
  - <https://me.sap.com/softwarecenter/> ➤ **INSTALLATIONS & UPGRADES** ➤ **By Category** ➤ **SAP NETWEAVER AND COMPLEMENTARY PRODUCTS** ➤ **<Product>** ➤ **<Product Release>**
  - <https://me.sap.com/softwarecenter/> ➤ **INSTALLATIONS & UPGRADES** ➤ **By Alphabetical Index (A-Z)** ➤ **<First Letter of Product>** ➤ **<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:  
**<Kernel part>\_<Sequence Number>-<Material Number>**

#### ❖ Example

```
SAPEXE_1110-80002623.SAR
Kernel Part I (753) (*)
SAPEXE_1111-80002623.SAR
Kernel Part I (753) (*)
SAPEXE_1112-80002623.SAR
Kernel Part I (753) (*)
```

#### ❖ Example

```
SAPEXEDB_1110-80002623.SAR
Kernel Part II (753) (*)
SAPEXEDB_1111-80002623.SAR
Kernel Part II (753) (*)
```

```
SAPXEDB_1112-80002623.SAR  
Kernel Part II (753) (*)
```


- Title

All objects that are part of an installation medium have the same title, such as

<Solution><Media\_Name><OS> or <Database>RDBMS<OS> for database media.

5. Download the objects to the download directory.

6. 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 Installation

## 5.1 Installation Checklist

This section includes the installation steps for the following:

- Standard system
- Distributed system
- High-availability system
- Additional application server instance

Detailed information about the steps are available in the linked sections.

### ⓘ Note

SAP ASE 16.0 is installed silently as part of the installation of the respective SAP product. Do not install the database software separately prior to the SAP installation.

## Standard System

### ⓘ Note

1. You [check the prerequisites \[page 117\]](#) and [run the software provisioning manager \[page 121\]](#) to install the SAP system.

### ⓘ Note

In a standard system, all mandatory instances are installed on one host in one installation run.

2. You continue with [Post-Installation \[page 142\]](#).

## Distributed System

1. If you want to share the transport directory `trans` from another system, you have to [mount \[page 113\]](#) it from this system. Otherwise, we recommend that you share the `trans` directory that is created during the installation of the primary application server instance.
2. On the **ASCS instance host**, you do the following:
  1. You [check the prerequisites \[page 117\]](#) and [run the software provisioning manager \[page 121\]](#) to install the ABAP central services instance (ASCS instance).

## Note

If you want to install an ASCS instance [with embedded SAP Web Dispatcher \[page 32\]](#) or [with embedded SAP Gateway \[page 34\]](#) or both, you must choose the *Custom* parameter mode.

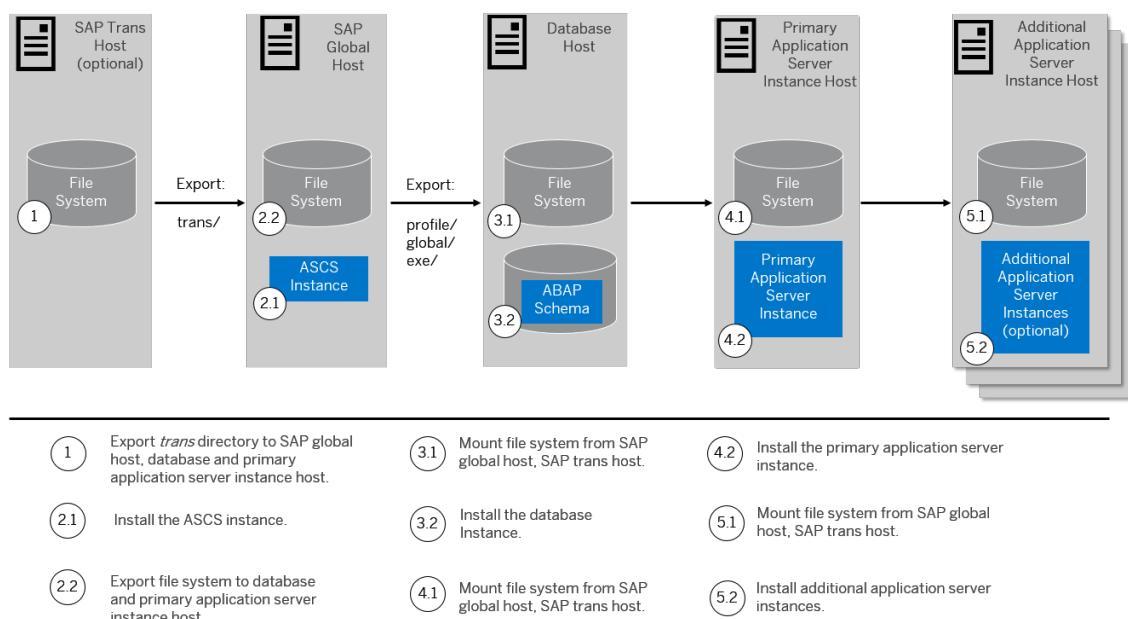
When processing the screens for the ASCS instance installation, you are prompted to mark the corresponding checkbox on the screen *Additional Components to be Included in the ASCS Instance*.

If you mark the checkbox for SAP Web Dispatcher, you are prompted for the additional parameters required for the SAP Web Dispatcher installation on the subsequent screens.

2. You [export global directories \[page 115\]](#) in `<sapmnt>/<SAPSID>` to the database and primary application server instance host.
3. On the **database instance host**, you do the following:
  1. You [mount the global directories \[page 115\]](#) in `<sapmnt>/<SAPSID>` that you exported from the SAP global host and – optionally – the `trans` directory that you [exported \[page 113\]](#) from the SAP transport host.
  2. You [check the prerequisites \[page 117\]](#) and [run the software provisioning manager \[page 121\]](#) to install the database instance.
4. On the **primary application server instance host**, you do the following:
  1. You [mount the global directories \[page 115\]](#) in `<sapmnt>/<SAPSID>` that you exported from the SAP global host.
  2. You [check the prerequisites \[page 117\]](#) and [run the software provisioning manager \[page 121\]](#) to install the primary application server instance.
  3. If you want to use the shared transport directory `trans` from another system, you also [mount \[page 113\]](#) this directory.
5. You continue with [Post-Installation \[page 142\]](#).

## Graphical Overview

The following figure shows how you install the various instances in a distributed system:



Distribution of Instances in an ABAP System

## High-Availability System

### Note

The following procedure is only an example. In this example, we use only one primary cluster node, **host A**, and one standby cluster node, **host B**. However, for your production system, we recommend that you have more than one standby node.

1. You make sure that you have already prepared the standby node, **host B**. You ought to have already made sure that it meets the hardware and software requirements and that it has all the necessary file systems, mount points, and (if required) Network File System (NFS).  
This is described in [Performing Switchover Preparations for High Availability \[page 92\]](#) and [Setting Up File Systems for a High Availability System \[page 87\]](#)
2. If you want to share the transport directory `trans` from another system, you have to [mount \[page 113\]](#) it from this system. Otherwise we recommend that you share the `trans` directory that is created during the installation of the primary application server instance (see below).
3. You set up the **switchover cluster infrastructure** as follows:
  1. You [check the prerequisites \[page 117\]](#) and [Running Software Provisioning Manager \[page 121\]](#) to install the ABAP central services instance (ASCS instance) on the primary cluster node, . Use a [virtual host namehost A \[page 91\]](#).

### Note

If you want to install an ASCS instance [with embedded SAP Web Dispatcher \[page 32\]](#) or [with embedded SAP Gateway \[page 34\]](#) or both, you must choose the *Custom* parameter mode.

When processing the screens for the ASCS instance installation, you are prompted to mark the corresponding checkbox on the screen *Additional Components to be Included in the ASCS Instance*.

If you mark the checkbox for SAP Web Dispatcher, you are prompted for the additional parameters required for the SAP Web Dispatcher installation on the subsequent screens.

2. You [hostcheck the prerequisites \[page 117\]](#) and [run the software provisioning manager \[page 121\]](#) to install the ERS instance for the ASCS instance on the primary cluster node, **host A**. Use a [virtual host name \[page 91\]](#).
3. You [export global directories \[page 115\]](#) in `<sapmnt> / <SAPSID>` to the database host and to the primary application server instance host.
4. You prepare the standby cluster node, **host B**, making sure that it meets the [hardware and software requirements \[page 39\]](#) and it has all the necessary [file systems \[page 87\]](#), mount points, and (if required) Network File System (NFS).
5. You set up the user environment on the standby node, **host B**:
  - You use the same user and group IDs, and OS specific files (such as `etc/services`) as on the primary node.
  - You create the home directories of users and copy all files from the home directory of the primary node.

For more information about the required operating system users and groups, see [Creating Operating System Users \[page 77\]](#).

6. You configure the switchover software and test that switchover functions correctly to **all** standby nodes in the cluster.
7. You repeat the following steps until you have finished installing the ERS instance on **all** nodes in the cluster:
  1. You perform the switchover to a node where you want to install the ERS instance for the ASCS instance.
  2. You [check the prerequisites \[page 117\]](#) and [run the software provisioning manager \[page 121\]](#) to install the ERS instance for the ASCS instance on the standby node, **host B**.
4. On the **database instance host**, you do the following:

#### → Recommendation

We recommend that the database instance is part of the hardware cluster or of any other proprietary high-availability solution for the database.

1. You make available the global directories in `<sapmnt> / <SAPSID>` from the switchover cluster infrastructure and – optionally – from the SAP transport host.
2. You [check the prerequisites \[page 117\]](#) and [run the software provisioning manager \[page 121\]](#) to install the database instance on the **database instance host**.
5. On the **primary application server instance host**, you do the following:

#### ⓘ Note

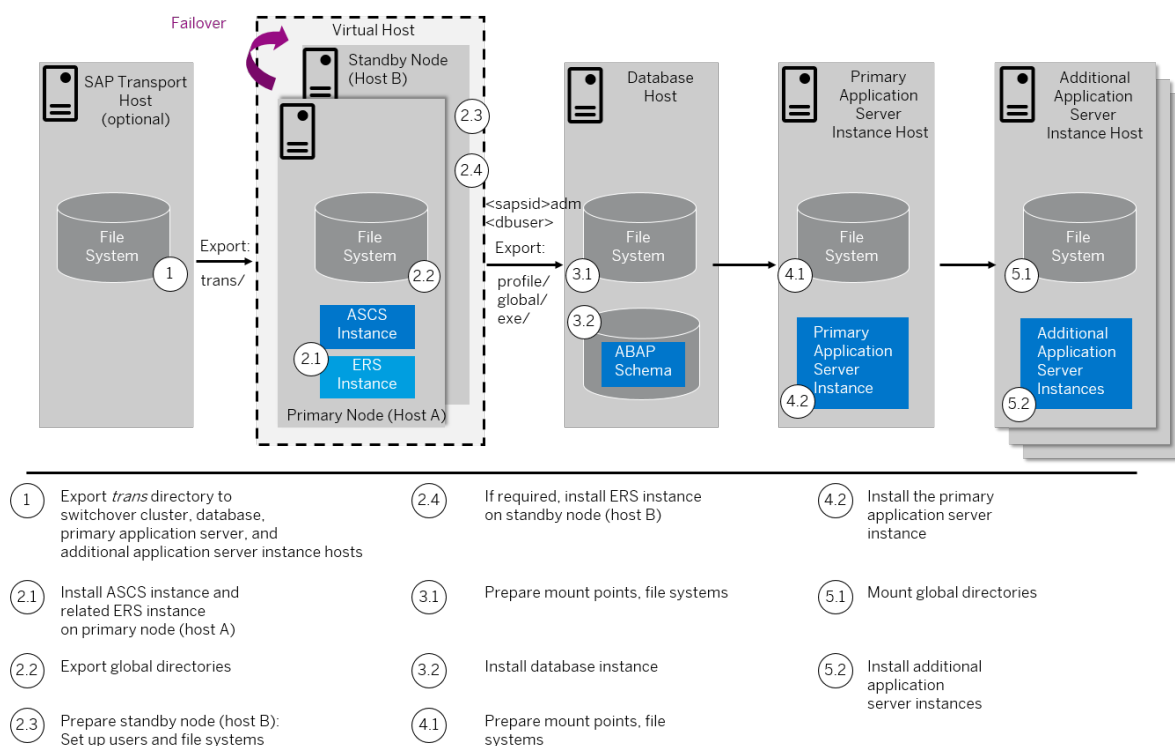
In a high-availability installation, the primary application server instance does **not** need to be part of the cluster because it is no longer a single point of failure (SPOF). The SPOF is now in the ABAP central services instance (ASCS instance), which is protected by the cluster.

1. You [mount the global directories \[page 115\]](#) in `<sapmnt> / <SAPSID>` that you exported from the switchover cluster infrastructure.

2. You [check the prerequisites \[page 117\]](#) and [run the software provisioning manager \[page 121\]](#) to install the primary application server instance.
3. If you want to use the shared transport directory `trans` from another system, you also [mount \[page 113\]](#) this directory (see above).
6. We recommend you to install additional application server (AS) instances to create redundancy. The AS instances are not a SPOF. Therefore, do **not** include these instances in the cluster.
7. You continue with [Post-Installation \[page 142\]](#).

## Graphical Overview

The following figure provides an overview of how you install the various instances in a high-availability installation:



Distribution of Instances in a High-Availability ABAP System

## Additional Application Server Instance

1. If you want to install additional application server instances on a host different from the SAP system host, you export global directories in `<sapmnt>/<SAPSID>` to the hosts on which you want to install additional application server instances.
2. On every **additional application server instance host**, you do the following:
  1. If you want to install additional application server instances on a host different from the SAP system host, you [mount the global directories \[page 115\]](#) in `<sapmnt>/<SAPSID>` that you exported from the SAP system host.
  2. You [check the prerequisites \[page 117\]](#) and [run the software provisioning manager \[page 121\]](#) to install the additional application server instance.
3. You continue with [Post-Installation \[page 142\]](#).



### Installation Steps for an Application Server Instance for a Distributed System

1. If you want to share the transport directory `trans` from another system, you have to [mount \[page 113\]](#) it from this system. Otherwise, we recommend that you share the `trans` directory that is created during the installation of the primary application server instance.
2. On the **SAP global host**, you export global directories in `<sapmnt> / <SAPSID>` to the hosts on which you want to install additional application server instances.
3. On every **additional application server instance host**, you do the following:
  1. You [mount the global directories \[page 115\]](#) in `<sapmnt> / <SAPSID>` that you exported from the SAP global host.
  2. You [check the prerequisites \[page 117\]](#) and [run the software provisioning manager \[page 121\]](#) to install the additional application server instance.
  3. If you want to use the shared transport directory `trans` from another system, also [mount \[page 113\]](#) this directory.
4. You continue with [Post-Installation \[page 142\]](#).

### Installation Steps for an Additional Application Server Instance for a High-Availability System

1. If you want to share the transport directory `trans` from another system, you have to [mount \[page 113\]](#) it from this system. Otherwise, we recommend that you share the `trans` directory that is created during the installation of the primary application server instance.
2. On the **primary node, host A**, of the **switchover cluster infrastructure**, you export global directories in `<sapmnt> / <SAPSID>` to the hosts on which you want to install additional application server instances.
3. On each **additional application server instance host**, do the following:
  1. You [mount the global directories \[page 115\]](#) in `<sapmnt> / <SAPSID>` that you exported from the SAP global host.
  2. You [check the prerequisites \[page 117\]](#) and [run the software provisioning manager \[page 121\]](#) to install the additional application server instance.
  3. If you want to use the shared transport directory `trans` from another system, you also [mount \[page 113\]](#) this directory.
4. You continue with [Post-Installation \[page 142\]](#).

## 5.2 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.

For more information, see the SAP Library at:

Release	SAP Library Path
<ul style="list-style-type: none"> <li>SAP NetWeaver 7.3 including Enhancement Package 1 <a href="http://help.sap.com/nw731">http://help.sap.com/nw731</a></li> <li>SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li> <li>SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li> <li>SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li> <li>SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li> </ul>	<p> <a href="#">Application Help</a> &gt; <a href="#">Function-Oriented View</a> &gt; <a href="#">Application Server</a> &gt; <a href="#">Application Server ABAP</a> &gt; <a href="#">Administration of Application Server ABAP</a> &gt; <a href="#">Change and Transport System</a> &gt; <a href="#">Change and Transport System - Overview</a> &gt; <a href="#">Basics of the Change and Transport System</a> &gt; <a href="#">Transport Management System - Concept</a> </p>

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

### Mounting the Transport Directory

#### ⓘ Note

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

- Log on as user `root` to the host of the primary or additional application server instance, where `/usr/sap/trans` is to be mounted.
- Create the mount point `/usr/sap/trans`.
- Mount `/usr/sap/trans` using Network File System (NFS) from the exporting host.

## 5.3 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.

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
```

- 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 \[page 200\]](#).

#### Note

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

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

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

```
<sapmnt>/<SAPSID>/exe
```

```
<sapmnt>/<SAPSID>/profile
```

```
<sapmnt>/<SAPSID>/global
```

- 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.

## 5.4 Specifying the Initial Data Source of the User Management Engine

During the installation of your SAP system, you have to specify the initial data source of the User Management Engine (UME).

### Prerequisites

You have planned how you want to configure user and access management for your SAP system to be installed as described in [Planning User and Access Management \[page 53\]](#).

## Procedure

### Using Central User Management

1. You install your SAP system as described in this installation guide.
2. Add the system to Central User Administration (CUA). For more information, see [Configuring User Management \[page 163\]](#).

### Using an LDAP directory as Source for User Data

1. You install your SAP system as described in this installation guide.
2. Configure the user management of the newly installed SAP system to use an LDAP directory. For more information, see [Configuring User Management \[page 163\]](#).

## 5.5 Prerequisites for Running Software Provisioning Manager

Make sure you fulfil 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 \[page 121\]](#). 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 \[page 128\]](#).

- If you want to enable Internet Protocol Version 6 (IPv6), make sure that you set `SAP_IPv6_ACTIVE=1` in the environment of the user with `root` authorization which you use to start the software provisioning

manager. While running the software provisioning manager, this setting is then also added to the environment of the `<sapsid>adm` user.

### Note

By applying this setting the SAP system administrator is responsible for configuring the IP version on each host of the system landscape, before installing any additional instance to it.

- 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>adm/.cshrc;env" or /bin/csh -c "source /home/<sapsid>adm/.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 \[page 128\]](#).

### Note

Some tools such as `jspitter` may create files while the software provisioning manager is running. The required free space in the `/tmp` directory depends on the amount of databases which you intend to unload.

- 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 \[page 77\]](#) and [Running Software Provisioning Manager \[page 121\]](#)).

### ⚠ 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 `cs` shell, the output of command `limit` needs to be at least as follows:

### ❖ Example

The following table lists example output taken from SUSE Linux Enterprise Server 15 (x86\_64).

Output	Properties
<code>cputime</code>	unlimited
<code>filesize</code>	unlimited
<code>datasize</code>	unlimited
<code>stacksize</code>	8192 KB
<code>coredumpsize</code>	unlimited
<code>descriptors</code>	8192
<code>memoryuse</code>	unlimited

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

### ❖ Example

The following table lists example output taken from SUSE Linux Enterprise Server 15 (x86\_64).

Output sh	Output ksh	Properties
<code>cpu time (seconds)</code>	<code>cpu time (seconds)</code>	unlimited
<code>file size (blocks)</code>	<code>file size (blocks)</code>	unlimited
<code>data seg size (kbytes)</code>	<code>data size (Kibytes)</code>	unlimited
<code>stack size (kbytes)</code>	<code>stack size (Kibytes)</code>	8192 KB
<code>core file size (blocks)</code>	<code>core file size (blocks)</code>	unlimited

Output sh	Output ksh	Properties
open files	nofile	8192
max memory size (kbytes)	max memory size (Kibytes)	unlimited

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

- Make sure that you have defined the most important SAP system parameters as described in [Basic Installation Parameters \[page 54\]](#) **before** you start the installation.
- Check that your installation host meets the requirements for the installation options that you want to install.  
For more information, see [Running the Prerequisite Checker \[page 40\]](#).
- If you want to install an additional application server instance in an existing SAP system, make sure that:
  - There is exactly one entry in the `/usr/sap/sapservices` file for each SAP instance installed on this host. Be sure to check that the entry refers to the correct profile.
  - There are no profile backup files with an underscore “\_” in their profile name. If so, replace the “\_” with a “.”.

#### ❖ Example

Rename `/usr/sap/S14/SYS/profile/S14_D20_zsi-aix693p2_D20081204`  
to `/usr/sap/S14/SYS/profile/S14_DVEBMGS20_zsi-aix693p2.D20081204`.

- 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 perform the installation in unattended mode, see [System Provisioning Using an Input Parameter File \[page 130\]](#) which describes an improved procedure using `infile.params`.



## 5.6 Running Software Provisioning Manager

This section describes how to run the software provisioning manager.

### Prerequisites

For more information, see [Prerequisites for Running Software Provisioning Manager \[page 117\]](#).

### 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 \[page 128\]](#).

### Procedure

1. Log on to the installation host as a user with `root` permissions.

#### Caution

Make sure that the user with `root` permissions that you want to use for running the software provisioning manager has not set any environment variables for a different SAP system or database.

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 installation host, you can specify another operating system user for authentication purposes. You do this using the `SAPINST_REMOTE_ACCESS_USER` parameter when starting the `sapinst` executable from the command line. You must confirm that the user is a trusted one. For more information, see SAP Note [1745524](#) .

2. Make the installation media available.

For more information, see [Preparing the Installation Media \[page 93\]](#).

#### Note

Even if you use the complete SAP kernel media, the software provisioning manager might prompt you during the provisioning process for additional archives (\*.SAR files) due to special Patch Level (PL) requirements depending on categories such as the product, operating system, and database platform.

<X> of the SAPEXEDB.SAR (for DBTYPE <Y>), but this PL of the SAPEXEDB.SAR is not contained in the SAP kernel media. In this case you must download the required PL from <https://me.sap.com/softwarecenter> following the instructions given in [Downloading SAP Kernel Archives \(Archive-Based Installation\)](#) [page 100].

### → Recommendation

Make the installation media available **locally** For example: The software provisioning manager might require a certain PL. For example, if you use Network File System (NFS), reading from media mounted with NFS might fail.

Only valid for 'Platform': Oracle Solaris

### ⓘ Note

**Oracle Solaris:** If you mount installation media, make sure that you do this with option **nomap1case**.

End of 'Platform': Oracle Solaris

3. Start the software provisioning manager from the directory to which you unpacked the Software Provisioning Manager archive by entering the following command:

```
<Path_To_Unpack_Directory>/sapinst
```

### ⓘ Note

If you are using a Stack XML file (see [Installation Using a Stack XML File](#) [page 37]), you must call the `sapinst` executable with command line parameter

```
SAPINST_STACK_XML=<Absolute_Path_To_Stack_XML_File>:
```

```
/<Path_To_Unpack_Directory>/sapinst  
SAPINST_STACK_XML=<Absolute_Path_To_Stack_XML_File>
```

### ⓘ Note

If you need to assign virtual host names to the instance to be installed, and it is **not possible** to do this by specifying it as an input parameter on the <Instance Name> *Instance* screen, you can assign a virtual host name by starting the software provisioning manager with the `SAPINST_USE_HOSTNAME` property:

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

For more information, see *Virtual Host Name* in [SAP System Parameters](#) [page 55].

### ⓘ Note

If you are running a system copy with parallel export/import using the Migration Monitor and started the export with command line option **SUPPORT\_DECLUSTERING=false**, you must start the software provisioning manager for the installation of the target database instance with command line option **SUPPORT\_DECLUSTERING=true** for the import during the target system installation.

For more information, see the system copy guides for *Product Release "SAP NetWeaver 7.X-based"* at <https://help.sap.com/viewer/swpm10guides> >> *System Copy Option of Software Provisioning Manager 1.0* > *System Copy Guides - Software Provisioning Manager 1.0* or <http://support.sap.com/>

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 \[page 128\]](#).
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 \[page 117\]](#)) 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. On the [Welcome](#) screen, choose the required option:

- Perform preparations

Go to [Generic Options](#) [Database](#) [Preparations](#) and choose the required task.

To install SAP Host Agent separately, choose [Generic Options](#) [Database](#) [Preparations](#) [SAP Host Agent](#).

- Install an SAP system:

- To install an SAP system based on SAP NetWeaver AS ABAP **from scratch**, choose [Product](#) [Database](#) [Installation](#) [Application Server ABAP](#) [System Variant](#).

- To install the application server ABAP for an SAP Process Integration system based on SAP NetWeaver 7.5 **from scratch**, choose [SAP NetWeaver 7.5](#) [Database](#) [Installation](#) [Application Server ABAP for SAP Process Integration](#) [System Variant](#).

- To install the application server ABAP for an SAP Solution Manager 7.2 system **from scratch**, choose [SAP Solution Manager 7.2](#) [Support Release](#) [Database](#) [Installation](#) [Application Server ABAP](#) [System Variant](#).

- To install an SAP system based on SAP NetWeaver AS ABAP **as target system of a system copy**, choose [Product](#) [Database](#) [System Copy](#) [Target System](#) [System Variant](#) [Based on AS ABAP](#).

- To install the application server ABAP for an SAP Process Integration system based on SAP NetWeaver 7.5 **as target system of a system copy**, choose [SAP NetWeaver 7.5](#) [Database](#) [System Copy](#) [Target System](#) [System Variant](#) [Based on AS ABAP](#).

- To install the application server ABAP for an SAP Solution Manager 7.2 system **as target system of a system copy**, choose [SAP Solution Manager 7.2](#) [Support Release](#) [Database](#) [System Copy](#) [Target System](#) [System Variant](#) [Based on AS ABAP](#).

- Install an additional SAP system instance, go to [Product](#) [Database](#) [Additional SAP System Instances](#) [Additional Application Server Instance](#).

- Perform other tasks or install additional components

Go to [Generic Options](#) [Database](#) and choose the required task.

6. Choose [Next](#).

#### 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 on the software provisioning manager screens and enter the required parameters.

#### 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.

### Note

If you want to install an ASCS instance [with embedded SAP Web Dispatcher \[page 32\]](#) or [with embedded SAP Gateway \[page 34\]](#) or both, you must choose the *Custom* parameter mode.

When processing the screens for the ASCS instance installation, you are prompted to mark the corresponding checkbox on the screen [Additional Components to be Included in the ASCS Instance](#).






If you mark the checkbox for SAP Web Dispatcher, you are prompted for the additional parameters required for the SAP Web Dispatcher installation on the subsequent screens.

### Note

If you are performing the target system installation in the context of a system copy with parallel export/import using the Migration Monitor and the target database is declustered - that is you started the software provisioning manager for the target database instance installation with command line option **SUPPORT\_DECLUSTERING=true** as described above - add the following load options parameter in the [SAP System Advanced Load Configuration](#) screen:

```
-datacodepage <datacodepage_of_source_system>
```


The advanced screen for load configuration only appears if you run the software provisioning manager in *Custom* parameter mode. You can check the parameter within the `import_monitor_cmd.properties` file located in the installation directory, in the `loadArgs` entry.

For more information, see the system copy guides at <http://support.sap.com/sltoolset>  [System Provisioning](#)  [System Copy Option](#)  [Guide for Systems Based on SAP NetWeaver 7.1 & Higher](#)  .

### 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 artefacts 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](#) .

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 installation.

8. To start the installation, choose [Next](#).

The software provisioning manager starts the installation and displays the progress of the installation. When the installation has finished, the software provisioning manager shows the message: Execution of `<Option_Name>` has completed.

### ⚠ Caution

**HP-UX only:** If you decided to use 02 as the instance number, the instance fails to start during the installation process. For more information about the cause, see [SAP System Parameters \[page 55\]](#). You must manually change the port number for report RSLGCOLL to continue with the installation.



Proceed as follows:

1. Go to directory `<sapmnt>/<SAPSID>/profile`.
2. Edit `DEFAULT.PFL`.
3. Set the parameter `rslg/collect_daemon/listen_port` to a free port number.

During the installation of an Application Server ABAP for **SAP Process Integration 7.5** or **SAP Solution Manager 7.2**, the following is automatically accomplished by the software provisioning manager:

- The Java users for the Application Server Java for SAP Process Integration or SAP Solution Manager are created, which you have to install once the installation of the Application Server ABAP for SAP Process Integration or SAP Solution Manager is complete.
- The Application Server ABAP for SAP Process Integration or SAP Solution Manager is prepared for connection to the Application Server Java for SAP Process Integration or SAP Solution Manager.

For details on these users, see the *Preparing an External ABAP System as Source for User Data* chapter of the *Installation of SAP Systems Based on the Application Server Java of SAP NetWeaver 7.5 and SAP Solution Manager 7.2 SR2 Java on <OS>: <DB>* documentation, which you must use anyway to install the Application Server Java for SAP Process Integration 7.5 or SAP Solution Manager 7.2 after you have installed the Application Server ABAP.

If you are performing an [Installation Using a Stack XML File \[page 37\]](#), the Software Update Manager (SUM) is started by the software provisioning manager at the end of the installation process. A browser window opens with a link to UI of the SUM that is already running. Follow the instructions on the SUM dialogs and in the SUM Guide at <https://support.sap.com/sltoolset>  [System Maintenance](#) .

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

### → Recommendation

Keep all installation 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 installation directories with all their contents and save it to a physically separate medium, such as an optical medium or a USB drive separate from your installation hosts. This might be useful for analyzing issues occurring later when you use the system. For security reasons, do **not** keep installation directories on installation hosts, but make sure that you delete them after saving them separately.

10. If you copied the software provisioning manager software to your hard disk, you can delete these files when the installation has successfully completed.
11. For security reasons, we recommend that you remove the operating system users from the group `sapinst` **after** you have completed the installation.

### Note

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

12. 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/
```

13. 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_inst_dir` directory. For more information, see [Useful Information about Software Provisioning Manager \[page 128\]](#).

## 5.7 Additional Information about Software Provisioning Manager

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

### [Useful Information about Software Provisioning Manager \[page 128\]](#)

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 \[page 130\]](#)

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 \[page 135\]](#)

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

### [Entries in the Services File Created by Software Provisioning Manager \[page 138\]](#)

### [Troubleshooting with Software Provisioning Manager \[page 139\]](#)

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

### [Using the Step State Editor \(SAP Support Experts Only\) \[page 140\]](#)

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

## 5.7.1 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 \[page 117\]](#).

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 SAP system or instance to be installed, 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.



Shell Used	Command
Bourne shell (sh)	<code>TEMP=&lt;Directory&gt;</code> <code>export TEMP</code>
C shell (csh)	<code>setenv TEMP &lt;Directory&gt;</code>
Korn shell (ksh)	<code>export TEMP=&lt;Directory&gt;</code>

### ⚠ 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_inst_dir` 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_inst_dir` 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. 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`:  
`./sapinst -p`
- If you want to perform the installation in unattended mode, see [System Provisioning Using an Input Parameter File \[page 130\]](#) which describes an improved procedure using `infile.params`.
- If required, stop the software provisioning manager by choosing the [Cancel](#) button.

### ℹ Note

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

## 5.7.2 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 \[page 128\]](#)) 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:

```
# 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:

```
# 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:

```
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:

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

#### ❖ Example

Example on Windows:

```
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:

```
Installation Master      /usr/local/TESE/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.MIGRATION1 = <full path to ABAP 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 \[page 36\]](#) and [Preparation \[page 76\]](#).
2. Create your input parameter file as follows:
  1. Start software provisioning manager as described in [Running Software Provisioning Manager \[page 121\]](#).
  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 “`infile.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 “`infile.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”

### ❖ Example

```
product-id=NW_ABAP_ASCS:NW750.ADA.ABAP
```

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

### ❖ Example

```
product id 'NW_ABAP_ASCS:NW750.ADA.ABAP'
```

5. [Run the software provisioning manager \[page 121\]](#) 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_GUISEVER=false
```

6. After software provisioning manager has completed, perform follow-up activities as described in [Post-Installation \[page 142\]](#).

## 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| 

SAP Note 2669183 ASCS installation failure with Software Provisioning Manager unattended mode (Non-Observer mode) 

SAP Note 2482103 Installation with Software Provisioning Manager in unattended mode using input parameter file fails 

SAP Note 2974889 Installation with Software Provisioning Manager in unattended mode fails in step getDBInfo due to missing paramerters 

## 5.7.3 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:

Option	Definition
<a href="#">Retry</a>	<p>The software provisioning manager retries the installation from the point of failure without repeating any of the previous steps.</p> <p>This is possible because the software provisioning manager records its progress in the <code>keydb.xml</code> file.</p> <p>We recommend that you view the entries in the log files, try to solve the problem, and then choose <a href="#">Retry</a>.</p> <p>If the same or a different error occurs, the software provisioning manager displays the same dialog box again.</p>
<a href="#">Stop</a>	<p>The software provisioning manager stops the installation, closing the dialog box and the software provisioning manager's SL-UI.</p> <p>The software provisioning manager records its progress in the <code>keydb.xml</code> 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.</p>
<a href="#">Continue</a>	<p>The software provisioning manager continues the installation from the current point.</p>
<a href="#">View Log</a>	<p>Access installation log files.</p>

## ❗ Note

You can also terminate the software provisioning manager by choosing `Ctrl` + `C` but we do **not** recommend this because it kills the process immediately.

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 \[page 121\]](#).
2. Make sure that the installation media are still available.

For more information, see [Preparing the Installation Media \[page 93\]](#).

### → 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.

Only valid for 'Platform': Oracle Solaris

## ❗ Note

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

End of 'Platform': Oracle Solaris

3. 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`

4. 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
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 \[page 128\]](#).



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 \[page 117\]](#)) 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. From the tree structure on the [Welcome](#) screen, select the installation option that you want to continue and choose [Next](#).

The [What do you want to do?](#) screen appears.

6. On the [What do you want to do?](#) screen, decide between the following alternatives and continue with [Next](#):

Alternative	Behavior
<i>Perform a new run</i>	<p>The software provisioning manager does not continue the interrupted installation 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.</p> <p>The following naming convention is used for the backup directory:</p> <pre>log_&lt;Day&gt;_&lt;Month&gt;_&lt;Year&gt;_&lt;Hours&gt;_&lt;Minutes&gt;_&lt;Seconds&gt;</pre> <div> <p>❖ Example</p> <pre>log_01_Oct_2016_13_47_56</pre> </div> <div> <p>ⓘ Note</p> <p>All actions taken by the installation before you stopped it (such as creating directories or users) are not revoked.</p> </div> <div> <p>⚠ Caution</p> <p>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.</p> </div>
<i>Continue with the existing one</i>	<p>The software provisioning manager continues the interrupted installation from the point of failure.</p>

## 5.7.4 Entries in the Services File Created by Software Provisioning Manager

After the installation has finished successfully, the software provisioning manager has created the following entries in `/etc/services`:

```
sapdp<Instance_Number> = 32<Instance_Number>/tcp
sapdp<Instance_Number>s = 47<Instance_Number>/tcp
sapgw<Instance_Number> = 33<Instance_Number>/tcp
sapgw<Instance_Number>s = 48<Instance_Number>/tcp
sapms<SAPSID> = 36<Instance_Number>/tcp (unless you specified another value during the installation)
```

#### 📘 Note

- There is a port created for every possible instance number, regardless of which instance number you specified during the installation. For example, for `sapgw<Instance_Number> = 33<Instance_Number>/tcp` the following range of entries is created:  
`sapgw00 = 3300/tcp`  
`sapgw01 = 3301/tcp`  
`sapgw02 = 3302/tcp`  
`[...]`  
`sapgw98 = 3398/tcp`  
`sapgw99 = 3399/tcp`
- If there is more than one entry for the same port number, this is **not** an error.

## 5.7.5 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.

#### 📘 Note

The *LOG FILES* tab is only available if you have selected on the *Welcome* screen the relevant software provisioning manager option for the SAP product to be installed.

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 128].

- 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 \[page 135\]](#).
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](#) .

## 5.7.6 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.

### 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 \[page 117\]](#).

## Procedure

1. Start the software provisioning manager from the command line as described in [Running Software Provisioning Manager \[page 121\]](#) 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.

# 6 Post-Installation

## 6.1 Post-Installation Checklist

This section includes the post-installation steps that you have to perform for the following:

### ⓘ Note

#### **SAP systems based on SAP NetWeaver 7.4:**

You can automate some of these post-installation steps by running task list `SAP_BASIS_SETUP_INITIAL_CONFIG` in the ABAP task manager for lifecycle management automation (transaction `STC01`). For more information, see [SAP NetWeaver 7.4 and Higher: Performing Automated Initial Setup \(Optional\) \[page 145\]](#).

The sections describing these steps are marked with a corresponding note at the beginning.

- Standard, distributed, or high-availability system
- Additional application server instance

More detailed information about the steps are available in the linked sections.

### Standard, Distributed, or High-Availability System

### ⓘ Note

In a standard system, all mandatory instances are installed on one host. Therefore, if you are installing a standard system, you can ignore references to other hosts.

1. If required, you [perform a full installation backup \[page 171\]](#) immediately after the installation has finished.
2. You check and if necessary modify the settings for the operating system users for your SAP system if they were created by the software provisioning manager.  
For more information, see [Creating Operating System Users and Groups \[page 77\]](#).
3. You check whether you can [log on to the Application Server ABAP \[page 144\]](#).
4. **SAP systems based on SAP NetWeaver 7.4 and higher only:** You [perform the automated initial setup \[page 145\]](#).

### ⓘ Note

This step is optional.

5. You [install the SAP license \[page 146\]](#).
6. If you have installed a high-availability system, you [set up the licenses for high availability \[page 147\]](#).
7. You [configure the remote connection to SAP support \[page 149\]](#).

8. You [enable the Note Assistant to apply note corrections \[page 149\]](#).
9. You [configure the documentation provided on the SAP Help Portal \[page 150\]](#).
10. You [perform the consistency check \[page 152\]](#).
11. You [configure the Transport Management System \[page 153\]](#).
12. For production systems it is highly recommended that you [connect the system to SAP Solution Manager \[page 154\]](#).
13. You [apply the latest kernel and Support Packages \[page 156\]](#).
14. You perform [post-installation steps for the application server ABAP \[page 158\]](#).
15. If you installed a high-availability system based on SAP NetWeaver AS for ABAP 7.52, you can decide whether you want to [switch to the new standalone enqueue server 2 and enqueue replicator 2 \[page 160\]](#).
16. If you installed the ABAP part of an SAP Solution Manager 7.2 or SAP Process Integration 7.5 system, enable HTTPS communication with the Java part of the system.  
For more information, see [SAP Solution Manager 7.2, SAP Process Integration 7.5 only: Enabling HTTPS Communication for ABAP \[page 161\]](#).
17. If required, you [install additional languages and perform language transport \[page 162\]](#).
18. You [ensure user security \[page 164\]](#).
19. You [perform the client copy \[page 168\]](#).
20. **SAP systems based on SAP NetWeaver 7.4 and higher only:** If required, you [change the keys for the secure storage \[page 169\]](#).
21. You [enable the database \[page 170\]](#).
22. You [perform a full installation backup \[page 171\]](#).
23. If you chose to install an embedded SAP Web Dispatcher within the ASCS instance, you [log on to the SAP Web Dispatcher Management Console \[page 173\]](#)
24. If you chose to install an embedded SAP Web Dispatcher within the ASCS instance, you [configure the SAP Web Dispatcher \[page 174\]](#)
25. If you chose to install an embedded Gateway within the ASCS instance, you [configure the SAP Gateway \[page 175\]](#).
26. You check the Master Guide for your SAP Business Suite application, SAP Solution Manager system (section *Implementation Sequence*) or SAP NetWeaver application (section *Configuration of Systems and Follow-Up Activities*) for additional implementation and configuration steps, such as language installation, monitoring, work processes, transports, SAP license, printers, system logs, and connectivity to system landscape directory (SLD).

## Additional Application Server Instance

1. If required, you [perform an installation backup \[page 171\]](#) immediately after the installation has finished.
2. You check and if necessary modify the settings for the operating system users for your SAP system if they were created by the software provisioning manager.  
For more information, see [Creating Operating System Users and Groups \[page 77\]](#).
3. You check whether you can [log on to the Application Server ABAP \[page 144\]](#).
4. You [configure the documentation provided on the SAP Help Portal \[page 150\]](#).
5. You [ensure user security \[page 164\]](#).
6. You [perform a full installation backup \[page 171\]](#).

## 6.2 Logging On to the Application Server ABAP

You need to check that you can log on to the Application Server ABAP with the standard users, given in the table below.


### Prerequisites

- The SAP system is up and running.
- You have installed the SAP front-end software.

### Context

In a distributed or high-availability system, you check whether you can log on to every instance of the SAP system that you installed.

#### Note

Client 066 is no longer available in newly installed SAP systems based on SAP NetWeaver 7.5 or higher. For more information, see SAP Note [1749142](#) .

User	User Name	Client
SAP system user	SAP*	000, 001, 066
	DDIC	000, 001

You access the application server ABAP using [SAP Logon](#).

### Procedure

1. Start [SAP Logon](#) on the host where you have installed the SAP front-end software as follows:

- SAP GUI for Windows:

On the host where you have installed the front end, choose:


 [Start](#)  [Programs](#)  [SAP Front End](#)  [Release](#)  [SAP Logon](#) 

- SAP GUI for Java:

Enter the following command from the GUI installation directory:

**guilogon**

2. Create a logon entry for the newly installed system in the [SAP Logon](#).

For more information about creating new logon entries, press .



3. When you have created the entry, log on as user SAP\* or DDIC.


## 6.3 SAP NetWeaver 7.4 and Higher: Performing Automated Initial Setup (Optional)

After the installation of a new SAP system you have to configure the system to enable its usage. For example, you have to install an SAP license, create logon groups, and configure the Transport Management System (TMS) and security settings. If your SAP system is based on SAP NetWeaver 7.4 and higher, you can profit from an automated initial setup which executes these steps automatically.

### Prerequisites

Note that the best point in time when you perform automated initial setup depends on the following:

- If you have run the installation using a Stack XML file (also called “up-to-date installation”), we recommend that you proceed as follows:
  1. Perform the **complete** installation and update process - that is the installation with Software Provisioning Manager **and** the update with Software Update Manager.
  2. Perform the automated initial setup.By running first the update and then the automated initial setup, you can profit from latest features and fixes in the initial setup configuration content.  
Background: As of Software Logistics Toolset 1.0 SPS12, the installation procedure with Software Provisioning Manager 1.0 SP07 and higher also includes basic configuration activities, such as initial basic configuration of transport management, which are a prerequisite for the subsequent maintenance process. In previous SP versions of Software Logistics Toolset 1.0, this prerequisite had to be fulfilled by running automated initial setup before the update process.
- If you have **not** run the installation using a Stack XML file (also called “up-to-date installation”), we recommend that you proceed as follows:
  1. Run automated initial setup directly after the installation, using the automation content provided with the system load.
  2. Apply the Support Packages to benefit from the already performed initial configuration – for example, using the already configured Transport Management System.
  3. Consider running the automated initial setup a second time, especially if you want to benefit from the latest improvements and fixes offered by the updated automation content provided by the applied Support Package.

For more information about automated initial setup, see the SAP Community Network at <https://wiki.scn.sap.com/wiki/display/SL/Automated+Initial+Setup+of+ABAP-Based+Systems> .

## Procedure

1. Start the ABAP Task Manager by calling transaction STC01.
2. Choose task list `SAP_BASIS_SETUP_INITIAL_CONFIG`.
3. Select the tasks you want to get executed.

For this, the task list offers sophisticated online documentation of the comprised activities.

4. Choose *Execute*.

You are guided through the configuration steps where you can enter the required values.

## Related Information

[Installation Using a Stack XML File \[page 37\]](#)

[Installing the SAP License \[page 146\]](#)

[Configuring the Remote Connection to SAP Support \[page 149\]](#)

[Configuring the Change and Transport System \[page 153\]](#)

[Applying the Latest Kernel and Support Package Stacks \[page 156\]](#)

[Performing Post-Installation Steps for the ABAP Application Server \[page 158\]](#)

[Performing the Consistency Check \[page 152\]](#)

## 6.4 Installing the SAP License

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

### Note

#### **SAP systems based on SAP NetWeaver 7.4 or higher only:**

You can automate this step by running task list `SAP_BASIS_SETUP_INITIAL_CONFIG` in the ABAP task manager for lifecycle management automation (transaction STC01). For more information, see [SAP NetWeaver 7.4 and Higher: Performing Automated Initial Setup \(Optional\) \[page 145\]](#).

## Context

### Caution

**Before** the temporary license expires, you must apply for a permanent license key from SAP.

We recommend that you apply for a permanent license key as soon as possible after installing your system.

For more information about SAP license keys and how to obtain them, see <http://support.sap.com/licensekey>.

## Procedure

Install the SAP license as described in the SAP Library at:

### Note

If you have installed a high-availability system, proceed as described in [High Availability: Setting Up Licenses](#) [page 147].

SAP Release and SAP Library Quick Link	SAP Library Path (Continued)
<ul style="list-style-type: none"><li>SAP NetWeaver 7.3 including Enhancement Package 1 <a href="http://help.sap.com/nw731">http://help.sap.com/nw731</a></li><li>SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li><li>SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li><li>SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li><li>SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li></ul>	<p>► <a href="#">Application Help</a> ► <a href="#">Function-Oriented View</a> ► <a href="#">Solution Life Cycle Management</a> ► <a href="#">SAP Licenses</a> ►</p>

## 6.5 High Availability: Setting Up Licenses

You need to install a **permanent** license, which is determined by the hardware environment of the message server.

### Prerequisites

The SAP system is up and running.

## Context

SAP has implemented a license mechanism for switchover solutions and clustered environments. Your customer key is calculated on the basis of local information on the message server host. This is the host machine where the ABAP central services instance (ASCS instance) runs.


To be able to perform a switchover, the **temporary** license that is installed automatically with the ASCS instance is not sufficient. You first need to install a **permanent** license, which is determined by the hardware environment of the message server. Since SAP's high-availability (HA) solution stipulates two or more cluster nodes (host machines) where the message server is enabled to run, you have to order as many [license keys \[page 146\]](#) as you have cluster nodes.

When we receive confirmation from your vendor that you are implementing a switchover environment, we provide the required license keys for your system, one key for each machine.

## Procedure

1. To find the hardware ID of the primary host, log on to any application server instance of the SAP system and call transaction `SLICENSE`.
2. Perform a switchover of the ABAP central services instance (ASCS) to another node in the cluster and repeat the previous step.

Repeat this for all remaining nodes in the cluster.

3. To obtain the two license keys, enter the hardware IDs for each cluster node, where message server is enabled to run: <http://support.sap.com/licensekey> 
4. To import the files containing the two licenses, log on to any application server instance of the SAP system and call transaction `SLICENSE`.
5. Perform a switchover of the ABAP central services instance (ASCS) to another node in the cluster and repeat the previous step.

Repeat this for all remaining nodes in the cluster.

## Results

The license is no longer a problem during switchover. This means you do **not** need to call `saplicense` in your switchover scripts.

## 6.6 Configuring the Remote Connection to SAP Support

SAP offers its customers access to support and a number of remote services such as the `Early Watch Service` or the `GoingLive Service`. Therefore, you have to set up a remote network connection to SAP.

### Note

#### SAP systems based on SAP NetWeaver 7.4 or higher only:

You can automate this step by running task list `SAP_BASIS_CONFIG_OSS_COMM` in the ABAP task manager for lifecycle management automation (transaction `STC01`). For more information, see [SAP NetWeaver 7.4 and Higher: Performing Automated Initial Setup \(Optional\) \[page 145\]](#).

For more information about configuring the remote connection to SAP Support, see the SAP Support Portal at <https://support.sap.com/remote-support.html>.

## 6.7 Enabling Note Assistant to Apply Note Corrections

Use the Note Assistant to implement note corrections in your ABAP system.

### Context

The Note Assistant allows you to automatically implement note corrections in your ABAP system. For more information about the Note Assistant, see <https://support.sap.com/noteassistant> and <https://help.sap.com/netweaver> ► *SAP NetWeaver Platform* ► *<Release>* ► *Application Help* ► *SAP NetWeaver Library: Function-Oriented View* ► *Solution Life Cycle Management* ► *Software Logistics* ► *Note Assistant* ►.

### Procedure

1. Follow the instructions in SAP Note [2836302](#) for enabling the Note Assistant for TCI and digitally signed SAP Notes.
2. Apply important SAP Notes for SAP\_BASIS as described in SAP Note [1668882](#).

## 6.8 Configuring Documentation Provided on the SAP Help Portal

In transaction SR13, you can configure the settings of your backend system to point to documentation that is provided on the SAP Help Portal.

### Context

You can configure your backend system to access documentation that is provided on the SAP Help Portal.

#### Prerequisites

- The documentation you want to access must be available on the SAP Help Portal.
- The users who access the documentation must have access to the Internet.
- You can configure an ABAP system to connect to only one combination of product and version.

If you cannot fulfill one or more of these prerequisites, you must install the documentation in your local system landscape using the download packages or media provided.

#### Note

For more information about installing the documentation in your local system landscape, see the [Installation of SAP Library guide](#).

### Procedure

1. Open transaction SR13.
2. Select the tab *PlainHtmlHttp*.
3. Choose *New Entries*.


#### Caution

You have to create entries for both documentation and XML documentation areas for each platform you are using and each language in which you want to provide documentation.


You must use the exact combination of uppercase and lowercase characters specified in the product and version.

To find the correct entry for the Path field, see the list of products and versions attached to SAP Note [2652009](#).

4. To create entries for the documentation area, enter the following values:

Name	Value to be entered
Variant	Enter a name for the variant.
Platform	Select the platform relevant for your implementation from the list of available platforms, for example, WN32.
Area	Select <a href="#">Documentation</a> from the list; this will display as IWBHELP in the table.
Server Names	<a href="https://help.sap.com/http.svc/ahp2">https://help.sap.com/http.svc/ahp2</a>
Path	<code>&lt;product/version&gt;</code>  To find the correct entry for the Path field, see the list of products and versions attached to SAP Note <a href="#">2652009</a>  .
Language	Select the language you need from the list.

- To create entries for the XML documentation area, enter the following values:

Name	Value to be entered
Variant	Enter a name for the variant (any name).
Platform	Select the platform relevant for your implementation from the list of available platforms, for example, WN32.
Area	Select <a href="#">XML Documentation</a> from the list; this will display as XML_DOCU in the table.
Server Names	<a href="https://help.sap.com/http.svc/ahp2">https://help.sap.com/http.svc/ahp2</a>
Path	<code>&lt;product/version&gt;</code>  To find the correct entry for the Path field, see the list of products and versions attached to SAP Note <a href="#">2652009</a>  .
Language	Select the language you need from the list.

- Repeat steps 4 and 5 for each relevant platform and language.
- Select one entry as the default language for each platform and area.
- Save your entries.

## Results

You have configured the settings to point to documentation that is provided on the SAP Help Portal.

## Related Information

[Installation of SAP Library](#)

[SAP Note 2149786](#) 

[SAP Note 2652009](#) 

## 6.9 Performing the Consistency Check

We recommend that you check the consistency of the newly installed SAP ABAP system.

### Note

#### **SAP systems based on SAP NetWeaver 7.4 or higher only:**

You can automate this step by running task list `SAP_BASIS_SETUP_INITIAL_CONFIG` in the ABAP task manager for lifecycle management automation (transaction `STC01`). For more information, see [SAP NetWeaver 7.4 and Higher: Performing Automated Initial Setup \(Optional\) \[page 145\]](#).

## Prerequisites

- If the installation finished successfully, your SAP system should be up and running. Otherwise, start it as described in [Starting and Stopping SAP System Instances \[page 192\]](#).
- You have [logged on to the SAP system \[page 144\]](#).

## Context

When logging on to the system for the first time, you need to trigger a consistency check manually. The function is then called automatically whenever you start the system or an application server.

The following checks are performed:

- Completeness of installation
- Version compatibility between the SAP release and the operating system  
The initial consistency check determines whether:
  - The release number in the SAP kernel matches the release number defined in the database system
  - The character set specified in the SAP kernel matches the character set specified in the database system
  - Critical structure definitions that are defined in both the data dictionary and the SAP kernel are identical. The structures checked by this function include `SYST`, `T100`, `TSTC`, `TDCT` and `TFDIR`.
- Accessibility of the message server
- Availability of all work process types
- Information about the standalone enqueue server and the update service

## Procedure

1. Perform a system check:  
Call transaction `SICK`.



You should see the entry `SAP System Check | no errors reported`

2. Perform a database check:

In the DBA Cockpit (transaction `DBACOCKPIT`), check for missing tables or indexes by choosing

► [Diagnostics](#) ► [Missing Tables and Indexes](#) ►.

## 6.10 Configuring the Change and Transport System

You have to perform some steps in the Transport Management System to be able to use the Change and Transport System (TMS).

### ❗ Note

**SAP systems based on SAP NetWeaver 7.4 or higher only:**

You can automate this step by running task list `SAP_BASIS_SETUP_INITIAL_CONFIG` in the ABAP task manager for lifecycle management automation (transaction `STC01`). For more information, see [SAP NetWeaver 7.4 and Higher: Performing Automated Initial Setup \(Optional\) \[page 145\]](#).

### ❗ Note

`SAP_BASIS_SETUP_INITIAL_CONFIG` only covers the configuration of TMS as single system.

### ❗ Note

If you are using a Stack XML file (see [Installation Using a Stack XML File \[page 37\]](#)) and chose *Run TMS Configuration (for Single System)* during the installation, you have already completed this step and skip this section.

## Context

## Procedure

1. Call transaction `STMS` in the ABAP system to configure the domain controller in the Transport Management System (TMS).

For more information, see the SAP Library at:

SAP Release and SAP Library Quick Link	SAP Library Path (Continued)
<ul style="list-style-type: none"> <li>SAP NetWeaver 7.3 including Enhancement Package 1 <a href="http://help.sap.com/nw731">http://help.sap.com/nw731</a></li> <li>SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li> <li>SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li> <li>SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li> <li>SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li> </ul>	<p>► <i>Application Help</i> ► <i>Function-Oriented View</i> ► <i>Solution Life Cycle Management</i> ► <i>Software Logistics</i> ► <i>Change and Transport System</i> ► <i>Change and Transport System – Overview</i> ► <i>Basics of the Change and Transport System</i> ► <i>Transport Management System – Concept</i> ►</p>

2. In addition, you must configure the system change options.

For more information, see the SAP Library at:

SAP Release and SAP Library Quick Link	SAP Library Path (Continued)
<ul style="list-style-type: none"> <li>SAP NetWeaver 7.3 including Enhancement Package 1 <a href="http://help.sap.com/nw731">http://help.sap.com/nw731</a></li> <li>SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li> <li>SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li> <li>SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li> <li>SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li> </ul>	<p>► <i>Application Help</i> ► <i>Function-Oriented View</i> ► <i>Solution Life Cycle Management</i> ► <i>Software Logistics</i> ► <i>Change and Transport System</i> ► <i>Transport Organizer (BC-CTS-ORG)</i> ► <i>Requirements for Working with the Transport Organizer</i> ► <i>Setting the System Change Option</i> ►</p>

3. Call transaction `SE38` to schedule a dispatcher job for transport programs by executing report `RDDIMPDP`.  
You schedule the transport dispatcher in the current client. This is equivalent to the execution of job `RDDNEWPP` in transaction `SE38`

## 6.11 Connecting the System to SAP Solution Manager

Here you find information about how to connect your newly installed SAP system to the SAP Solution Manager in your system landscape.

### Note

You can skip this section if your newly installed SAP system is itself a SAP Solution Manager system.

## Prerequisites

An SAP Solution Manager system must be available in your system landscape. For more information, see <http://help.sap.com/solutionmanager>.

## Context

SAP Solution Manager gives you central access to tools, methods, and preconfigured content that you can use to evaluate and implement your solutions.

When your implementation is running, you can use SAP Solution Manager to manage, monitor, and update systems and business processes in your solution landscape, and also to set up and operate your own solution support.

## Procedure

You connect a technical system to SAP Solution Manager by the following steps:

1. On the technical systems of your landscape, **data suppliers** are implemented, for example, with transaction RZ70 for Application Server ABAP and with Visual Administrator for Application Server Java.

For more information, see the SAP Solution Manager Application Help:

- If your SAP Solution Manager release is 7.2:  
<http://help.sap.com/solutionmanager> > Version 7.2 SPS <No> > Application Help (English) > Technical Infrastructures > Landscape Management Database (LMDB) > Setting Up the Landscape Management Infrastructure > Importing Landscape Data, CIM Model, and CR Content
- If your SAP Solution Manager release is 7.1:  
<http://help.sap.com/solutionmanager> > Version 7.1 SPS <No> > Application Help (English) > SAP Solution Manager Operations > Managing System Landscape Information > Managing Technical System Information > Register Technical Systems Automatically by Data Suppliers

2. The data suppliers send information about the hardware and installed software to a central **System Landscape Directory (SLD)**. Updates are sent to the SLD as well. Alternatively, systems can send information directly to the LMDB in SAP Solution Manager, without an SLD, as described in <http://help.sap.com/solutionmanager> > Version 7.2 SPS <No> > Application Help (English) > Technical Infrastructures > Landscape Management Database (LMDB) > Setting Up the Landscape Management Infrastructure > Importing Landscape Data, CIM Model, and CR Content.

For more information, see *Handling Technical Systems' Data - System Landscape Directory* at <https://support.sap.com/en/tools/software-logistics-tools/landscape-management-process/system-landscape-directory.html>.

3. From the SLD, this information is regularly synchronized with **SAP Solution Manager** where it is managed in the Landscape Management Database (LMDB).

For more information, see the SAP Solution Manager Application Help:

- If your SAP Solution Manager release is 7.2:  
<http://help.sap.com/solutionmanager> > Version 7.2 SPS <No> > Application Help (English)  
 > Technical Infrastructures > Landscape Management Database (LMDB) > Setting Up the Landscape Management Infrastructure > Importing Landscape Data, CIM Model, and CR Content  
 > Synchronization with an SLD
  - If your SAP Solution Manager release is 7.1:  
<http://help.sap.com/solutionmanager> > Version 7.1 SPS <No> > Application Help (English) > SAP Solution Manager Operations > Managing System Landscape Information > Setting Up the Landscape Management Infrastructure > Connecting LMDB to System Landscape Directory (SLD)
4. In the LMDB, you complete the information from the SLD manually.

For more information, see the SAP Solution Manager Application Help:

- If your SAP Solution Manager release is 7.2:  
<http://help.sap.com/solutionmanager> > Version 7.2 SPS <No> > Application Help (English)  
 > Technical Infrastructures > Landscape Management Database (LMDB) > Managing Technical System Information
- If your SAP Solution Manager release is 7.1:  
 Managing Technical System Information and Managing Product System Information at <http://help.sap.com/solutionmanager> > Version 7.1 SPS <No> > Application Help (English) > SAP Solution Manager Operations > Managing System Landscape Information

## Related Information

[Setting Up the Landscape Management Infrastructure](#)  
[Importing Landscape Data, CIM Model, and CR Content](#)  
[Synchronization with an SLD](#)  
[Managing Technical System Information](#)  
[Handling Technical Systems' Data - System Landscape Directory](#)

## 6.12 Applying the Latest Kernel and Support Package Stacks

We strongly recommend that you apply the latest kernel and Support Package stacks before you start configuring your SAP system.

### Note

If you are using a Stack XML file (see [Installation Using a Stack XML File \[page 37\]](#)), you already downloaded the `stack.xml` file and the delta archives. If you then already called the Software Update Manager (SUM) from the software provisioning manager and applied the Support Package Stacks after the installation had finished, you can skip this section.

## Context

For more information about release and roadmap information for the SAP Kernel versions, and how this relates to SAP system support packages - including important notes on downward compatibility and release dates - see the central SAP Kernel notes:

### Central SAP Notes

[2083594](#) - SAP Kernel Versions and SAP Kernel Patch Levels

[3116151](#) - SP Stack Kernel Schedule Forecast

[1744209](#) - SAP Kernel 720, 721 and 722: Versions and Kernel Patch Levels

[1969546](#) - Release Roadmap for Kernel 74x and 75x

[1802333](#) - Finding information about regressions in the SAP kernel

[19466](#) - Downloading SAP kernel patches

[2966761](#) - Overview of SAP Kernel Correction Archives

[2966621](#) - Overview of Kernel-Related Software Components

[953653](#) - Rolling Kernel Switch

The white paper [Update Strategy for the Kernel of the Application Server ABAP in On Premise Landscapes](#) provides SAP recommendations on how to patch the SAP kernel.

#### Note

If you have installed an **SAP Solution Manager 7.2** system, you must apply at least Support Package Stack (SPS) 01. You cannot use SAP Solution Manager 7.2 with SPS 00.

## Procedure

- Download and apply the latest Kernel and Support Package stacks using the Software Update Manager (SUM) as described in the Software Update Manager documentation at: <https://support.sap.com/en/tools/software-logistics-tools/software-update-manager.html>
- If you want to update the kernel manually, proceed as described below:
  - a. Log on as user `<sapsid>adm` to the hosts of the SAP system instances to be updated.
  - b. Download the latest kernel for your operating system and database platform as described in SAP Note [19466](#) .
  - c. Back up the kernel directory that is specified by the profile parameter `DIR_CT_RUN`.
  - d. Extract the SAR files of the kernel Support Packages of the target SP level to a temporary directory using the `SAPCAR` tool.
  - e. Copy or move the extracted programs from the temporary directory to the local kernel directory.
  - f. Adjust the ownership and permissions of the kernel binaries by entering the following command sequence (Execute the `saproot.sh` script that is located in the kernel directory):

```
su - root
```

```
cd <Kernel_Directory>

./saproot.sh <SAPSID>

exit
```

## 6.13 Performing Post-Installation Steps for the ABAP Application Server

This section describes the post-installation steps you have to perform for the ABAP application server.

### Note

**SAP systems based on SAP NetWeaver 7.4 or higher only:**

You can automate this step by running task list `SAP_BASIS_SETUP_INITIAL_CONFIG` in the ABAP task manager for lifecycle management automation (transaction `STC01`). For more information, see [SAP NetWeaver 7.4 and Higher: Performing Automated Initial Setup \(Optional\) \[page 145\]](#).

## Prerequisites

You have logged on to the ABAP application server as described in [Logging On to the Application Server \[page 144\]](#).

## Context

You have to perform the following post-installation steps for the ABAP application server:

- Upload and set system profiles using transaction `RZ10`
- Configure the number of work processes
- Create logon and RFC server groups using transactions `SMLG` and `RZ12`
- Create operation modes using transaction `RZ04`
- Schedule standard jobs using transaction `SM36`
- Configuration of SLD data supplier using transaction `RZ70`
- Perform load generation using transaction `SGEN`

For more information, see the appropriate sections below.

## Procedure

- **Upload and Set System Profiles using Transaction RZ10**

You upload system profiles, such as default profile and instance profile, from the file system into the database of the target system using transaction RZ10.

For more information about how to maintain SAP system profiles, see the SAP Library at:

SAP Release and SAP Library Quick Link	SAP Library Path (Continued)
<ul style="list-style-type: none"><li>• SAP NetWeaver 7.3 including Enhancement Package 1 <a href="http://help.sap.com/nw731">http://help.sap.com/nw731</a></li><li>• SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li><li>• SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li><li>• SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li><li>• SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li></ul>	<p>▶ <i>Application Help</i> ▶ <i>Function-Oriented View</i> ▶ <i>Application Server</i> ▶ <i>Application Server ABAP</i> ▶ <i>Administration of Application Server ABAP</i> ▶</p>

- **Configure the number of work processes**

SAP systems are installed with a minimum number of work processes. This is only an initial configuration to get you started after the installation. It is not detailed enough for a production system because the optimal number of each type of work process depends on the system resources and on the number of users working in each SAP system application. For more information about how many work processes to configure and how to set the number, see SAP Note [39412](#).

- **Create Logon and RFC Server Groups using Transactions SMLG and RZ12**

You create the following:

- Logon groups using transaction SMLG
- RFC server groups using transaction RZ12

Specify the following:

- Name of the logon or RFC server group
- Instance name (application server)
- Group type attributes are optional

If required, you create the RFC server group `parallel_generators`.

- **Create Operation Modes using Transaction RZ04**

You check for existing operation modes and - if required - create a new operation mode using transaction RZ04.

Specify the following:

- Name of the operation mode
- Short description

- Optional: monitoring properties variant

Select the corresponding checkbox to assign the operation mode to the following:

- Time table (assignment only from 0-24 h)
- Current application server instance

- **Schedule Standard Jobs using Transaction SM36**

You schedule SAP standard jobs using transaction SM36.

If a standard job is already scheduled, it is kept. Only missing jobs are scheduled.

- **Configure the SLD Data Supplier using Transaction RZ70**

- Make sure that the SLD and the SLD bridge (the receiving thread of the SLD, which runs on a Java EE engine) are running.
- Configure the System Landscape Directory (SLD) data supplier with default settings, using transaction RZ70.

SLD configuration is a prerequisite for the connection of an SAP system to SAP Solution Manager.

For more information, see [Connecting the System to SAP Solution Manager \[page 154\]](#)

- **Perform Load Generation using Transaction SGEN**

You generate the ABAP loads using transaction SGEN. ABAP loads are platform-dependent programs that are generated during runtime and stored in database tables. Using transaction SGEN you can generate ABAP loads of a number of programs, function groups, classes, and so on.

Choose one of the following generation modes:

- **Generate All Objects**  
All existing objects of all software components are generated synchronously. Job RSPARGENER8M starts the generation directly after all ABAP objects have been prepared for generation and have been stored in table GENSETC. Be aware that this is a time-consuming process.

#### Note

Make sure that you have sufficient space available on your database. The generation of all existing objects requires around 2 - 9 GB of free space.

- **Prepare All Objects for Generation**  
All objects to be generated are prepared for generation and stored in table GENSETM. You can start the generation of these objects later with transaction SGEN. Choose this strategy if object generation is to be done outside the configuration task due to performance issues.

## 6.14 Systems Based on SAP NetWeaver AS for ABAP 7.52 only: Switching to Standalone Enqueue Server 2 and Enqueue Replicator 2

If you installed a high-availability SAP system based on SAP NetWeaver AS for ABAP 7.52, you can switch to “Standalone Enqueue Server 2” and “Enqueue Replicator 2”.

When installing an SAP system based on SAP NetWeaver AS for ABAP 7.52 or lower, Software Provisioning Manager 1.0 installs the ASCS instance with the classic “Standalone Enqueue Server” and the ERS instance



with the classic “Enqueue Replication Server” by default. However, if you installed an SAP system based on SAP NetWeaver AS for ABAP 7.52 , you can switch to “Standalone Enqueue Server 2” and “Enqueue Replicator 2”.

For more information, see <https://help.sap.com/nw752abap> ► *Application Help* ► *SAP NetWeaver Library: Function-Oriented View* ► *SAP NetWeaver Application Server for ABAP Infrastructure* ► *Components of SAP NetWeaver Application Server for ABAP* ► *Standalone Enqueue Server 2* ► *Switching to the Standalone Enqueue Server 2* ►.

## Related Information

[High-Availability System \[page 26\]](#)

## 6.15 SAP Solution Manager 7.2, SAP Process Integration 7.5 only: Enabling HTTPS Communication for ABAP

For secure communication between the SAP systems connected to the ABAP stack, further post-installation steps are required to fully enable HTTPS communication.

## Prerequisites

- You have installed the application server ABAP for an SAP Solution Manager 7.2 or SAP Process Integration 7.5.
- You entered the HTTPS port that is to be configured in the application server instance profile when processing the *Communication Port for ABAP* screen. For more information, see *Additional Parameters when Installing SAP Process Integration 7.5 or SAP Solution Manager 7.2*.

## Procedure

Proceed as described in the SAP Note [510007](#) ►.

## Related Information

[Additional Parameters when Installing SAP Process Integration 7.5 or SAP Solution Manager 7.2 \[page 66\]](#)

## 6.16 Installing Additional Languages and Performing Language Transport

This section describes how to install and transport additional languages.

### Note

You do not have to perform these steps or at least some of these steps if you are using a Stack XML file (see [Installation Using a Stack XML File \[page 37\]](#)) and processed the *Install Additional Languages* screen during the installation.

### Context

If you have problems during the language installation, see SAP Note [2456868](#).

### Procedure

1. Configure the language settings by using transaction `LI18N` and choosing **LI18N Customizing** > **LI18N System Configuration** or by executing report `RSCPINST` directly.

For more information, see SAP Note [42305](#).

**AIX:** If you wish to use the Turkish locale with SAP on AIX, you must install the Turkish locale supplied by SAP instead of the one supplied with the operating system. For more information, see SAP Note [39718](#).

2. Perform the language transport using transaction `SMLT`:

### Note

German is already available in the system. Do not transport it via `SMLT`.

- a. Classify the language.
- b. Schedule the language transport.
- c. Schedule the language supplementation.

### Next Steps

### Note

You can also install additional languages later, but if you install any Support Packages in the meantime, you have to do one of the following:

- Install the Support Packages again.

- Use the report RSTLAN\_IMPORT\_OCS to extract the language-relevant information from each Support Package.

For information about the language transport, see the SAP Library at:

SAP Release and SAP Library Quick Link	SAP Library Path (Continued)
<ul style="list-style-type: none"> <li>• SAP NetWeaver 7.3 including Enhancement Package 1 <a href="http://help.sap.com/nw731">http://help.sap.com/nw731</a></li> <li>• SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li> <li>• SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li> <li>• SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li> <li>• SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li> </ul>	<p>► <i>Application Help</i> ► <i>Function-Oriented View</i> ► <i>Solution Life Cycle Management</i> ► <i>Software Logistics</i> ► <i>Change and Transport System</i> ► <i>Language Transport (BC-CTS-LAN)</i> ►</p>

## 6.17 Configuring the User Management

After the installation has completed, configure the user management of your SAP system.

### Note

For SAP Process Integration 7.5 and SAP Solution Manager configuring the user management with an external ABAP system is mandatory. For more information, see *Preparing an External ABAP System as Source for User Data* in the Java installation guide for your operating system and database .

For SAP Process Integration 7.5 and SAP Solution Manager go to *PI 7.5: Configuring the Process Integration System After the Installation* respectively *Configuring an SAP Solution Manager System* in the Java installation guide for your operating system and database.

## Context

For Solution Manager and Process Integration 7.5, your UME has been configured with the ABAP part of the system during the target system installation. For other SAP system products this configuration is optional. For more information, see *Preparing an External ABAP System as Source for User Data* in the Java installation guide for your operating system and database .

## Procedure

After the installation of your SAP system has finished, you must decide whether you want to do the following:

- Add the system to Central User Administration (CUA)
- Use Lightweight Directory Access Protocol (LDAP) synchronization

For more information, see the SAP Library at:

SAP Release and SAP Library Quick Link	SAP Library Path (Continued)
<ul style="list-style-type: none"><li>• SAP NetWeaver 7.3 including Enhancement Package 1 <a href="https://help.sap.com/nw731">https://help.sap.com/nw731</a></li><li>• SAP NetWeaver 7.4 <a href="https://help.sap.com/nw74">https://help.sap.com/nw74</a></li><li>• SAP NetWeaver 7.5 <a href="https://help.sap.com/nw75">https://help.sap.com/nw75</a></li><li>• SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li><li>• SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li></ul>	<p>► <i>Application Help</i> ► <i>Function-Oriented View: English</i> ► <i>Security</i> ► <i>Identity Management</i> ► <i>Identity Management for System Landscapes</i> ► <i>Integration of User Management in Your System Landscape</i> ► <i>Adding an ABAP System to Your System Landscape</i></p>

## 6.18 Ensuring User Security

You need to ensure the security of the users that the software provisioning manager created during the installation.

The tables below at the end of this section list the following users:

- Operating system users
- SAP system users

During the installation, the software provisioning manager by default assigned the [master password \[page 55\]](#) to all users created during the installation unless you specified other passwords.

### → Recommendation

The Master Password feature can be used as a simple method to obtain customer-specific passwords for all newly created users. A basic security rule is not to have identical passwords for different users. Following this rule, we strongly recommend individualizing the values of these passwords after the installation is complete.

### → Recommendation

In all cases, the user ID and password are encoded only when transported across the network. Therefore, we recommend using encryption at the network layer, either by using the Secure Sockets Layer (SSL)

protocol for HTTP connections, or Secure Network Communications (SNC) for the SAP protocols dialog and RFC.

### ⚠ Caution

Make sure that you perform this procedure **before** the newly installed SAP system goes into production.

For the users listed below, take the precautions described in the relevant SAP security guide.

You can find the security guide in the [Security](https://help.sap.com/) section of the product page for your SAP product at <https://help.sap.com/>

## Operating System and Database Users

After the installation, operating system users for SAP system, database, and SAP Host Agent are available as listed in the following table:

### → Recommendation

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

You do not have to do this if you specified this “cleanup” already during the [Define Parameters](#) phase on the [Cleanup Operating System Users](#) screen. Then the removal had already been done automatically when the processing of the software provisioning manager had completed. For more information, see [Operating System Users](#) in [SAP System Parameters \[page 55\]](#).

### Operating System Users

User	Primary Group
UNIX superuser <code>root</code>	No primary group assigned by the software provisioning manager (group <code>sapinst</code> is assigned as secondary group)
SAP system administrator <code>&lt;sapsid&gt;adm</code>	<code>sapsys</code> ( <code>sapinst</code> secondary group)
<code>syb&lt;dbsid&gt;</code> as secondary group)	<code>sapsys</code>

## SAP Host Agent User

User Type	User	Comment
Operating system user	sapadm	<p>SAP Host Agent administrator is the user for central monitoring services.</p> <p>You do not need to change the password of this user after the installation.</p> <p>This user is for administration purposes only.</p> <p>You are not able to log on as sapadm as this user is locked.</p>

## SAP System Users

After the installation, ABAP system users are available. The following table shows these users with the SAP system clients in which they are available, together with recommendations on how you can ensure the security of these users.

### Note

Client 066 is no longer available in newly installed SAP systems based on SAP NetWeaver 7.5 or higher. For more information, see SAP Note [1749142](#).

## SAP System Users

User	User Name	Comment
SAP system user	SAP*	User exists in at least SAP system clients 000, 001, and 066.
	DDIC	User exists in at least SAP system clients 000 and 001.
	EARLYWATCH	User exists in at least SAP system client 066.

User	User Name	Comment
<p>Application Server Java Administrator</p> <div> <p><b>Note</b></p> <p>This user has only been created if you have installed the application server ABAP for an SAP Process Integration (PI) 7.5 system or for an SAP Solution Manager 7.2 system.</p> </div>	<p>The name that you gave this user during the installation or the default name J2EE_ADMIN (see <a href="#">SAP System Parameters [page 55]</a>)</p>	<p>This user exists in at least clients 000 and 001 of the ABAP system and in the User Management Engine (UME) of the Java system. It has administrative permissions for user management.</p> <p>The password of this user is stored in secure storage. Therefore, whenever you change the password of the administrator password, you must also change the password in secure storage.</p> <div> <p><b>→ Recommendation</b></p> <p>We recommend that you use strong password and auditing policies for this user.</p> </div>
<p>Application Server Java Guest</p> <div> <p><b>Note</b></p> <p>This user has only been created if you have installed the application server ABAP for an SAP Process Integration (PI) 7.5 system or for an SAP Solution Manager 7.2 system.</p> </div>	<p>The name that you gave this user during the installation or the default name J2EE_GUEST (see <a href="#">SAP System Parameters [page 55]</a>)</p>	<p>This user exists in at least clients 000 and 001 of the ABAP system and in the User Management Engine (UME) of the Java system. It is used for anonymous access.</p>
<p>Communication user for Application Server Java</p> <div> <p><b>Note</b></p> <p>This user has only been created if you have installed the application server ABAP for an SAP Process Integration (PI) 7.5 system or for an SAP Solution Manager 7.2 system.</p> </div>	<p>The name that you gave this user during the installation or the default name SAPJSF (see <a href="#">SAP System Parameters [page 55]</a>)</p>	<p>This user exists in at least clients 000 and 001 of the ABAP system and in the User Management Engine (UME) of the Java system. It is used for a remote function call (RFC) between the ABAP system and the Java system.</p>

## 6.19 Performing the Client Copy

To get a production client, you have to perform a copy of the SAP reference client.

### Context

The software provisioning manager creates three ABAP clients during the installation, client 000, client 001, and client 066.

#### ❗ Note

Client 066 is no longer available in newly installed SAP systems based on SAP NetWeaver 7.5 or higher. For more information, see SAP Note [1749142](#).

Use client 000 as source client for the client copy.

#### ❗ Note

**SAP SCM:** If you want to mark the client 001 as **not** relevant for liveCache, run report `/SAPAPO/OM_NON_LC_RELEVANT_CLT` or `/SLCA_NON_LC_RELEVANT_CLIENT` using transaction SE38.

### Procedure

1. Maintain the new client with transaction SCC4.
2. Activate kernel user `SAP*`:
  - a. Set the profile parameter `login/no_automatic_user_sapstar` to 0.
  - b. Restart the application server.
3. Log on to the new client with kernel user `SAP*` and password `PASS`.
4. Copy the client with transaction SCC1 and profile `SAP_CUST`.
5. Check the log files with transaction SCC3.
6. Create the required users. These users must have at least the authorizations required for user administration and system administration. Create a user `SAP*` with all required authorizations for this user. If you want to have other users for system administration, you can also create user `SAP*` without authorizations.
7. Deactivate kernel user `SAP*`:
  - a. Reset `login/no_automatic_user_sapstar` to 1.
  - b. Restart the application server.



## Next Steps

For more information about the client copy and about how to perform it, see the SAP Library at :

SAP Release and SAP Library Quick Link	SAP Library Path (Continued)
<ul style="list-style-type: none"><li>• SAP NetWeaver 7.3 including Enhancement Package 1 <a href="http://help.sap.com/nw731">http://help.sap.com/nw731</a></li><li>• SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li><li>• SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li><li>• SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li><li>• SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li></ul>	<p>► <i>Application Help</i> ► <i>Function-Oriented View</i> ► <i>Application Server</i> ► <i>Application Server ABAP</i> ► <i>Administration of Application Server ABAP</i> ► <i>Change and Transport System</i> ► <i>BC – Client Copy and Transport</i> ►</p>

## 6.20 SAP Systems Based on SAP NetWeaver 7.4 and Higher: Changing Keys for the Secure Storage

The secure storage in the file system and the secure storage in the database have been encrypted with a randomly generated individual encryption key or with a default key.

In the first case, you have made a backup of the individual key because you need this value in case of failure to recover the data.

No matter what you chose during installation, you can change the encryption key at any time using the respective maintenance tool.

### → Recommendation

SAP recommends using an individual encryption key.

- For the secure storage in the file system, the key change is described in the SAP Library at:

SAP Release and SAP Library Quick Link	SAP Library Path (Continued)
<ul style="list-style-type: none"> <li>• SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li> <li>• SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li> <li>• SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li> <li>• SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li> </ul>	<p>► <i>Application Help</i> ► <i>Function-Oriented View</i> ► <i>Security</i> ► <i>System Security</i> ► <i>System Security for SAP NetWeaver AS ABAP Only</i></p> <p>► <i>Secure Storage in the File System (AS ABAP)</i> ►</p>

- For the secure storage in the database, the key change is described in the SAP Library at:

SAP Release and SAP Library Quick Link	SAP Library Path (Continued)
<ul style="list-style-type: none"> <li>• SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li> <li>• SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li> <li>• SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li> <li>• SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li> </ul>	<p>► <i>Application Help</i> ► <i>Function-Oriented View</i> ► <i>Security</i> ► <i>System Security</i> ► <i>System Security for SAP NetWeaver AS ABAP Only</i></p> <p>► <i>Secure Storage (ABAP)</i> ► <i>Key Management</i> ► <i>Using Individual Encryption Keys</i> ► <i>Generating Encryption Keys</i> ►</p>

## More Information

See also the entry *Individual Encryption Key for the Secure Storage* in table *SAP System Parameters* in [SAP System Parameters \[page 55\]](#).

## 6.21 Enabling the Database

### Use

After the SAP system installation, you must enable the database.

## Procedure

1. Make sure that the version of your database is still supported, and check if there are newer versions available. For more information, see SAP Notes [1554717](#) and [1590719](#).
2. You must enable the database for monitoring by setting up a DBA Cockpit Framework (DCF) after the SAP system installation. The DCF provides a time-based collection and evaluation of performance, configuration, and space-related data. In your SAP system, call transaction DBACOCKPIT to start the DBA Cockpit. Calling the DBA Cockpit automatically checks the existence of the DCF.

### → Recommendation

To make sure that the DCF was set up correctly, we recommend that you go to ► [Configuration](#) ► [Data Collectors and Admin Procedures](#) in the DBA Cockpit.

For further details, refer to the SAP ASE database administration guide [https://help.sap.com/viewer/ase\\_admin](https://help.sap.com/viewer/ase_admin).

3. Manually activate the Internet Communication Framework (ICF) service to ensure that the DBA Cockpit functions correctly. It is not activated by default. For more information, see SAP Note [1245200](#).
4. Apply the latest patches for the DBA Cockpit. For more information, see SAP Note [1558958](#).
5. Set up Automatic Table Maintenance in the DBA Cockpit. Read the article *DBA Cockpit: Automatic Table Maintenance for SAP ASE* (<http://scn.sap.com/docs/DOC-15162>).
6. Check SAP Note [1539124](#) to make sure that the database configuration for your SAP installation complies with SAP's requirements and recommendations.
7. For systems with high load, refer to SAP Note [1722359](#).

## 6.22 Performing a Full Installation Backup

You must perform a full offline backup after the configuration of your SAP system. If required, you can also perform a full offline backup after the installation (recommended). In addition, we recommend you to regularly back up your database.

The UNIX commands used in this procedure work on all hardware platforms. For more information about operating system-specific backup tools, see your operating system documentation.

You need to back up the following directories and files:

- All SAP-specific directories:
    - `/usr/sap/<SAPSID>`
    - You have logged on as user as `/usr/sap/trans`
    - `<sapmnt>/<SAPSID>`
    - Home directory of the user `<sapsid>adm`
  - All database-specific directories
  - The root file system
- This saves the structure of the system and all configuration files, such as file system size, logical volume manager configuration, and database configuration data.

### Note

This list is only valid for a standard installation.

## Prerequisites

You have logged on as user `<sapsid>adm` and [stopped the SAP system and database \[page 192\]](#).

Use the backup tool of your choice and refer to the backup software documentation. You can also use the standard UNIX commands as described below.

## Backing Up the Installation

1. Log on as user `root`.
2. Manually create a compressed `tar` archive that contains all installed files:
  - Saving to tape:  

```
tar -cf - <file_system> | compress -c > <tape_device>
```
  - Saving to the file system:  

```
tar -cf - <file_system> | compress -c > ARCHIVENAME.tar.Z
```

### Note

**Linux only:** You can also execute the following command to manually create a compressed GNU `tar` archive that contains all installed files and save it to the file system:

```
tar -czf <ARCHIVENAME>.tgz <file_system>
```

## Restoring Your Backup

If required, you can restore the data that you previously backed up.

### Caution

Check for modifications in the existing parameter files before you overwrite them when restoring the backup.

1. Log on as user `root`.
2. Go to the location in your file system where you want to restore the backup image.
3. Restore the data with the following commands:
  - From tape:  

```
cat <tape_device> | compress -cd | tar -xf -
```
  - From the file system:  

```
cat ARCHIVENAME.tar.Z | compress -cd | tar -xf -
```

Only valid for 'Platform': Linux

#### Note

**Linux only:** If you want to restore the data from a GNU `tar` archive, you have to execute the following command:

```
tar -xzf <ARCHIVENAME>.tgz
```

End of 'Platform': Linux

## 6.23 Logging on to the SAP Web Dispatcher Management Console

This section describes how to log on to the SAP Web Dispatcher.

### Context

#### Note

This step is only required if you chose to install an embedded SAP Web Dispatcher instance within the ASCS instance.

You must log on to the SAP Web Dispatcher Management Console to do the following:

- Check whether the SAP Web Dispatcher was installed successfully,
- Change the password of the `webadm` user,
- Access monitoring and administration tools.

### Procedure

1. Open a web browser.
2. Enter the following URL, depending on whether you use HTTP or HTTPS:

```
http(s)://<Webdispatcher_Host>:<HTTP(S)_PORT>/sap/wdisp/admin/public/default.html
```

#### Example








```
https://plx282:44300/sap/wdisp/admin/public/default.html
```

3. Log on as user `webadm` with the password that you entered during the input phase of the installation.

The *SAP Web Dispatcher Monitor* screen appears.

4. We recommend that you change the password of `webadm` immediately after the installation for security reasons.

For more information on how to change passwords of existing users using the `Admin Handler`, see the SAP Library at:

SAP Release and SAP Library Quicklink	SAP Library Path (Continued)
<ul style="list-style-type: none"> <li>SAP NetWeaver 7.3 including Enhancement Package 1  <a href="http://help.sap.com/nw731">http://help.sap.com/nw731</a> </li> </ul>	<p> <a href="#">Application Help</a> &gt; <a href="#">Function-Oriented View</a> &gt; <a href="#">Application Server</a> &gt; <a href="#">Application Server Infrastructure</a> &gt; <a href="#">Components of SAP NetWeaver Application Server</a> &gt; <a href="#">SAP Web Dispatcher</a> &gt; <a href="#">Administration of the SAP Web Dispatcher</a> &gt; <a href="#">Area menu</a> &gt; <a href="#">Section "HTTP Handler"</a>  </p>
<ul style="list-style-type: none"> <li>SAP NetWeaver 7.4  <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a> </li> <li>SAP NetWeaver 7.5  <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a> </li> <li>SAP NetWeaver Application Server for ABAP 7.51 innovation package  <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a> </li> <li>SAP NetWeaver AS for ABAP 7.52  <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a> </li> </ul>	<p> <a href="#">Application Help</a> &gt; <a href="#">Function-Oriented View</a> &gt; <a href="#">Application Server</a> &gt; <a href="#">Application Server Infrastructure</a> &gt; <a href="#">Components of SAP NetWeaver Application Server</a> &gt; <a href="#">SAP Web Dispatcher</a> &gt; <a href="#">Administration of the SAP Web Dispatcher</a> &gt; <a href="#">Using the Web Administration Interface</a> &gt; <a href="#">Area menu</a> &gt; <a href="#">Section "HTTP Handler"</a>  </p>

## Related Information

[ASCS Instance with Embedded SAP Web Dispatcher \[page 32\]](#)

## 6.24 SAP Web Dispatcher Configuration (Optional)

After installing SAP Web Dispatcher, you must configure it to be able to use it.

### Note

This step is only required if you chose to install an embedded SAP Web Dispatcher instance within the ASCS instance.

You can find the configuration information in the SAP Library at:

## SAP Release and SAP Library Quicklink

## SAP Library Path (Continued)

- SAP NetWeaver 7.3 including Enhancement Package 1  
<http://help.sap.com/nw731>
- SAP NetWeaver 7.4  
<http://help.sap.com/nw74>
- SAP NetWeaver 7.5  
<http://help.sap.com/nw75>
- SAP NetWeaver Application Server for ABAP 7.51 innovation package  
<https://help.sap.com/nw751abap>  
SAP NetWeaver AS for ABAP 7.52  
<https://help.sap.com/nw752abap>

► *Application Help* ► *Function-Oriented View* ► *Application Server* ► *Application Server Infrastructure* ► *Components of SAP NetWeaver Application Server* ► *SAP Web Dispatcher* ►

## Related Information

[ASCS Instance with Embedded SAP Web Dispatcher \[page 32\]](#)

## 6.25 Gateway Configuration

You have to configure the gateway to be able to use it.

### Note

This step is only relevant if you installed a gateway embedded in the ASCS instance. For more information, see [ASCS Instance with Embedded Gateway \[page 34\]](#).

You can find all relevant configuration information in the gateway documentation in the SAP Library at:

## SAP Release and SAP Library Quicklink

## SAP Library Path (Continued)

- SAP NetWeaver 7.3 including Enhancement Package 1  
<http://help.sap.com/nw731>

► *Application Help* ► *SAP NetWeaver Library: Function-Oriented View* ► *Application Server* ► *Application Server Infrastructure* ► *Connectivity* ► *Gateway* ►

## SAP Release and SAP Library Quicklink

- SAP NetWeaver 7.4  
<http://help.sap.com/nw74>
- SAP NetWeaver 7.5  
<http://help.sap.com/nw75>
- SAP NetWeaver Application Server for ABAP 7.51  
innovation package  
<https://help.sap.com/nw751abap>
- SAP NetWeaver AS for ABAP 7.52  
<https://help.sap.com/nw752abap>

## SAP Library Path (Continued)

► *Application Help* ► *SAP NetWeaver Library: Function-Oriented View* ► *Application Server* ► *Application Server Infrastructure* ► *Components of SAP NetWeaver Application Server* ► *Gateway*

## Related Information

[ASCS Instance with Embedded Gateway \[page 34\]](#)



## 7 SAP ASE 16.0: Auditing with SAP Adaptive Server Enterprise

As of SAP ASE 16.0 the software provisioning manager creates the database `sybsecurity` with one data device for the purpose to collect SAP ASE configuration changes per default.

It is also possible to enable further auditing options to detect penetration of the system and misuse of resources. For an overview about the available configurations, see SAP Note [2717834](#) - SYB: Discretionary Access Control configuration options offered by SWPM. The SAP ASE auditing system is described in detail in the [SAP ASE Security Administration Guide](#).

If you specify two or more data devices for the `sybsecurity` database, the software provisioning manager creates an audit table on each data device. You may want the software provisioning manager to establish a threshold procedure to automatically switch auditing tables when the current audit table becomes full. The Audit Trail Management is described in the [SAP ASE Security Administration Guide](#). Depending on the selected auditing options and system workload, a lot of events can be recorded and the size of the `sybsecurity` database must be adapted according to your specific needs.

We recommend two or more audit tables. In this way, you can set up a smoothly running auditing process in which audit tables are archived and processed without losing audit records and without manual intervention. The software provisioning manager also offers to create the optional database `sybsecurityarchive` for archiving audit records. You may want the software provisioning manager to establish a threshold procedure to automatically move audit events to the `sybsecurityarchive` database.

The size of `sybsecurityarchive` database depends on the selected auditing options, system workload and the time period of keeping the audit records in your SAP ASE system before making a database dump and removing them from the active `sybsecurityarchive` database.

### Note

You need to implement a backup strategy and a `sybsecurityarchive` database cleanup process according to your specific needs. Otherwise the `sybsecurityarchive` database will run full and you will lose auditing records.

## 8 SAP ASE 16.0: Disaster Recovery Setup with SAP Replication Server

### 8.1 Disaster Recovery Setup with SAP Business Suite on SAP ASE 16.0

The Disaster Recovery setup for SAP ASE 16.0 offers the following replication modes:

- Synchronous Replication (Hot Standby)
- Near-Synchronous Replication (Hot Standby)
- Asynchronous Replication (Warm Standby)

SAP recommends to always install the latest versions of SAP ASE and of the SAP Replication Server. For more information on the latest versions and the certified combinations of SAP ASE and SAP Replication Server, see SAP Note [1891560](#).

The DR setup with SAP ASE 16.0 provides additional features for monitoring the SAP Replication Server using the Replication Management Agent (RMA).

You can install the SAP Replication Server on the same host as SAP ASE 16.0 (co-located scenario).

For more information, see the [HADR Users Guide for SAP ASE 16.0](#), Chapter 4, *Installing HADR for SAP Business Suite* and SAP Note [1891560](#), section *Additional Information*.

# 9 Additional Information

## 9.1 Additional Information

The following sections provide additional information about **optional** preparation, installation, and post-installation tasks.

There is also a section describing how to delete an SAP system.

### Preparation

- [Integration of LDAP Directory Services \[page 183\]](#)

### Installation

- [Installing the Host Agent Separately \[page 188\]](#)

### Post-Installation

- [Starting and stopping SAP System Instances \[page 192\]](#)
- If you decided to use a generic LDAP directory, you have to [create a user for LDAP directory access \[page 199\]](#)
- [Heterogeneous SAP System Installation \[page 200\]](#)

### Deleting an SAP System or SAP Instance

- [Deleting an SAP System \[page 200\]](#)

## 9.2 Splitting Off an ABAP Central Services Instance from an Existing Primary Application Server Instance

With the installation option *Split Off ASCS Instance from existing Primary Application Server Instance*, you can move the message server and the enqueue work process from an existing primary application server instance to a newly installed ABAP central services instance (ASCS instance). The new ASCS instance is installed while the split is done.

### Prerequisites

The existing SAP system of the primary application server instance must meet the following requirements:

- It was upgraded from an SAP system release based on SAP NetWeaver lower than 7.1.
- It does not yet have an ASCS instance

### Context

#### Before the Split

The primary application server instance includes:

- ABAP dispatcher and work processes (dialog, batch, spool, enqueue, or update)
- Gateway
- Internet communication manager (ICM)
- Internet graphics service (IGS)
- ABAP message server

#### After the Split

An ABAP central services instance (ASCS instance) has been split off from the existing primary application server instance.

The primary application server instance now includes:

- ABAP dispatcher and work processes (dialog, batch, spool, or update)
- Gateway
- Internet communication manager (ICM)
- Internet graphics service (IGS)

The newly created ABAP central services instance (ASCS instance) includes:

- ABAP message server
- ABAP standalone enqueue server

The ABAP enqueue work process is now replaced with the ABAP standalone enqueue server.

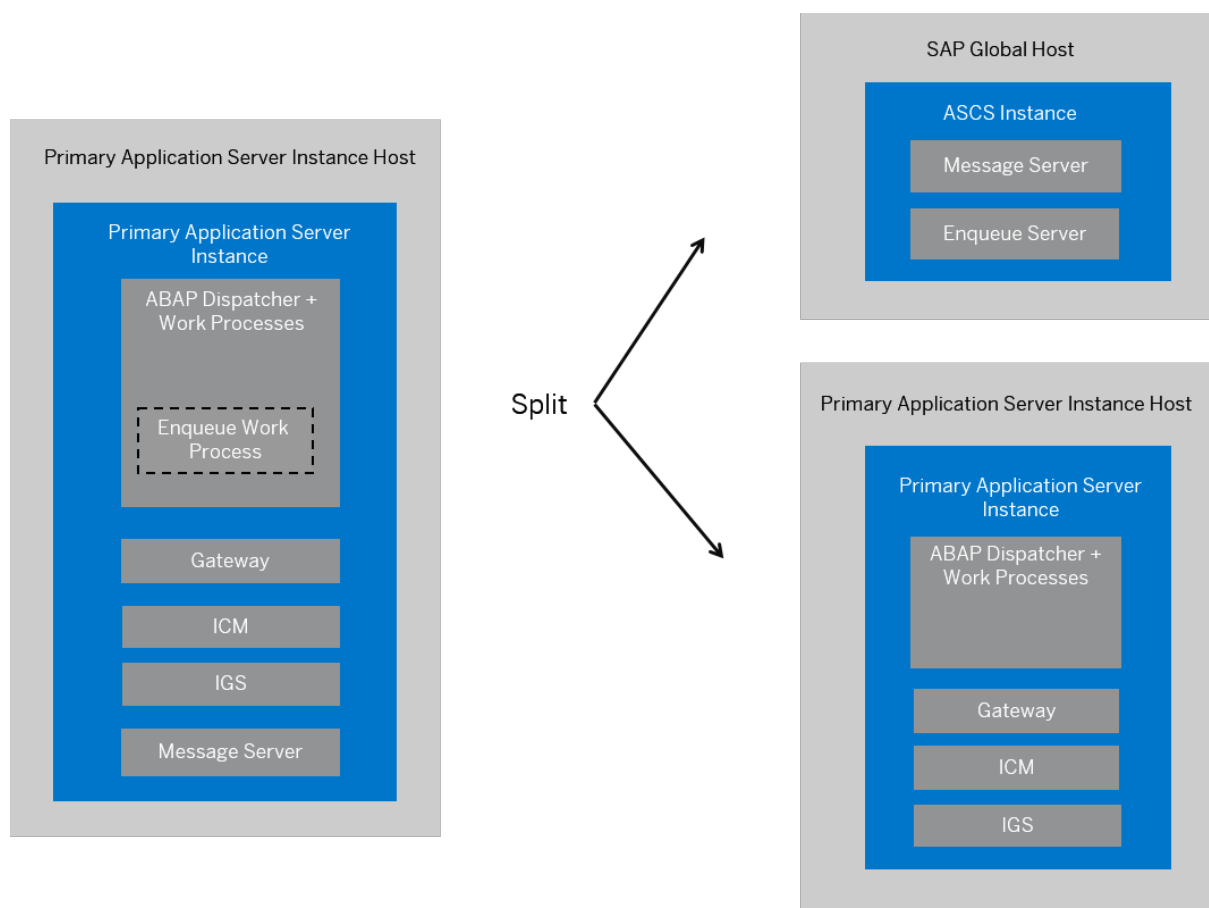
#### Note

**ASCS instance with “Standalone Enqueue Server” versus ASCS instance with new “Standalone Enqueue Server 2”:** Software Provisioning Manager 1.0 installs the “Standalone Enqueue Server” by

default for all SAP system releases in the ASCS instance. However, if you have installed the ASCS instance for an SAP system based on SAP NetWeaver AS for ABAP 7.52, you can switch to the new "Standalone Enqueue Server 2" after the installation has completed. For more information, see <https://help.sap.com/nw752abap> ► *Application Help* ► *SAP NetWeaver Library: Function-Oriented View* ► *SAP NetWeaver Application Server for ABAP* ► *Components of SAP NetWeaver Application Server for ABAP* ► *Standalone Enqueue Server 2* ► *High Availability with Standalone Enqueue Server 2* ►, and *Systems Based on SAP NetWeaver AS for ABAP 7.52 only: Switching to Standalone Enqueue Server 2 and Enqueue Replicator 2* [page 160] .

## The Effect of the Split

The following graphic provides an overview of the components contained in the primary application server instance before and after the split, along with the newly created ASCS instance:



## Procedure

1. Plan the basic parameters, as described in [SAP System Parameters](#) [page 55]:
  - Choose an instance number for the ASCS instance to be created.
  - Note that the message server port is not changed during the split.

2. Check the hardware and software requirements for the ASCS instance to be created as described in [Hardware and Software Requirements \[page 39\]](#).
3. Specify basic [SAP System Parameters \[page 55\]](#) for the ASCS instance to be created.
4. [Set up the required file systems \[page 82\]](#) for the ASCS instance to be created.
5. Check the [prerequisites \[page 117\]](#) and [start the software provisioning manager \[page 121\]](#) on the host where the ASCS instance is to be created.
6. On the *Welcome* screen, choose ► *Generic Options* ► *<Database>* ► *Split Off ASCS Instance from Existing Primary Application Server Instance* ►.
7. Follow the instructions on the software provisioning manager screens and enter the required parameters.

#### ❗ 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.

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 installation.

8. To start the installation, choose *Start*.

#### ⚠ Caution

All SAP system instances are stopped during the split procedure.

The software provisioning manager starts the installation and displays the progress of the installation. When the installation has successfully completed, the software provisioning manager shows the dialog *Execution of Split Off ASCS Instance from existing Primary Application Server Instance has completed*.

9. You check and if necessary modify the settings for the operating system users for your SAP system if they were created by the software provisioning manager.  
For more information, see [Creating Operating System Users and Groups \[page 77\]](#).
10. [Restart the application server instances \[page 192\]](#) (primary application server instance and additional application server instances if they exist).
11. Check whether you can [log on to the application servers \[page 144\]](#).
12. [Ensure user security \[page 164\]](#) for the operating system users of the newly created ASCS instance.
13. If you installed a high-availability system based on SAP NetWeaver AS for ABAP 7.52, you can decide whether you want to switch to standalone enqueue server 2 and enqueue replication server.
14. If required, [perform an installation backup \[page 171\]](#).

## 9.3 Integration of LDAP Directory Services

This section explains the benefits of using the SAP system with the Lightweight Directory Access Protocol (LDAP) directory and gives an overview of the configuration steps required to use an SAP system with the directory.

### ⚠ Caution

SAP recommends that you no longer use the LDAP configuration options provided by the software provisioning manager, because current security guidelines make it unsafe to run SAP applications on a domain controller. Instead, SAP recommends that you follow the instructions in SAP Note [3251648](#) to enable LDAP directory service integration of your SAP system with Active Directory.

LDAP defines a standard protocol for accessing directory services, which is supported by various directory products such as Microsoft Active Directory, and OpenLDAP `slapd`. Using directory services enables important information in a corporate network to be stored centrally on a server. The advantage of storing information centrally for the entire network is that you only have to maintain data once, which avoids redundancy and inconsistency.

If an LDAP directory is available in your corporate network, you can configure the SAP system to use this feature. For example, a correctly configured SAP system can read information from the directory and also store information there.

### ℹ Note

The SAP system can interact with the Active Directory using the LDAP protocol, which defines:

- The communication protocol between the SAP system and the directory
- How data in the directory is structured, accessed, or modified

If a directory other than the Active Directory also supports the LDAP protocol, the SAP system can take advantage of the information stored there. For example, if there is an LDAP directory on a UNIX or Windows server, you can configure the SAP system to use the information available there. In the following text, directories other than the Active Directory that implement the LDAP protocol are called **generic LDAP directories**.

This section does **not** provide information about the use of LDAP directories with the LDAP Connector. For more information about using and configuring the LDAP Connector for an ABAP system, see the SAP Library at:

SAP Release and SAP Library Quick Link	SAP Library Path (Continued)
<ul style="list-style-type: none"> <li>SAP NetWeaver 7.3 including Enhancement Package 1 <a href="http://help.sap.com/nw731">http://help.sap.com/nw731</a></li> <li>SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li> <li>SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li> <li>SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li> <li>SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li> </ul>	<p> <a href="#">Application Help</a> &gt; <a href="#">Function-Oriented View</a> &gt; <a href="#">Security</a>  <a href="#">Identity Management</a> &gt; <a href="#">User and Role Administration of Application Server ABAP</a> &gt; <a href="#">Configuration of User and Role Administration</a> &gt; <a href="#">Directory Services</a> &gt; <a href="#">LDAP Connector</a> </p>

## Prerequisites

You can only configure the SAP system for Active Directory services or other LDAP directories if these are **already available** on the network. The Active Directory is automatically available on all domain controllers. A generic LDAP directory is an additional component that you have to install separately on a UNIX or Windows server.

- You can only configure the SAP system for Active Directory services or other LDAP directories if these are **already available** on the network. The Active Directory is automatically available on all domain controllers. A generic LDAP directory is an additional component that you have to install separately on a UNIX or Windows server.
- Make sure that the required software is installed:

Operating System	Required Software
AIX	IBM Tivoli Directory Server client packages
HP-UX	The LDAP libraries listed in SAP Note <a href="#">541344</a>



Operating System	Required Software
Linux	<p>You must have at least the following RPM packages installed:</p> <ul style="list-style-type: none"> <li>• Oracle Linux: openldap2</li> <li>• Red Hat Linux: openldap2</li> <li>• SUSE LINUX openldap2 openldap2-client</li> </ul>
Solaris	You must have at least the libldap.so library installed.

## Features

In the SAP environment, you can exploit the information stored in an Active Directory or generic LDAP directory by using:

- SAP Logon
- The SAP Microsoft Management Console (SAP MMC)  
For more information about the automatic registration of SAP components in LDAP directories and the benefits of using it in SAP Logon and SAP MMC, see the documentation *SAP System Information in Directory Services* at:  
<https://archive.sap.com/documents/docs/DOC-14384>
- The SAP Management Console (SAP MC)

## SAP Logon

Instead of using a fixed list of systems and message servers, you can configure SAP Logon in the `sapmsg.ini` configuration file to find SAP systems and their message servers from the directory. If you configure SAP logon to use the LDAP directory, it queries the directory each time *Server* or *Group* selection is chosen to fetch up-to-date information on available SAP systems.

To use LDAP operation mode, check that the `sapmsg.ini` file contains the following:

```
[Address]

Mode=LDAPdirectory

LDAPserver=

LDAPnode=

LDAPoptions=
```

Distinguish the following cases:

- If you use an Active Directory, you must set **LDAPoptions="DirType=NT5ADS"**. For more information, see the SAP system profile parameter `ldap/options`.

- You must specify the directory servers (for example, `LDAPserver=pcintel6 p24709`) if one of the following is true:
  - The client is not located in the same domain forest as the Active Directory
  - The operating system does not have a directory service client (Windows NT and Windows 9X without installed *dsclient*).
 For more information, see the SAP system profile parameter `ldap/servers`.
- For other directory services, you can use *LDAPnode* to specify the distinguished name of the SAP root node. For more information, see the SAP system profile parameter `ldap/saproot`.

## SAP MMC

The SAP MMC is a graphical user interface (GUI) for administering and monitoring SAP systems from a central location. It is automatically set up when you install an SAP system on Windows. If the SAP system has been prepared correctly, the SAP MMC presents and analyzes system information that it gathers from various sources, including the Active Directory.

Integrating the Active Directory as a source of information has advantages for the SAP MMC. It can read system information straight from the directory that automatically registers changes to the system landscape. As a result, up-to-date information about all SAP application servers, their status, and parameter settings is always available in the SAP MMC.

If you need to administer distributed systems, we especially recommend that you use the SAP MMC together with Active Directory services. You can keep track of significant events in all of the systems from a single SAP MMC interface. You do not need to manually register changes in the system configuration. Instead, such changes are automatically updated in the directory and subsequently reflected in the SAP MMC.

If your SAP system is part of a heterogeneous SAP system landscape that comprises systems or instances both on Unix and Windows operating systems, you can also use the SAP MMC for operating and monitoring the instances running on Unix.

## SAP MC

The SAP MC is a graphical user interface (GUI) for administering and monitoring SAP systems from a central location. The SAP MC is automatically set up when you install an SAP system on any platform. If the SAP system has been prepared correctly, the SAP MC presents and analyzes system information that it gathers from various sources, including a generic LDAP Directory.

Integrating a generic LDAP Directory as a source of information has advantages for the SAP MC. It can read system information straight from the directory that automatically registers changes to the system landscape. As a result, up-to-date information about all SAP application servers, their status, and parameter settings is always available in the SAP MC.

For more information about the SAP MC and about how to configure it to access LDAP directories, see the documentation *SAP Management Console* in the SAP Library at:

SAP Release and SAP Library Quick Link	SAP Library Path (Continued)
<ul style="list-style-type: none"> <li>SAP NetWeaver 7.3 including Enhancement Package 1 <a href="http://help.sap.com/nw731">http://help.sap.com/nw731</a></li> <li>SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li> <li>SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li> <li>SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li> <li>SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li> </ul>	<p>► <a href="#">Application Help</a> ► <a href="#">Function-Oriented View</a> ► <a href="#">Solution Life Cycle Management</a> ► <a href="#">SAP Management Console</a> ►</p>

## Configuration Tasks for LDAP Directories

This section describes the configuration tasks for the Active Directory or other (generic) LDAP directories.

### • Configuration Tasks for Active Directory

To enable an SAP system to use the features offered by the Active Directory, you have to configure the Active Directory so that it can store SAP system data.

To prepare the directory, you use the software provisioning manager to automatically:

#### ⚠ Caution

SAP recommends that you no longer use the LDAP configuration options provided by the software provisioning manager, because current security guidelines make it unsafe to run SAP applications on a domain controller. Instead, SAP recommends that you follow the instructions in SAP Note [3251648](#) to enable LDAP directory service integration of your SAP system with Active Directory.

- Extend the Active Directory schema to include the SAP-specific data types
- Create the domain accounts required to enable the SAP system to access and modify the Active Directory. These are the group `SAP_LDAP` and the user `sapldap`.
- Create the root container where information related to SAP is stored
- Control access to the container for SAP data by giving members of the `SAP_LDAP` group permission to read and write to the directory

You do this by running the software provisioning manager on the Windows server on which you want to use Active Directory Services and choosing ► [Generic Installation Options](#) ► [Database](#) ► [Preparations](#) ► [LDAP Registration](#) ► [Active Directory Configuration](#) ►. For more information about running the software provisioning manager on Windows, see the documentation *Installation of SAP Systems Based on the Application Server <Stack> of SAP NetWeaver <Release> on Windows: <Database>* at [https://help.sap.com/docs/SOFTWARE\\_PROVISIONING\\_MGR\\_10/159a36e76fe84e54a703f8446b08ae1f6/c8ed609927fa4e45988200b153ac63d1.html](https://help.sap.com/docs/SOFTWARE_PROVISIONING_MGR_10/159a36e76fe84e54a703f8446b08ae1f6/c8ed609927fa4e45988200b153ac63d1.html)

#### 📌 Note

You have to configure the directory server only **once**. Then all SAP systems that need to register in this directory server can use this setup.

- **Configuration Tasks for Generic LDAP Directories**

To configure other LDAP directories, refer to the documentation of your directory vendor.

- **Configuration Tasks for Generic LDAP Directories on Windows**

To configure other LDAP directories, refer to the documentation of your directory vendor. The software provisioning manager software contains schema extensions for directory servers Netscape/iPlanet (ldregns4.txt, ldregns5.txt) and OpenLDAP slapd (ldregslapd.schema). Both files are located in the directory \<Unpack\_Directory>\COMMON\ADS. After you have applied the schema extension, you need to create a root container to store the SAP-related information and create a directory user that the SAP application server can use to write information to the directory.

For more information about how to set up a Netscape/iPlanet directory server, see the documentation [SAP System Information in Directory Services](#) at:

<https://archive.sap.com/documents/docs/DOC-14384>

- **Enabling the SAP System LDAP Registration**

Once you have correctly configured your directory server, you can enable the LDAP registration of the SAP system by setting some profile parameters in the default profile.

To do this, [run the software provisioning manager \[page 121\]](#) **once** for your system and choose:

#### ⚠ Caution

SAP recommends that you no longer use the LDAP configuration options provided by the software provisioning manager, because current security guidelines make it unsafe to run SAP applications on a domain controller. Instead, SAP recommends that you follow the instructions in SAP Note [3251648](#) to enable LDAP directory service integration of your SAP system with Active Directory.

► [Generic Installation Options](#) ► [<Database>](#) ► [Preparations](#) ► [LDAP Registration](#) ► [LDAP Support](#) ►

If you use a directory server other than Microsoft Active Directory and/or non-Windows application servers, you have to store the directory user and password information by using `ldappasswd pf=<any_instance_profile>`. The information is encrypted for storage in `DIR_GLOBAL` and is therefore valid for all application servers. After restarting all application servers and start services, the system is registered in your directory server. The registration protocols of the components are `dev_ldap*`. The registration is updated every time a component starts.

## 9.4 Installing the SAP Host Agent Separately

This procedure tells you how to install an SAP Host Agent **separately**.

### Context

The SAP Host Agent is installed automatically during the installation of new SAP instances with SAP kernel 7.20 or higher (integrated installation). This procedure is only for hosts with no SAP Host Agent running on them, due to the following reasons:

- There is no SAP system or instance on the host.
- The SAP system or instance running on the host has a kernel release lower than SAP kernel 7.20 and the host does not yet have an SAP Host Agent.

- You have upgraded your SAP system to a release with a kernel release lower than SAP kernel 7.20 and the host of the upgraded system or instance does not yet have an SAP Host Agent.

SAP Host Agent has the following executable programs and services:

- The `SAPHostExec` service
- The `sapstartsrv` service `SAPHostControl`
- The operating system collector `saposcol`

#### Note

The installed programs are automatically started when the host is booted.

The automatic start is ensured by the startup script `sapinit`, which starts the required executables.

The following procedure describes the steps you have to perform on the host where you install the SAP Host Agent separately.

## Procedure

1. Check the hardware and software requirements on the installation host.

The minimum requirements are as follows:

- Hard Disk Space: 1 GB
- RAM: 0.5 GB
- Swap Space: 2 x RAM

2. Make sure that the `sapadm` user is created.

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.

## User and Groups of the SAP Host Agent

User	Primary Group	Additional Group	Comment
sapadm	sapsys	–	SAP Host Agent administrator

**Note**

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

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

Only valid for 'Platform': AIX

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

End of 'Platform': AIX








## Groups and Members of the SAP Host Agent User

Groups	Members
sapsys	sapadm
sapinst	sapadm

- Set up the required file system for the SAP Host Agent and make sure that the required disk space is available for the directories to be created during the installation.

For more information, see [Required File Systems and Directories \[page 82\]](#).

- Download and unpack the Software Provisioning Manager 1.0 archive on the host where you want to install the SAP Host Agent as described in [Downloading and Extracting the Software Provisioning Manager 1.0 Archive \[page 98\]](#).
- Make the latest patch level of the `SAPHOSTAGENT <Version>.SAR` available on the host where you want to install the SAP Host Agent.

Download it from the following path: <https://me.sap.com/softwarecenter>  **SUPPORT PACKAGES & PATCHES**  **By Category**  **SAP Technology Components**  **SAP HOST AGENT**  **SAP HOST AGENT 7.22**  **<Operating System>** 

### Note

The digital signature of **installation archives** is checked **automatically** by the [software provisioning manager \[page 121\]](#) 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.

### → Recommendation

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

6. To install the SAP Host Agent, you [Running Software Provisioning Manager \[page 121\]](#) and choose **► Generic Options ► <Database> ► Preparations ► SAP Host Agent ►** on the *Welcome* screen of the software provisioning manager.
7. Follow the instructions on the software provisioning manager screens and enter the required parameters.
8. When the installation has finished, the software provisioning manager shows the message: Execution of SAP Host Agent has completed.

### Post-Installation

9. Check that the SAP Host Agent is installed and running by entering this command:

```
/usr/sap/hostctrl/exe/saphostexec -status
```

If the SAP Host Agent is running, you see something like this:

```
saphostexec running (pid = 21942)
```

10. If the SAP Host Agent is installed but not running, enter the following:

```
/usr/sap/hostctrl/exe/saphostexec -restart
```

11. Check whether the installed services are available:
  - a. Log on as a user with root authorizations.

### 📌 Note

When the host is booted, the startup script `sapinit` automatically starts the required executables.

- b. Check whether the following services are available:
  - The control program `saphostexec`
  - The SAP NetWeaver Management agent `SAPHostControl` (`sapstartsrv` in host mode)

## Next Steps

For more information about the SAP Host Agent, see the following documentation:

SAP Release and SAP Library Quick Link	SAP Library Path (Continued)
<ul style="list-style-type: none"><li>• SAP NetWeaver 7.3 <a href="http://help.sap.com/nw73">http://help.sap.com/nw73</a></li><li>• SAP NetWeaver 7.3 including Enhancement Package 1 <a href="http://help.sap.com/nw731">http://help.sap.com/nw731</a></li><li>• SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li><li>• SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li><li>• SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li><li>• SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li></ul>	<p>► <a href="#">Application Help</a> ► <a href="#">Function-Oriented View</a> ► <a href="#">Solution Life Cycle Management</a> ► <a href="#">SAP Host Agent</a> ►</p>

## 9.5 Starting and Stopping SAP System Instances

Start or stop SAP system instances in one of the following ways:

- [Using the SAP Management Console \(SAP MC\) \[page 192\]](#)
- [Using commands \[page 196\]](#).

### 9.5.1 Starting and Stopping SAP System Instances Using the SAP Management Console

You can start and stop all instances of your SAP system using the SAP Management Console (SAP MC).

#### Prerequisites

- Make sure that the host names defined in the DNS server match the names of the SAP system instance hosts. In particular, keep in mind that host names are case-sensitive. For example, if the names of the SAP system instance hosts are in upper case, but the same host names are defined in the DNS server in lower case, starting and stopping the system does not work.



- If you want to start or restart remote systems or instances, make sure that you have registered them in the SAP Management Console (SAP MC). You do not need to register SAP systems or instances installed on the local host, because the SAP MC displays them automatically.
- The SAP Host Agent is installed on the host where the application server of the SAP system or instance runs.
- You have installed Java Runtime Environment (JRE) 5.0 or higher.
- Your Web browser supports Java.
- Your Web browser's Java plug-in is installed and enabled to run scripting of Java applets.

### Note

If your Web browser no longer supports Java applet technology, you can configure the SAP MC to run locally on your PC. For more information, see section *Configuring SAP MC locally* in SAP Note [1014480](#).

## Context

### → Recommendation

If you experience any issues when starting or using the SAP MC, refer to SAP Note [1153713](#).

- For more information about handling the SAP MC, see the SAP Library at:

SAP Release and SAP Library Quick Link	SAP Library Path (Continued)
<ul style="list-style-type: none"> <li>• SAP NetWeaver 7.3 including Enhancement Package 1 <a href="http://help.sap.com/nw731">http://help.sap.com/nw731</a></li> <li>• SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li> <li>• SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li> <li>• SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li> <li>• SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li> </ul>	<p>▶ <a href="#">Application Help</a> ▶ <a href="#">Function-Oriented View</a> ▶ <a href="#">Solution</a> <a href="#">Life Cycle Management</a> ▶ <a href="#">SAP Management Console</a> ▶</p>

- If your newly installed SAP system is part of a heterogeneous SAP system landscape comprising systems or instances on Windows platforms, you can also start and stop it from a Windows system or instance using the **SAP Microsoft Management Console (SAP MMC)**.

For more information about handling the SAP MMC, see the SAP Library at:

Release SAP Library Quick Link	SAP Library Path (Continued)
<ul style="list-style-type: none"><li>• SAP NetWeaver 7.3 including Enhancement Package 1 <a href="http://help.sap.com/nw731">http://help.sap.com/nw731</a></li><li>• SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li><li>• SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li><li>• SAP NetWeaver Application Server for ABAP 7.51 innovation package <a href="https://help.sap.com/nw751abap">https://help.sap.com/nw751abap</a></li><li>• SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li></ul>	<p>► <a href="#">Application Help</a> ► <a href="#">Function-Oriented View</a> ► <a href="#">Solution Life Cycle Management</a> ► <a href="#">SAP Microsoft Management Console: Windows</a></p>

Only valid for 'Platform': Linux

### Note

**Linux only:** If your server runs on a Linux distribution using systemd version 234 or later, it's technically possible that you use systemd commands on operating system level to start and stop SAP systems. However, we recommend that you **do not** use these systemd commands. For example, using systemd to restart or stop the systemd unit will not only stop the start service, but the entire related SAP instance with time limits for the processes to shut down. This might end in unexpected results. To start and stop SAP instances, we recommend that you use the SAP Management Console, as outlined here, or the `sapcontrol` commands (see also [Starting and Stopping SAP System Instances Using Commands \[page 196\]](#)). For more information about systemd, see SAP Note [3139184](#).

End of 'Platform': Linux

## Procedure

- **Starting the Web-Based SAP Management Console**
  1. Start a Web browser and enter the following URL:  
**`http://<Host_Name>:5<Instance_Number>13`**

### Example

If the instance number is 53 and the host name is `saphost06`, you enter the following URL:

**`http://saphost06:55313`**

This starts the SAP MC Java applet.

### Note

If your browser displays a security warning message, choose the option that indicates that you trust the applet.

2. Choose [Start](#).

The SAP Management Console (SAP MC) appears.

By default, the instances installed on the host you have connected to are already added in the SAP MC.

#### Note

If the instances have not been added or if you want to change the configuration to display systems and instances on other hosts, you have to register your system manually. This is described in *Registering Systems and Instances in the SAP Management Console* below.

### Starting SAP Systems or Instances

Similarly, you can start or restart all SAP systems and individual instances registered in the SAP MC.

1. In the navigation pane, open the tree structure and navigate to the system node that you want to start.
2. Select the system or instance and choose [Start](#) from the context menu.
3. In the [Start SAP System\(s\)](#) dialog box, choose the required options.
4. Choose [OK](#).

The SAP MC starts the specified system or system instances.

#### Note

The system might prompt you for the SAP system administrator credentials. To complete the operation, you require administration permissions.

Log in as user `<sapsid>adm`.

### Starting SAP System Instances Successively

>If you need to start the instances of an SAP system successively – for example when you want to start a distributed or a high-availability system – proceed as follows:

1. Start the database instance.
2. Start the ABAP central services instance `ASCS<Instance_Number>`.
3. Start the primary application server instance `D[VEBMGS] <Instance_Number>`.

#### Note

In SAP systems based on SAP NetWeaver 7.5 or higher, the primary application server instance is named `D<Instance_Number>`.

In SAP systems based on SAP NetWeaver 7.4 or lower, the primary application server instance is named `DVEBMGS<Instance_Number>`.

4. Start additional application server instances `D<Instance_Number>`, if there are any.

### Stopping SAP Systems or Instances

Similarly, you can stop all SAP systems and individual instances registered in the SAP MC.

1. Select the system or instance you want to stop and choose [Stop](#) from the context menu.
2. In the [Stop SAP System\(s\)](#) dialog box, choose the required options.
3. Choose [OK](#).

The SAP MC stops the specified system or system instances.

#### 📘 Note

The system might prompt you for the SAP system administrator credentials. To complete the operation, you require administration permissions.

Log in as user `<sapsid>adm`.

### Stopping SAP System Instances Successively

If you need to stop the instances of an SAP system successively – for example when you want to start a distributed or a high-availability system – proceed as follows:

1. Stop additional application server instances `D<Instance_Number>`, if there are any.
2. Stop the primary application server instance `D[VEBMGS] <Instance_Number>`.

#### 📘 Note

In SAP systems based on SAP NetWeaver 7.5 or higher, the primary application server instance is named `D<Instance_Number>`.

In SAP systems based on SAP NetWeaver 7.4 or lower, the primary application server instance is named `DVEBMGS<Instance_Number>`.

3. Stop the ABAP central services instance `ASCS<Instance_Number>`.
4. Stop the database instance.

## 9.5.2 Starting and Stopping SAP System Instances Using Commands

### Prerequisites

You are logged on to the SAP system host as user `<sapsid>adm`.

### Context

#### 📘 Note

The `startsap` and `stopsap` commands are deprecated. SAP recommends that you do not use them any longer. For more information, see SAP Notes [1763593](#) and [809477](#).

Only valid for 'Platform': Linux

**Linux only:** If your server runs on a Linux distribution using systemd version 234 or later, it's technically possible that you use systemd commands on operating system level to start and stop SAP systems. However, we recommend that you **do not** use these systemd commands. For example, using systemd to restart or stop the systemd unit will not only stop the start service, but the entire related SAP instance with time limits for the processes to shut down. This might end in unexpected results. To start and stop SAP instances, we recommend that you use the `sapcontrol` commands or the SAP Management Console (see

also [Starting and Stopping SAP System Instances Using the SAP Management Console \[page 192\]](#)). For more information about systemd, see SAP Note [3139184](#).

End of 'Platform': Linux

This section only lists the basic commands how to start or stop an SAP system. You can find a detailed list of all SAPControl options and features in the command line help, which you can call as follows:

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol --help
```

#### ❖ Example

```
/usr/sap/GB1/D00/exe/sapcontrol --help
```

## Procedure

- **Starting an SAP System or Instance**

- Starting an SAP System:

You can start an SAP system by executing the following commands from the command line (**<Instance\_Number>** can be the number of any instance of the SAP system):

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol -nr <instance_number>  
-function StartSystem
```

#### ❖ Example

```
/usr/sap/GB1/D00/exe/sapcontrol -nr 01 -function StartSystem
```

- Starting an SAP System Instance

You can start an SAP system instance by executing the following commands from the command line:

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol -nr <instance_number>  
-function Start
```

#### ❖ Example

Starting an instance with **<instance\_number>** 02: 

```
/usr/sap/GB1/D00/exe/sapcontrol -nr 02 -function Start
```

For remote instances, the syntax is slightly different, because you also have to apply the **-host** and **-user** parameters:

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol -nr <instance_number>  
-host <remote host> -user <sapsid>adm <password> -function Start
```

#### ❖ Example

Starting a remote instance with **<instance\_number>** 02: 

```
/usr/sap/GB1/D00/exe/sapcontrol -nr 02 -host myremotehost -user gbladm -function Start
```

- **Stopping an SAP System or Instance**

- Stopping an SAP System

You can stop an SAP system by executing the following commands from the command line

(<Instance\_Number> can be the number of any instance of the SAP system):

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol -nr <instance_number>
-function StopSystem
```

#### ❖ Example

```
/usr/sap/GB1/D00/exe/sapcontrol -nr 01 -function StopSystem
```

- Stopping an SAP System Instance

You can stop an SAP system instance by executing the following commands from the command line:

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol -nr <instance_number>
-function Stop
```

#### ❖ Example

Stopping an instance with <instance\_number> 02: `/usr/sap/GB1/D00/exe/sapcontrol -nr 02 -function Stop`

For remote instances, the syntax is slightly different, because you also have to apply the `-host` and `-user` parameters:

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol -nr <instance_number>
-host <remote host> -user <sapsid>adm <password> -function Stop
```

#### ❖ Example

Stopping a remote instance with <instance\_number> 02: `/usr/sap/GB1/D00/exe/sapcontrol -nr 02 -host myremotehost -user gbladm -function Stop`

#### 📌 Note

The database is not stopped by these commands. You have to stop the database using database-specific tools or commands.

- Checking System Instance and Processes

- With the following command you get a list of system instances, their status, and the ports used by them (<Instance\_Number> can be the number of any instance of the SAP system):

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol -nr <instance_number>
-host <remote host> -user <sapsid>adm <password> -function
GetSystemInstanceList
```

#### ❖ Example

```
/usr/sap/GB1/D00/exe/sapcontrol -nr 02 -host myremotehost -user gbladm
-function GetSystemInstanceList
```

- With the following command you get a list of instance processes and their status:

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol -nr <instance_number>
-host <remote host> -user <sapsid>adm <password> -function GetProcessList
```

#### ❏ Example

```
/usr/sap/GB1/D00/exe/sapcontrol -nr 02 -host myremotehost -user gbladm  
-function GetProcessList
```

- **Troubleshooting**

If you get an error like "FAIL: NIECONN\_REFUSED", execute `sapcontrol -nr <Instance_Number> -function StartService <SAPSID>` to ensure that `sapstartsrv` is running. Then execute again the start or stop command.

## 9.6 Creating a User for LDAP Directory Access

If you use LDAP directory services, you have to set up a user with a password on the host where the SAP system is running. This permits the SAP system to access and modify the LDAP directory.

### ⚠ Caution

SAP recommends that you no longer use the LDAP configuration options provided by the software provisioning manager, because current security guidelines make it unsafe to run SAP applications on a domain controller. Instead, SAP recommends that you follow the instructions in SAP Note [3251648](#) to enable LDAP directory service integration of your SAP system with Active Directory.

## Prerequisites

During the SAP instance installation you chose to configure the SAP system to integrate LDAP services.

## Context

For more information, see [Integration of LDAP Directory Services \[page 183\]](#).

## Procedure

1. Log on as user `<sapsid>adm`.
2. Enter the following:  
`ldappasswd pf=<Path_and_Name_of_Instance_Profile>`
3. Enter the required data.

### ❖ Example

The following is an example of an entry to create an *LDAP Directory User*:

```
CN=sapldap,CN=Users,DC=nt5,DC=sap-ag,DC=de
```

## 9.7 Heterogeneous SAP System Installation


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

See SAP Note [1067221](#)  for more information on:

- Supported combinations of operating systems and database systems
- How to install an application server on Windows in a heterogeneous (UNIX) SAP system environment
- Heterogeneous SAP system landscapes with different UNIX operating systems

## 9.8 Enabling SSL Encrypted Data Transfer

Secure Sockets Layer (SSL) encrypted data transfer is available for SAP ASE 16.0 SP02 starting with PL6.

For general limitations and prerequisites refer to SAP Note [2481596](#)  - SYB: Encrypted data transfer between SAP system and SAP ASE database.

The software provisioning manager offers the possibility to enable the SSL encrypted data transfer via a checkbox. The SSL certificates are generated by the software provisioning manager and enabled for the database server and the SAP application server.

There are no manual steps necessary to configure the usage of SSL for the purpose of encrypted data transfer.

### 📌 Note

The software provisioning manager adds the profile parameter `db/sybase/ssl = 1` to the SAP System DEFAULT profile and configures the environment variable `db_syb_ssl = 1` for the OS user `<sid>adm`.

The SAP ASE interface file contains the keyword `ssl` in the TCP/IP connection string.

## 9.9 Uninstalling an SAP System or Single Instances

Uninstalling an SAP system or single instances is described in this section. It includes prerequisites, manual steps, and recommendations for deleting the system or instances using the software provisioning manager. It also provides information on deleting database content and other related considerations.



## Prerequisites

- You have installed your SAP system with standard SAP tools according to the installation documentation.
- You are logged on as a user with `root` permissions.

### ⚠ Caution

Do **not** use the `<sapsid>adm` user to delete the SAP system.

- Make sure that the SAP system, or single instance, or standalone engine, or optional standalone unit to be deleted is down and that you are not logged on as one of the SAP system users. Also check that all SAP-related processes are stopped. If there is a lock on one of the SAP system objects, the uninstall fails.

### ℹ Note

You do not have to stop the SAP Host Agent. The SAP Host Agent is stopped automatically during the uninstall process.


- When starting the uninstall, make sure that there are no SAP system user sessions still open.

## Context

Note the following when deleting an SAP system or single instances:

- We strongly recommend that you delete an SAP system or single instances using the software provisioning manager. However, you can also delete an SAP system or single instance manually. For more information, see SAP Note [1259982](#).
- You cannot delete an SAP system remotely.
- During the uninstall process, all file systems and subdirectories of the selected SAP system or single instance are deleted. Before you start uninstalling, check that you have saved a copy of all files and directories that you want to keep to a secure location.
- The uninstall process is designed to remove as much as possible of the SAP system to be deleted. If an item cannot be removed, a message informs you that you have to remove this item manually. You can do this either at once or after the uninstall process has finished. As soon as you confirm the message, the uninstall process continues.

## Procedure

1. Start the software provisioning manager as described in [Running Software Provisioning Manager \[page 121\]](#).
2. On the [Welcome](#) screen, choose:  

3. Follow the instructions on the software provisioning manager screens to delete a complete SAP system or single instances.

### 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.

The following table provides information about deleting a complete system or single instances with the software provisioning manager.

Deletion of	Remarks
Standard system	You can delete a standard system (where all instances reside on the same host) in one software provisioning manager run.
Distributed or high-availability system	<p>If you want to delete a distributed or high-availability system, you have to run the software provisioning manager to delete the required instances <b>locally</b> on each of the hosts belonging to the SAP system in the following sequence:</p> <div><p><b>Caution</b></p><p>Only select checkbox <i>Uninstall all instances of the SAP system from this host</i> when removing the last remaining instance of the SAP system. Otherwise the contents of mounted global directories under / &lt;sapmnt&gt; / &lt;SAPSID&gt; / such as instance profiles and kernel executables, are also deleted.</p><ol style="list-style-type: none"><li>1. Additional application server instances, if there are any</li><li>2. Primary application server instance</li><li>3. Database instance Since the software provisioning manager only stops local instances automatically, make sure that before deleting the database instance of a distributed system, you stop all remaining instances. You must stop the instance with the message server only after having entered all software provisioning manager parameters for the deletion of the database instance.</li><li>4. ABAP Central services instance (ASCS)</li></ol></div> <div><p><b>Note</b></p><p>To delete system directories mounted from an NFS server, you have to run the software provisioning manager on the NFS server.</p></div>
Additional application server	If you want to delete additional application server instances of an existing SAP system, you have to run the software provisioning manager to delete them <b>locally</b> on each additional application server instance host.

Deletion of	Remarks
Standalone SAP Host Agent	<p>The SAP Host Agent is automatically uninstalled from a host together with the last remaining SAP system instance.</p> <p>If you want to uninstall a <b>standalone</b> SAP Host Agent, deselect <i>Profiles Available</i> and select <i>Uninstall Standalone SAP Host Agent</i> on the <i>General SAP System Parameters</i> screen.</p>

- When you have finished, delete the relevant directory structure on the global host.
- If you created the directories `/usr/sap/<SAPSID>` and `/<sapmnt>/<SAPSID>` as mount points, but not as directories on the local file system, you have to remove them manually.
- To remove obsolete SLD data, see the following document: <https://wiki.scn.sap.com/wiki/display/SL/More+on+System+Landscape+Directory> ► *How-to Manage House-Cleaning in the System Landscape Directory - Duplicate System Entries* ►
- If the following directories and files exist, delete them by entering the following command:

#### WRKLNKSAP

- `/usr/sap/trans/cofiles/*<SAPSID>*`
- `/usr/sap/trans/data/*<SAPSID>*`
- `/usr/sap/trans/log/*<SAPSID>*`
- `/usr/sap/trans/buffer/*<SAPSID>*`

Choose **4** (*Remove*) on every file that is found by the command **WRKLNKSAP**.

#### ❖ Example

For example, for directory `/usr/sap/trans/data`, enter the following command:

```
WRKLNKSAP DIR( '/usr/sap/trans/data/*<SAPSID>*' )
```

Choose **4** (*Remove*) on the listed files.

#### ⓘ Note

To limit the command **WRKLNKSAP**, choose **Subset** (in the upper right part on the screen).

- If the following directories exist, delete them by entering the following commands:

```
RMVDIR DIR( '/sapmnt/<SAPSID>' ) SUBTREE( *ALL )
```

```
RMVDIR DIR( '/usr/sap/trans/config/<SAPSID>' ) SUBTREE( *ALL )
```

#### ⓘ Note

If you are removing a system from an independent ASP also delete the contents from the following directories:

```
RMVDIR DIR( '/<IASP_Name>/usr/sap/<SAPSID>' ) SUBTREE( *ALL )
```

```
RMVDIR DIR( '/<IASP_Name>/sapmnt/<SAPSID>' ) SUBTREE( *ALL )
```

- If the kernel library of the system you just deleted was only used by the deleted system, you can remove it.

- To remove the kernel library from the library list, enter the following command:  
`RMVLIBLE LIB(SAP<SAPSID>IND)`
- To delete the kernel library, enter the following command:  
`DTLIB LIB(SAP<SAPSID>IND)`

## Results

The SAP system is now deleted. If you want to reinstall an SAP system, you can use the same <SAPSID> as the one of the SAP system you deleted.

# A Appendix

## A.1 Online Information from SAP

More information is available online as follows:



Titel	Internet Address
<i>Database Administration Guide: SAP Applications on SAP Adaptive Server Enterprise</i>	<a href="https://help.sap.com/viewer/ase_admin">https://help.sap.com/viewer/ase_admin</a>
<i>Security Guide for SAP Application on SAP Adaptive Server Enterprise</i>	<a href="https://help.sap.com/viewer/ase_security">https://help.sap.com/viewer/ase_security</a>

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