Installation Guide | PUBLIC
Software Provisioning Manager 1.0 SP40
Document Version: 2.2 – 2024-02-12

# Installation of SAP Content Server 7.5 and Higher on Windows

THE BEST RUN **SAP**

# Content

# 1 Document History

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

> ⓘ **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* ❯ .

| Version | Date | Description |
|---------|------|-------------|
| 2.2 | 2024-02-12 | Updated version for software provisioning manager 1.0 SP40 (SL Toolset 1.0 SP40) |
| 2.1 | 2023-10-09 | Updated version for software provisioning manager 1.0 SP39 (SL Toolset 1.0 SP39) |
| | | Windows operating systems no longer supported for software provisioning manager 1.0 SP39 and higher, according to SAP Note 2998013 🔗, have been removed. |
| 2.0.1 | 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 🔗. |
| 2.0 | 2023-05-26 | Updated version for software provisioning manager 1.0 SP38 (SL Toolset 1.0 SP38) |
| 1.9 | 2023-02-13 | Updated version for software provisioning manager 1.0 SP37 (SL Toolset 1.0 SP37) |
| | | Operating systems and CPU architectures no longer supported according to SAP Note 2998013 🔗 have been removed. |
| 1.8.1 | 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 🔗. |
| 1.8 | 2022-05-24 | Updated version for software provisioning manager 1.0 SP35 (SL Toolset 1.0 SP35) |
| 1.7 | 2022-02-14 | Updated version for software provisioning manager 1.0 SP34 (SL Toolset 1.0 SP34) |
| 1.6 | 2021-10-11 | Updated version for software provisioning manager 1.0 SP33 (SL Toolset 1.0 SP33) |
| 1.5 | 2021-06-21 | Updated version for software provisioning manager 1.0 SP32 (SL Toolset 1.0 SP32) |
| 1.4 | 2021-02-15 | Updated version for software provisioning manager 1.0 SP31 (SL Toolset 1.0 SP31) |
| 1.3 | 2020-10-05 | Updated version for software provisioning manager 1.0 SP30 (SL Toolset 1.0 SP30) |
| 1.2 | 2020-06-08 | Updated version for software provisioning manager 1.0 SP29 (SL Toolset 1.0 SP29) |
| 1.1 | 2020-01-20 | Updated version for software provisioning manager 1.0 SP28 (SL Toolset 1.0 SP28) |

| Version | Date | Description |
| --- | --- | --- |
| 1.0 | 2019-09-16 | Initial version |
| | | software provisioning manager 1.0 SP27 (SL Toolset 1.0 SP27) |

# 2 About this Document

This documentation describes how to install an SAP Content Server or SAP Cache Server 7.5 **or higher** on Windows, using the software provisioning manager 1.0 SP40 [page 6], which is part of SL Toolset 1.0 SP40.

> ⓘ Note
>
> If you want to install an SAP Content Server or SAP Cache Server release **lower than 7.5**, use the documentation *Installation of SAP Content Server (lower than) 7.5 on Windows*, which is available at https://support.sap.com/sltoolset 🔗 | *System Provisioning* 〉 *System Provisioning Scenarios* 〉 *Install a System using software provisioning manager* 〉 *Installation Option of software provisioning manager 1.0* `<Current SP>` 〉 *Installation Guides - Standalone Engines and Clients* 〉 *SAP Content Server* ▶

You can find a complete list of the SAP system products that are supported by software provisioning manager 1.0 attached to SAP Note 1680045 🔗.

Starting with release 7.5, Content Server is integrated into the SAP Web Dispatcher instead of the Apache (Unix) or Microsoft IIS (Windows) web servers.

SAP Content Server will be installed typically under its own system ID (SAPSID) and with an instance number that is unique within the system. As a result, SAP Content Server instances will now be better integrated in your SAP system landscape (for example, regarding its integration with SAP MC, SAP MMC, SAP Solution Manager). For more information, see SAP Note 2786364 🔗 .

If SAP Cache Server is not explicitly mentioned, "SAP Content Server" always refers to both SAP Content Server and SAP Cache Server.

> ⓘ Note
>
> If you want to install an SAP Content Server or Cache Server **lower** than 7.5 , use the documentation *Installation of SAP Content Server on Windows 7.4 and Lower* 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 Number>` 〉 *Installation Guides - Standalone Engines and Clients* 〉 *SAP Content Server* ▶

## 2.1 About Software Provisioning Manager 1.0

The software provisioning manager 1.0 is the successor of the product- and release-specific delivery of provisioning tools, such as "SAPinst". We strongly recommend that you always download the latest version of the software provisioning manager 1.0. The software provisioning manager 1.0 is part of the Software Logistics Toolset 1.0 ("SL Toolset" for short). This way, you automatically get the latest fixes and supported processes. For more information about the software provisioning manager as well as products and releases supported by it, see SAP Note 1680045 🔗 and http://scn.sap.com/docs/DOC-30236 🔗.

"SAPinst" has been renamed to "software provisioning manager" in this documentation, but the terms "SAPinst" and "sapinst" are still used in:

- The name of the technical framework of the software provisioning manager. For more information about the SAPinst Framework, see SAP Note 2393060 .
- Texts and screen elements in the the software provisioning manager GUI (SL Common GUI)
- Names of executables, for example `sapinst.exe`
- Names of command line parameters, for example **SAPINST_HTTPS_PORT**

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

**Related Information**

## 2.2 Purpose

This section describes the purpose of SAP Content Server.

Knowledge Provider is a component of SAP Application Server ABAP and provides the general infrastructure for storing and administrating documents. SAP Content Server 7.5 and higher is available on Windows Server (OS Versions are listed in the Product Availability Matrix ( PAM) at https://apps.support.sap.com/sap/support/pam ).

The Content Server and the Cache Server are server components that interact with the Knowledge Provider. This document describes how to install these components. For further information on Knowledge Provider, the Content Server, and the Cache Server, see the SAP Library at https://help.sap.com/nw ⊳ `<Choose the SAP NetWeaver Release your SAP product is based on>` ⊳ *SAP NetWeaver Library: Function-Oriented View* ⊳ *Application Server* ⊳ *Application Server ABAP* ⊳ *Other Services* ⊳ *Services for Business Users* ⊳ *Knowledge Provider (BC-SRV-KPR)* ⊳ *Content Management Service (BC-SRV-KPR)* ⊳ *SAP Content Server* ⊐.

## 2.3    Features

This section describes the features of SAP Content Server which comprises a content server and a cache server.

The graphic below illustrates the conceptual structure of the server system:
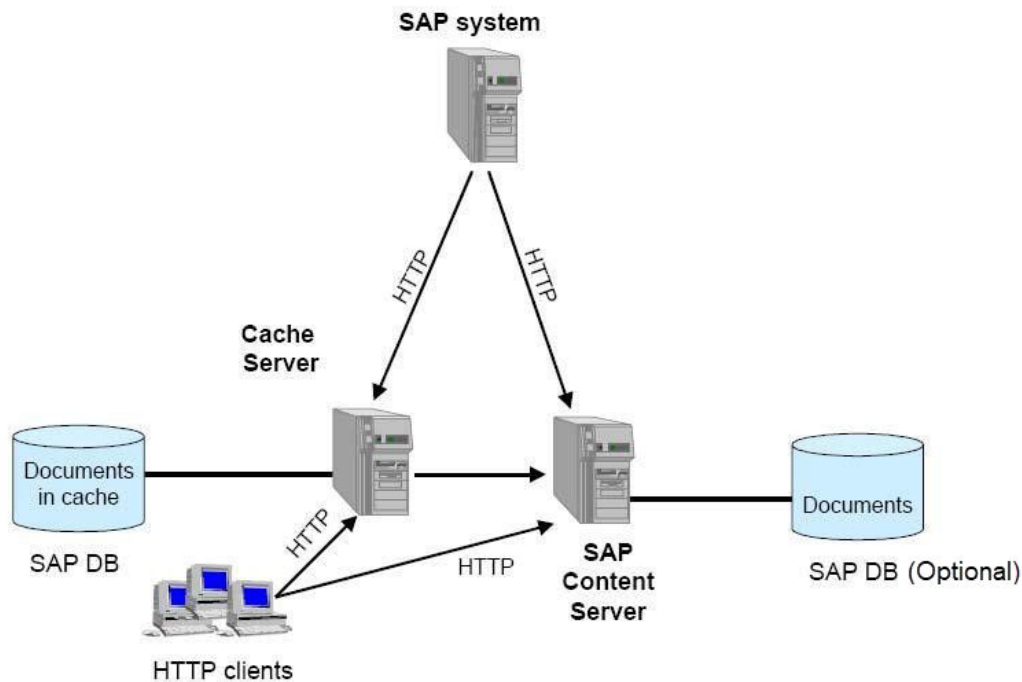


SAP Content Server Structure of the Server System on Windows

Using a database is optional. Documents can be stored either in SAP MaxDB or directly on the file system.

## 2.3.1  Content Server

The Content Server is accessed via HTTP. SAP AG has designed the interface required to do this. SAP also provides a certification procedure. You can find a description of the SAP Content Server Interface in the SAP Library at https://help.sap.com/nw ▌❭ `<Choose the SAP NetWeaver Release your SAP product is based on>` ❭ *SAP NetWeaver Library: Function-Oriented View* ❭ *Application Server* ❭ *Application Server ABAP* ❭ *Other Services* ❭ *Services for Business Users* ❭ *Knowledge Provider (BC-SRV-KPR)* ❭ *Content Management Service (BC-SRV-KPR)* ❭ *SAP Content Server* ❭ *SAP Content Server HTTP 4.5 Interface* ▌

If you want to integrate another content server into your network, the new content server must fulfill the requirements of the interface.

## 2.4    Constraints

This section lists the constraints valid for SAP Content Server.

SAP Content Server is not an alternative to optical storage systems and other storage media for long-term document archiving.

SAP Content Server on Microsoft Failover Cluster is supported only with Cluster Disks

- Effective immediately, the software provisioning manager no longer supports the deprecated Windows operating system versions 2998013 listed in SAP Note 2998013 .

> ⓘ Note
>
> - If your current operating system is listed as deprecated in SAP Note 2998013 , we strongly recommend that you migrate to a supported platform.
> - If you continue to run Software Provisioning Manager on the deprecated 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, see SAP Note 3346502 .

- Effective immediately, the software provisioning manager no longer supports the deprecated operating system versions 2998013 listed in SAP Note 2998013 .

> ⓘ Note
>
> - If your current operating system is listed as deprecated in SAP Note 2998013 , we strongly recommend that you migrate to a supported platform.
> - If you continue to run Software Provisioning Manager on the deprecated operating system versions listed in SAP Note 2998013 , you do so at your own risk and without support from SAP. The software provisioning manager 1.0 SP36 and higher will still run on the deprecated 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 2008 (R2) ends January 14th, 2022. See SAP note 2998013."* If you run into an issue, you must use the "frozen" software provisioning manager **1.0 SP35** software and the related installation guide. For more information, see SAP Note 3220901 .

## 2.5    SAP Notes for the Installation

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 | Remarks, annotations, and corrections discovered after publication of the documentation Software Provisioning Manager |

## 2.6 Naming Conventions

In this documentation, the following naming conventions apply:

> ⓘ Note
>
> From a technical point of view, the SAP Content Server 7.5 or higher is set up like an SAP system with its own SAP system ID (SAPSID), its own operating system users, and its own directory structure.

- "SAP system" refers to the "SAP Content Server" as such.
- "instance" refers to the "SAP Content Server instance".
- If SAP Cache Server is not explicitly mentioned, "SAP Content Server" always refers to both SAP Content Server and SAP Cache Server.

# 3   Planning

## 3.1   Installation Prerequisites

Before you start installing SAP Content Server, note the following prerequisites.

## 3.1.1  General Prerequisites

SAP Content Server can store documents in SAP MaxDB (separate installation required, see Installing the SAP
MAX DB (Optional) [page 32]) or directly on a file system.

You should save the following SAP Content Server sub-components to different hard disks, to ensure maximum
performance and data security in the productive system:

- Data (data files of MaxDB or root folder of file system based repositories)
- Log file (MaxDB only)
- Mirrored log file (MaxDB only)

All users, in particular application servers and workstation PCs, must be able to access the Content Server
or Cache Server system via HTTP. A workstation PC without direct HTTP access will not be able to execute
individual scenarios, or will only have very limited access to individual scenarios.

## 3.1.2  Technical Prerequisites

## 3.1.2.1 Hardware and Software Requirements

> ⚠ Caution
>
> If your hosts do not fully meet the requirements, you might experience problems when working with the SAP system.

**Procedure**

1. Check the *Product Availability Matrix* at https://apps.support.sap.com/sap/support/pam🔗 for supported operating system releases.
2. If you want to use the SAP Content Server for 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 hardware sizing information available at https://sap.com/sizing🔗.
   - You contact your hardware vendor, who can analyze the load and calculate suitable hardware sizing depending on:
     - The set of applications to be deployed
     - How intensively the applications are to be used
     - The number of users

## 3.1.2.1.1 Hardware and Software Requirements Tables

Hardware Requirements

| Hardware Require-ment | Requirement | How to Check |
|---|---|---|
| Minimum disk space | | To check disk space:<br><br>1. Open PowerShell in elevated mode, and enter the following command:<br>`get-volume`<br>2. Check the value *SizeRemaining* of the disk you want to install on. |

| Hardware Require-ment | Requirement | How to Check |
|---|---|---|
| Minimum RAM | | 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 [page 56] |
| Processing units | **For application server instances and database 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:<br>  • Windows Server Standard Edition<br>  • Windows Server Datacenter Edition<br><br>⚠ **Caution**<br>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🔗.<br><br>⚠ **Caution**<br>Make sure that you install the **English** language pack so that your support requests can be handled quickly.<br><br>• For any version of Windows Server, you need the latest supported service pack | To check your Windows version:<br><br>Open PowerShell in elevated mode, and enter the following command:<br><br>```Get-WmiObject Win32_OperatingSystem | select caption```<br><br>Only valid for 'High Availability': HA (Windows)<br><br>ⓘ **Note**<br>You must add the operating system feature *Failover Clustering* on **all** cluster nodes.<br><br>End of 'High Availability': HA (Windows) |
| 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 🔗 - *Installation requirements for SAP kernels on Windows (C++ runtime environment, VCredist versions)* | – |
| Windows regional settings | *English (United States)* must be set by default. For more information about localized Windows versions, see SAP Note 362379🔗.<br><br>You can install additional languages but the default setting for new users must always be *English (United States)*. | Choose ▌ *Start* ❯ *Control Panel* ❯ *Clock, Language, and Region* ❯ *Language* ▐. |

| Software Requirement | Requirement | How to Check |
|---|---|---|
| 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:<br><br>• Microsoft Internet Explorer 11 or higher<br>• Microsoft Edge<br>• Mozilla Firefox<br>• Google Chrome<br><br>Always use the latest version of these web browsers.<br><br>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 ▶ *Start* ❯ *Control Panel* ❯ *Programs and Features* ❭ . |

## 3.2 Basic Installation Parameters

The table below lists the basic input parameters that are prompted by the software provisioning manager. For all remaining input parameters, use the tool help or the descriptions on the software provisioning manager screens.

| Parameters | Description |
|---|---|
| SAP System ID `<SAPSID>` | The SAP System ID `<SAPSID>` is the technical identifier for your SAP Content Server and SAP Cache Server. You can install SAP Content Server and SAP Cache Server with the same `<SAPSID>`, but with different instance numbers.<br><br> ⚠ Caution<br><br>Choose your SAP system ID carefully. You **cannot** change the SAP system ID after the installation.<br><br>Make sure that your SAP system ID:<br><br>• Is unique throughout your organization<br>• Consists of exactly three alphanumeric characters<br>• Contains only uppercase letters<br>• Has a letter for the first character<br>• Does not include any of the reserved IDs listed in SAP Note 1979280 . |

| Parameters | Description |
| --- | --- |
| Instance Number for the SAP Content Server | **Instance Number:**<br><br>Technical identifier for internal processes. 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.<br><br> ⚠ Caution<br>Do not use 43, 60, 89 for the instance number of the SAP Content Server. |
| Virtual Host Name | Virtual host name (network name) of the `SAP<SAPSID>` cluster group<br><br>You can assign a virtual host name for the instance to be installed, by specifying it in the *Host Name* field of the screen. Then this instance is installed with this virtual host name.<br><br>After the installation has completed, all application servers can use this virtual host name to connect to the instance. The virtual host name is also a global host name. If you do not provide the virtual host name, the instance is installed automatically using its physical host name.<br><br>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 26].<br><br> ⓘ Note<br>Fully qualified host names, `IPv4`, `IPv6` are not accepted as virtual host names.<br><br>Alternatively you can assign virtual host names also by starting the software provisioning manager with the `SAPINST_USE_HOSTNAME` command line parameter. For more information, see Running Software Provisioning Manager [page 34]. |

| Parameters | 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 instal-
> lation, the software provisioning manager creates them with the common
> master password (see *Operating System Users*). In this case, make sure that
> the master password meets the requirements of your operating system.

* Secure Store key phrase

> ⓘ 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.

**Additional restrictions depending on SAP MaxDB:**

* It can be 8 to 18 characters long
  **Windows only:** When installing MaxDB in an MSCS environment, do not use a
  password more than 9 characters long for the MaxDB `control` user. Otherwise
  the database installation on an additional node will fail.
* It must not begin with a digit or an underscore
* It can only contain the following characters: `@`, `_`, `#`, `$`, `a-z`, `A-Z`, `0-9`

> → 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 50].

| Parameters | Description |
|---|---|
| Operating System Users | The passwords of the operating system users **must** comply with the Windows pass-word policy. The software provisioning manager processes the passwords of operating system users as follows:<br><br>• If the operating system users do **not** exist, SAP creates the following users:<br>  • `<sapsid>adm`<br>   This user is the SAP system administrator user. It is a member of the local `Administrators` group.<br>  • `SAPService<SAPSID>`<br>   This user is the Windows account to run the SAP system. It is not a member of the local `Administrators` group.<br>  • `sapadm`<br>   The 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.<br>   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 23]. For security reasons, however, SAP strongly recommends you to create this user as a local user.<br>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.<br>• 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.<br><br>⚠ Caution<br>Make sure that you have the required user authorization [page 22] for these accounts before you start the installation. |

| Parameters | Description |
|---|---|
| SAP Content Server Configuration | • *Maximum Number of Incoming Concurrent Connections*<br>You can specify a maximum of incoming concurrent connections.<br>Standard configurations are available for:<br>  • 500 connections: Test configuration, suitable for few concurrent requests<br>  • 2000 connections: Configuration for small or medium-sized production systems<br>  • 32000 connections: Configuration for large production systems and load tests<br>The configurations differ in the number of possible parallel connections and resource consumption, such as memory, sockets, and threads.<br>• *HTTP Script*<br>This is the SAP Content Server's or the SAP Cache Server's script name.<br>For SAP Content Server, the default script name is `/sapcs`.<br>For SAP Cache Server, the default script name is `/sapscs`.<br>When migrating an existing SAP Content Server, make sure that you use the same HTTP Script as specified in OAC0. You can also adjust OAC0 to use the same HTTP Script as specified here.<br>• HTTP/HTTPS Ports:<br>  • *HTTPS Port*<br>  The HTTPS port of the SAP Content Server is an entry point to the SAP system. The default is `1091`.<br>  • *HTTP Port*<br>  Optionally you can change the HTTP port number if the port number assigned by default does not suit your needs.<br>  The HTTP port of the SAP Content Server is an entry point to the SAP system. The default is `1090`.<br>  You can either accept a default value for the HTTP port number or configure the port number as required.<br><br>→ Recommendation<br><br>For the SAP Content Server, we recommend using HTTP port 1090 and HTTPS port 1091.<br><br>For the SAP Cache server, we recommend using HTTP port 1095 and HTTPS port 1096.<br><br>• *Enable AdminSecurity*<br>If you want to enable `AdminSecurity`, provide the *AdminSecurity Group*. |

| Parameters | Description |
| --- | --- |
| 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 SAPHOSTAGENT<Version>.SAR archive.<br><br>To download this archive, go to https://me.sap.com/softwarecenter 🔧 ▶ ❯ *SUPPORT PACKAGES & PATCHES* ❯ *By Category* ❯ ❯ *SAP Technology Components* ❯ *SAP HOST AGENT* ❯ *SAP HOST AGENT 7.21* ❯ <Operating System> ◀ |

# 4 Preparation

This section describes in detail the steps you need to take before installing your SAP Content Server.

> 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.

> This section describes how to prepare the installation media.

## 4.1 Checking the Windows File System

### Use

You need to check that you are using the Windows file system NTFS on hosts where you want to install the SAP system and database. NTFS supports full Windows security and long file names.

> ⓘ Note
>
> You must use NTFS for an SAP system installation. Do **not** install the SAP directories on a FAT partition.

### Procedure

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.

## 4.2 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.

**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.

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.

For a domain installation, you need to:

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

**Local Installation**

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

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

> ⚠ Caution
>
> Do not use the Windows built-in account `Administrator` or the renamed built-in account to install your SAP system. The built-in account only has restricted network access rights that are required by the

> 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**

## 4.3 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 distributedinstallations (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.

## 4.4 SAP Directories

The software provisioning manager automatically creates the directories listed in the following figures and tables. Before running the installation, you have to set up the required file systems manually. In addition, you have to make sure that the required disk space for the directories to be installed is available on the relevant hard disks. The figure below assumes that you have set up one file system for the SAP system mount directory `<sapmnt>` and one file system for the `/usr/sap` directory. However, you have to decide for which directories you want to set up separate file systems. If you do not set up any file system on your installation host, the software provisioning manager creates all directories in the `root` directory `/`. The software provisioning manager prompts you only for the `<sapmnt>` directory during the installation.

Global Host

<Drive>

usr

refers to

sap

<SAPSID>

SYS

global
profile
exe
uc/nuc

<platform>

Access to Global Directories

\\<SAPGLOBALHOST>\sapmnt (UNC path)
\\<SAPLOCALHOST>\saploc (UNC path)

Local Instances

<Drive>

usr

refers to

sap

<SAPSID>

C<No>

work
log
data
exe

Access to Local Directories

\\<SAPLOCALHOST>\saploc (UNC path)

Key:
— — — —▶ : Replication by sapcpe
uc/nuc : Unicode / non-Unicode
C<No> : SAP Content Server Instance
On global host:
SAPGLOBALHOST = SAPLOCALHOST
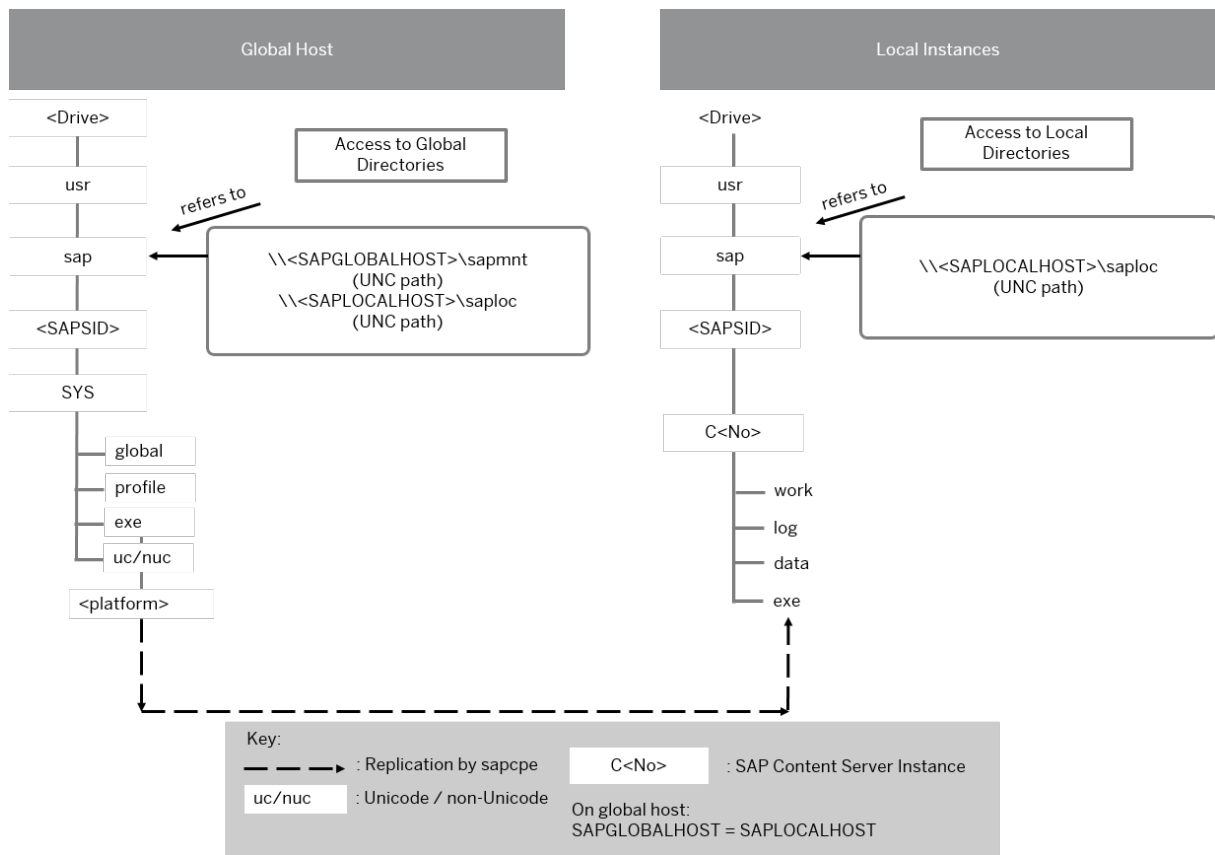
SAP Directories of an SAP Content Server Instance

The directory of the SAP Content Server instance is `C<Instance_Number>`, for example `C00`.

## SAP File Directories in Detail

> ⓘ Note
>
> The listed file system sizes are initial SAP requirements.
>
> Depending on your operating system, you might also have to add space for administrative purposes.

| Directory Name | Description | Space Required |
|---|---|---|
| `<Drive>:\usr\sap\<SAPSID>` | `\usr\sap` is created and **shared** with the network share `sapmnt`.<br><br>The `\usr\sap` directory contains general SAP software, global and local (instance-specific) data.<br><br>For this, the following directories are created in `usr\sap\<SAPSID>\SYS`:<br><br>• `global` (contains globally shared data)<br>• `profile` (contains the profiles of the instance)<br>• `exe` (contains executable kernel programs)<br><br>The directory `usr\sap\<SAPSID>\<INSTANCE>` is the directory of the instance:<br><br>The instance name (instance ID) of the SAP Content Server instance is `C<Instance_Number>`, for example `C00`. | 500 MB |
| `<Drive>:\usr\sap\trans` | `\usr\sap\trans`<br><br>This directory contains SAP software for the transport of objects between SAP systems . | This value heavily depends on the use of your SAP system.<br><br>For the installation, it is sufficient to use 200 MB for each SAP system instance. You can enlarge the file system afterwards. |

# 4.5 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

> **⚠ Caution**
>
> **High Availability only:**
>
> - Only use virtual host names if this is explicitly stated in the parts of this installation guide specific to high availability. Otherwise, use the physical host name.
> - Do **not** start the software provisioning manager with the command line parameter SAPINST_USE_HOSTNAME=<virtual hostname> on failover cluster nodes.

## Procedure

To install a **non-high-availability** system, proceed as described in SAP Note 1564275👉.

## 4.6 Preparing the Installation Media

This section describes how to prepare the installation media.

Installation media are available as follows:

| Installation Archive | Description |
| --- | --- |
| SWPM10SP`<Support_Package_Number>_<Version_Number>`.SAR | The software provisioning manager 1.0 archive containing the software provisioning manager<br><br>You always have to download the latest version of the software provisioning manager 1.0 archive.<br><br>You must extract this archive to be able to run the software provisioning manager. For more information, see Downloading and Extracting the Software Provisioning Manager 1.0 Archive [page 28]. |
| SAPCS`<Release>`.SAR | Contains the installation packages for the SAP Content Server and the Cache Server<br><br>You can download it from https://me.sap.com/softwarecenter👉 ▌ ❯ *DATABASES* ❯ *SAP MaxDB* ❯ |

| Installation Archive | Description |
|---|---|
| SAPHOSTAGENT`<Release>_<Version>`.SAR | Contains the installation packages for the SAP Host Agent |
| | You can download it from https://me.sap.com/softwarecenter ▶ SUPPORT PACKAGES & PATCHES ❯ By Category ❯ SAP TECHNOLOGY COMPONENTS ❯ SAP HOST AGENT ❯ SAP HOST AGENT 7.22 ❯ `<Latest Version>` ❯ |

| Installation Media | Description |
|---|---|
| SAP MaxDB `<Release>` - SP`<Version>` Build `<Version> <OS>` | Contains the SAP MaxDB database software, only required if you install a database instance for the Content Server and / or the Cache Server |
| | Download the SAP MaxDB database software media from the SAP Software Download Center (SWDC) at: https://me.sap.com/softwarecenter ▶ DATABASES ❯ SAP MaxDB ❯ |
| | For more information, about how to download installation media, see Downloading Complete Installation Media [page 30]. |

> ⓘ Note
>
> 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 34] ). The software provisioning manager only accepts media whose digital signature has been checked.

## 4.6.1 Downloading and Extracting the Software Provisioning Manager 1.0 Archive

You must always download and extract the software provisioning manager 1.0 archive from the SAP Software Download Center because you must use the latest version.

### Prerequisites

- Make sure that you use the **latest** version of the `SAPCAR` tool when manually extracting the software provisioning manager archive. You need the `SAPCAR` tool to be able to unpack and verify software component archives (*.SAR files). *.SAR is the format of software lifecycle media and tools that you can download from the SAP Software Download Center.

> ⓘ **Note**
>
> An older `SAPCAR` version might extract archive files in a wrong way and this could prevent the software provisioning manager from working consistently.

Proceed as follows to get the latest version of the `SAPCAR` tool:

1. Go to https://me.sap.com/softwarecenter 🔗 ▶ > *SUPPORT PACKAGES & PATCHES* ❯ *By Category* ❯ *SAP TECHNOLOGY COMPONENTS* ❯ *SAPCAR* ❯.
2. Select the `SAPCAR` for your operating system and download it to an empty directory.
3. Even if you have the latest `SAPCAR` already available, we strongly recommend that you verify its digital signature anyway, unless you downloaded it directly from https://me.sap.com/softwarecenter/ 🔗 yourself. You can do this by verifying the checksum of the downloaded `SAPCAR` tool:
   1. Depending on what operating system you are using, compute a hash of the downloaded `SAPCAR` tool, using the SHA-256 algorithm used by SAP .
   2. Now verify the digital signature of the downloaded SAPCAR tool by comparing the hash with the checksum (generated by SAP using the SHA-256 algorithm) from the *Content Info* button in the *Related Info* column on the right-hand side of the place where you downloaded the `SAPCAR` tool.
4. To improve usability, we recommend that you rename the executable to **`sapcar`**.

For more information about `SAPCAR`, see SAP Note 212876 🔗.

## Procedure

1. Download the latest version of the Software Provisioning Manager 1.0 archive `SWPM10SP<Support_Package_Number>_<Version_Number>.SAR` from:

   https://support.sap.com/sltoolset 🔗 ▶ > *System Provisioning* ❯ *Download Software Provisioning Manager* ❯

2. Using the latest version of SAPCAR, you can verify the digital signature of the downloaded `SWPM10SP<Support_Package_Number>_<Version_Number>.SAR` archive as follows:

   a. Get the latest version of the `SAPCRYPTOLIB` archive to your installation host as follows:

      1. Go to https://me.sap.com/softwarecenter 🔗 ▶ *SUPPORT PACKAGES & PATCHES* ❯ and search for "**`sapcryptolib`**".
      2. Select the archive file for your operating system and download it to the same directory where you have put the `SAPCAR` executable.
      3. Use the following command to extract the `SAPCRYPTOLIB` archive to the same directory where you have put the `SAPCAR` executable:
         **`SAPCAR -xvf sapcryptolibp_84…sar -R <target directory>`**
      4. Download the Certificate Revocation List from https://tcs.mysap.com/crl/crlbag.p7s 🔗 and move it to the same directory.

   b. Verify the digital signature of the downloaded `SWPM10SP<Support_Package_Number>_<Version_Number>.SAR` archive by executing the following command:

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

```
<Path to SAPCAR>\sapcar.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.

## 4.6.2  Downloading Complete Installation Media

This section describes how you can download 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 28].
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 Preparing the Installation Media [page 27] .
4. Identify **all** download objects that belong to one medium according to one of the following:

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

- Download path or location:
    - To download the complete kernel media, go to https://me.sap.com/softwarecenter/ 🔗 ▶
      ▶ *SUPPORT PACKAGES & PATCHES* ▶ *By Category* ▶ *ADDITIONAL COMPONENTS* ▶ *SAP KERNEL*
      ▶ *SAP KERNEL 64-BIT UNICODE* ▶ *SAP KERNEL* <Version> *64-BIT UNICODE* ▶ <Select your
      OS> .
        - Select ▶ *#DATABASE INDEPENDENT* ◀ to download the database-independent parts of the
          kernel.

> ⚙ Example
>
> ```
> SAPEXE_1110-80002623.SAR
> Kernel Part I (753) (*)
> ```
>
> ```
> SAPEXE_1118-80002612.SAR
> ```

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

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

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

- Material number
  All download objects that are part of an installation medium have the same material number and an individual sequence number:
  `<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>` or `<Database>`RDBMS`<OS>` for database media.

5. Download the objects to the download directory.

6. To correctly re-combine the media that are split into small parts, unpack all parts into the same directory.

   In the unpacking directory, the system creates a subdirectory with a short text describing the medium and copies the data into it. The data is now all in the correct directory, the same as on the medium that was physically produced. For more information, see SAP Note 1258173 🔗.

> ⚠ Caution
>
> Make sure that you unpack each installation media to a separate folder. Do not unpack installation media to the same folder where you unpack the Software Provisioning Manager archive.
>
> Do not unpack installation media to the same folder where you unpack the SAP kernel archives for archive-based installation.

## 4.7 Installing the SAP MAX DB (Optional)

SAP Content Server can store documents in SAP MaxDB (separate installation required) or directly on a file system. If you want to use SAP MaxDB, you have to install it separately. Proceed as follows:

1. Check the Prerequisites for Running Software Provisioning Manager [page 33].
2. Running Software Provisioning Manager [page 34] and choose ▌ *Generic Options* ❯ *SAP Content Server* ❯ *SAP MaxDB Database Instances* ▌
   For detailed information about how to install a SAP MaxDB database instance, see the documentation Installation of SAP Systems Based on the Application Server ABAP of SAP NetWeaver 7.3 EHP1 to 7.52 on Windows : SAP MaxDB at https://help.sap.com/viewer/swpm10guides ▌ ❯ *Installation Option of Software Provisioning Manager 1.0* ❯ *Installation Guides - Application Server Systems - Software Provisioning Manager 1.0* ❯ *Database: SAP MaxDB* ❯ *Product Release: SAP NetWeaver 7.X-based* ❯ `<Operating System Platform>` ❯ `<Technical Stack>` ▌.

When installing the SAP MaxDB, you should also consult your operating system manual as necessary.

# 5 Installation

## 5.1 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 do trust the self-issued certificate of the software provisioning manager after carefully performing the "thumbprint" verification described in Running Software Provisioning Manager [page 34] . 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 39].

- 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 22] 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 39].
- Make sure that you have defined the most important SAP system parameters as described in Basic Installation Parameters [page 15] **before** you start the installation.
- 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>**

# 5.2 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 33].

## 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 39].

## Procedure

1. Log on to the installation host using an account with the required user authorization to run the software provisioning manager [page 22].

   > ⚠ 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 27] .

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 Basic Installation Parameters [page 15]), 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 26].

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 33]) 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 39].
> 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:

   - To install an SAP MaxDB database instance as data storage for your content server or cache server installation, choose ▶ *Generic Options* ❯ *SAP Content Server* ❯ *SAP MaxDB Database Instances* ❯.
     See also Installing the SAP MAX DB (Optional) [page 32].

   - To install SAP Content Server and Cache Server, choose ▶ *Generic Options* ❯ *SAP Content Server* ❯ *Content Server and SAP Cache Server (7.5 and Higher)* ❯.

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.

   - Only valid for 'High Availability': HA (Windows)

     **High Availability only:** If you decide to install an SAP Web Dispatcher or a Gateway in the ASCS instance, note that a failure of the SAP Web Dispatcher or the Gateway causes failover of the ASCS instance to another cluster node. The failover cluster monitors all processes that are started by the SAP start service (sapstartsrv.exe). For an ASCS instance this is: `msg_server.exe` (message server), `enserver.exe` (enqueue server), gwrd.exe (Gateway), and `sapwebdisp.exe` (SAP Web Dispatcher). To prevent failover, see SAP Note 2375999 .

     End of 'High Availability': HA (Windows)

> ⚠ 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.`

10. If you want to store documents in SAP MaxDB, you can now install a SAP MaxDB Database Instance.

    a. Restart the software provisioning manager as described above.

    b. On the Welcome screen, choose ▶ *Generic Options* ▶ *SAP Content Server* ▶ *SAP MaxDB Database Instances* ▶.

    c. Follow the instructions on the software provisioning manager screens and enter the required parameters.

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 39].

# 5.3 Additional Information about Software Provisioning Manager

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

Useful Information about Software Provisioning Manager [page 39]
    This section contains some useful technical background information about the software provisioning manager and the software provisioning manager's SL-UI.

How to Avoid Automatic Logoff by Software Provisioning Manager [page 40]

Restarting Interrupted Processing of Software Provisioning Manager [page 42]
    Here you find information about how to restart the software provisioning manager if its processing has been interrupted.

Troubleshooting with Software Provisioning Manager [page 45]
    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 46]
    This section describes how to use the `Step State Editor` available in the software provisioning manager.

## 5.3.1 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 33].
  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 `FCO-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 required, stop the software provisioning manager by choosing the *Cancel* button.

> ⓘ Note
>
> If you need to terminate the software provisioning manager, choose ▐▶ *File* ❯ *Exit* ▐ in the menu of the *Program Starter* window.


## 5.3.2  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.

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.

> ⚠ Caution
>
> Be aware that domain policies override locally defined policies. This means that if you want to grant domain administrator rights to a user who belongs to the local `Administrators` group, make sure that you have also defined domain administrator rights for this user on domain level.

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 22]

### 5.3.3 Restarting Interrupted Processing of Software Provisioning Manager

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

## Context

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

- An error occurred during the *Define Parameters* or *Execute* phase:
  The software provisioning manager does not abort the installation in error situations. If an error occurs, the installation pauses and a dialog box appears. The dialog box contains a short description of the choices listed in the table below as well as a path to a log file that contains detailed information about the error.

- You interrupted the processing of the software provisioning manager by choosing *Cancel* in the SL-UI.

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

The following table describes the options in the dialog box:

| Option | Definition |
| --- | --- |
| *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 `keydb.xml` file. |
| | We recommend that you view the entries in the log files, try to solve the problem, and then choose *Retry*. |
| | If the same or a different error occurs, the software provisioning manager displays the same dialog box again. |
| *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 `keydb.xml` file. Therefore, you can continue with the software provisioning manager from the point of failure without repeating any of the previous steps. See the procedure below. |
| *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 34] .

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

   For more information, see Preparing the Installation Media [page 27] .

   > → 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. 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`.

4. The software provisioning manager is restarting.

   If you have a supported web browser (see Prerequisites for Running Software Provisioning Manager [page 33]) 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 39].
   > 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. From the tree structure on the *Welcome* screen, select the installation option that you want to continue and choose *Next*.

   The *What do you want to do?* screen appears.

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

| Alternative | Behavior |
|---|---|
| *Perform a new run* | 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<br><br>`log_01_Oct_2016_13_47_56` |
| | ⓘ Note<br><br>All actions taken by the installation before you stopped it (such as creating directories or users) are not revoked. |
| | ⚠ Caution<br><br>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. |
| *Continue with the existing one* | The software provisioning manager continues the interrupted installation from the point of failure. |

## 5.3.4 Troubleshooting with Software Provisioning Manager

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

### Context

If an error occurs, the software provisioning manager:

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

**Procedure**

1. Check SAP Note SAP Note 3207613👆 (*SAPinst Framework 753 Central Note*) for known software provisioning manager issues.
2. If an error occurs during the *Define Parameters* or the *Execute Service* phase, do one of the following:

   - Try to solve the problem:
     - To check the software provisioning manager log files (`sapinst.log` and `sapinst_dev.log`) for errors, choose the *LOG FILES* tab.

       > ⓘ 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 39].

     - 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 42].
3. If you cannot resolve the problem, report an incident using the appropriate subcomponent of BC-INS*.

   For more information about using subcomponents of BC-INS*, see SAP Note 1669327👆.

## 5.3.5  Using the Step State Editor (SAP Support Experts Only)

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

> ⓘ 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 33].

## Procedure

1. Start the software provisioning manager from the command line as described in Running Software Provisioning Manager [page 34] with the additional command line parameter `SAPINST_SET_STEPSTATE=true`

2. Follow the instructions on the software provisioning manager screens and fill in the parameters prompted during the *Define Parameters* phase until you reach the *Parameter Summary* screen.

3. Choose *Next*.

   The `Step State Editor` opens as an additional dialog. Within this dialog you see a list of all steps to be executed by the software provisioning manager during the *Execute Service* phase. By default all steps are in an initial state. Underneath each step, you see the assigned software provisioning manager component. For each step you have a *Skip* and a *Break* option.

   - Mark the checkbox in front of the *Break* option of the steps where you want the software provisioning manager to pause.
   - Mark the checkbox in front of the *Skip* option of the steps which you want the software provisioning manager to skip.

4. After you have marked all required steps with either the *Break* or the *Skip* option, choose *OK* on the *Step State Editor* dialog.

   The software provisioning manager starts processing the *Execute Service* phase and pauses one after another when reaching each step whose *Break* option you have marked. You can now choose one of the following:

   - Choose *OK* to continue with this step.
   - Choose *Step State Editor* to return to the `Step State Editor` and make changes, for example you can repeat the step by marking the checkbox in front of the *Repeat* option.
   - Choose *Cancel* to abort the software provisioning manager.

5. Continue until you have run through all the steps of the *Execute Service* phase of the software provisioning manager.

# 6 Post-Installation

## 6.1 Post-Installation Steps

After the software provisioning manager has completed successfully, there are a few more things you have to do before you can use your newly-installed SAP Content Server.

**Procedure**

1. Set up repositories.
2. Make the repositories known to your SAP system.
3. Issue certificates, if necessary.
4. Change the password for the database users.

   You do steps 1 – 3 in transaction CSADMIN in your SAP system. For detailed information on CSADMIN and the tasks listed above, go to https://help.sap.com/nw ▌▶ ❯ `<Choose the SAP NetWeaver Release your SAP product is based on>` ❯ *SAP NetWeaver Library: Function-Oriented View* ❯ *Application Server* ❯ *Application Server ABAP* ❯ *Other Services* ❯ *Services for Business Users* ❯ *Knowledge Provider (BC-SRV-KPR)* ❯ *Content Management Service (BC-SRV-KPR)* ❯ *SAP Content Server* ▌ and see the following documentation:

   - Section *Content Server and Cache Server Administration*
     See also SAP Note 329473 ▱ for a description of the Content Server and Cache Server configuration file.

- Section ▶ *Special Measures* ▶ *Changing the Password for Database Access* ▶ describes clearly how to change the password for the database user SAPR3. However, you should also read SAP Note 212394 that lists all the administrative database users and describes an alternative method of changing passwords. If you change the password for the user SAPR3 in the database instance, you must run the report RSCMSPWS. This report asks for the user/ password combination that the content server should use to access the repositories. After you have entered a new combination, RSCMSPWS encrypts the password and sends the user/password combination to the content server. If you forget to change the password with RSCMSPWS all connection attempts from the content server to the database will fail. The composite SAP note for the SAP Content Server for UNIX contains the link to the appropriate SAP Notes that describe the report RSCMSPWS.

5. On a more general level, you should also consult the complete operating manual for SAP Content Server at https://help.sap.com/nw ▶ ▶ `<Choose the SAP NetWeaver Release your SAP product is based on>` ▶ *SAP NetWeaver Library: Function-Oriented View* ▶ *Application Server* ▶ *Application Server ABAP* ▶ *Other Services* ▶ *Services for Business Users* ▶ *Knowledge Provider (BC-SRV-KPR)* ▶ *Content Management Service (BC-SRV-KPR)* ▶ *SAP Content Server* ▶ to learn how to prepare backups, observe and monitor the server, and relocate repositories, among other things. The sections *Content Server and Cache Server Administration*, *Content Server and Cache Server Monitoring*, and the *SAP Content Server Security Guide* are of particular relevance here.

# 6.2 Installation Check

This section describes how you can perform an installation check

## Context

After you have created your repositories (see Post-Installation [page 48]), you might want to run report RSCMST to check that your repositories can be accessed from the SAP system.

## Procedure

- **Testing the Content Repositories**
    a. In transaction SE38, execute the report RSCMST.
    b. Enter the name of one of your content repositories and execute one or more test runs.

    The traffic light symbols show you whether or not the tests were successful. You can also read the test logs at this point.

- **Testing the Caches**

    You can test the cache independently of the Customizing settings described above. To do this, use the test report RSCMST to set that a specific cache should be used for access, regardless of the Customizing settings.

a. In transaction SE38, execute the report RSCMST.

b. Specify the name of your cache in the following format:

`<Host Name>:<Port>/sapcsc`

> ❖ Example
>
> `p21032:1095/Cache/sapcsc`

c. Execute the test.

d. Execute the test run RSCMSTH0 or RSCMSTAC.

The traffic light symbols show you whether or not the tests were successful. You can also read the test logs at this point.

### RSCMSTH0

URLs that contain the forward parameter are GET URLs that are transferred via the cache that you specified.

### RSCMSTAC

If data is found in the cache, [cache] is the output after each GET request.

## 6.3    Ensuring User Security

You need to ensure the security of the users that the software provisioning manager created during the installation.

> → 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.

## Operating System Users

Operating System and Database Users

| User Type | User | Comment |
|---|---|---|
| Operating system user | `<sapsid>adm` | SAP system administrator |
| | `sqd<dbsid>` | SAP MaxDB database administrator |
| | `SAPService<SAPSID>` | User to run the SAP system |

Operating System Users

| User Type | User | Comment |
|---|---|---|
| Operating system user | `<sapsid>adm` | Administrator for the SAP Content Server. |
| Operating system user | `SAPService<SAPSID>` | User to run the SAP Content Server. |

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. |

# 6.4    System Configuration

Before you store data on SAP Content Server and start using the system productively, you have to make the system settings described in this section. You can make these settings directly in the SAP System.

## Prerequisites

You have to fulfill the technical prerequisites described in Installation Prerequisites [page 11].

## Overview

Make the system settings described in the following sections:

-
-

The system settings are mainly Customizing settings.

You make the Customizing settings in the SAP System in the Implementation Guide (IMG). The individual Customizing activities are described in the SAP reference IMG under ▶ *Application Server* ❯ *Basis Services* ❯ *Knowledge Provider* ◀. In the IMG, simply choose *Execute* to go to the transaction in question. For online help, choose Documentation. Also, for detailed documentation on SAP Content Server, see the SAP Library at https://help.sap.com/nw ▶ ❯ `<Choose the SAP NetWeaver Release your SAP product is based on>` ❯ *Application Server* ❯ *Basis Services* ❯ *Knowledge Provider* ❯ *Content Management Service* ◀ and its sub-sections. As the settings are described in detail in the SAP Library, they are only mentioned briefly here.

# 6.4.1  Content Server Settings

Once you have installed your new Content Server, you need to create content repositories where you can store your content.

## Procedure

- **Testing the Connection to the Content Server**
    a.  Open a Web browser on a host that is connected to your local network.
    b.  Navigate to the following URL:

    **`http://<hostname>:<port>/sapcs?serverInfo`**

    > ⓘ Note
    >
    > Note that the URL is case-sensitive.

    The information on the Content Server that is the result of the test is then displayed. In this information, the status should be `running`.

- **Creating Content Repositories**
    a.  In transaction CSADMIN, create at least one content repository for your Content Server.

    Make sure that you change the pre-set ContentStorageName from SDB to the name of the database instance you set during the installation procedure.

    b.  Send a certificate to your repository and activate the certificate.
    c.  From the tab page *Detail*, call up transaction OAC0, so that you can make the repository known in the SAP System.

    You can use the Customizing icon (a blue arrow) in change mode to jump from transaction CSADMIN to transaction OAC0. In OAC0, you can simply accept the pre-set entries and save them.

For more information on administrating the Content Server, see the SAP Library at: https://help.sap.com/nw ▮ ❯ `<Choose the SAP NetWeaver Release your SAP product is based on>` ❯ *SAP NetWeaver Library: Function-Oriented View* ❯ *Application Server* ❯ *Application Server ABAP* ❯ *Other Services* ❯ *Services for Business Users* ❯ *Knowledge Provider (BC-SRV-KPR)* ❯ *Content Management Service (BC-SRV-KPR)* ❯ *SAP Content Server* ❯ *Content Server and Cache Server Administration* ▮

- **Switching Off Access Control for Content Server Administration**

  AdminSecurity is activated by default.

  This means that only members of specified groups (and local administrators) can execute administrative commands. To do this, they have to enter their user name and password.

# 6.4.2 Cache Server Settings

## Context

## Procedure

- **Testing the Connection to the Cache Server**
  a. Open a Web browser on a host that is connected to your local network.
  b. Enter the following URL in the address field and choose Return:

     `http://<hostname>:<port>/sapcsc?serverInfo`

     > ⓘ Note
     >
     > Note that the URL is case-sensitive.

     The information on the Cache Server that is the result of the test is then displayed. In this information, the status should be `running` (`serverStatus="running"`).

- **Making the Cache Known to the SAP System**
  a. In transaction SCMSCA, maintain the entries for your Cache Server.
  b. If you are using distributed cache servers, you need to make additional entries.

  For information on this, see both the installation guide (IMG) at ▮ *Application Server* ❯ *Basis Services* ❯ *Knowledge Provider* ❯ *Distribution* ▮ and the SAP Library at https://help.sap.com/nw ▮ ❯ `<Choose the SAP NetWeaver Release your SAP product is based on>` ❯ *SAP NetWeaver Library: Function-Oriented View* ❯ *Application Server* ❯ *Application Server ABAP* ❯ *Other Services* ❯ *Services for Business*

*Users* > *Knowledge Provider (BC-SRV-KPR)* > *Content Management Service (BC-SRV-KPR)* > *SAP Content Server* > *Distribution* ▶.

# 7 Additional Information

## 7.1 SAP Notes Relevant for SAP Content Server

| Number | Content |
| --- | --- |
| https://me.sap.com/notes/ | Integrating SAP MaxDB database in Microsoft Cluster Server |
| 2786364 | SAP Content Server and Cache Server 7.5 (and higher) |
| 0181696 | Caching |
| 0216419 | Multilevel caching and content server proxies |
| 0350067 | Administration Content Server/SAP DB |
| 0351647 | Cache Server Administration |
| 310218 | Delete SAP DB Installation |
| 329473 | Description of Content Server and Cache Server configuration file |

## 7.2 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

> ⚠ **Caution**
>
> **High Availability only:**
>
> - Only use virtual host names if this is explicitly stated in the parts of this installation guide specific to high availability. Otherwise, use the physical host name.
> - Do **not** start the software provisioning manager with the command line parameter SAPINST_USE_HOSTNAME=<virtual hostname> on failover cluster nodes.

## Procedure

To install a **non-high-availability** system, proceed as described in SAP Note 1564275 .

# 7.3 Checking and Changing the Paging File Settings on Windows Server

This section describes how to check and change the paging file size on Windows Server with PowerShell.

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

> ⓘ **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.

> ⓘ **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:

```
             Name                InitialSize
 MaximumSize              FileSize
 ----                     -----------
 -----------              --------
             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*.

> ⓘ **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()
```

# 7.4    Uninstalling the SAP Content Server

## Procedure

1. Start the software provisioning manager [page 34].
2. On the Welcome screen, choose ▮▶ *Generic Options* ❯ `<Database>` ❯ *Uninstall* ❯ *Uninstall SAP Systems or Single Instances* ◗.
3. Follow the instructions in the software provisioning manager screens.

# 8    High Availability with Microsoft Failover Clustering

You can install a high-availability SAP system with *Microsoft Failover Clustering*. The Failover Clustering software improves the availability of the system and protects it against failure and unplanned downtime, enabling 24-hour operation, 365 days a year.

With high availability, you enable critical system components, known as "Single Points of Failure (SPOFs)", to be automatically switched from one machine to the other, if hardware or software problems arise on one machine. With the help of this switchover – or failover – the system can continue functioning.

Apart from enabling failover when hardware problems occur, you can also use Failover Clustering to avoid downtime when you perform essential system maintenance. If you need to maintain one host (failover cluster node), you can deliberately switch the cluster resources to the other host (failover cluster node) and temporarily operate it there while maintenance is in progress. When maintenance work is finished, you can easily move the resources back to their original node and continue operating them there.

## Important Information

To install a new SAP system with Microsoft Failover Clustering, you have to perform a number of extra steps specially required for the cluster and configure the SAP system so that it can take advantage of the cluster functionality:

- Since the correct configuration of network addresses is absolutely essential for the cluster to function properly, you have to perform a number of additional steps that are necessary to set up and check address resolution.
- Since the cluster hardware has at least two nodes that have access to all local and shared storage devices, you have to install some components on all nodes and pay attention to special rules for distributing components to local or shared disks.
- Since the cluster hardware has at least two nodes that have access to all local and shared storage devices, you have to install some components on all nodes and pay attention to special rules for distributing components to local or shared disks.

## Terminology

- In the sections on Microsoft Failover Clustering we use "SAP system" to mean SAP Content Server.
- In this documentation the hosts in a Microsoft Failover Cluster are referred to as first cluster node and additional cluster node(s):
  - The **first** cluster node is the cluster node where you perform the general installation of SAP Content Server.
  - The **additional** cluster node is the node where you install SAP Content Server instance dependent software to run in Microsoft Failover Clustering.

# 8.1 Checklist for a High-Availability System

This section includes the steps that you have to perform for your SAP system using Microsoft Failover Clustering. Detailed information about the steps is available in the relevant section.

## Planning

1. You decide how to distribute SAP system components to disks for HA [page 61].
2. You read Directories in an HA Configuration [page 64].
3. You read IP Addresses in an HA Configuration [page 65].
4. You obtain IP addresses for HA [page 68].

## Preparation

1. For the installation of a high-availability SAP Content Server system with Microsoft Failover Clustering, you have to perform the same preparations [page 21] as for an ordinary SAP Content Server system. In addition, you have to perform the following HA-specific preparation tasks:
2. To make sure that all preparation steps have been correctly performed, check that you can move the disk resources from one cluster node to another so that they are only accessible from a single node at any time.

## Installation

1. You make sure that:
    1. You are logged on as a domain administrator user or a domain user, who has the necessary rights on all cluster nodes. .

        > ⓘ Note
        >
        > In Failover Cluster configurations, make sure that the account of the cluster (<clustername>$) has full rights in the OU (Organizational Unit) on which your Domain administrator configures the SAP users and the SAP group.
        >
        > If these rights are missing, the software provisioning manager will try to add the cluster network name resource to the SAP cluster group. However, because the cluster itself has no rights to add the related computer object (CNO) to the OU, the software provisioning manager will stop and show the error message `<access denied>`.

    2. You do **not** use the user `<sapsid>adm` unless specified.
    3. If you are prompted during the installation process, log off and log on again.
2. You install SAP Content Server on the first cluster node [page 70].
3. You configure SAP Content Server on the additional cluster node [page 71].

## 8.2    Planning

The following sections provide information about how to plan the installation of the SAP system for Microsoft Failover Clustering. For a complete list of all steps, see section *Planning* in the Installation Checklist for a High-Availability System [page 60].

## 8.2.1  Distribution of SAP System Components to Disks for Failover Clustering

When planning the Microsoft Failover Cluster installation, keep in mind that the cluster hardware has two different sets of disks:

When planning the Microsoft Failover Cluster installation, keep in mind that the cluster hardware has two different sets of disks:

- Local disks that are connected directly to the cluster nodes
- Shared disks that can be accessed by all cluster nodes via a shared interconnect

> ⓘ Note
>
> Shared disk is a synonym for the cluster resource of *Resource type* `Physical disk.`

- Local disks that are connected directly to the cluster nodes
- Shared disks that can be accessed by all cluster nodes via a shared interconnect

> ⓘ Note
>
> Shared disk is a synonym for the cluster resource of *Resource type* `Physical disk.`

You need to install the SAP system components in both the following ways:

- Separately on all cluster nodes to use the local storage on each node
- On the shared storage used in common by all cluster nodes

- Separately on all cluster nodes to use the local storage on each node
- On the shared storage used in common by all cluster nodes

> ⚠ Caution
>
> You **must not** install any SAP or database components on the quorum disk.

> ⚠ Caution
>
> You **must not** install any SAP or database components on the quorum disk.

The following figure shows a cluster configuration for an SAP system, where the SAP Content Server and database instance are installed in the same cluster. It illustrates how to distribute the database data files, the SAP system executables, and the quorum resource (if used) to **different** disks. Only with this distribution of

files to distinct disks is it possible to move the SAP system and database as separate entities in a failover situation.

The following figure shows a cluster configuration for an SAP system, where the (A)SCS and database instance are installed in the same cluster. It illustrates how to distribute the database data files, the SAP system executables, and the quorum resource (if used) to **different** disks. Only with this distribution of files to distinct disks is it possible to move the SAP system and database as separate entities in a failover situation.
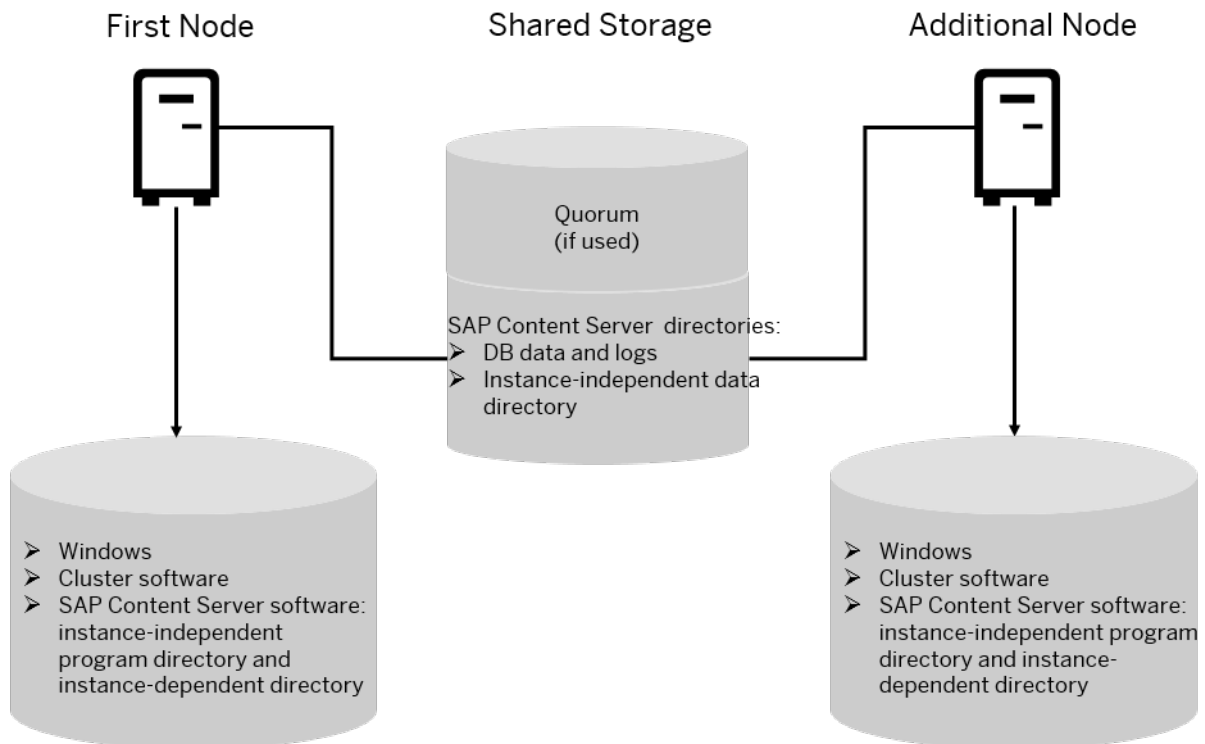
## Quorum Configurations on Windows

On Windows, there are several quorum configurations available. The configuration to use mainly depends on the cluster setup, such as the number of cluster nodes, the storage type (single or distributed), and the number of data centers. For more information, see the Windows documentation.

The default quorum configuration is called *Node and Disk Majority* for clusters with more than two nodes.

With a quorum configuration, each node and the witness maintain its own copy of the cluster configuration data. This ensures that the cluster configuration is kept running even if the active node fails or is offline.

> ⚠ Caution
>
> If you do not use the default quorum configuration for your operating system, contact your hardware partner, who can help you to analyze your needs and set up your cluster model. SAP supports these configurations if they are part of a cluster solution offered by your Original Equipment Manufacturer (OEM), or Independent Hardware Vendor (IHV).

## Geographically Dispersed Cluster (Geospan)

The standard cluster configuration consists of two cluster nodes and a shared storage with all technical components located in the same data center. In a geographically dispersed cluster, also known as a geospan cluster, the cluster nodes are distributed across at least two data centers to avoid the full outage of a data center in the event of disaster.

A geospan configuration requires a more sophisticated storage architecture since a standard shared storage can only be located in one data center and might therefore be a single point of failure (SPOF). To prevent the disk storage becoming a SPOF, you have to configure the storage system in each data center and to replicate its content to the storage system of the other data center.

Replication can either be synchronous or asynchronous, depending on the:

- Functionality of the storage subsystem
- Acceptable amount of data loss during a failover
- Physical layout of the storage area network
  This includes the distance between the storage systems, signal latency, capacity, and speed of the network connection.
- Customer budget
- Functionality supported by the database vendor
- Functionality supported by the database vendor

The database components in geospan configurations are often no longer part of the cluster and the database is replicated by pure database techniques, such as shadow database, log shipping, and mirrored database.

The database components in geospan configurations are often no longer part of the cluster and the database is replicated by pure database techniques, such as shadow database, log shipping, and mirrored database.

## Distribution of Database Files in a RAID Configuration

> ⚠ Caution
>
> Microsoft does **not** support a host-based RAID configuration (Dynamic Disks) on shared disks.

The following figure shows a secure method to distribute the SAP Content Server directories to different RAID volumes.



SAP Content Server RAID Volumes

**Distribution of Database Files in a RAID Configuration**

> ⚠ Caution
>
> Microsoft does **not** support a host-based RAID configuration (Dynamic Disks) on shared disks.

## 8.2.2 Directories in a Microsoft Failover Cluster Configuration

The following tables show the directories where the main software components for a high-availability system are stored:

Directories on Local Disks on Cluster Nodes

| Component | Default Directory |
| --- | --- |
| A supported operating system [page 12] | `%windir%` |
| Microsoft Failover Clustering software | `%windir%\Cluster` |
| Application server | `<Local_Drive>:\usr\sap\<SAPSID>\<Instance>` |
| Diagnostics Agent (optional) | `<Local_Drive>:\usr\sap\<DASID>\SMDA<Instance_Number>` |
| SAP Host Agent | `%Program Files%\SAP\hostctrl` |
| | `<Drive>:\sapdb\program` |

| Component | Default Directory |
|---|---|
| | `<Drive>:\sapdb\<DBSID>\db` |

Directories on Shared Disks

| Component | Default Directory |
|---|---|
| | `<Drive>:\sapdb\<DBSID>\sapdata\...` |
| | `<Drive>:\sapdb\<DBSID>\saplog\...` |
| | `<Drive>:\sapdb\<DBSID>\saplog\...` |
| | `<Drive>:\sapdb\data` |
| SAP MaxDB private data | `<Drive>:\sapdb\<DBSID>\data` |
| SAP Content Server instance-independet programs | `<Drive>:\usr\sap\<SAPSID>\SYS` |

# 8.2.3 Hostnames in a Failover Cluster Configuration

A part of the installation process that is unique to Microsoft Failover Clustering is the configuration of host names and IP addresses in the network. This is a particularly important task because the addressing plays a key role in the switchover procedure. Addressing must be set up correctly so that the system can take advantage of the cluster functionality and switch between nodes when hardware problems arise.

This section explains the different types of IP addresses and their function in the switchover mechanism of **one** Microsoft Failover Cluster with **two** cluster nodes.

## Types of IP Addresses

In a proper configured cluster with two nodes, there are six IP addresses and corresponding host names for your SAP system. You have two IP addresses for each cluster node, one IP address for the cluster and one for the SAP Content Server cluster group.

Some of the addresses are assigned to the **network adapters** (network interface card, NIC) whereas others are virtual IP addresses that are assigned to the **cluster groups**.
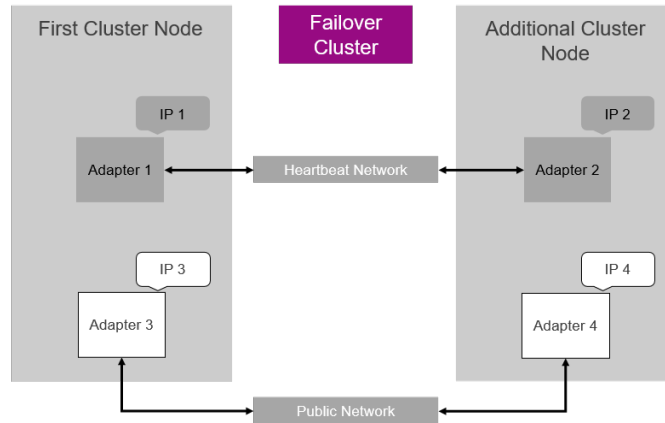
## Physical IP Addresses Assigned to Network Adapters

A Microsoft Failover Cluster configuration has at least two networks:

- A public network that is used for the communication between the primary application server, additional application servers, and the LAN.

- A private network that is used internally for communication between the nodes of the cluster, also called heartbeat.

The following figure shows a Microsoft Failover Cluster with two nodes and illustrates the adapters required for the public and private networks, and their corresponding physical IP addresses. A physical IP address, in contrast to a virtual one, is stationary and permanently mapped to the same adapter.



Adapters and IP Addresses Required for Public and Private Networks in an Microsoft Failover Cluster with Two Nodes

## Host Names Assigned to Network Adapters

Each of the physical IP addresses of the network adapters must have a corresponding host name. For example, on the left-hand node in the figure above, you might assign the IP addresses of the public and private network adapters as follows:

IP Addresses and Host Names

| Network Adapter | IP Address | Host Name |
| --- | --- | --- |
| Adapter 1 (private network) | 10.1.1.1 | clusA_priv |
| Adapter 3 (heartbeat network) | 192.168.1.1 | clusA |

⚠ Caution

- The IP address and host name of the **public** network adapter is also the IP address and name of the machine. In our example, this means that the machine that is the cluster node on the left in the figure has the name clusA.
- Do **not** confuse the **host name** with the **computer name**. Each node also has a computer name, which is usually the same as the host name.
  The computer name is displayed in the node column of the *Failover Cluster Management*. However, it is **not** required for the TCP/IP communication in the cluster. When you configure IP addresses and corresponding names, keep in mind that it is the **host names** that are important for the cluster, not the computer names.

## Virtual IP Addresses Assigned to Cluster Groups

When you have installed SAP Content Server and fully configured the cluster, the critical system resources are bound together in two different **groups**.

Each of these groups requires a virtual IP address and network name that is permanently mapped to the group and not to a particular node. The advantage of this is that, whenever a group is moved between nodes, its IP address and network name move together with the group.

An HA configuration has the following groups:

- SAP Content Server cluster group
- Cluster group

The following figure illustrates how the virtual IP addresses of the SAP Content Server group can move from one node to the other during a failover.
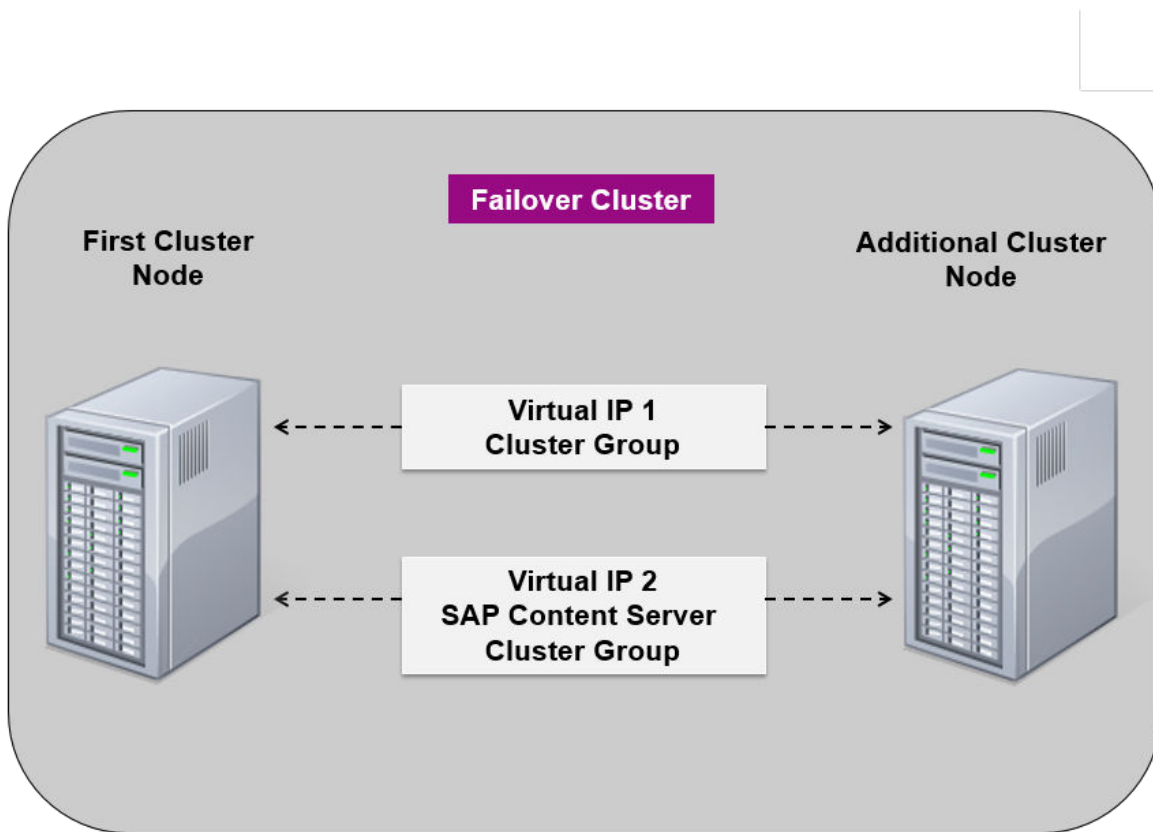


Failover of Virtual IP Addresses

## 8.2.4  Obtaining IP Addresses for a Microsoft Failover Cluster Configuration

This chapter describes how to obtain the IP addresses for the network adapters (cards) that are required to install and run your high-availability system.

### Context

For a clustered system, you have to configure IP addresses correctly. During the installation procedure you have to assign at least six IP addresses and host names. You normally obtain these names and addresses from the system administrator.

### Procedure

Ask the system administrator to give you the addresses and host names listed in the tables below, which show an example for a configuration with one Microsoft failover cluster with two nodes. You need to enter the addresses and host names later during the installation process.

The column *Defined During* indicates at which stage of the installation of the operating system and the SAP system the addresses are defined in the system.

> ⚠ **Caution**
>
> Use the names **exactly** as specified by the system administrator.

> ⓘ **Note**
>
> In the following tables we are still using the terminology cluster group, and not the Windows Server terminology Roles.

Physical IP Addresses

| Component | Example for Physical IP Address | Example for Physical Host Name | Purpose | Defined During |
|---|---|---|---|---|
| First cluster node: adapter for heartbeat network | 10.1.1.1 | `clusA_priv` | Address for internode communication on the heartbeat network | Windows installation |

| Component | Example for Physical IP Address | Example for Physical Host Name | Purpose | Defined During |
|---|---|---|---|---|
| First cluster node: adapter for public network | 129.20.5.1 | clusA | Address of the first cluster node for communication with application servers and LAN (this is the same as the address of the first cluster node) | Windows installation |
| Additional cluster node: adapter for heartbeat network | 10.1.1.2 | clusB_priv | Address for internode communication on the heartbeat network | Windows installation |
| Additional cluster node: adapter for public network | 129.20.5.2 | clusB | Address of the additional cluster node for communication with application servers and LAN (this is the same as the address of the additional cluster node) | Windows installation |

Virtual IP Addresses

| Component | Example for Virtual IP Address | Example for Host Name | Purpose | Defined During |
|---|---|---|---|---|
| Cluster group | 129.20.5.3 | clusgrp | Virtual address and name of the cluster group. It identifies the cluster and is used for administration purposes. | Failover cluster software configuration |
| SAP Content Server cluster group | 129.20.5.4 | csgrp | Virtual address and name for accessing the group of SAP Content Server resources, regardless of the node it is running on | Execution of HA-wizard |

## 8.3    Preparation

This section provides information about how to prepare the installation of the SAP system for Microsoft Failover Clustering. For a complete list of all steps, see section *Preparation* in the Installation Checklist for a High-Availability System [page 60].

1. For the installation of a high-availability SAP Content Server system with Microsoft Failover Clustering, you have to perform the same preparations [page 21] as for an ordinary SAP Content Server system.
2. To make sure that all preparation steps have been correctly performed, check that you can move the disk resources from one cluster node to another so that they are accessible from a single node at any time.
3. To make sure that all preparation steps have been correctly performed, check that you can move the disk resources from one cluster node to another so that they are accessible from a single node at any time.

## 8.4    Installation

The following sections provide information about how to install the SAP system in a high-availability environment. For a complete list of all steps, see section *Installation* in the Installation Checklist for a High-Availability System [page 60].

Due to a SAP MaxDB technical restriction, the use of passwords longer than nine characters is not possible in an MSCS environment. For more information, see SAP Note 2319006.

The following sections provide information about how to install the SAP Content Server system in a high-availability environment. You need to use the **SWPM*.SAR** package for the installation. You download the most recent version of this package from the SAP software download center at https://me.sap.com/softwarecenter/. For more information, see Installing the SAP MAX DB (Optional) [page 32].

1. Installing SAP Content Server on the First Node [page 70]
2. Installing SAP Content Server on the Additional Node [page 71]

## 8.4.1  Installing SAP Content Server on the First Node

This section describes how to install SAP Content Server on the first node of a Microsoft Failover Cluster.

### Procedure

1. Run the software provisioning manager [page 34] and choose:

   ▐▶ *Generic Options* ❭ *SAP Content Server* ❭ *High-Availability (7.5 and Higher)* ❭ *SAP Content Server and SAP Cache Server First Cluster Node* ❭

2. If you are installing SAP Content Server with the software provisioning manager for the first time and the software provisioning manager prompts you to log off, do the following:

    a.  Choose *OK* and log on again.

    b.  Perform step 1 above.

    c.  Select *Run a new installation* and choose *OK.*.

3. Follow the instructions in the software provisioning manager dialogs and enter the required parameter values.

> ⓘ 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
>
> Make sure that you distribute the SAP Content Server software, data, and logs correctly to local and shared disks as described in Directories in a Microsoft Failover Cluster Configuration [page 64].

## Related Information

SAP Note 576063

# 8.4.2  Installing SAP Content Server on the Additional Node

This section describes how to configure SAP Content Server on the additional node of a Microsoft Failover Cluster.

## Procedure

1. On the additional cluster node, run the software provisioning manager [page 34] and choose:

   *Generic Options* ❯ *SAP Content Server* ❯ *High-Availability (7.5 and Higher)* ❯ *SAP Content Server and SAP Cache Server Additional Cluster Node* ❯

2. Follow the instructions in the software provisioning manager dialogs and enter the required parameter values.

> ⚠ Caution
>
> Make sure that you distribute the SAP Content Server software data and logs correctly to local and shared disks as described in Directories in a Microsoft Failover Cluster Configuration [page 64].

Installation of SAP Content Server 7.5 and Higher on Windows
**High Availability with Microsoft Failover Clustering**
                PUBLIC    **71**

> ⓘ 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.

## Related Information

SAP Note 576063

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