



Installation Guide | PUBLIC

Software Provisioning Manager 1.0 SP38

Document Version: 4.6.1 – 2023-10-09

Installation of SAP Systems Based on the Application Server ABAP of SAP NetWeaver 7.3 EHP1 to 7.52 on Windows : IBM Db2 for i

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1 Document History

i 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
4.6.1	2023-10-09	Updated version for software provisioning manager 1.0 SP38 (SL Toolset 1.0 SP38): Last version containing information about no longer supported Windows operating systems according to SAP Note 3346502 .
4.6	2023-05-26	Updated version for software provisioning manager 1.0 SP38 (SL Toolset 1.0 SP38)
4.5	2023-02-13	Updated version for software provisioning manager 1.0 SP37 (SL Toolset 1.0 SP37)
4.4	2022-10-10	Updated version for software provisioning manager 1.0 SP36 (SL Toolset 1.0 SP36) Operating systems and CPU architectures no longer supported according to SAP Note 2998013 have been removed.
4.3.1	2022-10-10	Updated version for software provisioning manager 1.0 SP35 (SL Toolset 1.0 SP35): Last version containing information about no longer supported operating systems and CPU architectures according to SAP Note 2998013 .
4.3	2022-06-01	Updated version for software provisioning manager 1.0 SP35 (SL Toolset 1.0 SP35)
4.2	2022-05-24	Updated version for software provisioning manager 1.0 SP35 (SL Toolset 1.0 SP35)
4.1	2022-02-14	Updated version for software provisioning manager 1.0 SP34 (SL Toolset 1.0 SP34)
4.0	2021-10-11	Updated version for software provisioning manager 1.0 SP33 (SL Toolset 1.0 SP33)
3.9	2021-06-21	Updated version for software provisioning manager 1.0 SP32 (SL Toolset 1.0 SP32)
3.8	2021-02-15	Updated version for software provisioning manager 1.0 SP31 (SL Toolset 1.0 SP31)
3.7	2020-10-05	Updated version for software provisioning manager 1.0 SP30 (SL Toolset 1.0 SP30)
3.6	2020-06-08	Updated version for software provisioning manager 1.0 SP29 (SL Toolset 1.0 SP29)
3.5	2020-01-20	Updated version for software provisioning manager 1.0 SP28 (SL Toolset 1.0 SP28)
3.4	2019-09-16	Updated version for software provisioning manager 1.0 SP27 (SL Toolset 1.0 SP27)

Version	Date	Description
3.3	2019-05-27	Updated version for software provisioning manager 1.0 SP26 (SL Toolset 1.0 SP26)
3.2	2019-01-21	Updated version for software provisioning manager 1.0 SP25 (SL Toolset 1.0 SP25)
3.1	2018-09-17	Updated version for software provisioning manager 1.0 SP24 (SL Toolset 1.0 SP24) New Features: New Look and Feel of SL Common GUI with software provisioning manager 1.0 SP24, Patch Level 05, documented in: <i>New Features, Prerequisites for Running the Software Provisioning Manager</i>
3.0	2018-05-07	Updated version for software provisioning manager 1.0 SP23 (SL Toolset 1.0 SP23) - New Features: - New Software Provisioning Manager Option Download Media for a Maintenance Plan, documented in: <i>New Features, Downloading the Media for a Maintenance Planner Transaction</i> - Validity Check for SUM* .SAR Archive, documented in: <i>New Features, Additional Parameters When Using a Stack XML File</i> - Information "enqueue server" versus "enqueue server 2", "enqueue replication server" versus "enqueue replication server 2" added: <i>High Availability with Microsoft Failover Clustering, System Based on SAP NetWeaver AS for ABAP 7.52 only: Switching to Enqueue Server 2 and Enqueue Replication Server 2</i>

Version	Date	Description
2.9	2018-01-15	Updated version for software provisioning manager 1.0 SP22 (SL Toolset 1.0 SP22) - New Features: - 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> - 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> - Secure ABAP message server connection, documented in: <i>New Features, SAP System Parameters</i> - Enabling IPv6, documented in: <i>New Features, Prerequisites for Running the Software Provisioning Manager</i> <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. - The Java SDT GUI - which was in the SP21 version still available in parallel to the SL-UI - has been deprecated with SP22. As of SP22, SL-UI is the only available GUI of the software provisioning manager: - The following sections which were explicitly related to Java SDT GUI were completely removed from this documentation: <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>). - 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> - 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>

Version	Date	Description
2.8	2017-09-11	Updated version for software provisioning manager 1.0 SP21 (SL Toolset 1.0 SP21) - New Features: - 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. - Download Media for a Maintenance Plan, documented in: <i>New Features, Downloading Media for a Maintenance Plan</i> - SAP Host Agent Upgrade , documented in: <i>New Features, SAP System Parameters, Downloading SAP Kernel Archives (Archive-Based Installation)</i> - Load tools are now available as LOADTOOLS.SAR in the Software Provisioning Manager archive, documented in: <i>New Features, Downloading and Extracting the Software Provisioning Manager Archive</i> - Simplified additional application server instance installation, documented in: <i>New Features, Preparing the Installation Media, Downloading SAP Kernel Archives (Archive-Based Installation)</i>
2.7	2017-05-22	Updated version for software provisioning manager 1.0 SP20 (SL Toolset 1.0 SP20) - New Features: - New SAPUI5-based graphical user interface (GUI) "SL-UI", documented in: <i>Prerequisites for Running the Software Provisioning Manager, Running the Software Provisioning Manager, Useful Information About the Software Provisioning Manager</i> - 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>
2.6	2017-02-06	Updated version for software provisioning manager 1.0 SP19 (SL Toolset 1.0 SP19) - New Features: - Verification of the integrity of data units in Software Provisioning Manager, documented in: <i>New Features, Downloading the Software Provisioning Manager Archive</i> - Archive-based Language Installation, documented in: <i>Additional Parameters When Using a Stack XML File</i>
2.5	2016-10-07	Updated version for software provisioning manager 1.0 SP18 (SL Toolset 1.0 SP18) - New Features: - Option to choose installing an integrated SAP Web Dispatcher during the ASCS instance installation, documented in: <i>ASCS Instance with Integrated SAP Web Dispatcher.</i>

Version	Date	Description
2.4	2016-06-06	Updated version for software provisioning manager 1.0 SP17 (SL Toolset 1.0 SP17) - New Features: “ Archive-Based Installation”, documented in: New Features [page 16] Preparing the Installation Media [page 58] ► ► <i>Downloading Specific Installation Archives (Archive-Based Installation)</i> ►
2.3	2016-02-15	Updated version for software provisioning manager 1.0 SP10 (SL Toolset 1.0 SP16)
2.2	2015-10-12	Updated version for software provisioning manager 1.0 SP09 (SL Toolset 1.0 SP15)
2.1	2015-09-14	Updated version for software provisioning manager 1.0 SP09 (SL Toolset 1.0 SP14)
1.9	2015-04-27	Updated version for software provisioning manager 1.0 SP08 (SL Toolset 1.0 SP13)
1.8	2015-11-24	Updated version for software provisioning manager 1.0 SP07 (SL Toolset 1.0 SP12)
1.7	2014-07-07	Updated version for software provisioning manager 1.0 SP06 (SL Toolset 1.0 SP11)
1.6	2014-03-17	Updated version for software provisioning manager 1.0 SP05 (SL Toolset 1.0 SP10)
1.5	2013-11-28	Updated version
1.4	2013-11-13	Updated version
1.3	2013-10-28	Updated version
1.2	2013-10-27	Updated version
1.1	2013-09-25	Updated version
1.0	2012-08-06	First version for software provisioning manager 1.0

2 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 SP38, which is part of SL Toolset 1.0 SP38. .

i Note

Effective immediately, the software provisioning manager no longer supports the deprecated Windows operating system versions [2998013](#) listed in SAP Note [2998013](#).

i Note

- If your current operating system is listed as deprecated in SAP Note [2998013](#), we strongly recommend that you migrate to a supported platform.
- If you continue to run Software Provisioning Manager on the deprecated Windows 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 SP39 and higher will still run on the deprecated Windows 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 Windows Server 2012 (R2) ends October 31th, 2023. See SAP note 2998013.”* If you run into an issue, you must use the “frozen” software provisioning manager **1.0 SP38** software and the related installation guide. For more information about software provisioning manager 1.0 SP38, see SAP Note [3346502](#).

This guide 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 \[page 11\]](#).

i Note

This document **only** applies if you are installing an additional application server instance on a Windows operating system 64 bit against IBM Db2 for i. Windows systems based on the Intel Itanium processor are not supported.

i 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.

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 \[page 12\]](#)

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

[Constraints \[page 13\]](#)

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 \[page 16\]](#)

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

2.1 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
• EHP4 for SAP CRM 7.0 ABAP	SAP NetWeaver 7.4 Support Release 2
• EHP8 for SAP ERP 6.0 ABAP	SAP NetWeaver 7.3 EHP1
• EHP8 for SAP ERP 6.0 ABAP including SAP S/4HANA Finance 1605 SP03	
• EHP4 for SAP SRM 7.0 ABAP	
• EHP4 for SAP SCM 7.0 ABAP	

SAP Product	Based on the following SAP NetWeaver Release
SAP Business Suite 7i 2013 Support Release 2:	SAP NetWeaver 7.5
- EHP3 for SAP CRM 7.0 ABAP Support Release 2 - EHP7 for SAP ERP 6.0 ABAP Support Release 2 - EHP7 for SAP ERP 6.0 ABAP including SAP Simple Finance 1.0 / 1503 - EHP3 for SAP SRM 7.0 ABAP Support Release 2 - EHP3 for SAP SCM 7.0 ABAP Support Release 2	SAP NetWeaver 7.4 Support Release 2 SAP NetWeaver 7.3 EHP1
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

2.2 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 \[page 58\]](#).
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.exe`
 - Names of command line parameters, for example `SAPINST_STACK_XML`
- “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 \[page 16\]](#).

- “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.
- **Operating System Names**
In this document, “Windows Server 2012 (R2)” – with (R2) written in parentheses – means that the information applies to **both** Windows Server 2012 and Windows Server 2012 R2 and higher.

2.3 Constraints

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

- 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**.
- 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](#) .

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

Document	Internet Address
Master Guide – SAP Enhancement Package 1 for SAP NetWeaver 7.3	http://help.sap.com/nw731
	►► Installation and Upgrade ►

2.5 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
1680045	Release Note for software provisioning manager 1.0	software provisioning manager 1.0 with installation and system copy for SAP NetWeaver-based systems
1710950	Inst. SAP Systems Based on SAP NetWeaver 7.1 and higher: Windows	Windows-specific information about the SAP system installation and corrections to this documentation
1732161	SAP Systems on Windows Server 2012 (R2)	Windows Server 2012 (R2)-specific information for the SAP system installation
2384179	Planned support of Windows Server 2016 for SAP products	Windows Server 2016-specific information for the SAP system installation
2751450	SAP Systems on Windows Server 2019	Windows Server 2019-specific information for the SAP system installation
3143497	SAP Systems on Windows Server 2022	Windows Server 2022-specific information for the SAP system installation
73606	Supported Languages and Code Pages	Information on possible languages and language combinations in SAP systems
1067221	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.

SAP Note Number	Title	Description
789220 	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
819722 	Support Package levels for SRM installations/upgrades	Information about the ABAP Support Package levels and kernel patch levels contained in the current SAP SRM release
774615 	Support Package levels of ERP/ECC installations/upgrades	Information about the ABAP Support Package levels and kernel patch levels contained in the current SAP ERP release
837413 	Support Package levels for CRM installations/upgrades	Information about the ABAP Support Package levels and kernel patch levels contained in the current SAP CRM release
850038 	Support Package levels for SCM/APO installations/upgrades	Information about the ABAP Support Package levels and kernel patch levels contained in the current SAP SCM release
1990240 	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.
886535 	Downloading multispanning archives	Downloading multispanning archives
1553465 	Installation requirements for SAP kernels on Windows (C++ runtime environment, VCredist versions)	Information about VCredist version

2.6 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 2393060  <i>SAPinst Framework 749 Central Note</i>) to 753. For more information, see SAP Note 3207613  <i>SAPinst Framework 753 Central Note</i> .	software provisioning manager 1.0 SP36 (SL Toolset 1.0 SP36)
Installation requirements for SAP kernels on Windows (C++ runtime environment, VCredist versions)	Manual subsequent installation of the VCredist files by customers may be required during the installation of SAP kernels that are based on specific versions. For more information, see Requirements for the SAP System Hosts [page 32] .	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 Basic Installation Parameters [page 37] .	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 https://blogs.sap.com/2018/11/10/new-look-for-software-provisioning-manager/  .	software provisioning manager 1.0 SP24, PL05 (SL Toolset 1.0 SP24)
New software provisioning manager Option Download Software Packages for Maintenance Planner Transaction	If you perform an installation using a Stack XML file, you can now download media according to a Maintenance Plan. For more information, see Installation Using a Stack XML File [page 28] , Downloading Software Packages for a Maintenance Planner Transaction [page 68] , and https://blogs.sap.com/2018/06/01/software-provisioning-manager-new-option-for-standalone-download-service/  .	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 SAP System Parameters [page 38] .	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 before a product has been selected on the Welcome screen. For more information, see Useful Information about Software Provisioning Manager [page 80] and Troubleshooting with Software Provisioning Manager [page 92] .	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 automatically by software provisioning manager during the Define Parameters phase while processing the Software Package Browser screens. As of now software provisioning manager only accepts archives whose digital signature has been checked. For more information, see Downloading SAP Kernel Archives (Archive-Based Installation) [page 65] .	software provisioning manager 1.0 SP22 (SL Toolset 1.0 SP22)

Feature	Description	Availability
LOADTOOLS . SAR archive in software provisioning manager enabled for NUC	The load tools in SWPM10SP<Support_Package_Number>_<Version_Number> . SAR are now also enabled for an installation using non-Unicode (NUC) SAP kernel version 7.40 or higher. For more information, see Downloading and Extracting the Software Provisioning Manager 1.0 Archive [page 62] i Note This feature enhances feature LOADTOOLS . SAR archive in Software Provisioning Manager of software provisioning manager 1.0 SP21 (SL Toolset 1.0 SP21) (see entry LOADTOOLS . SAR archive in software provisioning manager below in this table).	software provisioning manager 1.0 SP22 (SL Toolset 1.0 SP22)
Enabling IPv6	You can now set up a new SAP system or SAP system instance using Internet Protocol Version 6 (IPv6). For more information, see Prerequisites for Running Software Provisioning Manager [page 74].	software provisioning manager 1.0 SP22 (SL Toolset 1.0 SP22)
Media Signature Check	The digital signature of media is checked automatically by the software provisioning manager during the <i>Define Parameters</i> phase while processing the <i>Media Browser</i> screens. The software provisioning manager only accepts media whose digital signature has been checked. For more information, see Preparing the Installation Media [page 58] and Running the software provisioning manager [page 75].	software provisioning manager 1.0 SP21 (SL Toolset 1.0 SP21)
SAP Host Agent Upgrade During the Installation (Optional)	During the <i>Define Parameters</i> 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 SAP System Parameters [page 38].	software provisioning manager 1.0 SP21 (SL Toolset 1.0 SP21)
Simplified Additional Application Server Instance Installation	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 Preparing the Installation Media [page 58].	software provisioning manager 1.0 SP21 (SL Toolset 1.0 SP21)

Feature	Description	Availability
LOADTOOLS . SAR archive in software provisioning manager	An up-to-date version of the load tools - such as R3load, R3szchk, R3ldctl, SAPuTool - 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 2472835. For an installation using Unicode kernel version 7.40 or higher, the load tools from the SWPM10SP<Support_Package_Number>_<Version_Number> . SAR are used automatically. For more information, see Downloading and Extracting the Software Provisioning Manager 1.0 Archive [page 62]	software provisioning manager 1.0 SP21 (SL Toolset 1.0 SP21)
SL-UI with SAPINST 7.49	With the new software provisioning manager framework version SAPINST 7.49, you can now use the new SAPUI5-based graphical user interface (GUI) "SL-UI". For more information, see Useful Information about Software Provisioning Manager [page 80] , Running Software Provisioning Manager [page 75] .	software provisioning manager 1.0 SP20 (SL Toolset 1.0 SP20)
Verification of Integrity of Data Units in software provisioning manager	The integrity of data units extracted from the software provisioning manager archive is verified. For more information, see Downloading and Extracting the Software Provisioning Manager 1.0 Archive [page 62]. In addition, check SAP Note 1680045 whether additional information is available.	software provisioning manager 1.0 SP19 (SL Toolset 1.0 SP19)
Archive-Based Installation	You can now download the required installation archives instead of the complete SAP kernel installation media. For more information, see section <i>Downloading Specific Installation Archives (Archive-Based Installation)</i> in Preparing the Installation Media [page 58] .	software provisioning manager 1.0 SP17 (SL Toolset 1.0 SP17)
Diagnostics Agent	The Diagnostics Agent is no longer installed automatically with the SAP system. The <i>Install Diagnostics Agent</i> check box on the <i>Install Diagnostics Agent</i> screen is no longer available. 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). For more information, see the Diagnostics Agent Installation Strategy attached to SAP Note 1365123, to SAP Note 1833501, and to SAP Note 1858920 and the attached <i>Diagnostics Agent Setup Guide</i>.	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	All system provisioning tasks (installation, system copy, system rename) are available for the new SAP NetWeaver 7.5 release. The Dual Stack option, which integrates an AS ABAP and AS Java in a single system (common System ID <SAPSID>, common startup framework, common database), is no longer supported in SAP systems based on SAP NetWeaver 7.5. - After upgrading to SAP NetWeaver 7.5 PI, you first have to split the still existing dual stack-system before you can use SAP NetWeaver 7.5 PI productively. For more information, see the <i>Upgrade Master Guide - SAP NetWeaver 7.5</i> at: http://help.sap.com/nw75 ►► <i>Installation and Upgrade</i> ► - SAP NetWeaver 7.5 is Unicode only - The primary application server instance directory has been renamed from <code>/usr/sap/<SAPSID>/DVEBMGS<Instance_Number></code> to <code>/usr/sap/<SAPSID>/D<Instance_Number></code>. For more information, see SAP Directories [page 125]. - Declustering and depooling of tables during the installation is enabled by default. For more information, see SAP Note 1892354 .	software provisioning manager 1.0 SP09 (SL Toolset 1.0 SP15)
System Provisioning for SAP Solution Manager 7.2	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.	software provisioning manager 1.0 SP09 (SL Toolset 1.0 SP15)
Windows Domain Organizational Units	You can now specify an optional organizational unit (OU) within the Windows domain where you want software provisioning manager to create the SAP system accounts. For more information, see SAP System Parameters [page 38].	software provisioning manager 1.0 SP09 (SL Toolset 1.0 SP14)

Feature	Description	Availability
Creating Kernel Archives from existing SAP System	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. Note This feature is only available for Unicode systems. Caution 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 Welcome 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.	software provisioning manager 1.0 SP09 (SL Toolset 1.0 SP14)
Installation Using a Stack XML File	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. For more information, see Installation Using a Stack XML File [page 28].	software provisioning manager 1.0 SP07 (SL Toolset 1.0 SP12)
Adaptive Installation	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. For more information, see SAP System Parameters [page 38].	software provisioning manager 1.0 SP07 (SL Toolset 1.0 SP12)
Feedback Evaluation Form	SAP SE’s aim is to provide fast and efficient procedures. To evaluate the procedure you just carried out, we need information generated by the tool during process execution and your experience with the tool itself. A new evaluation form contains a simple questionnaire and XML data generated during the procedure. Port 4239 is used for displaying the feedback evaluation form. For more information, see Prerequisites for Running Software Provisioning Manager [page 74].	software provisioning manager 1.0 SP07 (SL Toolset 1.0 SP12)

Feature	Description	Availability
Option Verify Signed Media	The digital signature ensures that the signatory of a digital document can be identified unambiguously and signatory's name is documented together with the signed document, the date, and the time. For more information, see SAP Note 1979965 .	software provisioning manager 1.0 SP06 (SL Toolset 1.0 SP11)

3 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 \[page 28\]](#).

[Standard System \[page 23\]](#)

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

[Additional Application Server Instance \[page 25\]](#)

3.1 Standard System

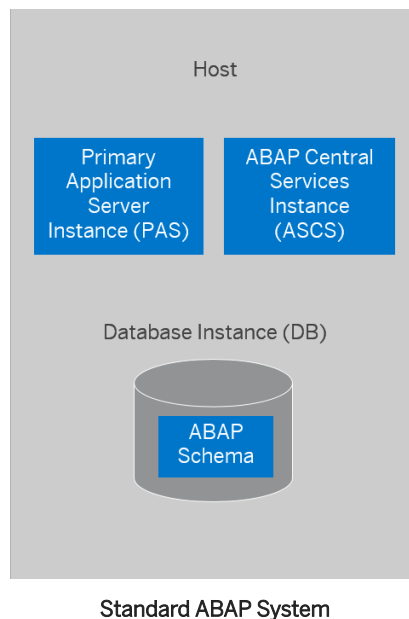
You can install a **standard** system on a **single** host.

i Note

A standard system for In a standard system, all main instances run on a single host. IBM Db2 for i is only installed on IBM i.

There are the following instances:

- ABAP Central services instance (ASCS instance)
Contains the ABAP message server and the Standalone Enqueue Server
In a standard
- Database instance (DB)
- Primary application server instance (PAS instance)



3.2 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.

i Note

A **distributed** system for IBM Db2 for i is only installed on IBM i.

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

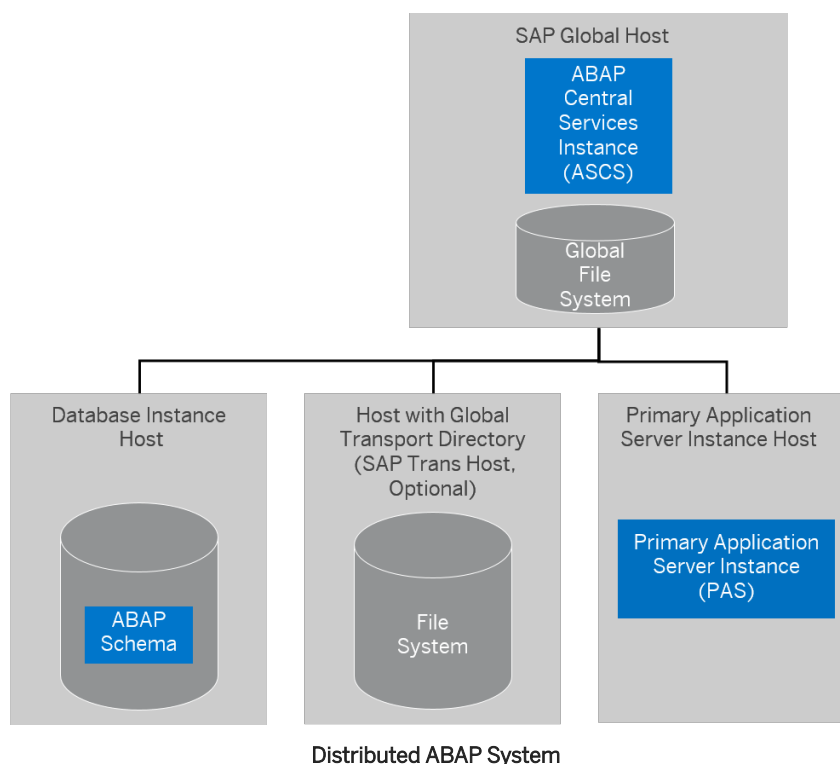
A distributed system consists of the following instances:

- ABAP Central services instance (ASCS instance)
Contains the ABAP message server and the Standalone Enqueue Server
- Database instance (DB)
The ABAP stack uses its own database schema in the database.
- Primary application server instance (PAS)

The following figure assumes the following:

- The ASCS and primary application server instance run on the SAP global host.
- You can also install the primary application server instance on a separate host.
- The global transport directory resides on a separate SAP transport host.

Optionally, you can install one or more additional application server instances. For more information, see [Installation of an Additional Application Server Instance \[page 25\]](#).



3.3 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
- On a dedicated host

i Note

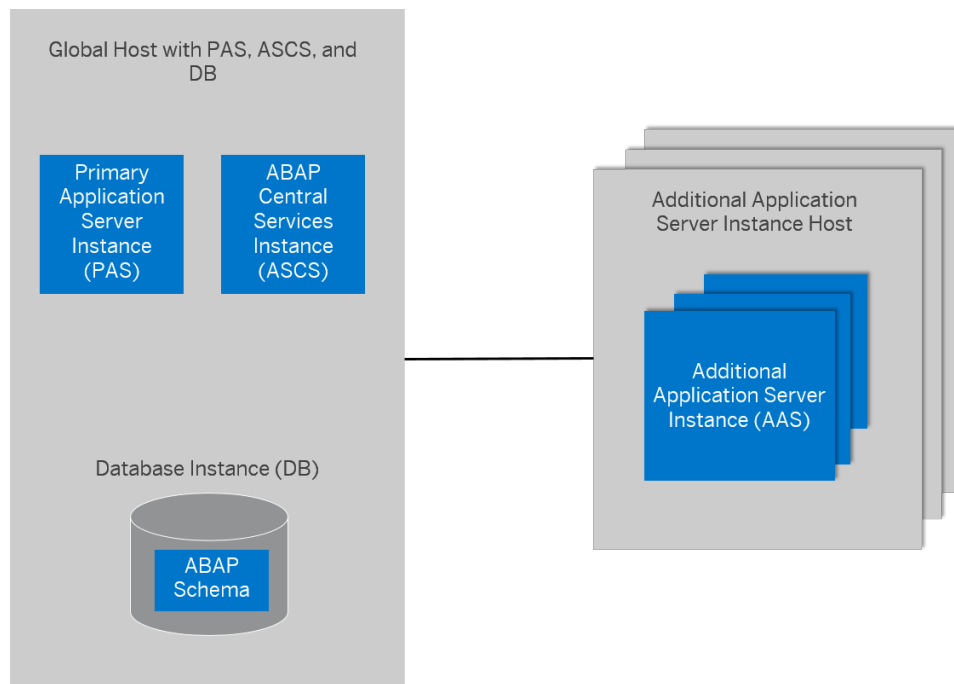
We do not recommend installing additional application server instances on the SAP global host.

i Note

If you want to install an additional application server instance on an existing SAP system, you must perform a domain installation. You must also make sure that your existing SAP system was installed as a domain installation. For more information, see [Domain or Local Installation \[page 36\]](#).

Additional Application Server Instance for a Standard System

The following figure shows additional application server instances that are running on dedicated hosts.

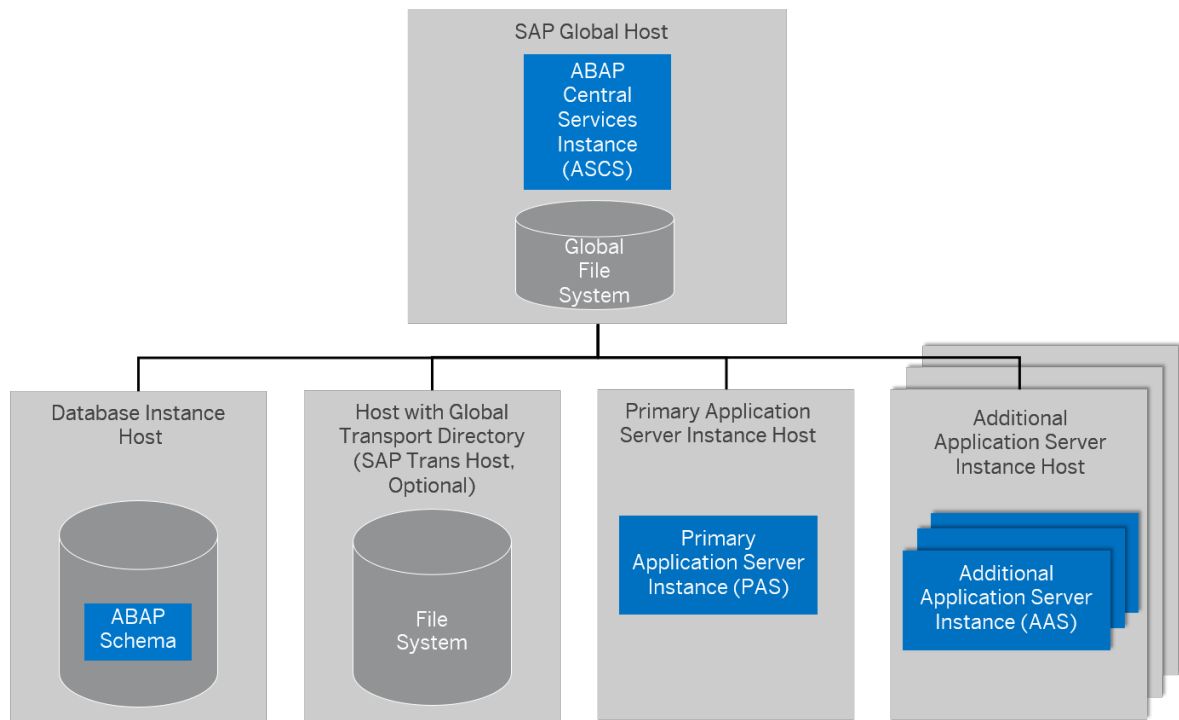


Additional Application Server Instance for a Standard ABAP System

For more information, see the section [Standard System](#) in the IBM i installation guide.

Additional Application Server Instance for a Distributed System

The following figure shows additional application server instances that are running on dedicated hosts.



Additional Application Server Instance for a Distributed ABAP System

4 Planning

4.1 Planning Checklist

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

- 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 \[page 23\]](#)).

Additional Application Server Instance

1. You check the [hardware and software requirements \[page 30\]](#) 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 \[page 37\]](#).
3. Continue with [Preparation \[page 50\]](#).

4.2 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](#).

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/>.

i 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 \[page 82\]](#).

- 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 \[page 68\]](#).

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.

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 \[page 28\]](#)
- [Downloading Software Packages for a Maintenance Planner Transaction \[page 68\]](#)
- [Running Software Provisioning Manager \[page 75\]](#)
- [Configuring the Change and Transport System \[page 103\]](#)
- [Applying the Latest Kernel and Support Package Stacks \[page 107\]](#)
- [Installing Additional Languages and Performing Language Transport \[page 111\]](#)

4.3 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. If you have any questions, contact the person in charge of the installation, your Competence Center, or your local IBM representative.

Prerequisites

- Make sure that the host name meets the requirements listed in SAP Note [611361](#) .
- Contact your OS vendor for the latest OS patches.

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 \[page 31\]](#).
 - Integrated in the installation tool (mandatory) as part of the installation process
For more information, see [Running Software Provisioning Manager \[page 75\]](#).
 - The hardware and software requirements tables in [Requirements for the SAP System Hosts \[page 32\]](#)
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

4.3.1 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 \[page 62\]](#).
2. Make either the separate SAPEXE<Version>.SAR archive or the complete kernel medium available as described in [Preparing the Installation Media \[page 58\]](#).
3. Start the software provisioning manager as described in [Running Software Provisioning Manager \[page 75\]](#).
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.

i Note

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

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 \[page 62\]](#)
[Preparing the Installation Media \[page 58\]](#)

4.3.2 Requirements for the SAP System Hosts

This section provides information about the hardware and software requirements for the:

Additional application server instance

Hardware and Software Requirements

The following tables show the hardware and software requirements. Most of the requirements are valid for every installation host whereas some requirements are instance-specific and are marked accordingly.

Note

- The listed values are sufficient for **development systems** or **quality assurance systems** but **not** for **production systems**.
- If you install several SAP instances on one host, you need to add up the requirements.
- For up-to-date information on the released and supported operating system versions for your SAP product and database, see the *Product Availability Matrix (PAM)* at: <http://support.sap.com/pam>.

Hardware Requirements

Hardware Requirement	Requirement	How to Check
Minimum disk space	• Additional application server instance (not including paging file): 2.5 GB (x64) • Temporary disk space for every required installation medium that you have to copy to a local hard disk: Up to 6 GB	To check disk space: 1. Open PowerShell in elevated mode, and enter the following command: get-volume 2. Check the value <i>SizeRemaining</i> of the disk you want to install on.
Minimum RAM	• All instances, except SAP Host Agent: 4 GB If you install the ASCS instance with an embedded SAP Web Dispatcher, see SAP Note 2007212 for memory consumption in productive use. • SAP Host Agent: 0.5 GB	To check RAM: Open PowerShell in elevated mode, and enter the following command: Get-WmiObject Win32_ComputerSystem
Paging file size	For more information, see SAP Note 1518419 .	To check paging file size: For more information, see Checking and Changing the Paging File Settings on Windows Server 2012 (R2) [page 130]

Hardware Requirement	Requirement	How to Check
Processing units	For application server instances: The number of physical or virtual processing units usable by the operating system image must be equal to or greater than 2. Examples of processing units are processor cores or hardware threads (multithreading). In a virtualized environment, ensure that adequate processor resources are available to support the workloads of the running SAP systems.	
Suitable backup system		
Software Requirements		
Software Requirement	Requirement	How to Check
Windows operating system	• 64-bit version of one of the following Windows Server Editions: • Windows Server Standard Edition • Windows Server Datacenter Edition ⚠ Caution For up-to-date information on the released and supported operating system versions for your SAP product and database, see the Product Availability Matrix (PAM) at http://support.sap.com/pam. ⚠ Caution Make sure that you install the English language pack so that your support requests can be handled quickly. • For any version of Windows Server, you need the latest supported service pack	To check your Windows version: Open PowerShell in elevated mode, and enter the following command: <pre>Get-WmiObject Win32_OperatingSystem select caption</pre>

Software Requirement	Requirement	How to Check
Important information about the delivery of Microsoft Visual C++ redistributables (VCredist) versions with software provisioning manager 1.0	The software provisioning manager 1.0 no longer delivers any VCredist versions that are no longer in maintenance by the manufacturer Microsoft. SAP cannot therefore assume maintenance responsibility for these 3rd party components. At the time of delivery, this affects VCredist 2005 and 2010. As a result, a manual subsequent installation of the VCredist files by the customer may be required during the installation of SAP kernels that are based on these specified versions. For more information, see SAP Note 1553465 - <i>Installation requirements for SAP kernels on Windows (C++ runtime environment, VCredist versions)</i>	–
Windows regional settings	<i>English (United States)</i> must be set by default. For more information about localized Windows versions, see SAP Note 362379. You can install additional languages but the default setting for new users must always be <i>English (United States)</i>.	Choose ► <i>Start</i> ► <i>Control Panel</i> ► <i>Clock, Language, and Region</i> ► <i>Language</i> ►
Minimum Web Browser	Make sure that you have at least one of the following web browsers installed on the host where you run the software provisioning manager GUI: • Microsoft Internet Explorer 11 or higher • Microsoft Edge • Mozilla Firefox • Google Chrome Always use the latest version of these web browsers. You need a web browser to be able to run the SL-UI, and to display the Evaluation Form and send it to SAP.	Choose ► <i>Start</i> ► <i>Control Panel</i> ► <i>Programs and Features</i> ►

4.4 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 \[page 73\]](#).

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)
• 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	► <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> ►

4.5 Domain or Local Installation

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

For more information about the differences between a local and domain installation, go to ► [Start](#) ► [Help and Support](#) ► and search for *What is the difference between a domain and a workgroup?*.

i Note

For IBM i, you typically use the local installation.

Domain Installation

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

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

- You install a distributed system.
- You use a common transport host for several SAP systems running on different computers.

Local Installation

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

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

i Note

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

<https://support.sap.com/sltoolset> ► [System Provisioning](#) ►

More Information

[Required User Authorization for Running Software Provisioning Manager \[page 53\]](#)

4.6 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.

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 \[page 38\]](#)

4.6.1 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	Every new installation of an SAP system is Unicode. SAP systems based on SAP NetWeaver 7.5 or higher are Unicode only. 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.

Parameter	Description
SAP System ID <SAPSID>	The SAP system ID (<SAPSID>) identifies the entire SAP system. The software provisioning manager prompts you for the <SAPSID> when you execute the first installation option to install a new SAP system. If there are further installation options to be executed, the software provisioning manager prompts you for the profile directory. For more information, see the description of the parameter <i>SAP System Profile Directory</i>.  Caution Choose your SAP system ID carefully since renaming requires considerable effort. Make sure that your SAP system ID: • Is unique throughout your organization. Do not use an existing <SAPSID> when installing a new SAP system. • Consists of exactly three alphanumeric characters • Contains only uppercase letters • Has a letter for the first character • Does not include any of the reserved IDs listed in SAP Note 1979280. • 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.
SAP System Instance Numbers	Technical identifier for internal processes. It consists of a two-digit number from 00 to 97. 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. 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. To find out the instance numbers of SAP systems that already exist on the installation host, look for subdirectories ending with <Instance Number> of local \usr\sap\<SAPSID> directories. For more information, see SAP Directories [page 125].  Caution Do not use 89 for the instance number because it is used by Windows Terminal Server:

Parameter	Description
Virtual Host Name	Virtual host name (network name) of the SAP<SAPSID> cluster group You can assign a virtual host name to an SAP instance in one of the following ways: - You can assign a virtual host name for the instance to be installed, by specifying it in the <Instance Name> Host Name field of the <Instance Name> Instance screen. Then this instance is installed with this virtual host name. - 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 Running Software Provisioning Manager [page 75]. 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 (= Windows host name) of the host where you run the software provisioning manager. 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 Using Virtual Host Names [page 54]. i Note Fully qualified host names, IPv4, IPv6 are not accepted as virtual host names.
SAP Process Integration (PI) 7.5, SAP Solution Manager 7.2: Application Server Gateway Communication Setup	Java system on a host If you want to install the primary application server instance of the different 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 Define Parameters phase of the primary application server instance installation of the ABAP system. This is to set up the connection between the ABAP and the Java system.
SAP System Profile Directory	\\<SAPGLOBALHOST>\sapmnt\<SAPSID>\SYS\profile The software provisioning manager retrieves parameters from the SAP system profile directory of an existing SAP system. SAP profiles are operating system files that contain instance configuration information. 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>.

Parameter	Description
Destination drive	Base directory for the SAP system.

i Note

If you install a subsequent SAP system, the `sap\loc` share already exists and you cannot select the installation drive. The software provisioning manager uses the installation drive where the `sap\loc` share points to.

Parameter	Description
Master Password	Common password for all users that are created during the installation: - Operating system users (for example <sapsid>adm, SAPService<sapsid>) ⚠ Caution 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. - ABAP users: SAP*, DDIC, and EARLYWATCH. - Secure Store key phrase SAP systems based on SAP NetWeaver 7.4 and Higher: 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. i Note If a user already exists, you are prompted to confirm the password for this user. Basic Password policy The master password must meet the following requirements: - It can be 8 to 30 characters long - It must contain at least one letter (a-z, A-Z) - It must contain at least one digit (0-9) - It must not contain \ (backslash) or " (double quote). Additional restrictions depending on Windows: - If a user already exists, you are prompted to confirm the password for this user. - Depending on the configuration of the password policy, additional restrictions might apply. Depending on the installation option, additional restrictions may apply. i Note If your current Windows version has more restrictions than your IBM i OS version, you must choose a password for the user <sapsid>adm that fits on both OS versions. Change the password for the <SAPSID>ADM on IBM i first before you continue the installation on Windows. → 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. For more information, see Ensuring User Security [page 114].

Parameter	Description
Message Server Access Control List	You can specify if you want to have a message server Access Control List (ACL) created. The ACL is created as a file in the <code>/<sapmnt>/<SAPSID>/global</code> directory. If it exists, it defines the hosts from which the message server accepts requests. ⚠ Caution 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. For more information, see the information about <code>ms/ACL_info</code> in SAP Notes 1495075 and 826779.
SAP systems based on SAP NetWeaver 7.4 and Higher only: Individual Encryption Key for the Secure Storage	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. - 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: http://help.sap.com/nw74 http://help.sap.com/nw75 https://help.sap.com/nw751abap https://help.sap.com/nw752abap ▶ Application Help ▶ Function-Oriented View ▶ Security ▶ System Security ▶ System Security for SAP NetWeaver AS ABAP Only ▶ Secure Storage in the File System (AS ABAP) ▶ - 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: http://help.sap.com/nw74 http://help.sap.com/nw75 https://help.sap.com/nw751abap https://help.sap.com/nw752abap ▶ Application Help ▶ Function-Oriented View ▶ Security ▶ System Security ▶ System Security for SAP NetWeaver AS ABAP Only ▶ Secure Storage (ABAP) ▶ Key Management ▶ Using Individual Encryption Keys ▶ Generating Encryption Keys ▶

Parameter	Description
DNS Domain Name for SAP System	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. 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: <code><Host_Name>.<Domain_Name></code> 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.

❖ Example

If your application server host is called `kirk.wdf.sap.com`, the DNS Domain Name is `wdf.sap.com`.

SAP Host Agent Upgrade (Optional)	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<Version>.SAR</code> archive. For more information, see Downloading SAP Kernel Archives (Archive-Based Installation) [page 65]
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Ports

Parameter	Description
ABAP Message Server Port	⚠ Caution 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. If you do not specify a value, the default port number is used. ABAP Message Server Port There is an external messagev server port and an internal message server port. 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. The external message server port uses the parameter <code>rdisp/msserv</code> with default value <code>36<ABAP_Message_Server_Instance_Number></code>. The internal message server port uses the parameter <code>rdisp/msserv_internal</code> with default value <code>39<ABAP_Message_Server_Instance_Number></code>. 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 (<code>system/secure_communication = ON</code>) if the kernel supports secure connections to the message server. For more information, see SAP Note 2040644.

Parameter	Definition
Password of Operating System Users	The passwords of the operating system users must comply with the Windows password policy. The software provisioning manager processes the passwords of operating system users as follows: - If the operating system users do not exist, SAP creates the following users: <sapsid>adm This user is the SAP system administrator user. It is a member of the local Administrators group. SAPService<SAPSID> This user is the Windows account to run the SAP system. It is not a member of the local Administrators group. i Note For IBM i, this user is called SAPSE<SAPSID>. sapadm The SAP Host Agent user sapadm is used for central monitoring services. The software provisioning manager creates this user by default as a local user although it is not a member of the local Administrators group. If required, you can change this user to become a domain user on the Parameter Summary screen. For more information, see Performing a Domain Installation Without Being a Domain Administrator [page 128]. For security reasons, however, SAP strongly recommends you to create this user as a local user. 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. - If the operating system users already exist, the software provisioning manager prompts you for the existing password, except the password of these users is the same as the master password. ⚠ Caution Make sure that you have the required user authorization [page 53] for these accounts before you start the installation.

Parameter	Definition
Windows Domain Organizational Units	You can choose the organizational units (OUs) within the Windows domain where you want to create the SAP system accounts. By default, the software provisioning manager creates the domain users <code>SAPService<SAPSID></code>, <code><SAPSID>adm</code>, and the domain group <code>SAP_<SAPSID>_Globaladmin</code> in the domain Users container. Here you can specify an optional organizational unit where the software provisioning manager creates these domain users and group. The user who performs the installation needs read and write permissions to this organizational unit. The OU feature is only available when you select <i>Custom mode</i> in SWPM and choose <i>Use Domain of current user</i>. For more information, see SAP Note 2247673.
Operating System Users	The software provisioning manager creates the <code><sapsid>adm</code> and <code>SAPSE<SAPSID></code> user in the domain specified. Make sure that you have domain administrator rights before you start the installation. If not, you have to create these users manually before starting the installation. For more information, see Required User Authorization for Running Software Provisioning Manager [page 53].

User Management Engine Parameters

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

i 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
Java Guest User i 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.	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 Authenticated Users. The software provisioning manager creates this user in the ABAP system. After the installation, it is available both in the ABAP and in the Java system. The software provisioning manager sets the user name J2EE_GUEST and the master password by default. If required, you can choose another user name and password according to your requirements. For more information about supported UME data sources and change options, see SAP Note 718383.
Communication User i 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.	The software provisioning manager creates this user in the ABAP system. After the installation, it is available both in the ABAP and in the Java system This user is used for the communication between the ABAP system and the Java system. The software provisioning manager sets the user name SAPJSF and the master password by default. If required, you can choose another user name and password according to your requirements. For more information about supported UME data sources and change options, see SAP Note 718383.

Parameter	Definition
SLD Destination for the System	The System Landscape Directory (SLD) registers the systems and the installed software of your entire system landscape. You can choose between the following options: • Register in existing SLD 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. • No SLD destination Choose this option if you do not 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. For more information, see Performing Post-Installation Steps for the ABAP Application Server [page 108]
SLD Host	The host name of the existing SLD.
SLD HTTP(S) Port	HTTP port of the SAP system based on AS Java on which the System Landscape Directory (SLD) resides. The following naming convention applies: <code>5<Primary_Application_Server_Instance_Number>00</code>. ❖ Example 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.
SLD Data Supplier User and password	The existing SLD Data Supplier user and password of the existing SLD

4.7 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 \[page 57\]](#).

More Information

- [SAP Directories \[page 125\]](#)
- See the SAP Library at:

Release	SAP Library Path
• 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	► <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>

5 Preparation

5.1 Preparation Checklist

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

- Additional application server instance

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

Additional Application Server Instance

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

1. [Disable the Windows Server firewall \[page 50\]](#) operating system users and groups on each host.
2. You [perform basic preparations on Windows \[page 51\]](#).
3. You [check that you have the required user authorization for running the software provisioning manager \[page 53\]](#).
4. You [prepare IBM i for Windows File System Access \[page 55\]](#).
5. You [configure Windows Transport Systems \[page 55\]](#).
6. If required, you [prepare the SAP system transport host \[page 57\]](#).
7. You [install the SAP front-end software \[page 58\]](#) on the desktop of the user.
8. You check that the required [installation media \[page 58\]](#) are available on each installation host.
9. You continue with [Installation \[page 73\]](#).

5.2 Disabling the Windows Server Firewall on Windows Server

The Windows firewall – which is turned on by default on all Windows versions – is configured to allow only a small set of Windows-specific inbound IP connections. By default, outbound connections are not limited to rules and are therefore not restricted by the firewall.

The firewall settings apply to local policies. For domain policies that override local policies, other rules might apply.

To avoid any problems with non-configured TCP/IP ports that are used by the SAP system, you need to disable the firewall on all Windows hosts before you install the SAP system with the software provisioning manager. We recommend that you secure network access to the SAP application servers with a real physical firewall or use a router Access Control List (ACL).

Procedure

Windows Server 2012 (R2) and higher:

Open PowerShell in elevated mode, and enter the following command:

```
Set-NetFirewallProfile -enabled false
```

5.3 Performing Basic Windows Preparation Steps

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

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

Procedure

Checking the Windows File System

You need to check which Windows file system you are using on hosts where you want to install the SAP system.

You should use the Windows file system ReFs or NTFS. Older Windows Server versions must use NTFS.

i Note

Do **not** install the SAP system on a FAT partition.

Perform the check as follows:

- Use PowerShell:
 1. Open PowerShell in elevated mode, and enter the following command:
get -volume
 2. Check that the value *FileSystem* is ReFs or NTFS.
- Use Windows Explorer:
 1. Open the Windows Explorer.
 2. Select the relevant disk.
 3. Choose ► *Properties* ► *General* .
The system displays the type of file system in use.
 4. Check that the file system is NTFS.

Checking the Windows Domain Structure

Note

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

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

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

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

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

Caution

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

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

Note

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

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

Depending on a customer's AD landscape and security policy, there are certain restrictions on where to store users and groups in AD. Contact the administrator of your AD infrastructure to understand where to store all SAP and database-related domain users and domain groups.

The software provisioning manager offers to define an existing OU in AD to create all needed SAP and database users in this OU.

There are many different scenarios and prerequisites concerning how to use OUs. For more information, see SAP Note [2247673](#), which explains these issues in detail and shows some examples of how to use them.

Caution

The software provisioning manager does **not** create OUs. The software provisioning manager does **not** move existing domain users or groups. The software provisioning manager does **not** delete existing users, groups, OUs, nor any other object in a Windows domain.

The only exception to this rule is the Uninstall option in software provisioning manager.

5.4 Required User Authorization for Running Software Provisioning Manager

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

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

Procedure

⚠ Caution

Do **not** use the user <sapsid>adm or the built-in administrator account for the installation of the SAP system.

i Note

The installation user on your Windows server has to have the same name and password as on your IBM i host. If this is not the case you will not have access to your SAP system on your IBM i host. For example, the software provisioning manager will not be able to read the needed information of the profiles.

Domain Installation

For a domain installation the account used for the installation needs to be a member of the local Administrators group. In many old installation guides, you find the information that the account must be a member of the Domain Admins group. The account can be either a member of the Domain Admins group or belong to the Domain Users group and have the necessary rights to create/modify objects in the domain.

For a list of the required permissions, see [Performing a Domain Installation without being a Domain Administrator \[page 128\]](#).

All machines in the system must belong to the same domain. In a domain installation, the user information is stored centrally on the domain controller and is accessible to all hosts in the system.

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

⚠ Caution

- If you install a distributed system as a local installation, this can lead to authorization problems for the operating system users <sapsid>adm and SAPSE<SAPSID>. It can also lead to problems with the transport directory, which is usually shared by several SAP systems. SAP does **not** support distributed SAP systems running with local user accounts.
- For performance and security reasons, SAP does not support an SAP system installation on a domain controller.

Local Installation

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

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

Caution

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

For a local installation, you need to:

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

Related Information

[Performing a Domain Installation Without Being a Domain Administrator \[page 128\]](#)

5.5 Using Virtual Host Names

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

Prerequisites

- Make sure that the virtual host name can be correctly resolved in your Domain Name System (DNS) setup.
- Make sure that you configured the Windows operating system properly to use virtual host names. For more information, see SAP Note [1564275](#) .

Context

Procedure

1. 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 \[page 75\]](#).
 - 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 \[page 38\]](#) and SAP Note [962955](#).

2. To install a **non-high-availability** system, proceed as described in SAP Note [1564275](#).

5.6 Preparing IBM i for Windows File System Access

Use

You use this procedure to start the NetServer on IBM i. Windows uses NetServer to access IFS files on the IBM i where the primary application server instance is running.

Procedure

The NetServer must be started automatically by adding one of the following commands to the startup program specified in the `QSTRUPPGM` system value (`WRKSYSVAL QSTRUPPGM`). To do so, proceed as follows:

1. Log on to IBM i as a user that has authorization `*IUSYSCFG`, for example user `QSECOFR`.
2. Add one of the following commands:
 - **STRTCPSVR SERVER(*NETSRV)** or
 - **STRTCPSVR SERVER(*ALL)**

For more information about how to setup the startup program for SAP, see SAP Note [1703667](#).

5.7 Configuring Windows Transport Systems

Use

Some command line functions of the transport program `tp.exe` do not work, for example shadow buffers. You have to correct the transport profile.

When using `tp.exe` from the command prompt, you have to modify the transport configuration profile to indicate the transport directory in NETBIOS naming convention.

Prerequisites

You have configured the domain controller in the Transport Management System (TMS). For more information, see the section [Configuring the Transport Management System](#) in the installation guide.

Procedure

Modify the `TP_DOMAIN_<SID>.PFL` file on the IBM i in the `/sapmnt/trans/bin` directory.

Access from Windows

`\\<SAPTRANSHOST>\saptext\trans\bin\` and then `sappad.exe`

`Sappad.exe` can be found in the SAP executable directory.

Access from the SAP System

1. Call transaction STMS.
The [Transport Management System](#) screen appears.
2. Choose [System overview](#).
The [System Overview: Domain <DomainName>](#) screen appears.
3. Double-click the system in which you want to perform the changes.
The [Display TMS Configuration: System <SID>](#) screen appears.
4. Choose [Transporttool](#) and then [Display](#) ↔ [Change](#).
5. Add a line with the following information:
 - Parameter: **wnt|transdir**
 - Value: **\\<SAPTRANSHOST>\sapmnt\trans**
6. To save your changes, choose [Continue](#).
To test your settings, execute:
C:> tp showbuffer AM2
pf=\\as0039\saptext\trans\bin\TP_DOMAIN_AM2.PFL

5.8 Preparing the SAP System Transport Host

The transport host has a directory structure that is used by the SAP transport system to store transport data and metadata.

Context

When you install an SAP system, the software provisioning manager by default creates the transport directory on the global host in `\usr\sap\trans`.

If you do not intend to use the directory structure of the system you are going to install, but want to use another new transport directory on another host, or an existing transport directory in your system landscape, you need to prepare that transport host:

- If the directory structure already exists, you must set up its security to allow the new system to write to it.
- If it does not yet exist, you must create the core directory structure and a share to export it for other computers as well as set the security on it.

The transport directory `\usr\sap\trans` is used by the Change and Transport System (CTS). The CTS helps you to organize development projects in the ABAP Workbench and in Customizing, and then transport the changes between the SAP systems in your system landscape. For more information, see the SAP Library at:

SAP Release and SAP Library Quick Link	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 http://help.sap.com/nw751abap • SAP NetWeaver AS for ABAP 7.52 http://help.sap.com/nw752abap	► <i>Application Help</i> ► <i>SAP NetWeaver Library: 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>

Procedure

1. If the transport directory does not yet exist, do the following:
 - a. Create the directory `\usr\sap\trans` on the host to be used as the transport host.
 - b. Share the `usr\sap` directory on the transport host as `SAPMNT` and set the permission for *Everyone* to *Full Control* for this share.

This enables the software provisioning manager to address the transport directory in the standard way as \\SAPTRANSHOST\SAPMNT\trans.

2. Grant *Everyone* the permission *Full Control* for the transport directory.

⚠ Caution

Remove the *Full Control to Everyone* permission after you have finished the installation and only grant *Full Control* on this directory to the SAP_<SAPSID>_GlobalAdmin groups of all the systems that are part of your transport infrastructure. The software provisioning manager assigns the appropriate rights with the help of an additional SAP_LocalAdmin group. For more information, see [Automatic Creation of Accounts and Groups \[page 137\]](#).

5.9 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>

5.10 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 \[page 62\]](#).
- 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 \(Archive-Based Installation\) \[page 65\]](#).

If you are performing an [Installation Using a Stack XML File \[page 28\]](#), 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 \[page 59\]](#).
- Download the complete kernel media from the SAP Software Download Center.
For more information, see [Downloading Complete Installation Media \[page 70\]](#).

- 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 \[page 59\]](#).

[Media Required for the Installation - Listed by SAP System Instance \[page 59\]](#)

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

5.10.1 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 \[page 75\]](#)). 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 \[page 23\]](#) as listed below.

SAP Instance

Installation Required Software Packages from Installation Media

- | Installation | Required Software Packages from Installation Media |
|--|--|
| Additional application server instance | <ul style="list-style-type: none">• Software Provisioning Manager 1.0 archive• UC or NUC Kernel (folder K_<Version>_<N or U>_<OS>) where U means Unicode and N means non-Unicode. |

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

SAP Host Agent (Separate Installation Only)

SAP Instance Installation	Required Media
SAP Host Agent (separate installation only)	• Software provisioning manager 1.0 archive • UC Kernel (folder K_<Version>_U_<OS>) where U means Unicode.

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 \[page 62\]](#).
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 \(Archive-Based Installation\) \[page 65\]](#).

i Note

If you are using a Stack XML file (see [Installation Using a Stack XML File \[page 28\]](#)), 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://launchpad.support.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 \[page 68\]](#).

- 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.
- If you perform a domain installation and do not want to copy the media but use network drives for mapping the installation media, make sure that the `<sapsid>adm` user has access to the UNC paths of the network drives.
If the user does not yet exist, you have to create the user manually before you install the SAP system.

- Download the kernel medium from the Software Download Center.
For more information, see [Downloading Complete Installation Media \[page 70\]](#).

i 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://launchpad.support.sap.com/#/softwarecenter> following the instructions in [Downloading SAP Kernel Archives \(Archive-Based Installation\) \[page 65\]](#).

Note

If you perform an additional application server installation, kernel archives - such as SAPEXE<Version>.SAR, SAPEXEDB<Version>.SAR, IGSEXE<Version>.SAR, igshe1per<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.

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.
- If you perform a domain installation and do not want to copy the media but use network drives for mapping the installation media, make sure that the <sapsid>adm user has access to the UNC paths of the network drives.
If the user does not yet exist, you have to create the user manually before you install the SAP system.

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/migrationkey>.

Related Information

[Downloading and Extracting the Software Provisioning Manager 1.0 Archive \[page 62\]](#)

[Downloading SAP Kernel Archives \(Archive-Based Installation\) \[page 65\]](#)

[Downloading Software Packages for a Maintenance Planner Transaction \[page 68\]](#)

[Downloading Complete Installation Media \[page 70\]](#)

5.10.1.1 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 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://launchpad.support.sap.com/#/softwarecenter>  **SUPPORT PACKAGES & PATCHES**  **By Category**  **SAP TECHNOLOGY COMPONENTS**  **SAPCAR** .
2. Select the SAPCAR for your operating system and download it to an empty directory.
3. Even if you have the latest SAPCAR already available, we strongly recommend that you verify its digital signature anyway, unless you downloaded it directly from <https://launchpad.support.sap.com/#/softwarecenter>  yourself. You can do this by verifying the checksum of the downloaded SAPCAR tool:
 1. Depending on what operating system you are using, compute a hash of the downloaded SAPCAR tool, using the SHA-256 algorithm used by SAP.
 2. Now verify the digital signature of the downloaded SAPCAR tool by comparing the hash with the checksum (generated by SAP using the SHA-256 algorithm) from the [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, SAPuptool - 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 (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://launchpad.support.sap.com/#/softwarecenter> SUPPORT PACKAGES & PATCHES and search for "sapcryptolib".
 2. Select the archive file for your operating system and download it to the same directory where you have put the SAPCAR executable.
 3. Use the following command to extract the SAPCRYPTOLIB archive to the same directory where you have put the SAPCAR executable:
SAPCAR -xvf sapcryptolib_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.exe -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.exe -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.

5.10.1.2 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 \[page 68\]](#).

Context

The digital signature of **installation archives** is checked **automatically** by the [software provisioning manager \[page 75\]](#) 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 \[page 62\]](#).
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.

- To get all downloadable software component archives required for your SAP product, go to <https://launchpad.support.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**

- Choose the required software component, release, and technical stack:
 - 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>**
- 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, igshe1per<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.

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 ►

i 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> ►

i Note

SAP KERNEL <Version> <NUC> is only available for SAP systems based on SAP NetWeaver 7.4 or lower.

- igsex<Version>.sar

► SAP IGS <Version> ► <Operating System> ►

- You require the igshe<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.

i 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://launchpad.support.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 \[page 59\]](#) or by downloading them as described in [Downloading Complete Installation Media \[page 70\]](#).

Related Information

[Downloading Software Packages for a Maintenance Planner Transaction \[page 68\]](#)

5.10.1.3 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.

i 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 \[page 75\]](#).
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.

i 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://launchpad.support.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 day

If 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://launchpad.support.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 \(Archive-Based Installation\) \[page 65\]](#) - 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 \[page 70\]](#).

5.10.1.4 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 \[page 62\]](#).
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 \[page 59\]](#).
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://launchpad.support.sap.com/#/softwarecenter/>   **SUPPORT PACKAGES & PATCHES**  **By Category**  **ADDITIONAL COMPONENTS**  **SAP KERNEL**  **SAP KERNEL 64-BIT UNICODE**  **SAP KERNEL <version> 64-BIT UNICODE**  **<Select your OS>** .
 - Select  **#DATABASE INDEPENDENT**  to download the database-independent parts of the kernel.

Example

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) (*)
```

i Note

You can only download complete kernel media for kernel release 7.22, which can only be used for provisioning of SAP products based on SAP NetWeaver 7.3 EHP1. For all remaining SAP products, you have to download kernel media from <https://launchpad.support.sap.com/#/softwarecenter/> as described in [Downloading SAP Kernel Archives \(Archive-Based Installation\)](#) [page 65].

- To download the remaining media required for your SAP product, you can use one of the following navigation paths:

- <https://launchpad.support.sap.com/#/softwarecenter/> ► INSTALLATIONS & UPGRADES
► By Category ► SAP NETWEAVER AND COMPLEMENTARY PRODUCTS ► <Product>
► <Product Release> ►
- <https://launchpad.support.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:

<Kernelpart>_<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) (*)
SAPEXEDB_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>.

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.

6 Installation

6.1 Installation Checklist

This section includes the installation steps for the following:

- Additional application server instance

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

Additional Application Server Instance

You perform the following steps on each host where you install the additional application server instances.

1. You [check the prerequisites \[page 74\]](#) and [run the software provisioning manager \[page 75\]](#) to install the additional application server instances.
2. You continue with [Post-Installation \[page 95\]](#).

6.2 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 \[page 36\]](#).

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 \[page 113\]](#).

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 \[page 113\]](#).

6.3 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 \[page 75\]](#). 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 \[page 80\]](#).

- 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 the [required authorization \[page 53\]](#) to run 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.

- You need 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. The software provisioning

manager creates an installation directory `sapinst_instdir`, where it keeps its log files, and which is located directly in the `%ProgramFiles%` directory. For more information, see [Useful Information about Software Provisioning Manager \[page 80\]](#).

- Make sure that you have defined the most important SAP system parameters as described in [Basic Installation Parameters \[page 37\]](#) **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 \[page 31\]](#).
- If you want to install an additional application server instance in an existing SAP system, make sure that:
 - The service definitions for the SAP start services are configured correctly and refer to the correct profile files.
 - There are no profile backup files with an underscore “_” in their profile name. If so, replace the “_” with a “.”.

❖ Example

```
Rename <Drive>:\usr\sap\S14\SYS\profile\S14_D20_wsi6408_12 to  
<Drive>:\usr\sap\S14\SYS\profile\S14_DVEBMGS20_wsi6408.12.
```

- 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.exe` with the following command line parameter:
SAPINST_HTTPS_PORT=<Free Port Number>
 - Port 4239 is used by default for displaying the feedback evaluation form at the end of the 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.exe` 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 \[page 82\]](#) which describes an improved procedure using `inifile.params`.

6.4 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 \[page 74\]](#).

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 \[page 80\]](#).

Procedure

1. Log on to the installation host using an account with the [required user authorization to run the software provisioning manager \[page 53\]](#).

⚠ Caution

Do **not** use an existing <sapsid>adm or the built-in administrator account user.

If your security policy requires that the person running the software provisioning manager is not allowed to know administrator credentials 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 `sapinst.exe` from the command line. You must confirm that the user is a trusted one. For more information, see SAP Note [1745524](#).

2. Make the installation media available.

For more information, see [Preparing the Installation Media \[page 58\]](#).

i 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://launchpad.support.sap.com/#/softwarecenter> following the instructions given in [Downloading SAP Kernel Archives \(Archive-Based Installation\) \[page 65\]](#).

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

sapinst.exe (in a command prompt)

.\sapinst.exe (in PowerShell)

By default, the SL-UI uses the default browser defined for the host where you run the software provisioning manager. However, you can also specify another supported web browser available on the host where you start the software provisioning manager. You can do this by starting the `sapinst`

executable with command line option **SAPINST_BROWSER=<Path to Browser Executable>**, for example **SAPINST_BROWSER=firefox.exe**.

Note

If you need to assign a virtual host name to the instance to be installed and you do not want to assign it by entering it as a parameter using the software provisioning manager screens (see [SAP System Parameters \[page 38\]](#)), you can alternatively assign it as follows:

1. Open a command prompt or PowerShell window in elevated mode and change to the directory to which you unpacked the Software Provisioning Manager archive.
2. Start the software provisioning manager with the following command:

sapinst.exe SAPINST_USE_HOSTNAME=<Virtual_Host_Name> (in a command prompt)
.\sapinst.exe SAPINST_USE_HOSTNAME=<Virtual_Host_Name> (in PowerShell)

For more information, see [Using Virtual Host Names \[page 54\]](#).

4. The software provisioning manager now starts and waits for the connection with the SL-UI.

If you have a supported web browser (see [Prerequisites for Running Software Provisioning Manager \[page 74\]](#)) installed on the host where you run the software provisioning manager, the SL-UI starts automatically by displaying the [Welcome](#) screen.

If the SL-UI does not open automatically, you can find the URL you require to access the SL-UI at the bottom of the [Program Starter](#) window of the software provisioning manager. You find the icon of the [Program Starter](#) window in the taskbar of your Windows host. Open a supported web browser and run the URL from there.

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

Note

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

1. Terminate the software provisioning manager as described in [Useful Information about Software Provisioning Manager \[page 80\]](#).
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.

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:
`%userprofile%\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 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. If the software provisioning manager prompts you to log off from your system, log off and log on again.
The software provisioning manager restarts automatically.
8. 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.

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.

9. 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.

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 28], 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*.

10. If required install an additional application server instance for a standard (central) or distributed system.
11. If you copied the software provisioning manager software to your hard disk, you can delete these files when the installation has successfully 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:

`%userprofile%\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_instdir` directory. For more information, see *Useful Information about Software Provisioning Manager* [page 80].

6.5 Additional Information about Software Provisioning Manager

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

[Useful Information about Software Provisioning Manager \[page 80\]](#)

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 \[page 82\]](#)

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

[How to Avoid Automatic Logoff by Software Provisioning Manager \[page 86\]](#)

[Restarting Interrupted Processing of Software Provisioning Manager \[page 88\]](#)

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 \[page 91\]](#)

[Troubleshooting with Software Provisioning Manager \[page 92\]](#)

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

[Using the Step State Editor \(SAP Support Experts Only\) \[page 93\]](#)

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

6.5.1 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 in the *Program Starter* window. If you have a supported web browser installed on the host where you run the software provisioning manager, the SL-UI starts automatically.

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

Alternatively you can open a supported web browser on any device and run the URL from there.

For more information about supported web browsers see [Prerequisites for Running Software Provisioning Manager \[page 74\]](#).

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.exe` executable, the software provisioning manager creates a `.sapinst` directory underneath the `<Drive>:\Users\<User>` directory where it keeps its logs and other technical files. `<User>` is the user which you used to start 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 logs and other technical files, and which is located directly in the `%ProgramFiles%` directory. If the software provisioning manager is not able to create `sapinst_instdir` there, it tries to create `sapinst_instdir` in the directory defined by the `TEMP` environment variable.
All log files which have been stored so far in the `.sapinst` folder are moved to the `sapinst_instdir` directory as soon as the latter has been created.
The software provisioning manager records its progress in the `keydb.xml` file located in the `sapinst_instdir` directory. Therefore, if required, you can continue with the software provisioning manager from any point of failure, without having to repeat the already completed steps and without having to reenter the already processed input parameters. For security reasons, a variable encryption key is generated as soon as the `sapinst_instdir` directory is created by the software provisioning manager. This key is used to encrypt the values written to the `keydb.xml` file.

→ Recommendation

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

- The software provisioning manager extracts itself to a temporary directory (`TEMP`, `TMP`, `TMPDIR`, or `SystemRoot`). These executables are deleted 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 `FC0-00058`.

- To see a list of all available software provisioning manager properties (command line options) and related documentation, open a command prompt and start the software provisioning manager 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 \[page 82\]](#) 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, choose **File > Exit** in the menu of the *Program Starter* window.

6.5.2 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 \[page 80\]](#)) 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 \[page 28\]](#) and [Preparation \[page 50\]](#).
2. Create your input parameter file as follows:
 1. Start software provisioning manager as described in [Running Software Provisioning Manager \[page 75\]](#).
 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 [\[page 75\]](#) 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 \[page 95\]](#).

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 parameters](#) 📄

6.5.3 How to Avoid Automatic Logoff by Software Provisioning Manager

When you install the SAP system, the installation tool checks whether the user account used for the installation has the required privileges and authorization.

For a local or domain installation, the account needs to be a member of the local **Administrators** group.

For domain installations the account can be either a member of the **Domain Admins** group, or belongs to the **Domain Users** group and has the necessary rights to create/modify objects in the domain.

For a list of the required permission, see [Performing a Domain Installation without being a Domain Administrator \[page 128\]](#)

In both cases, the user account must be authorized to do the following:

- Act as part of the operating system
- Adjust memory quotas for a process
- Replace a process level token

If the user account does not have these rights assigned, the software provisioning manager assigns them and automatically logs the account off to activate them. To avoid the software provisioning manager logging the account off, you can set these rights manually before you start the installation.

Procedure

You perform the following steps to assign these rights to the user account used for the installation.

1. Press **Ctrl** + **Esc** and choose ► **Administrative Tools** ► **Local Security Policy** ►.
2. In the **Local Security Settings** window, choose ► **Local Policies** ► **User Rights Assignment** ►.
3. Double-click the required right under **Policy** and choose **Add User or Group**.
4. In the **Select Users and Groups** window, choose the required user and choose **Add**.
The selected user appears in the box below.
5. Confirm your entry and then repeat the steps for each remaining policy that the user requires for the installation.
6. Log off and log on again to apply the changes.

Related Information

[Required User Authorization for Running Software Provisioning Manager \[page 53\]](#)

6.5.4 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
Retry	The software provisioning manager retries the installation from the point of failure without repeating any of the previous steps. This is possible because the software provisioning manager records its progress in the <code>keydb.xml</code> file. We recommend that you view the entries in the log files, try to solve the problem, and then choose Retry. If the same or a different error occurs, the software provisioning manager displays the same dialog box again.
Stop	The software provisioning manager stops the installation, closing the dialog box and the software provisioning manager's SL-UI. The software provisioning manager records its progress in the <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.
Continue	The software provisioning manager continues the installation from the current point.
View Log	Access installation log files.

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

Procedure

1. Log on to the installation host as a user with the required permissions as described in [Running Software Provisioning Manager \[page 75\]](#) .
2. Make sure that the installation media are still available.

For more information, see [Preparing the Installation Media \[page 58\]](#) .

→ Recommendation

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

3. Make sure that the installation media are still available.

For more information, see [Preparing the Installation Media \[page 58\]](#) .

→ Recommendation

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

4. Restart the software provisioning manager by double-clicking **sapinst.exe** from the directory to which you unpacked the software provisioning manager archive.

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

5. The software provisioning manager is restarting.

If you have a supported web browser (see [Prerequisites for Running Software Provisioning Manager \[page 74\]](#)) installed on the host where you run the software provisioning manager, the SL-UI starts automatically by displaying the [Welcome](#) screen.

If the SL-UI does not open automatically, you can find the URL you require to access the SL-UI at the bottom of the [Program Starter](#) window of the software provisioning manager. You find the icon of the [Program Starter](#) window in the taskbar of your Windows host. Open a supported web browser and run the URL from there.

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

i 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 \[page 80\]](#).
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.

⚠ 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:
`%userprofile%\sapinst\`
2. In the `sapinst_exe.xxxxxx.xxxx` directory, execute the `sapgenpse` tool with the command line option **get_my_name -p**.

As a result, you get the server fingerprint or thumbprint from the server certificate.

3. Accept the warning to inform your browser that it can trust this site, even if the certificate could not be verified.

The SL-UI opens in the browser by displaying the [Welcome](#) screen.

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

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

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

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

6.5.5 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 for port names in <Drive>:\WINDOWS\system32\drivers\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)

i 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.

6.5.6 Troubleshooting with Software Provisioning Manager

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

Context

If an error occurs, the software provisioning manager:

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

Procedure

1. Check SAP Note [SAP Note 3207613](#) (SAPinst Framework 753 Central Note) for known software provisioning manager issues.
2. If an error occurs during the *Define Parameters* or the *Execute Service* phase, do one of the following:
 - Try to solve the problem:
 - To check the software provisioning manager log files (`sapinst.log` and `sapinst_dev.log`) for errors, choose the *LOG FILES* tab.

i Note

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

If you need to access the log files before you have done this selection, you can find the files in the `.sapinst` directory underneath the `<Drive>\Users\<User>` directory, where `<User>` is the user that you used to start the software provisioning manager.

For more information, see [Useful Information about Software Provisioning Manager \[page 80\]](#).

- To check the log and trace files of the software provisioning manager's SL-UI for errors, go to the directory %userprofile%\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 \[page 88\]](#).
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](#) .

6.5.7 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 \[page 74\]](#).

Procedure

1. Start the software provisioning manager from the command line as described in [Running Software Provisioning Manager \[page 75\]](#) 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.

7 Post-Installation

7.1 Post-Installation Checklist

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

i 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 \(Optional\) \[page 97\]](#).

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

i Note

For an additional application server instance IBM Db2 for i on Windows, you only have to perform the post-installation steps that you have not already finished for your primary application server instance.

- Additional application server instance

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

Additional Application Server Instance

1. If required, you [perform a full system backup \[page 120\]](#) immediately after the installation has finished.
2. You check whether you can [log on to the Application Server ABAP \[page 96\]](#).
3. You [configure the documentation provided on the SAP Help Portal \[page 99\]](#).
4. If required, you [set up symbolic links for application servers \[page 102\]](#).

7.2 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

i 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**:
 1. Press **Windows** + **Q**, and enter [SAP Logon](#) in the [Search](#) field.
 2. Choose [SAP Logon](#).
 - SAP GUI for **Java**:
 1. Press **Windows** + **Q**, and enter [SAP GUI for Java <Release>](#)
 2. Choose [SAP GUI for Java <Release>](#).

The [SAP Logon](#) appears.

i Note

You can alternatively enter the command **gui login** in the SAP GUI installation directory to start SAP GUI for Java.

2. Create a logon entry for the newly installed system in the [SAP Logon](#).
For more information about creating new logon entries, press **F1**.
3. When you have created the entry, log on as user **SAP*** or **DDIC**.

7.3 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 \[page 28\]](#)

[Configuring the Remote Connection to SAP Support \[page 98\]](#)

[Configuring the Change and Transport System \[page 103\]](#)

[Applying the Latest Kernel and Support Package Stacks \[page 107\]](#)

[Performing Post-Installation Steps for the ABAP Application Server \[page 108\]](#)

[Performing the Consistency Check \[page 101\]](#)

7.4 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_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 \(Optional\) \[page 97\]](#).

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

7.5 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](#).

7.6 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 <i>Documentation</i> from the list; this will display as IWBHELP in the table.
Server Names	https://help.sap.com/http.svc/ahp2
Path	<code><product/version></code> To find the correct entry for the Path field, see the list of products and versions attached to SAP Note 2652009 .
Language	Select the language you need from the list.

5. 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 <i>XML Documentation</i> from the list; this will display as XML_DOCU in the table.
Server Names	https://help.sap.com/http.svc/ahp2

Name	Value to be entered
Path	<product/version> To find the correct entry for the Path field, see the list of products and versions attached to SAP Note 2652009.
Language	Select the language you need from the list.

6. Repeat steps 4 and 5 for each relevant platform and language.
7. Select one entry as the default language for each platform and area.
8. 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](#)

7.7 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 \(Optional\) \[page 97\]](#).

Prerequisites

- If the installation finished successfully, your SAP system should be up and running. Otherwise, start it as described in [Starting and Stopping the SAP System \[page 132\]](#).

- You have [logged on to the SAP system \[page 96\]](#).

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](#) ►.

7.8 Creating Symbolic Links on Windows Server for Application Servers

Use

On Windows Server you can create symbolic links for additional application server instances to simplify their administration.

Symbolic links for application servers let you access from your local host the **SYS** directory that is located on the global host, without having to specify its UNC path. Instead you can browse, for example, in the Windows explorer on your local host to the **SYS** directory and its subdirectories on the global host.

Procedure

To create symbolic links, perform the following steps:

1. Open a PowerShell command in elevated mode, and enter the following PowerShell command in a single line:

```
cmd /c mklink /d <localdisk>:\usr\sap<SAPSID>\SYS \
\<sapglobalhost>\sapmnt\<SAPSID>\SYS
```

Note

Enter a blank before \\<sapglobalhost>\. . . .

2. If you use a central transport directory, you can also create the following link in PowerShell:

```
cmd /c mklink /d <localdisk>:\usr\sap\trans \\<trans_dir_host>\sapmnt\trans
```

Note

The transport directory host <trans_dir_host> and the <sapglobalhost> can be identical.

Caution

The command `mklink` creates the link without checking whether the link target exists or is accessible. If the link does not work after you created it, make sure that it exists and check the accessibility of the UNC path.

7.9 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 \(Optional\) \[page 97\]](#).

Note

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

i Note

If you are using a Stack XML file (see [Installation Using a Stack XML File \[page 28\]](#)) 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)
• 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 ► Solution Life Cycle Management ► Software Logistics ► Change and Transport System ► Change and Transport System – Overview ► Basics of the Change and Transport System ► Transport Management System – Concept ►

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)
• 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	► <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> ►

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**

7.10 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](http://help.sap.com/solutionmanager) and [Managing Product System Information](http://help.sap.com/solutionmanager) 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](#)

7.11 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 \[page 28\]](#)), 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.

i 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.

7.12 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.

i 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 \(Optional\) \[page 97\]](#).

Prerequisites

You have logged on to the ABAP application server as described in [Logging On to the Application Server \[page 96\]](#).

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)
• 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 ABAP ► Administration of Application Server ABAP ►

- **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**

- a. Make sure that the SLD and the SLD bridge (the receiving thread of the SLD, which runs on a Java EE engine) are running.
- b. 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 \[page 105\]](#)

- **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.

i 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.

7.13 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* .

7.14 Installing Additional Languages and Performing Language Transport

This section describes how to install and transport additional languages.

i 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 \[page 28\]](#)) 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 **I18N** and choosing ► *I18N Customizing* ► *I18N System Configuration* ► or by executing report **RSCPINST** directly.

For more information, see SAP Note [42305](#).

2. Perform the language transport using transaction **SMLT**:

i 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

i 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)
• 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	► <i>Application Help</i> ► <i>Function-Oriented View</i> ► <i>Solution</i> <i>Life Cycle Management</i> ► <i>Software Logistics</i> ► <i>Change and</i> <i>Transport System</i> ► <i>Language Transport (BC-CTS-LAN)</i> ►

7.15 Configuring the User Management

After the installation has completed, configure the user management of your SAP system.

Context

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)
• SAP NetWeaver 7.3 including Enhancement Package 1 https://help.sap.com/nw731 • SAP NetWeaver 7.4 https://help.sap.com/nw74 • SAP NetWeaver 7.5 https://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	▶ <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>

7.16 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 \[page 38\]](#) 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:

Changing Passwords of Created Users

User Type	User
SAP Administrator Account	<SAPSID>ADM
SAP Service Account	SAPSE<SAPSID>

SAP Host Agent User

User Type	User	Comment
Operating system user	sapadm	SAP Host Agent administrator is the user for central monitoring services. You do not need to change the password of this user after the installation. This user is for administration purposes only. You are not able to log on as sapadm as this user is locked. On IBM i, you are not able to log on as sapadm as this user profile does not allow it.

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.
Application Server Java Administrator	The name that you gave this user during the installation or the default name J2EE_ADMIN (see SAP System Parameters [page 38])	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. 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.
i Note 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. → Recommendation We recommend that you use strong password and auditing policies for this user.		
Application Server Java Guest	The name that you gave this user during the installation or the default name J2EE_GUEST (see SAP System Parameters [page 38])	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.
Communication user for Application Server Java	The name that you gave this user during the installation or the default name SAPJSF (see SAP System Parameters [page 38])	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.
i Note 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.		

7.17 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.

i 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.

i 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 SCCL 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)
• 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	► <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> ►

7.18 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)
• 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	► <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> ►

- 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)
• 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	► <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> ►

More Information

See also the entry *Individual Encryption Key for the Secure Storage* in table *SAP System Parameters* in [SAP System Parameters \[page 38\]](#).

7.19 Performing a Full System Backup

You must perform a full system backup, including the operating system disk, system state, and all other disks, after the configuration of your SAP system. If required, you can also perform a full system backup after the installation (recommended). In addition, we recommend you to regularly back up your database.

Prerequisites

- You are logged on as user <sapsid>adm.
- You have shut down the SAP system and database.

Procedure

For more information about backing up your SAP system on Windows, see the SAP Library at:

SAP Release and SAP Library Quick Link	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 http://help.sap.com/nw751abap • SAP NetWeaver AS for ABAP 7.52 http://help.sap.com/nw752abap	► <i>Application Help</i> ► <i>Function-Oriented View</i> ► <i>Solution Life Cycle Management</i> ► <i>Backup and Recovery</i> ► <i>Backing Up and Restoring your SAP System on Windows</i>

8 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.

8.1 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)
- 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 > Security Identity Management > User and Role Administration of Application Server ABAP > Configuration of User and Role Administration > Directory Services > LDAP Connector

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.

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

You can also use the SAP Management Console (SAP MC) for administering and monitoring SAP systems from a central location.

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)
- 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 ► Solution Life Cycle Management ► SAP Management Console ►

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 \[page 75\]](#) and choosing: ► [Generic Installation Options](#) ► [<Database>](#) ► [Preparations](#) ► [LDAP Registration](#) ► [Active Directory Configuration](#) ►.

i 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. The software provisioning manager software contains schema extensions for directory servers Netscape/iPlanet (`ldregns4.txt`, `ldregns5.txt`) and OpenLDAP slapd (`ldregsldapd.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 \[page 75\]](#) **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.

8.2 SAP Directories

This section describes the directories that are available in an SAP system.

The software provisioning manager automatically creates the following directories during the installation:

- `\usr\sap`

This directory is created on the:

- **Global** host and **shared** with the network share `sapmnt`

In a non-high-availability-system, you can install the primary application server instance or the (A)SCS instance on the global host or on any other host.

On global hosts, the `\usr\sap` directory contains general SAP software, global, and local (instance-specific) data.

For this, the software provisioning manager creates the global directory `usr\sap\<SAPSID>\SYS`, which physically exists only once for each SAP system. It consists of the following subdirectories:

- `global` – contains globally shared data
 - `profile` – contains the profiles for all instances
 - `exe` – contains executable replication directory for all instances and platforms

- **Local** host and **shared** with the name `saploc`.

On local hosts, the `\usr\sap\<SAPSID>\<Instance_Name>` directory contains copies of the SAP software and local (instance-specific) data.

Note

- Since SAP traces for the instance are created in `\usr\sap`, make sure that there is sufficient space available in this directory. Changes in SAP profiles can also affect the disk space.
- The executables on the local host are replicated from those on the global host every time the local instance is started. The SAP copy program `sapcpe` compares the binaries in the `<Platform>` directory on the global host and the binaries in the `exe` directory on the application server. If the binaries in the `exe` directory are older than those in the `<Platform>` directory, `sapcpe` replaces them with the newer version of the global host.

Other application servers access the global data using the Universal Naming Convention (UNC) path `\\<SAPGLOBALHOST>\sapmnt`. The SAP programs access their instance-specific data with the UNC path `\\<SAPLOCALHOST>\saploc`. If the UNC path points to a local directory, the local path (and not the UNC path) is used to access the directory.

The parameters `SAPGLOBALHOST` and `SAPLOCALHOST` have the **same** values on the global host.

- `\usr\sap\trans`

The transport directory contains SAP software for the transport of objects between SAP systems. The software provisioning manager by default creates it on the `SAPGLOBALHOST`.

If you want to have it created on another host, or if you want to use an already existing transport host of your SAP system landscape, you can specify another host during the installation. In this case, you have to prepare that host to allow the new SAP system to use it as transport host. For more information, see [Preparing the SAP System Transport Host \[page 57\]](#).

Directory Structure

The following figures show how the physical directory `\usr\sap` is shared on the global host in a standard and in a distributed system. In both cases, the UNC paths are used as follows:

- `\\<SAPGLOBALHOST>\sapmnt` to access global directories
- `\\<SAPLOCALHOST>\saploc` to access local instance-specific data

Note

There are the following instance names available in an SAP system:

ABAP central services instance: `ASCS<Instance_Number>`

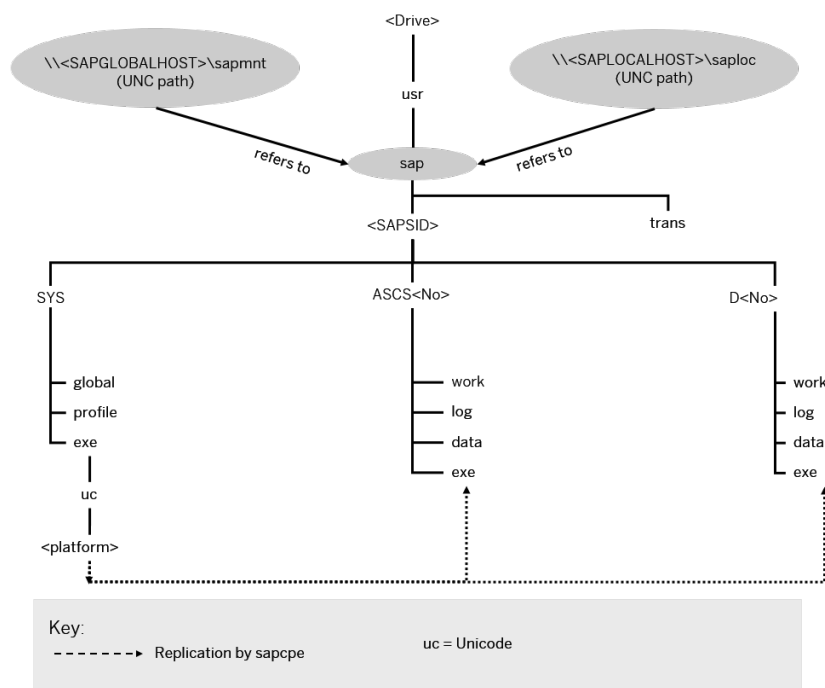
SAP systems based on SAP NetWeaver 7.3 EHP1 to 7.4: Primary application server instance:
`DVEBMGS<Instance_Number>`

SAP systems based on SAP NetWeaver 7.5 and higher: Primary application server instance:
`D<Instance_Number>`

Additional application server instance: `D<Instance_Number>`

Directory Structure on the Global Host in a Standard (Central) ABAP System for SAP Systems Based on SAP NetWeaver 7.5 and higher

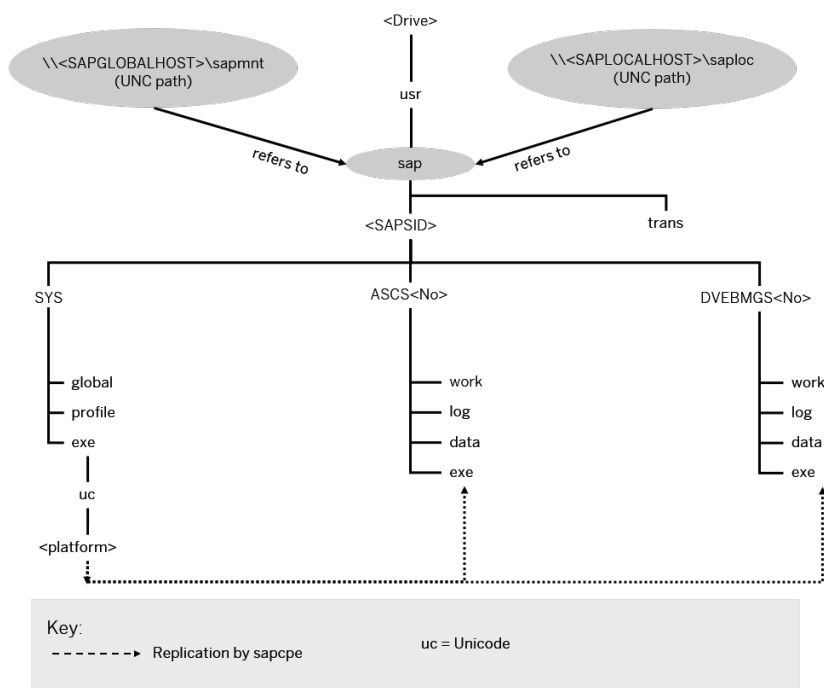
On the global host in a standard (central) ABAP system for SAP systems based on SAP NetWeaver 7.5 and higher, all application server instances, including the primary application server instance, are named `D<Instance_Number>`.



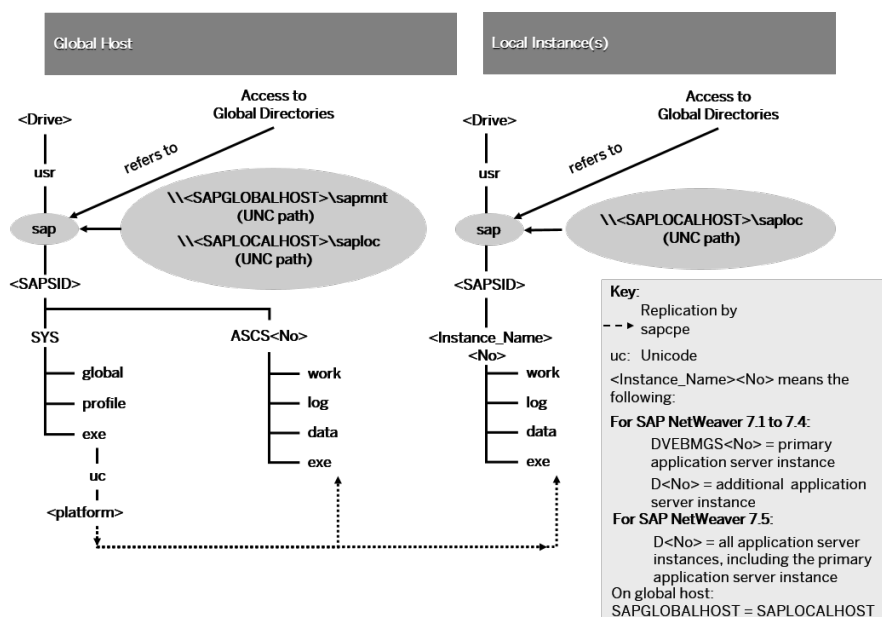
Directory Structure on the Global Host in a Standard (Central) ABAP System for SAP Systems Based on SAP NetWeaver 7.5 and higher

Directory Structure on the Global Host in a Standard (Central) ABAP System for SAP Systems Based on SAP NetWeaver 7.3 EHP1 to 7.4

For the global host in a standard (central) ABAP system for SAP systems based on SAP NetWeaver 7.3 EHP1 to 7.4, the primary application server instance is named DVEBMGS<Instance_Number>.



Directory Structure on the Global Host in a Standard (Central) ABAP System for SAP Systems Based on SAP NetWeaver 7.3 EHP1 to 7.4



Directory Structure for a Distributed ABAP System

8.3 Performing a Domain Installation Without Being a Domain Administrator

It is not required to perform the installation of the SAP system with a user who is a member of the Domain Admins group. For security reasons most customers do not provide this permission to SAP or database

administrators. If the **Domain Admin** right has been granted, you can start any SAP installation because the user will have all necessary rights to install a standard, distributed or high-availability system.

An alternative is to ask the domain administrator to grant the required permissions to the user which installs SAP or the database. This domain user must be a member of the local Administrators group. In most cases the domain administrator will define an OU (Organizational Unit) structure, where all SAP systems and their related domain objects belong to.

To perform the installation with a domain user, the user account must meet the following requirements:

1. Create/Delete/Modify Users and Groups within OUs only. Ask the AD administrator about the company's OU concept.
2. Create/Delete/Modify Computer Objects within this OU. This is required for users which install SAP or database applications in Failover Clusters, SAP Landscape Management environments or other high-availability (HA) environments.
Optional rights might be necessary related to your company's security policy, for example:
3. Create/Delete/Modify DNS server records within a specific DNS zone, where the Windows hosts with SAP software belong to.
4. Create/Delete/Modify Organizational Unit objects within a specific OUs only.

For standard and distributed installations (not HA installations!) the domain administrator can prepare the user and group objects in the domain for you. In this case, the domain user which will be used for the installation does not need any of the above permissions.

The required objects in the domain are:

1. Domain group **SAP_<SAPSID>_GlobalAdmin**
The group scope should be GLOBAL, the group type should be SECURITY.
2. Two new SAP system users **<sapsid>adm** and **SAPService<SAPSID>**.
3. The users **<sapsid>adm** and **SAPServiceSAPSID** must be members of the domain group **SAP_<SAPSID>_GlobalAdmin**.

Note

The software provisioning manager creates the operating system user for the SAP Host Agent by default as a local user that is not

a member of the local Administrators group. If you want to create this user manually as a domain user, you must perform the following steps:

Creating the SAP Host Agent User and Group Manually

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

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

Note

When you install an Additional Application Server on Windows for IBM i the user concept is different. On IBM i there is no SAP Service User **SAPService<SAPSID>**. There is only the Administration User **<sapsid>adm** which exists on Windows and on IBM i. On Windows a different SAP Service User **SAPSE<SAPSID>** is created which has no direct access to IBM i. For every access to IBM i, the service user **SAPSE<SAPSID>** is using the administrator user **<sapsid>adm**. The user **SAPSE<SAPSID>** acts only

locally. You can put the user `SAPSE<SAPSID>` into the group `SAP_<SAPSID>_GlobalAdmin`, but this is not required.

8.4 Checking and Changing the Paging File Settings on Windows Server 2012 (R2) and Higher

Use

This section describes how to check and change the paging file size on Windows Server 2012 (R2) and higher with PowerShell.

The PowerShell commands also work in previous Windows versions where PowerShell is available.

i Note

Some paging file operations require a reboot of the server to activate the changes you made. Wmi-commands do not indicate whether a reboot is required or not. Therefore, we recommend rebooting your system every time you change the paging file settings with PowerShell.

Prerequisites

Always start the PowerShell in elevated mode (run as administrator).

Procedure

Checking the Size of a Paging File

1. Start Windows PowerShell.
2. Check whether the default value *Automatic manage pagefile size for all devices* is activated.

i Note

We do not support automatically managed page file sizes.

To check this, enter the following command:

```
(Get-WmiObject Win32_Pagefile) -eq $null
```

If *Automatic manage pagefile size for all devices* is enabled, the output value is *True*.

If necessary, disable *Automatic manage pagefile size for all devices* with the following command:

```
$sys = Get-WmiObject Win32_ComputerSystem -EnableAllPrivileges
```

```
$sys.AutomaticManagedPagefile = $false
```

```
$sys.put()
```

3. Check the size of the paging files with the following command:

```
Get-WmiObject Win32_Pagefile | Select-Object Name, InitialSize, MaximumSize, FileSize
```

The output looks like the following:

MaximumSize	Name	FileSize	InitialSize
-----	----	-----	-----
	C:\pagefile.sys	0	0
41943040000	E:\pagefile.sys	40000	80000
41943040000			

In this example, in the first line, the *InitialSize* and *MaximumSize* values of a paging file are 0, which means that the paging file size is *system managed* (not recommended).

In the second line, the paging file size has a minimum and a maximum size (recommended).

Changing the Size of a Single Paging File

Changing the *InitialSize* and *MaximumSize* values of a paging file to a size other than 0, will automatically switch off *system managed size*.

In the following example, we change the size of the paging file on *C:* to the *InitialSize* of 40 GB and to the *MaximumSize* of 80 GB.

Use the following commands in a PowerShell:

```
$Pagefile = Get-WmiObject Win32_PagefileSetting | Where-Object {$_.name -eq "C:\pagefile.sys"}
```

```
$Pagefile.InitialSize = 40000
```

```
$Pagefile.MaximumSize = 80000
```

```
$Pagefile.put()
```

Typically, you choose the same value for *InitialSize* and *MaximumSize*.

i Note

The sum of all paging files *InitialSize* values must be equal to or higher than the value recommended for your SAP system.

Creating a Second Paging File on Another Disk

You might want to create a second or additional paging files to improve system performance, or if your disk does not have enough space.

To do so, enter the following commands in a PowerShell:

```
$Pagefile = Get-WmiObject Win32_PagefileSetting
```

```
$pagefile.Name = "E:\pagefile.sys"
```

```
$pagefile.Caption = "E:\pagefile.sys"
```

```
$pagefile.Description = "'pagefile.sys' @ E:\"
```

```
$pagefile.SettingID ="pagefile.sys @ E:"
```

```
$pagefile.InitialSize = 80000
```

```
$pagefile.MaximumSize = 80000
```

```
$pagefile.put()
```

Deleting a Paging File on a Specific Device

To delete a paging file, enter the following commands in a PowerShell:

```
$pagefile = Get-WmiObject Win32_PagefileSetting | Where-Object {$_.name -eq  
"E:\pagefile.sys"}
```

```
$pagefile.delete()
```

8.5 Installing the SAP Host Agent Separately

The SAP Host Agent is installed automatically during the installation of new SAP instances with SAP kernel 7.20 or higher (embedded installation). If you need to install the SAP Host Agent separately, use the documentation *Installation of SAP Host Agent on Windows - Using Software Provisioning Manager 1.0* at:

<https://support.sap.com/sltoolset> > System Provisioning > Install a System using Software Provisioning Manager > Installation Option of Software Provisioning Manager 1.0 SP <Current Version> > Installation Guides - Standalone Engines and Clients > SAP Host Agent

8.6 Starting and Stopping the SAP System

You use this procedure to start and stop the SAP system or single instances after the installation with the **SAP Microsoft Management Console (SAP MMC)** or SAPControl.

⚠ Caution

Note the following restrictions about starting and stopping the database instance with the SAP MMC or SAPControl:

In a non-high-availability system, you can use the SAP MMC or SAPControl to start the database instance. To stop the database instance, however, you must use the relevant database administration tools.

Prerequisites

The user who wants to start and stop the SAP system with the SAP MMC, must be a member of the local administrators group.

Procedure

Starting and Stopping the SAP System with the SAP MMC

With the SAP MMC, you can start or stop installed SAP instances – except the database instance – locally on the host that you are logged on to. If the SAP MMC is configured for central system administration, you can start or stop the entire system from a single host.

Note

- To stop the database instance you must use the relevant database administration tools.
- You can also start and stop a UNIX system with the SAP MMC.
- The SAP MMC is not available on Server Core for Windows Server 2012 (R2) and higher.

For more information about the SAP MMC, see the SAP Library at:

SAP Release and SAP Library Quick Link	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 ► Solution Life Cycle Management ► SAP Microsoft Management Console: Windows

To start or stop the SAP system – except the database instance – with the SAP MMC, perform the following steps:

1. Start the SAP MMC on the SAP system host.
2. Right-click the SAP system node and choose *Start* or *Stop*.
All SAP instances listed under the system node start or stop in the correct order.
3. To stop the database instance, use the relevant database administration tools.
4. If the SAP system is installed on multiple hosts, you have the following options to start or stop your system:
 - You start or stop the SAP instances – except the database instance – using the SAP MMC on each host.
 - You add the remote instances to the SAP MMC configuration to start or stop all instances from a single SAP MMC.
To do so, do one of the following:
 - You configure the SAP MMC manually. For more information, see *Changing the Configuration of the SAP MMC* in the SAP MMC documentation.
 - You use the automatic LDAP registration. For more information, see *Configuring SAP MMC for Active Directory Services* in the SAP MMC documentation.

Starting and Stopping the SAP System with SAPControl

To start or stop the SAP system – except the database instance – with SAPControl (sapcontrol.exe), perform the following steps:

- To start or stop the complete SAP system with SAPControl, open a PowerShell in elevated mode, and enter the following command:
sapcontrol -prot PIPE -nr <Instance_Number> -function StartSystem
sapcontrol -prot PIPE -nr <Instance_Number> -function StopSystem
- To start or stop a single instance with SAPControl, open a PowerShell in elevated mode, and enter the following command:
sapcontrol -prot PIPE -nr <Instance_Number> -function Start
sapcontrol -prot PIPE -nr <Instance_Number> -function Stop
- To stop the database instance, use the relevant database administration tools.

8.7 Configuring the Windows Server Firewall after SAP installation

Use

In Windows Server the firewall is configured to allow only a small set of Windows-specific inbound IP connections.

Therefore, we recommend that you do **not** turn on the Windows firewall after you have installed your SAP system. Instead, we recommend that you secure network access to your SAP system with the physical firewall or a router Access Control List (ACL) within your datacenter.

If, for some reason, you want to use the Windows Server firewall, you have to configure the Windows firewall and define a set of *Inbound Rules* for the TCP/IP port numbers that are used by your system. Otherwise, your SAP system might not operate.

For more information about the port numbers used, see the documentation *TCP/IP Ports of All SAP Products* at: <https://help.sap.com/viewer/ports>.

Ports listed with the default value *Not active* in this document are not configured.

Prerequisites

You turn on the [disabled firewall \[page 50\]](#) as follows:

- Open Windows PowerShell in elevated mode, and enter the following command:
Set-NetFirewallProfile "public","domain","private" -enabled true
- You turn on the disabled firewall as follows:
Open Windows PowerShell in elevated mode, and enter the following command:
Set-NetFirewallProfile "public","domain","private" -enabled true

Procedure

This procedure provides an example how to set *Inbound Rules* for the ports of an ABAP server that was installed with the following settings:

<i>Instance number</i>	00
<i>Port type</i>	TCP
<i>Ports</i>	3200, 3300, 4800, 8000, 3600, 50013, 1433, 1434

- Open Windows PowerShell in elevated mode, and enter the following command:
New-NetFirewallRule -DisplayName "SAP ABAP Server 00" -Direction Inbound -Protocol TCP -LocalPort 3200,3300,4800,8000,3600,50013,1433,1434 -Action Allow
- You turn on the disabled firewall as follows:
Open Windows PowerShell in elevated mode, and enter the following command:
Set-NetFirewallProfile "public","domain","private" -enabled true

Note

If you want to use, for example, a different IP scope for port 50013, which is used by the connection SAP Start Service – SAP Management Console, you can restrict the IP access to a small number of SAP administrators. Then delete this port from the SAP ABAP Server 00 rule and create a new rule for port 50013 with a more restrictive scope.

8.8 SAP System Security on Windows

In a standard SAP system installation, the software provisioning manager automatically performs all steps relevant for security. Although the software provisioning manager makes sure that the system is protected against unauthorized access, you must still check that no security breaches can occur.

For central and straightforward administration of the SAP system, you have to install distributed SAP systems with multiple application servers in a Windows **domain**. This section describes the user accounts and groups that the software provisioning manager creates during a domain installation and shows how these are related to the SAP directories.

User Accounts

The software provisioning manager creates the following accounts for SAP system administration:

User account	Description
<sapsid>adm	This is the SAP system administrator account that enables interactive administration of the system.

User account	Description
SAPSE<SID>	This is the user account that is required to start the SAP system. It has the local user right to log on as a service. The advantage of the additional SAPSE<SAPSID> account is that it does not allow interactive logon, which prevents abuse of the account. Therefore, you do not need to set an expiration date for the password and you do not have to set the option <i>user must change password at next logon</i>.
sapadm	This is the user for the SAP Host Agent. By default it is a local user and not a member of the local Administrators group. You can change this user into a domain user on the Parameter Summary screen. For security reasons, however, SAP strongly recommends to create this user as a local user. The SAP Host Agent contains all of the required elements for centrally monitoring any host with the Alert Monitor or the SAP NetWeaver Administrator.

Domain and Local Groups

The only function of a domain group is to group users at the domain level so that they can be placed in the appropriate local groups.

Only local groups are created and maintained on each local host. A local group can only be given permissions and rights to the system where it is located. The system is part of a particular domain, and the local group can contain users and domain (global) groups from this domain.

During a domain installation, the software provisioning manager creates the following domain and local groups:

Group	Description
SAP_<SAPSID>_GlobalAdmin	This domain (global) group is a domain-level SAP administration group for organizing SAP system administrators.
SAP_SAP_GlobalAdmin	This domain group for the SAP Host Agent is only created if you create the SAP Host Agent user sapadm as a domain user.
SAP_<SAPSID>_LocalAdmin	This local group is created on each host.
SAP_SAP_LocalAdmin	If you create the SAP Host Agent user as domain user, the group SAP_SAP_LocalAdmin is also created.
SAP_LocalAdmin	This local group is created on all hosts, but is particularly important for the transport host. Members of the group have full control over the transport directory (\usr\sap\ttrans) that allows transports to take place between systems.

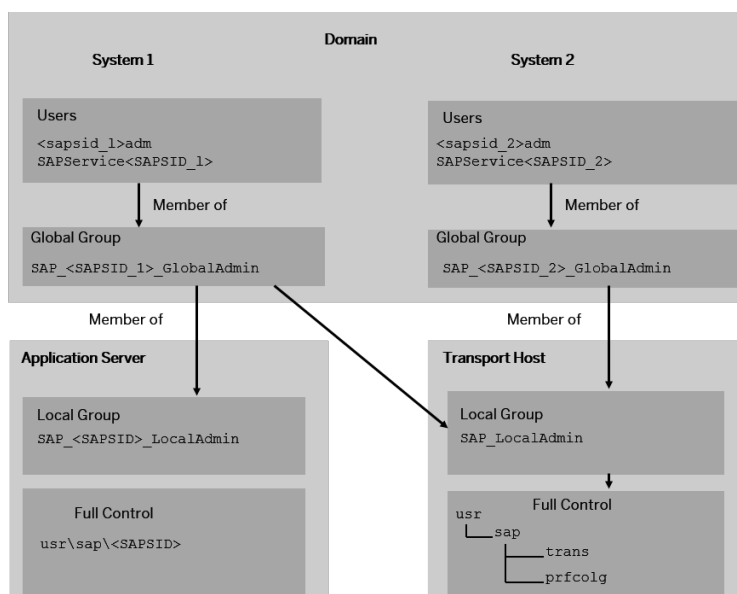
SAP Directories

The software provisioning manager protects the SAP directories under **\usr\sap\<SAPSID>** by only granting the group **SAP_<SAPSID>_LocalAdmin** full control over these directories.

The following graphic illustrates the users and groups that are created by the software provisioning manager for the <sapsid>adm and SAPService<SAPSID> users in a system infrastructure consisting of two SAP systems.

i Note

For IBM i, we use the user SAPSE<SAPSID> not SAPService<SAPSID>.



User Groups and Accounts

i Note

An access control list (ACL) controls access to SAP system objects. For maximum security in the SAP system, only the following are members of **all** SAP system object ACLs:

- Local group SAP_<SAPSID>_LocalAdmin
- Group Administrators
- User SYSTEM

More Information

[Automatic Creation of Accounts and Groups \[page 137\]](#)

8.9 Automatic Creation of Accounts and Groups

The software provisioning manager automatically creates the accounts and groups required for the secure operation of the SAP system with Windows during the installation, as described in [SAP System Security on Windows \[page 135\]](#).

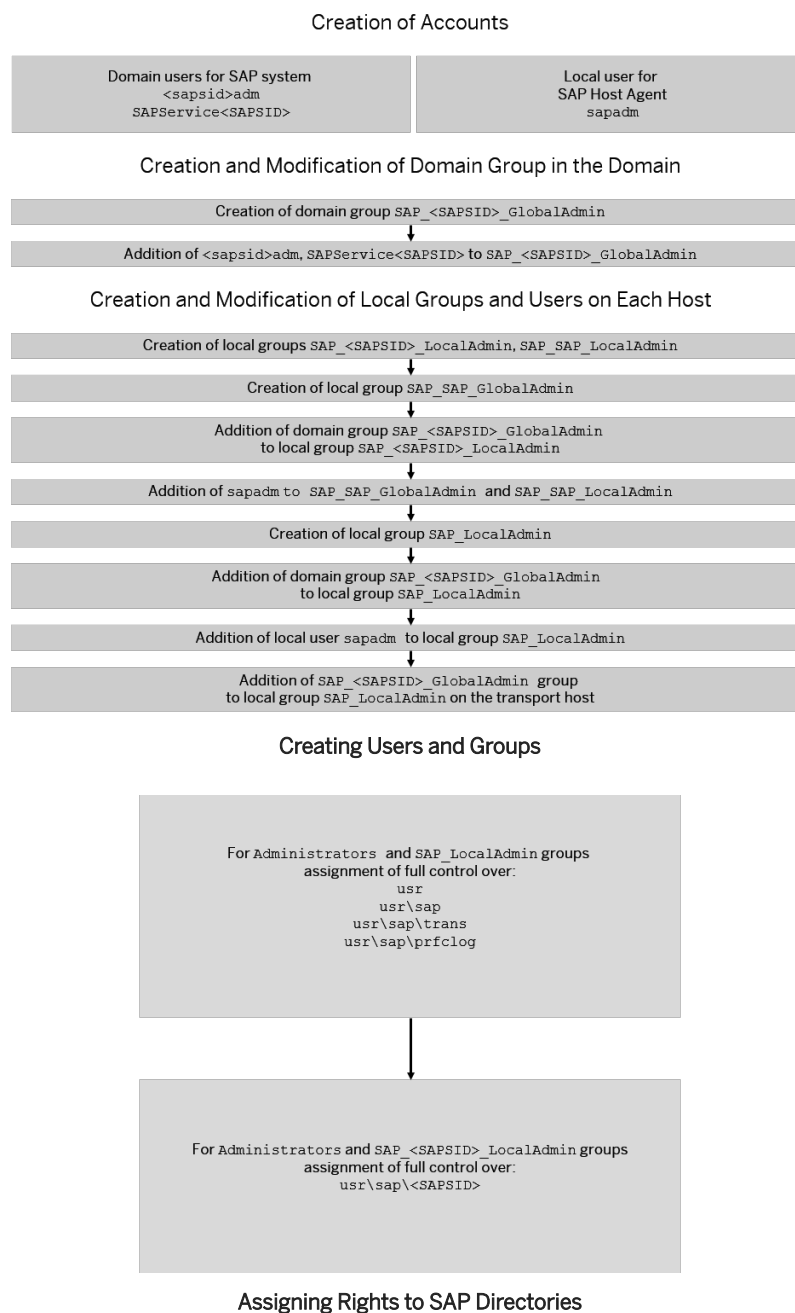
Features

The following figures show the steps that the software provisioning manager performs to create the users and groups and assign the required rights to SAP directories.

The first figure shows the users that are created during a domain installation, with the SAP Host Agent operating system users being local users.

i Note

For IBM i, we use the user `SAPSE<SAPSID>` not `SAPService<SAPSID>`.



8.10 Changing the Password of the Users <sapsid>adm and SAPSE<SAPSID> on Windows for IBM DB2 for i

Context

The handling of the password of the Windows users <sapsid>adm and SAPSE<SAPSID> must follow strict rules. Otherwise, the users might not have access anymore to the SAP global host or to the database on IBM i.

i Note

Change the password only when the password of the <SAPSID>ADM on IBM i has already changed .

To change the password for <sapsid>adm and SAPSE<SAPSID> execute the following steps:

1. The users <sapsid>adm and SAPSE<SAPSID> on Windows must always have the same password as the user <SAPSID>ADM on IBM i. Logon to the Windows server and change the password for both Windows users.
2. The Windows service SAP<SAPSID>_<Instance_Number> must be adjusted to the new password. Start the service control manager (Start ► ► *Run* ► *services.msc* ► ► or Search Windows: Services) and modify the *LogOn* properties of the service SAP<SAPSID>_<Instance_Number> to the new password.
3. Sign on to the Windows application server as user <sapsid>adm and execute the following command::
setdb4pwd \\<Global_Host>\saptext\<SAPSID>\sys\profile\NTLOGON.INF

→ Recommendation

Two Windows registry entries are made for the installation of the additional application server instance.

If you have connection or permission issues from Windows to IBM i, you must check these entries:

1. Check the NetConnections entry in the Windows registry.
The following entry must still exist under
HKEY_LOCAL_MACHINE\SOFTWARE\SAP\<SAPSID>\NetConnections:
Connection1: \\<Global_Host>\sapmnt <sapsid>adm (REG_SZ)
If this entry is missing, you must create it manually.
2. Check the LAN manager level in the Windows registry.
The following entry must still exist under
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa:
LmCompatibilityLevel: 1 (REG_DWORD)

i Note

Any other value is wrong. If necessary, you must manually change the entry to *1*.

Alternatively you can use the Windows Local Security Policy to switch the LAN Manager authentication level to *"Send LM & NTLM - use NTLMv2 session security if negotiated"*.

i Note

Since the New User Concept on IBM i was introduced in 2007, the user `SAPSE<SAPSID>` no longer exists on IBM i. Therefore, you do not need to adjust the password of this user on IBM i as in the past using the Classic User Concept on IBM i. For more information, see [SAP Note 1123501](#).

8.11 Uninstalling an SAP System or Single Instances

This section describes how to uninstall a complete SAP system or single SAP instances with the *Uninstall* option of the software provisioning manager.

Prerequisites

- You have installed your SAP system with standard SAP tools according to the installation documentation.
- You are logged on with a user account that has the required authorization to run the software provisioning manager and the SAP system. For more information, see [Required User Authorization for Running Software Provisioning Manager \[page 53\]](#).

⚠ 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:

- You cannot delete an SAP system remotely.
- If you delete network-wide users or groups in an environment with Network Information System (NIS), other SAP installations might also be affected. Before you delete users or groups, make sure that they are no longer required.

- 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.
- If you uninstall an SAP instance and you plan to install another SAP instance with the same System ID, first reboot the Windows host to clear all user cached information. For more information, see SAP Note [2296310](#).

Procedure

1. Start the software provisioning manager as described in [Running Software Provisioning Manager \[page 75\]](#).
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
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 locally on each additional application server instance host.
Standalone SAP Host Agent	The SAP Host Agent is automatically uninstalled from a host together with the last remaining SAP system instance. If you want to uninstall a standalone 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.

4. When you have finished, delete the relevant directory structure on the global host.
5. Delete the local user group SAP_<SAPSID>_LocalAdmin manually as follows:
 - Open a PowerShell in elevated mode and enter the following command:
`net localgroup SAP_<SAPSID>_LocalAdmin /delete`

6. If required, you can delete the directory `\usr\sap\trans` and its contents manually.
The software provisioning manager does not delete `\usr\sap\trans` because it might be shared.
7. 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* 

A Appendix

A.1 Using PowerShell

SAP uses Windows PowerShell to run and describe Windows commands.

For Windows Server, SAP only uses Windows PowerShell to run and describe Windows commands.

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

For more information about the Windows PowerShell, see:

<http://technet.microsoft.com/en-us/scriptcenter/dd742419.aspx> 

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

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

- Windows Server 2022
Windows Server 2022 contains PowerShell 5.1
You can update to PowerShell 5.1 (search the internet for *Windows Management Framework 5.1*).
For more information, see SAP Note [3143497](#)  and *Windows Management Framework (WMF) 5.x Release Notes* 
- Windows Server 2019
Windows Server 2019 contains PowerShell 5.0
You can update to PowerShell 5.0 (search the internet for *Windows Management Framework 5.0*).
- Windows Server 2016
Windows Server 2016 contains PowerShell 5.0
You can update to PowerShell 5.0 (search the internet for *Windows Management Framework 5.0*).
- Windows Server 2012 R2
Windows Server 2012 R2 contains PowerShell 4.0.
- Windows Server 2012
Windows Server 2012 contains PowerShell 3.0.
You can update to PowerShell 4.0 (search the internet for *Windows Management Framework 4.0*).

How to Work with PowerShell

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

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

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

- Before you can run PowerShell scripts (text files with the file extension `.ps1` that contain PowerShell statements), you might have to change the default security setting to allow the execution of non-signed scripts as follows:
`set-executionpolicy ("unrestricted")`
- By default, when double-clicking PowerShell scripts (`.PS1` files) in the Windows explorer, this does not execute the script as is the default for `.cmd` files, but opens the script in an editor. If you want to activate automatic script execution after a double-click, you have to change the value `HKEY_CLASSES_ROOT\Microsoft.PowerShellscript.1\Shell\Open\Command` from `notepad.exe` to the full path of the PowerShell executable.
- The output of PIPE commands is not just a stream of characters (strings) but a stream of objects. You can easily access the properties and methods for these objects (see the process list DLL example below).
- The current working directory is not part of the directory search path that the PowerShell looks at for scripts and programs. The PowerShell only searches directories listed in the environment variable `path`. Therefore, you might have to run a local program with `./sapcontrol.exe` or specify its full path.
- You can use the UNIX-like directory delimiters, such as `cd /usr/sap/C11`.
- You can have your current working directory in a UNC path (`cd \\sapglobalhost\sapmnt`).
- The shell distinguishes between environment variables and shell variables:
 - Use of shell variables:
Definition: **`$x="hello"`**
Reference: **`write-host $x`**
 - Use of an environment variable:
Definition: **`$env:x="hello"`**
Reference: **`write-host $env:x`**
- The PowerShell has an interesting container concept called `ps-drives`. Within `ps-drives` you can navigate in other objects, such as the registry or shell internal lists in the same way as you typically navigate in a file system (`cd`, `dir`, `del`, and so on).
`dir env`: to get a list of environment variables
`dir variable`: to get the list of shell variables
`dir HKLM`: to get a list of registry keys in `HKEY_LOCAL_MACHINE`
`get-psdrive` to get a list of available `ps-drives`
- Windows PowerShell has full access to the .NET runtime. You can directly access missing functions in the PowerShell via .NET.
- With Windows PowerShell, you can create GUI-class user interfaces using Windows forms.

PowerShell Commands

The following table lists some PowerShell commands:

Command	Explanation
<code>stop-service sap*</code>	Stops all Windows services with service name starting with "SAP"

Command	Explanation
<code>get-process</code>	Lists currently started processes on your system
<code>get-process sort starttime select -last 1</code>	Lists the last started process on your computer
<code>get-process sort starttime select -last 1 format-list -proper *</code>	Lists all properties of the last started process
<code>get-process sort starttime select -last 1 get-member</code>	Lists all process class members (properties and methods) of the last started process
<code>get-process % {\$_ .name; "-----"; \$_ .modules}</code>	Lists all processes, and the executables and DLLs the processes loaded
<code>\$processes = (get-process sort starttime)</code>	Defines a shell variable <code>\$processes</code> , which contains an array of process objects
<code>\$processes.length</code>	The number of processes in the array (is equivalent to the number of processes on your computer)
<code>\$processes[\$processes.length-1].kill()</code>	Invokes the kill method (terminate process) of the last started process
<code>(dir a.txt).set_attributes("readonly")</code>	Sets the file <code>a.txt</code> to "read-only"

A.2 Online Information from SAP

More information is available online as follows:

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