

# Installation Guide SAP Content Server for UNIX



**Release 6.30**



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## Icons

Icon	Meaning
	Caution
	Example
	Note
	Recommendation
	Syntax

## Typographic Conventions

Type Style	Description
<i>Example text</i>	Words or characters that appear on the screen. These include field names, screen titles, pushbuttons as well as menu names, paths and options.  Cross-references to other documentation.
<b>Example text</b>	Emphasized words or phrases in body text, titles of graphics and tables.
EXAMPLE TEXT	Names of elements in the system. These include report names, program names, transaction codes, table names, and individual key words of a programming language, when surrounded by body text, for example, SELECT and INCLUDE.
Example text	Screen output. This includes file and directory names and their paths, messages, source code, names of variables and parameters as well as names of installation, upgrade and database tools.
EXAMPLE TEXT	Keys on the keyboard, for example, function keys (such as F2) or the ENTER key.
<b>Example text</b>	Exact user entry. These are words or characters that you enter in the system exactly as they appear in the documentation.
<Example text>	Variable user entry. Pointed brackets indicate that you replace these words and characters with appropriate entries.

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# Installation Guide SAP Content Server for UNIX



## General Information

### Purpose

#### Who is this guide for?

This installation guide is aimed at system administrators, consultants, and anyone else who needs in-depth technical information on installing the SAP Content Server for UNIX.

#### What does the component do?

In previous releases, the SAP Content Server was available for Windows platforms only. The new SAP Content Server for UNIX allows users to run SAP's proven content server technology with the added advantages inherent in UNIX systems: enhanced flexibility, improved resource utilization, platform-independence, and high stability.

The SAP Content Server for UNIX has the following sub-components:

- The SAP Content Server and SAP Cache Server core libraries:  
mod\_sapcs.so, mod\_sapcsc.so, libsapsecu.so  
(The file suffixes may vary from platform to platform)
- The SAP database (SAP DB), version 7.3

### Integration

The following additional components are required for the successful operation of the SAP Content Server for UNIX:

- Operating system. This can be any one of the following:  
Linux, IBM AIX, Sun Solaris, HP-UX  
See the SAP Web Application Server 6.30 supported platform list for further information about the release numbers of the above mentioned operating systems.
- Apache Web server 1.3.xx (starting from 1.3.14; version 2.xx is not yet supported)
- SAP DB version 7.3 (provided with the installation software)  
*and/or*
- File system, such as the standard UNIX file system (UFS), or another mountable file system such as Samba, or a network file system (NFS)

See the "Architecture" section under [SAP Content Server for UNIX Description \[Page 7\]](#) below for detailed information on how these components interoperate with the main content server component.

### Constraints

This installation guide provides information on installing the SAP Content Server for UNIX only. It does not provide information on the following:

- Installing or operating the following:  
SAP DB  
Operating system

### Hardware setup

- UNIX administration commands
- Backup tools and procedures
- IP network administration and security

## Prerequisites

This installation guide assumes that you have a thorough knowledge of the following:

- UNIX administration commands
- Backup tools and procedures
- IP network security
- The HTTP protocol
- The general principles of client/server communication

## Reference Material

SAP DB	<a href="http://www.sapdb.org">http://www.sapdb.org</a>
Apache	<ul style="list-style-type: none"> <li>• <a href="http://www.apache.org">http://www.apache.org</a></li> <li>• <i>Apache: The Definitive Guide</i>, 3rd Edition by Ben Laurie, Peter Laurie</li> </ul>
SAP Content Server	<ul style="list-style-type: none"> <li>• The documents <i>Operating Manual for SAP Content Server</i> and <i>Content Server Sizing for Experts</i>. <ul style="list-style-type: none"> <li>• To access these documents, go to the SAP Service Marketplace (<a href="http://service.sap.com">service.sap.com</a>), enter the QuickLink <i>contentserver</i> and select <i>Literature</i> from the list on the right.</li> </ul> </li> <li>• SAP documentation on the SAP Help Portal (<a href="http://help.sap.com">help.sap.com</a>). From the list on the left-hand side of the screen, choose <i>SAP Web Application Server</i> → <i>SAP Web Application Server 6.20</i> → <i>[language]</i>. Then select the documentation you require: <ul style="list-style-type: none"> <li>• SAP Web Application Server: <i>SAP Web Application Server</i></li> <li>• Knowledge Provider: <i>SAP Web Application Server</i> → <i>Basis Services</i> → <i>Knowledge Provider</i>.</li> <li>• SAP Content Server: <i>SAP Content Server</i></li> </ul> </li> <li>• The general <i>Knowledge Provider</i> presentation contains several slides on content server administration using transaction CSADMIN. <ul style="list-style-type: none"> <li>• To access this presentation, go to the SAP Service Marketplace (<a href="http://service.sap.com">service.sap.com</a>), enter the QuickLink <i>contentserver</i>, and select <i>Media Library / KPro Presentations</i> from the list on the right.</li> </ul> </li> <li>• For a list of SAP Notes that deal with various aspects of the SAP Content Server, see the section <a href="#">Notes Relevant to SAP Content Server [Page 33]</a> below.</li> </ul>



## Description

This section contains sub-sections giving a [general description of the SAP Content Server \[Page 7\]](#), and a [specific description of SAP Content Server for UNIX \[Page 7\]](#).



## SAP Content Server General Description

### SAP Content Server

The SAP Content Server is the server at the core of SAP's document storage and management concept. It provides the technical infrastructure for all document-centric applications and business scenarios that do not require a long-term document archiving solution. Because the SAP Content Server is included in every SAP solution, a self-contained content server is always available to SAP customers.

### Cache Server

The content server infrastructure also includes the cache server. Like the content server, the cache server stores documents and allows them to be accessed via HTTP. The difference is that the cache server is an interim storage facility located close to the client whose main task is to make access to document content quicker and more efficient. It does this by temporarily storing ('caching') requested document content, so that the next time that content is requested by a nearby client, the content can be retrieved from the nearest cache server rather than the content server.

This is most advantageous on very large, dispersed networks, where the client and the content server may be located on different continents. It is also particularly useful if the content is required for fast display, such as in a Web browser. Cache servers also reduce the network load and thus enhance network performance.

### Client Applications

SAP applications that use the technical infrastructure of the SAP Content Server include the SAP Business Workplace, ArchiveLink, the Document Management System (DMS), and the SAP Knowledge Warehouse.

### Further Information

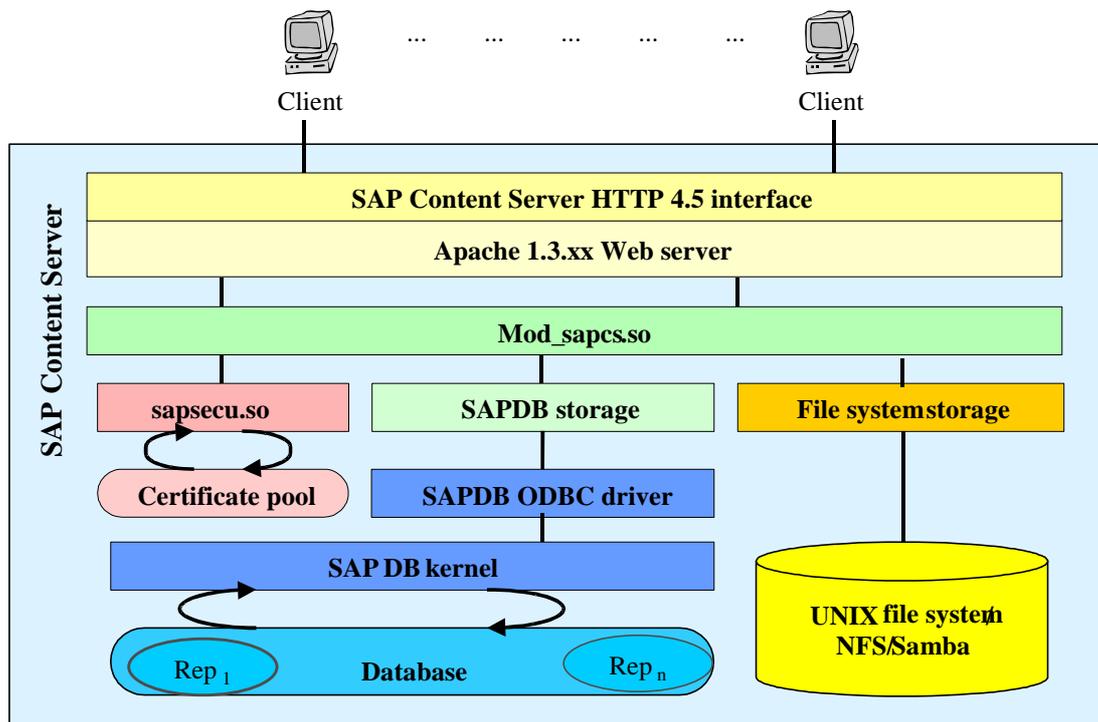
For further information on Knowledge Provider, the SAP Content Server, and the cache server, see the SAP Library (on your documentation CD or under <http://help.sap.com>) under *SAP Web Application Server* → *Basis Services* → *Knowledge Provider*.



## SAP Content Server for UNIX Description

### Architecture

The graphic below shows the architecture of SAP Content Server for UNIX:



**Graphic: architecture of the SAP Content Server for UNIX**

The basis of the SAP Content Server is the *content server engine*. The engine is implemented as an Apache module called *mod\_sapcs.so* and is loaded into the Apache Web server's process space.

The engine receives all URLs, checks their validity, and triggers the processing of requests.

The SAP Content Server saves data to the SAP database (SAP DB) or to the file system. However, the Content Server engine does not communicate directly with the storage medium. Instead, it uses an adapter known as the *content storage layer*, which is implemented either as the SAP DB storage layer or the file system storage layer, depending on the storage medium. The storage layer "hides" the specific access mechanisms of the storage medium behind a consistent, bytestream-oriented interface. This means that one server engine can support several storage media.

## Advantages

The new Content Server for UNIX has a number of advantages. The most important of these are:

- Greatly improved resource utilization (RAM, CPU)
  - Optimized stream-based design allows the minimum memory footprint.
- Platform-independence
- Highly stable software, virtually maintenance-free – "set up once, run forever"
  - The only significant maintenance task is making regular backups.
- Fully compatible with the Windows versions of the content server and cache server
- High flexibility:
  - Documents can be stored either compressed or uncompressed.
  - Both the SAP DB and file system storage are supported.

- Any combination of operating system and storage system is possible.

## Constraints

SAP ships only the SAP Content Server module, not the Apache Web server. You can obtain precompiled Apache versions from SAP platform partners, or from third-party software vendors. SAP does not provide any Apache support.

The SAP Content Server (both platform versions) is not intended to replace optical storage systems and other storage media for long-term document archiving.

## Storage Layer

With the new UNIX version, the SAP Content Server can use either the SAP DB or a file system for document storage. Since the SAP Content Server is integrated via the SAP HTTP Content Server interface, the actual storage medium used remains completely transparent to SAP applications.

## SAP DB

The SAP DB storage layer uses the SAP DB client driver to access the database server. The SAP DB administrates the individual repository tables in which the documents are stored.

The main advantages of SAP DB storage are as follows:

- Full SAP support for data recovery.
- Full range of SAP DB administrative tools available.
- SAP DB most likely outperforms file system storage on high-load servers.
- Unlike file system storage, the SAP DB guarantees transactional security (in other words, no junk data fragments remain on the disk after a transaction has been interrupted).
- Consistency of document content is guaranteed if documents are modified exclusively within the SAP application domain.

## File System

The file system storage layer uses the POSIX (*portable operating system interface on UNIX*) file system API of the underlying UNIX operating system. The file system repositories take the form of a directory hierarchy in which the documents are stored. The system is designed in such a way that the number of documents in the file system is limited only by the number of available inodes (note that some inodes are needed for the directory structure).



Non-standard file systems (that is, file systems other than the UNIX file system (UFS)), such as SAMBA or a virtual FS, can be used, but they must support the UNIX access rights and be accessible via a valid access path beginning with the root file system. You should also expect substantial performance losses if you use a non-standard file system.

The directory structure of the file system repositories has been designed in such a way as to make efficient, fast, and flexible use of your disks. The main features of file system storage are as follows:

- Flat hierarchy
  - The aim of a flat hierarchy is to keep the number of disk accesses required during document retrieval low and consistent (the flatter the hierarchy, the fewer accesses required). A flat hierarchy also increases the potential number of documents that can be stored.
- Efficient usage ratio of the inodes used for structural objects and content objects

The ratio between inodes used for structural objects and content object does not substantially limit the overall capacity of the repository.

- **Portable layout**

File system repositories are accessible from different server hosts and can be transported as backed-up archives. No file system-specific features are utilized, in order to keep the repositories platform-independent. Therefore, repositories can be mounted onto different computers, and even different operating systems. Also see the next point.

- **Self-contained data organization**

No management tables or metadata are required for the following purposes:

- To ensure that the same repositories are accessible from different storage locations (even concurrently, provided that the NFS locking mechanism works correctly)
- To ensure that the repositories are robust; that is, that they are not prone to crashing



## Installation Process

The installation process consists of five main phases, executed in this order:

1. [Planning and sizing \[Page 10\]](#) your content server.
2. [Preparing \[Page 12\]](#) your installation host for installation. This step includes setting up users, the Web server, the SAP DB, the file system, and making sure all technical requirements are fulfilled.
3. [Running \[Page 20\]](#) the installation program itself.
4. [Post-installation \[Page 24\]](#) tasks, including setting up access rights to the repositories in the Customizing.
5. [Checking \[Page 25\]](#) your installation.



## Planning and Sizing of the Database Instance

To dimension your Content Server Database instance as accurately as possible, you should estimate your data volume and log volume requirements. Answer the following questions:

- What types of objects will be involved?  
(Estimate the existing data volume and compression level.)
- By how much is the volume of objects per location likely to increase?  
(Estimate the increase in data volume over a specific period of time.)

The answers to these first two questions indicate the data volume requirement.

- On average, how many users are likely to access the content server at any one time?

The answer to this question indicates the size of main memory, and the CPU and log volume requirements.

The following sub-sections go into each of these questions in greater depth.

## What types of objects will be involved?

When stored on the content server, every file is compressed according to its file type, and occupies a specific amount of storage space (data volume). Therefore, it is important to establish what file types are contained in your legacy data volume. You can use the compression percentages in the table below to determine your legacy data volume.



Note that these percentages are approximate values only and may need to be adjusted according to individual circumstances.

MIME Type	DOC	XLS	PPT	TIFF	GIF	JPG	CAD	...
Compr. approx.	50 %	50 %	30 %	5 %	5 %	5 %	?	?

File size \* percentage = compression

File size - compression = amount of data volume occupied

## By how much is the volume of objects per location likely to increase?

The increase in data volume, taking into account the compression levels, has to be estimated for a specific time period. (Make sure that the hard disk capacity is sufficient for the data volume expected during this period.) Once you have calculated the expected increase in data volume, add this to the legacy data volume.

The result can be termed the 'net' data volume required for the time period in question. Then add 20% to 25% more memory space to allow for internal database administration data ('headroom'). The result is the 'gross' data volume requirement.

## On average, how many users are likely to access the content server at any one time?

The goal here is to ensure that the transaction buffer is sufficiently large to allow a number of users to access the content server simultaneously. To this end, the log volume should be approximately 10% of the calculated data volume. In all cases, it should be at least twice the size of the largest expected document. This is so that the content server can handle at least two simultaneous accesses.

Legacy data volume:

File	Size	File size * percentage = compression
File1.doc	10 MB	100 MB * 50 % = 50 MB
File2.doc	10 MB	
...	...	
File10.doc	10 MB	
File1.ppt	40 MB	130 MB * 30 % = 39 MB
File2.ppt	10 MB	
...	...	
File10.ppt	10 MB	
File1.gif	10 MB	100 MB * 5 % = 5 MB
File2.gif	10 MB	
...	...	
File10.gif	10 MB	

File size - compression = data volume requirement

100 MB - 50 MB =	50 MB	
130 MB - 39 MB =	91 MB	
100 MB - 5 MB =	95 MB	
	-----	
	236 MB	"Net" data volume requirement
+ 20 %	47,2 MB	
	-----	
	283,2 MB	"Gross" data volume requirement
+ 10 % log space	28,32 MB	

However, the largest existing document is 40 MB, or 28 MB when compressed. In accordance with our recommendation, the log volume should be at least twice as large as the largest expected document. Therefore, 10% is not enough in this case. The log space should be at least 56 MB.

For the greatest possible data security, we recommend that you mirror your log file. If you do so, you will then need twice the calculated amount of log space.

## Further Information

For more detailed information on sizing your content server, see the document *Content Server Sizing for Experts* on the SAP Service Marketplace:

<http://service.sap.com/contentserver>.



## Preparations

This section details the requirements of an SAP Content Server installation, and the steps you need to take before installing your content server.

## Requirements

### Hardware

This table shows the main hardware requirements:

Resource	Amount Required
Hard disk space for software components	<ul style="list-style-type: none"> <li>ca. 100 MB for the Web server plus modules</li> <li>ca. 350 MB for the SAP DB plus first DB instance</li> <li>max. 160 MB temporary space during installation (see <a href="#">Installation [Page 20]</a> below for details)</li> </ul>
Hard disk space for data files and log files for each partition	As much as you specified – see the <a href="#">Planning and Sizing [Page 10]</a> section above.
Main memory	At least 512 MB
Processor	Acceptable: 1 CPU.

	Recommended: 2 CPUs (the DB kernel runs on one CPU and the other CPU is used to process accesses to the content server).
Network protocol	TCP/IP

## Software

- Any one of the following operating systems in the correct releases that are listed in the section "General Information".
- Apache Web server 1.3.xx (must be at least 1.3.14)
- SAP DB version 7.3

## SAP System

- For the content server: release 4.5B or higher of the SAP system (Note that certificates can only be used together with an SAP system release 4.6B or higher.
- For the cache server: release 4.6B or higher (4.6B with Support Package 10) of the SAP system or an SAP system with KW 4.0 or higher (KW 4.0 with Support Package 5)

In order to be able to perform administrative tasks (transaction **CSADMIN**), you may need a higher version of the SAP system:

- For the content server: at least Release 4.6C or KW 4.0
- For the cache server: at least Release 4.6C

## Steps

### 1. Create Users and Groups

- a. Create content server and a cache server users. We recommend that you use the following schema: **<sid>cs** and **<sid>csc**, respectively. This helps identifying which content server belongs to which SAP system later. However, any other user names are fine.
- b. Make both users members of the group **sapsys**.
- c. Also create a dedicated home directory for each user, where the server configuration profiles and the software will be installed.

### File system storage

If you are planning to use a file system as your storage medium, be aware that all objects created in the repositories are owned by the content server and cache server users.

- a. Therefore, assign full access to the repository root directories to these users.



Note that the repository roots do not necessarily have to be located in the **sapcs/sapcsc** home directories, but could also be a mounted to a network attached storage device.

### SAP DB storage

The installation program automatically creates a user called **sqd<DBID>** for each database instance, and makes each of these users a member of the group **sapsys**. See step 3 below.

### 2. Set Up the Web Server

#### Introductory comments

The installation procedure requires a preinstalled Apache Web server on your machine.

The way the Apache Web server software is installed influences both the installation and runtime behavior of the SAP Content Server and cache server software.

We recommend that you prepare two separate Apache server installations in the home directories of the users `<sid>cs` and `<sid>csc`, and that you start the server instances under these users. You are, of course, free to configure a single server instance, so that both modules are loaded into the same process space. However, this approach is contrary to our recommendations and is not described in this installation guide.



If you intend to store your documents in a file system, the files are owned by the user under which the Web server is run. See the recommendations on file permissions under 'File system storage' in step 1 above.

The following steps refer to the SAP Content Server, but are the same for the cache server.

### Prerequisites for the Apache Web server installation structure

The standard Apache version 1.3 binary installation creates a directory structure that consists of these subdirectories:

```
<apache root> /bin
                /cgi-bin
                /conf
                /htdocs
                /icons
                /include
                /libexec
                /logs
                /man
                /proxy
```

The installation program accesses the subdirectories shown in bold (`bin`, `conf` and `libexec`). The main server configuration file `httpd.conf` is stored under `./conf`, and the loadable server modules are stored under `./libexec`.

During setup, the Apache root directory is referred to as the Web server root for the content server or cache server. The setup program makes the following assumptions about the Apache installation:

- The directories `./conf` and `./libexec` exist and the setup program has write access to them. (This should not be a problem, however, as the setup should be executed with "root" permissions).
- Apache's configuration profile `httpd.conf` is located in the `./conf` directory.

You need to ensure that these assumptions are fulfilled if you are setting up the Apache binary tree yourself, or are installing a third-party binary distribution. If you want to use an Apache installation that has been integrated into your system already, you have to either manually create or soft link the `./conf` and `./libexec` directories under `$HOME` for `<sid>cs/<sid>csc`. You also have to copy or soft link the file `httpd.conf` to the `$HOME/conf` directory.



However, we do not recommend that you soft link system directories, as this makes it much harder to keep track of the installed packages, and makes system directories prone to access rights violations. It is easier if you maintain separate directories, and a `httpd.conf` file that belongs exclusively to your content server or cache server installations.

## Step 1: Install the Apache Web server

The three most common ways of installing a working Apache Web server on your machine are described below. Choose whichever method suits you best.

To make the examples more readable, we assume a content server user named “*sapcs*” with a home directory “*/usr/users/sapcs*” in the following examples.

### Compile and install the Apache Web server software from a source distribution

This method requires you to have downloaded the Apache Web server source distribution from [www.apache.org](http://www.apache.org), and preinstalled an ANSI C compiler and a make environment on your machine.

- a. Log on as the user *sapcs* and unpack the source distribution to the home directory:  

```
sapcs:~$ gunzip < apache_1.3.26.tar.gz | tar xvf -
```
- b. Usually, the Apache source is extracted to the subdirectory *./apache\_1.3.26*. Change to that directory and configure the make files for your system. Make sure that you enable dynamic shared object (DSO) support and that you compile all the standard modules that come with the distribution. You also need to define Apache’s root directory during the configuration phase. This is the directory where you should install the binary package after successful compilation. So a complete configure command looks like this:

```
sapcs:~/apache_1.3.26$ configure -prefix=/usr/users/sapcs -
enable-shared=max --enable-module=most
```

There are a lot of other options that affect the way you compile your Web server. See the documentation provided with your source distribution for information on all the possibilities.

Some platforms require additional compiler or linker switches that are not generated automatically during the configure step. Typically these flags turn on 32 or 64bit code generation, trigger code optimizations and add additional libraries to the link step. Additional flags may be added to the configuration phase with the environment variables *CFLAGS* and *LDFLAGS*. Make sure that you export the variables before running the configure script. A prominent example for the *LDFLAGS* variable on HP-UX is “*LDFLAGS=-lc*”.

- c. After you have configured the make files successfully, you may want to compile the source. This is simply done by issuing the command:

```
sapcs:~/apache_1.3.26$ make
```

- d. Once you have successfully completed the main compilation, you can install the binary distribution to the final destination, the Apache root directory. Issue this command:

```
sapcs:~/apache_1.3.26$ make install
```

You should now have an Apache Web server installation under the directory */usr/users/sapcs*.

### Install a precompiled Apache distribution from a third party vendor

The binary distributions usually conform to the standard directory structure recommended by the Apache group. Therefore, the only thing you have to do is to unpack the distribution archive to an appropriate directory under the *\$HOME* belonging to *sapcs* or *sapcsc*, and run a short configuration script that adapts the Web server startup scripts to your local directory structure.

Some binary distributions provide fully configured setup procedures that interactively prompt you for all the required information.

### Install a precompiled Apache distribution from your platform vendor.

These packages are usually fully integrated into the system directory structure and often adapt your startup scripts (in `/etc/rc`, etc.) in such a way that a preconfigured Web server instance is launched during system startup. The `httpd` processes then usually run under the effective user ID “nobody” or as “root”. Running non-administrative processes with administrative privileges is in general not a good idea. So, if you decide to use a preconfigured web server, please make sure that the resulting processes run with a effective user id that has no special system privileges. Especially when the file system storage is used, all filesystem objects will be owned by the process owner.

### Step 2: set port numbers

- a. The default port numbers for the servers are 1090 (content server) and 1095 (cache server). You can change these numbers during the installation process, if necessary.
- b. If you are running other Web servers on your machine that listen to one of these ports, specify a different port number (>1023). You will use this port number later when customizing your SAP system.

### Step 3: set network connections

Make sure that all users, in particular application servers and workstation PCs, can access the content server or cache server system via HTTP.



A user without direct HTTP access will either not be able to execute individual scenarios, or will only have very limited access to individual scenarios.

### Additional information: how to start and stop the Apache Web server

A single command is used to start and stop the Web server. This command that can be found in the `./bin` directory of your Web server installation. The commands are self-explanatory:

- `$sapcs:~/bin$ apachectl start`
- `$sapcs:~/bin$ apachectl restart`
- `$sapcs:~/bin$ apachectl stop`

`apachectl` is a wrapper script around the server executable `httpd` that starts `httpd` using several command line options.

If you call `apachectl` as user `sapcs` or `sapcsc`, the `httpd` process is granted the appropriate rights for `sapsc` or `sapcsc`. However, if you want to use a system installation of Apache, ordinary users may not be able to execute the `apachectl` file. In such circumstances, you may be able to start a server instance by issuing the following command:

```
sapcs:~$ /usr/local/bin/httpd -f $HOME/conf/httpd.conf
```

We are assuming here that the `httpd` has been installed in `/usr/local/bin` and that you have created a copy of `/usr/local/conf/httpd.conf` in `$HOME/conf` belonging to `sapcs` or `sapcsc`.

### 3. Install the SAP DB and/or the File System Storage

The content server supports both storage types simultaneously. That is, you can put one or more repositories into the file system and other repositories into one or more database instances.

### Disk space requirements for the database software

Reserve at least 350 MB for the initial software installation and the first database instance.

Add 100 MB for each subsequent database instance.

### Database root directory

Create a SAP DB root directory, `/sapdb`. This can be a real directory on your root partition, a mount point, or a soft link.

Make sure that all users that are members of the group `sapsys` have full permissions for this directory.

### Data and log volumes

Set up the data volumes and the log volumes. The SAP DB provides two options for doing this: you can either create them as files inside the **file system**, or in **raw devices**.

- **File system**

You can create data and log volumes as large files in the file system. This option is generally regarded as more flexible than the raw device option, but you have to expect a loss of I/O performance. This is because every disk access has to pass the kernel's file system layer.

- **Raw devices**

Directing disk I/O into raw disk devices – that is, addressing partitions directly and not via the kernel's file system layer – yields the best performance. If you decide on this option, make sure that you set up enough raw devices (partitions plus the corresponding entries in `/dev`).

Whichever method you choose, do not simply create one large file or raw device. Instead, spread your total volume across several files or raw devices. This will increase the overall I/O throughput of your SAP DB installation. A good divider value is 5. So, if you intend to create a database with a total size of 10 GB, create 5 partitions of 2 GB each.

For information on dimensioning the database instance, see the section [Planning and Sizing \[Page 10\]](#) above, and read the document *Content Server Sizing for Experts* on the SAP Service Marketplace: <http://service.sap.com/contentserver>.

### 3a. Installing the SAP DB

The installation of the SAP DB for SAP Content Server is included in the main installation program (see [Installation \[Page 20\]](#) below).

<http://www.sapdb.org> also contains a wide range of other information and documentation on the SAP DB.

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

### 3b. Set Up the File System

Set up your file system, taking into account the following points:

- a. A file system repository may be located on any mounted partition. However, SAP recommends that you set up a separate partition that is exclusively reserved for that purpose.
- b. To maintain a consistent setup across all content servers, we also recommend that you reserve a common mount point for these partitions within your enterprise (for example, `/net/contreps`). Note that the initial path depth adds to

the number of disk accesses inside the repository hierarchy, thus decreasing performance. Therefore, you should keep the mount point depth low.

- c. Make sure that the content server and cache server users have full execution, creation, and read rights for this mount point.
- d. As described under step 2 above, all files are owned by the user under which the Apache process is running. We therefore recommend that you run the servers under the users *sapcs* or *sapcsc*. Also, all files are created with read and write access rights for the owner, group, and others. If you want to restrict the access rights, do so using the UNIX command `umask`.
- e. As mentioned above, the file system repositories are designed to yield a good usage ratio of inodes used for structural elements to those used for the documents. You can estimate the number of required inodes using the following formula:

**8193 + n Documents \* ( 1 + m components per document)**

Therefore, if you want to store 3 million documents with 1 component each, you should reserve at least 6,008,183 inodes for this repository.

## SAPInst: Background

SAP's standard installation tool is called the System Landscape Implementation Manager, known for short as *SAPInst*.

The main advantages of SAPInst are:

- SAPInst lets you go back and correct your entries during the input phase without restarting the installation.
- SAPInst does not abort due to errors. Instead, it stops the installation, and you can retry the installation after solving the problem. Alternatively, you can abort the installation manually if you want.
- SAPInst continues an aborted installation directly from the point of failure.
- SAPInst records installation progress in a single log file, `sapinst.log`.
- SAPInst has a graphical user interface (GUI) called the SAPInst GUI that allows you to watch the progress of the installation and see all messages issued by SAPInst. As the SAPInst GUI is Java-based, you need a Java Runtime Environment (JRE) or a Java Development Kit (JDK).

A *What's this?* help is integrated in the SAPInst GUI. To use this, choose the icon showing an arrow and a question mark, then click on the field for which you want more information.



You can start the SAPInst GUI on a remote computer, if required. See the section [Remote Installation with SAPInst \[Page 26\]](#) below for more information.

For more information on SAPInst, see the documentation *SAPInst Troubleshooting Guide* in the *SAP Service Marketplace* at [service.sap.com/sapinstfeedback](http://service.sap.com/sapinstfeedback).



## Preparing the SAPinst Installation

### Use

You use this procedure to prepare for a standard, that is, a **local** installation with SAPinst.



If required, you can perform a **remote** installation using a standalone SAPinst GUI on a separate Windows or UNIX host. This enables you to perform the installation on a remote host while monitoring it with the SAPinst GUI from a local host. If you want to perform a remote installation, see [Remote Installation with SAPinst \[Page 26\]](#).

### Procedure

1. The SAP J2EE Engine and the Java-based SAPinst GUI require a Java Development Kit (Java™ 2 SDK, Standard Edition). Therefore, make sure a correct JDK version is installed on every host on which you want to:
  - Run the SAPinst GUI
  - Install an SAP instance including the SAP J2EE Engine

For more information on the JDK versions that are released for the SAP Web Application Server, SAP components based on SAP Web AS and the SAP J2EE Engine, see the *SAP Service Marketplace* at the Internet address:

[service.sap.com/platforms](http://service.sap.com/platforms) → *Availability of SAP components in Detail* → *SAP Web AS / Basis / Kernel* → *OS/DB/JDK Releases for SAP Web AS*.



- The SAPinst GUI requires the **same** JDK version as SAP Web Application Server.
- JDK is **not** part of the SAP shipment.
- To check the version of an already installed JDK, enter:

```
java -version
```

2. Make sure that the `JAVA_HOME` environment variable (on UNIX: for user `root`) is set to `<JAVA_HOME>`.
3. Windows: Make sure that `%JAVA_HOME%\bin` is included in your system path.
4. UNIX: Make sure that your `DISPLAY` environment variable is set to `<host_name>:0.0`, where `<host_name>` is the host on which the SAPinst GUI will be displayed.

Shell Used	Command
Bourne shell ( <code>sh</code> )	<code>DISPLAY=&lt;host_name&gt;:0.0</code> <code>export DISPLAY</code>
C shell ( <code>csh</code> )	<code>setenv DISPLAY &lt;host_name&gt;:0.0</code>
Korn shell ( <code>ksh</code> )	<code>export DISPLAY=&lt;host_name&gt;:0.0</code>

5. To avoid an error when starting the SAPinst GUI, make sure that there are no `.jar` files from an XML parser tool, such as *Xerces* or *Xalan*, in the `JDK_ext` directory, as follows:

- a. Log on to the host where you intend to run the SAPinst GUI.
- b. Check whether there are already `<parser_name>.jar` files, for example, `xerces.jar` in your `ext` directory. The default path is:
  - UNIX: `<JAVA_HOME>/JRE/lib/ext`
  - Windows: `<JAVA_HOME>\JRE\lib\ext`
- c. If you find any `.jar` files, do one of the following:
  - Rename them to, for example, `xerces.xxx`. This is only possible if the application to which the `.jar` files belong is not running during the installation.



Do **not** forget to rename the files back to their original names after the installation procedure is complete.

Run the SAPinst GUI remotely on any other host. For more information, see [Remote Installation with SAPinst \[Page 26\]](#).



## Installation

Now that you have completed the preparations detailed in the [Planning \[Page 10\]](#) and [Preparations \[Page 12\]](#) sections, you are ready to carry out the installation procedure itself.

The installation procedure has two parts. In the first, you run SAPinst, SAP's generic setup program, and in the second part, you run the installation procedure for the SAP Content Server itself.

## Running SAPinst

### Use

This procedure tells you how to run SAPinst to install an SAP instance.

### Procedure

1. Log on to your host as user `root`.
2. Create an installation directory for SAPinst with sufficient space (see table below) and permissions `777`.



Every installation service must have its own separate installation directory `<SAPinst_INSDIR>` every time you start SAPinst. That is, for **each** new installation with SAPinst, you must create a separate installation directory. Otherwise, you might lose former log and command files.

- a. Make sure that the following conditions are met:
  - Required space:

Platforms	Required Space for an Installation Directory
AIX	150 MB
HP-UX	160 MB

Linux	90 MB
Solaris	90 MB

- Sun Solaris only:  
Do **not** use /tmp and its subdirectories because they are removed when the system is rebooted. For more information, see the documentation *SAP Software on UNIX: OS Dependencies*, section <your operating system>: *Preparing the Installation*.

b. Enter:

```
mkdir <SAPinst_INSTDIR>
chmod 777 <SAPinst_INSTDIR>
```

3. If you want to install:

- A central instance, a database instance, a dialog instance, or Java core for a central instance, mount the *SAPinst* CD.
- A gateway instance or additional components, mount the *SAP Presentation* CD. In this case, replace <SAPinst CD> with <Presentation CD> in this section.

For more information on mounting CDs, see documentation *SAP Software on UNIX: OS Dependencies*, section <Your OS>: *Mounting a CD*.



Mount the CDs locally. We do **not** recommend using Network File System (NFS) as reading from NFS-mounted CDs may fail.

4. Change to the installation directory:

```
cd <SAPinst_INSTDIR>
```

5. Enter:

```
<SAPinst CD>/SAPINST/UNIX/ \
<platform>/INSTALL
```



SAPinst uses the ports 21212 and 21213 during the installation for communication with the SAPinst GUI. If one of these ports is already used by another service you must start SAPinst as follows:

```
<SAPinst CD>/SAPINST/UNIX/ \
<platform>/INSTALL --port \
<free_port_number>
```

where <free\_port\_number> and <free\_port\_number> + 1 are unused port numbers.

For example, if you enter 60000 as <free\_port\_number>, SAPinst uses the ports 60000 and 60001.

SAPinst is now copied to your <SAPinst\_INSTDIR> and the SAPinst GUI starts automatically by displaying the *Welcome* screen.

For information on troubleshooting SAPinst, see [Installation Troubleshooting \[Ext.\]](#) below.

## SAP Content Server Installation Procedure



Make sure that you have completed the preparations detailed in the [Planning \[Page 10\]](#) and [Preparations \[Page 12\]](#) sections. Otherwise, the installation procedure will not work properly.

1. Confirm the welcome screen and the license agreement by choosing *Next* and *I Agree* respectively.
2. On the next screen, select what you want to install - either *SAP Content Server* and/or *SAP Cache Server* with or without the database instances or *SAP DB Database Instance Only*.

If you are in doubt whether or not you should install a database instance you can start the installation of a server without instance. You can add a database instance any time later by selecting *SAP DB Database Instance Only*. This feature is also useful if you want to put the Web server and the database on different machines (or add new Web servers to an existing database).

3. Choose *Next*.
4. Depending on the choice above select *SAP Content Server* and/or *SAP Cache Server*.
5. Choose *Next*.
6. Enter the user names and the Web server root directories for the content server and/or cache server. Use the *Browse* button to select the Web server root directory.
7. Choose *Next*.
8. Enter the repository root directories you want to define. Use the *Browse* button to select the repository root directories. Define the HTTP port for the content server and/or cache server. SAP recommends that you use port 1090 for the content server and 1095 for the cache server. If you want to activate the admin security, enter a valid user group for the security checks.

Please read the chapter "Admin Security" for further information how admin security works and what system settings have to be made.

9. Choose *Next*.
10. If you have selected an installation with an SAP DB database instance, the setup will continue with dialogs dealing with the database setup. Otherwise, the installation now starts copying the program files into the appropriate directories, and adds configuration settings to the configuration profile of your Web server.
11. The following paragraphs describe briefly how to set up the database instances.



<http://www.sapdb.org> also contains a wide range of other information and documentation on the SAP DB.

13. If you selected *SAP Content Server* and/or *SAP Cache Server* with the database instances, enter a name for the database instances and specify the size.

If you selected *SAP DB Database Instance Only*, enter the path to the mounted SAP DB installation disk.

14. Choose *Next*.
15. If you selected *SAP Content Server* and/or *SAP Cache Server* with the database instances, enter the path to the mounted SAP DB installation disk.

If you selected *SAP DB Database Instance Only*, enter a name for the database

instances and specify the size.

SAP recommends that you use instance name *SDB* for the content server and *CDB* for the cache server. The minimum size is 200 megabytes for the content server instance and 100 megabytes for the cache server instance. The minimum log size is 10 % of the database instance size.

16. Choose *Next*.

17. Select whether or not you want to use the *Mirror Log* feature of SAP DB. If you select "YES", make sure that you have a second file system mounted where you can put the mirrored logs.

Specify the number of CPUs that you want to use for the SAP DB kernel. This input field is disabled if you have a single processor installed.

Select the "Volume Media Type" you want to use for the database instance. You can choose between file system and raw devices.

18. Choose *Next*.

19. Depending on the previous choice (file system/raw devices) specify where you want to put your database log volumes.

If you have selected *File System*, enter a path in the *Location* field together with the *Size* of that log volume. It is common to create multiple log volumes so that the database kernel can optimize disk operations. Usually a low number should be used (2 – 5).

For example, if the calculated log size is 1024 MB, you could split this amount into four log volumes, each 256 MB. All log volumes can be put into the same directory.

However, the setup only checks that the sum of all the database log volumes is at least the minimum required size. You can increase the total log size to any amount by either adding more log volumes, or by increasing the size of the individual volumes.

If you have selected *Raw Devices*, enter device names in the *Location field* that correspond to your disk partitions. Since the size of the raw device is determined automatically by the setup program, no additional size information is required.

As with the file system, it is advisable that you distribute your log volumes into several raw devices, so that I/O operations can be performed in parallel. Make sure that the total size of your raw devices is at least the minimum required size.

As you can see, using raw devices requires precise planning of the disk layout before you actually can run the installation. In large and heavily used databases this is particularly important, since using raw devices dramatically increases the I/O throughput of your database.

20. Choose *Next*.

21. Create your data volumes as described in the above paragraph for the log volume.

The recommended number of data volumes is between 5 and 10.

22. Choose *Next*.

23. Finally you have to decide whether the setup should put the system database into the default location, or into another location. Usually it is a good idea to leave this untouched unless the system database does not fit into the default directory.

24. Choose *Next*.

If you have selected both SAP Content Server and SAP Cache Server database instances, you have to process all the setup steps again for the second database instance. Otherwise,

the installation now starts copying the program files into the appropriate directories and creates the database log and data volumes. Depending on the database size and the disk speed the database creation step can take several hours.

The next screen shows the progress of the installation process. Once the process is complete, two more dialog boxes appear, one reminding you to restart the servers, and the other informing you that the installation process has finished successfully.

## AdminSecurity

With **AdminSecurity** you can switch “Basic Authentication” for administrative commands on and off in the SAP Content Server.

As soon as **AdminSecurity** is activated, the server returns the status code 401 (`authorization required`) together with the appropriate realm to the client. This prompts the client to send a user name and password. This user and password must be made known to the operating system of the server. By default all passwords are verified against the local `/etc/passwd` entries.

If you set the parameter **AuthService=NIS** in the global section of the configuration profile, all password verifications are executed against the **passwd.byname** map of your Network Information Service (NIS) domain.

**AdminSecurityGroup** limits the number of authorized users to a specific user group. An **AdminSecurityGroup** must be provided in conjunction with **AdminSecurity**. All users are verified against this group to avoid unintended administrative access to the SAP Content Server. Again, by default all group verifications are executed against `/etc/group`, if **AuthType=NIS** is set, all verifications are executed against the **group.byname** map of your NIS domain.

The content server always uses the default NIS domain.

Turning on NIS as the authorization mechanism can probably open security leaks depending on the NIS implementation. Make sure that you have setup a secure NIS environment. If you are in doubt about possible security issues, consult your operating system vendor and read the appropriate notes on NIS security.

Shadow password mechanisms are not supported by the SAP Content Server.

The above mentioned parameters **AdminSecurity** and **AdminSecurityGroup** are set automatically by the installation program if you have enabled administrative security. However, the parameter **AuthService=NIS** must be set to a later point in time with the transaction CSADMIN. Notice that all these parameters are effective only in the “All Repositories” section of the content server configuration.



## Post-Installation

There are a few more things you have to do before you can use your newly-installed SAP Content Server:

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 above tasks, see the following documentation:

- The *Knowledge Provider* slideshow, especially the slides under the headings 'Content Server Administration' and 'CSADMIN'. To access this presentation, go to the SAP Service Marketplace ([service.sap.com](http://service.sap.com)), enter the QuickLink *contentserver*, and select *Media Library / Kpro Presentations* from the list on the right.
- The Knowledge Provider documentation at <http://help.sap.com> under *SAP Web Application Server* → *Basis Services* → *SAP Knowledge Provider* → *Content Management Service*. The sections under *Content Server and Cache Server Administration* → *Functions* are of particular relevance here.
- The chapter "Changing the Password for the Database Access" in the Operating Manual for the SAP Content Server describes clearly how to change the password for the database user `SAPR3`. However, you should also read the 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`.

On a more general level, you should also consult the *Operating Manual for SAP Content Server* to learn how to prepare backups, observe and monitor the server, and relocate repositories, among other things. The chapter 'Content Server Administration' is of particular relevance here. To access the operating manual, go to the SAP Service Marketplace ([service.sap.com](http://service.sap.com)), enter the QuickLink *contentserver* and select *Literature* from the list on the right.



## Installation Check

After you have created your repositories (see [Post-Installation \[Page 24\]](#)), you may want to run report `RSCMST` to check that your repositories can be accessed from the SAP system.



## Additional Information

The following sub-sections provide information that may be useful to you once your installation is up and running:

[Remote Installation with SAPinst \[Page 26\]](#)

[Interrupted Installation with SAPinst \[Page 30\]](#)

[Installation Troubleshooting \[Ext.\]](#)

[Notes Relevant to SAP Content Server \[Page 33\]](#)

[Appendix: modifications to httpd.conf \[Page 34\]](#)



## Remote Installation with SAPinst

### Purpose

You can run the SAPinst GUI in standalone mode to perform a remote installation.

This enables you to install an SAP system on another host (the remote host) while monitoring the installation with the SAPinst GUI on your local Windows or UNIX computer (the local host).

### Prerequisites

- Make sure that you have performed the preparation activities for your local host (SAPinst GUI host) and your remote host.

For more information, see "Installation Preparations" in this documentation.

- Both computers are on the LAN and can ping each other.

To test this:

- Log on to your remote host and enter the command `ping <local host>`.
- Log on to the local host and enter the command `ping <remote host>`.

- SAPinst ports

SAPinst uses the ports 21212 and 21213 during the installation for communication with the SAPinst GUI. If one of these ports is already used by another service, SAPinst aborts the installation with an appropriate error message.

In this case, you must start SAPinst or the SAPinst GUI from the command prompt as follows:



In the following commands, `<free_port_number>` defines an unused port number. Since SAPinst also uses `<free_port_number> + 1`, this must also be free.

For example, if you enter 60000 as `<free_port_number>`, SAPinst uses the ports 60000 and 60001.

- UNIX:
  - SAPinst: `./sapinst`  
`SAPINST_DIALOG_PORT=<free_port_number>`
  - SAPinst GUI: `./sapinstgui.sh -port <free_port_number>`

- Windows:
  - SAPinst: `sapinst SAPINST_DIALOG_PORT=<free_port_number>`
  - SAPinst GUI: `sapinstgui.bat -port <free_port_number>`

The same applies to the SAPinst GUI commands `startinstgui.bat` (Windows) and `startinstgui.sh` (UNIX).

## Process Flow

1. You install SAPinst on your remote host and the SAPinst GUI on your local host.
2. You start the SAPinst server on your remote host.
3. You start the SAPinst GUI on your local host.
4. You perform the installation using the SAPinst GUI.

For more information, see:

- [Setting Up the Remote Host for Remote Installation \[Page 27\]](#)
- [Setting Up the Local Host for Remote Installation \[Page 28\]](#)



## Setting Up the Remote Host for Remote Installation

### Use

You use this procedure to set up your **remote** host when you want to run SAPinst as a [remote installation \[Page 26\]](#). The remote host is the host where you want to install the SAP system.

### Procedure

1. Log on to your remote host as a user who is a member of the local administration group.
2. Insert the installation CD in your CD drive.
3. Run `setup.cmd` from the following path:

```
<CD drive>:\SAPinst\NT
```

SAPinst now asks if you want to perform a *Standard* or *Custom* installation

If you choose a *Custom* installation you can define:

- Installation directory for SAPinst, `<SAPinst_DIR>`
- SAPinst folder in the *Start* menu, which is used to create unique *Start* menu entries.



You enter the following for the *Start* menu during the installation:

```
SAP System Central Instance
```

SAPinst creates the following *Start* menu:

```
Start → Programs → SAP System Central Instance → ...
```

- Connection parameters (not relevant here)
- 4. Select *Standard* or *Custom* and choose *Next*.  
SAPinst is now copied to your <SAPinst\_DIR> and the *Start* menu entries are created.
- 5. To start SAPinst, choose *Start* → *Programs* → <menu\_entry> → *SAPinst Server only*  
The SAPinst server now starts and waits to connect to the SAPinst GUI
- 6. Start the SAPinst GUI on your local host, as described in [Setting Up the Local Host for Remote Installation \[Page 28\]](#).

## Your Remote Host Runs on a UNIX Platform

1. Log on to your remote host as user `root`.
2. Mount the installation CD.
3. Create <SAPinst\_INSTDIR> and change to this directory.
4. From <Installation CD>/SAPINST/UNIX/<platform> run:  

```
./INSTALL --nogui
```

  
SAPinst is now copied to your <SAPinst\_INSTDIR> without the SAPinst GUI.
5. Start SAPinst from your <SAPinst\_INSTDIR> by entering:  

```
./sapinst
```

  
SAPinst now starts and waits for the connection to the SAPinst GUI. The following message is displayed:  

```
guiengine: waiting for connect...
```
6. Start the SAPinst GUI on your local host, as described in [Setting Up the Local Host for Remote Installation \[Page 28\]](#).



## Setting Up the Local Host for Remote Installation

### Use

You use this procedure to set up your **local** host when you want to run SAPinst as a [remote installation \[Page 26\]](#). The local host is the host running the SAPinst GUI.

### Procedure

#### Your Local Host Runs on a Windows Platform

1. Log on to your local Windows host.
2. Insert the installation CD into your CD drive.
3. Run `setup.cmd` from the following path:  

```
<CD drive>:\SAPinst\NT
```

  
SAPinst now asks you to perform a *Standard* or *Custom* installation
4. Select *Custom* installation.  
You can define the following:
  - Installation directory for SAPinst (that is, for the SAPinst GUI)

- SAPinst folder in the *Start* menu, which is used to create unique *Start* menu entries
- Connection parameters (host name and port number) to connect to your remote host(s). Use *Add Row* to enter all known remote hosts and their corresponding free port numbers. Make sure that you enter the same port number as SAPinst uses on the corresponding remote computer. If you do not enter a port number, standard port 21212 is used.



You enter the following during the installation:

- Start menu entry: **SAPinst GUI**
- Connection parameters (remote host / port): **uwi005 / 8000**
- Connection parameters (remote host / port): **hs1101 / 5555**

SAPinst creates the following *Start* menu entries:

*Start* → *Programs* → *SAPinst GUI* → *SAPinst GUI uwi005 8000*

*Start* → *Programs* → *SAPinst GUI* → *SAPinst GUI hs1101 5555*

5. Enter your data, select *Install SAPinst GUI only*, and choose *Start*.

The SAPinst GUI is now copied to your <SAPinst\_DIR> and the *Start* menu entries are created.

6. Choose *Start* → *Programs* → <menu\_entry> → *SAPinst GUI* <host><port>.

The SAPinst GUI automatically connects to the host, which is waiting for a connection.

That is, the SAPinst GUI now starts and the *Welcome* screen is displayed.



If you have not entered connection parameters before, a dialog box now prompts you to enter the following parameters:

- *Hostname* : Enter the host name of the remote computer.
- *Port*: Enter the same port number as SAPinst uses on the remote host.

7. Perform the installation from your local host.

## Your Local Host Runs on a UNIX Platform

1. Log on to your local UNIX host as user `root`.
2. Mount your installation CD.
3. Create <SAPinst\_INSTDIR> and change to this directory.
4. From <Installation CD>/SAPINST/UNIX/<platform> run

```
./INSTALL --nosapinst
```

The SAPinst GUI is now copied to your <SAPinst\_INSTDIR>.

5. Start the SAPinst GUI from your <SAPinst\_INSTDIR> by entering:

```
./startinstgui.sh
```

The SAPinst GUI automatically connects to the host, which is waiting for a connection.

6. Perform the installation from your local host.



## Interrupted Installation with SAPInst

### Purpose

SAPInst does not abort the installation in error situations. Therefore, you can continue an interrupted installation when you have:

- **Not** canceled the installation
- **Already** canceled the installation

### Prerequisites

You have solved the problem that caused the error situation.

### Process Flow

- You have **not** canceled the installation
 

That is, the error dialog box is still displayed and SAPInst is waiting for your input. You proceed as follows:

In the error dialog box, you choose *Retry*.

SAPInst now retries the installation step.
- You have **already** canceled the installation
 

That is, the installation was aborted.

You have two alternatives:

  - [Continuing the installation \[Page 32\]](#)

Since SAPInst records the installation progress in the `keydb.xml` file, you can continue the installation from the failed step without repeating previous steps.
  - [Restarting the installation \[Page 30\]](#)

You can restart from the beginning, that is, with the default `keydb.xml` file as delivered.



In some cases, you must de-install already installed components, before repeating the installation from the beginning. For example, this applies to an SAP system installation. For more information, see the description on how to de-install a component in the corresponding installation guide.



## Restarting an Interrupted Installation with SAPInst

### Use

You use this procedure if you have decided to restart an [interrupted installation \[Page 30\]](#) with SAPInst from the beginning. To do this, you restart the installation with the default `keydb.xml` file as delivered.

## Procedure

### Windows

1. Check if a SAPinst GUI Java process is still running.
2. If a process is still running, look for `javaw.exe` under *Processes* in your Task Manager and kill it.
3. Do one of the following:
  - Restart the installation from installation CD:  
Start SAPinst from CD again as described in the corresponding installation documentation.  
SAPinst deletes all files in your installation directory and asks you if you want to overwrite any existing installation directory.
  - Prepare the new installation by using the following *Start* menu entries:
    - i. Choose *Start* → *Programs* → *<menu\_entry>* → *Prepare New Installation*.  
Current log and command files are now copied to the backup directory `<SAPinst_Dir>\log<month>_<date><time>` that indicates the date and time of the backup.
    - ii. Choose one of the following, depending on how you want to start SAPinst:

To Start	Choose
SAPinst server with GUI	<i>Start</i> → <i>Programs</i> → <i>&lt;menu_entry&gt;</i> → <i>SAPinst Server with GUI</i>
Only the SAPinst GUI	<i>Start</i> → <i>Programs</i> → <i>&lt;menu_entry&gt;</i> → <i>SAPinst GUI</i>
Only the SAPinst server	<i>Start</i> → <i>Programs</i> → <i>&lt;menu_entry&gt;</i> → <i>SAPinst Server only</i>

### UNIX

1. Check if a SAPinst GUI Java process named `java` is still running:  
`ps -efl | grep java`  
If so, kill it.
2. Do one of the following:
  - Restart the installation from the installation CD:  
Start SAPinst from CD again as described in the corresponding installation documentation.  
SAPinst deletes all files in your installation directory and asks if you want to overwrite any existing installation directory.
  - Prepare the new installation by running the following command from your installation directory `<SAPinst_INSTDIR>` (the installation CD is not needed):  
`./newinstall`  
This command copies current log and command files to the backup directory `<SAPinst_Dir>/log<month>_<date><time>` that indicates the date and time of the backup. SAPinst then starts with reset XML files.



## Continuing an Interrupted Installation with SAPInst

### Use

You use this procedure if you have decided to continue an [interrupted installation \[Page 30\]](#) with SAPInst. That is, SAPInst continues the installation at the point where it stopped.

### Procedure

#### Windows

1. Check if a SAPInst GUI Java process is still running.
2. If a process is still running, look for `javaw.exe` under Processes in your Task Manager and kill it.
3. Choose one of the following, depending on how you want to start SAPInst.

To Start	Choose
SAPInst server with GUI	<i>Start → Programs → &lt;menu_entry&gt; → SAPInst Server with GUI</i>
Only the SAPInst GUI	<i>Start → Programs → &lt;menu_entry&gt; → SAPInst GUI</i>
Only the SAPInst server	<i>Start → Programs → &lt;menu_entry&gt; → SAPInst Server only</i>

#### UNIX

1. Check if a SAPInst GUI Java process named `java` is still running:
 

```
ps -efl grep java
```

 If so, kill it.
2. Make sure that all environment variables are set as described in the corresponding installation documentation.
3. Start SAPInst from your installation directory `<SAPInst_INSTDIR>` with:
 

```
/sapinst
```



## Installation Troubleshooting

### SAPInst

This section refers to 'Running SAPInst' under [Installation \[Page 20\]](#) above.

- If an error occurs during the **dialog phase**, SAPInst does the following:
  - Stops the installation
  - Displays a dialog that informs you about the error
 You can now directly view the log file by choosing *View Logs*.  
 Abort the installation by choosing *OK* and try to solve the problem.
- If an error occurs during the **processing phase**, SAPInst does the following:
  - Stops the installation

- Displays a dialog that informs you about the error  
You can now:
- Directly view the log file by choosing *View Logs*
- Try to solve the problem (see the SAPinst Troubleshooting Guide in the *SAP Service Marketplace* at <http://service.sap.com/sapinstfeedback>)
- Retry the installation by choosing *Retry*
- Abort the installation by choosing *OK*

## Other Installation Scenarios

You may also find useful the sections [Remote Installation with SAPinst \[Page 26\]](#) and [Interrupted Installation with SAPinst \[Page 30\]](#) above.



## Notes Relevant to SAP Content Server

Number	Title
0586895	SAP Content Server for UNIX (Composite SAP Note)
0093042	Problems with SAPFTP
0119863	SAP DB: Backup Tools
0164203	Problems with SAPHTTP
0181696	Caching
0212394	Initial Password for DBM, DBA, and Domain User
0216419	Multi-Layer Caching and Content Server Aliases
0315604	Customizing the Content Repositories
0319332	Content Server Backup Strategies
0203721	Content Server: Backup Tools
0350067	Administration Content Server/SAP DB
0351647	Cache Server Administration
0352518	Using the SAP Content Server Cache
0354819	Composite note SAPSECULIB
0361123	SAP Content Server and Security
0376033	Cache Server Knowledge Warehouse 5.1
0389366	Relocating Documents
0308977	Repositories BIE_QMM, BIE_NET and HME_CONTENT
0392242	Multiple Entries in Application Log
0407520	Information on the Cache Server



## Appendix: Modifications to httpd.conf

The `httpd.conf` file is the general configuration profile that defines the runtime behavior of the Apache Web server.

This appendix briefly describes the modifications made to `httpd.conf` by the SAP Content Server installation program. However, be aware that due to the virtually limitless number of installation scenarios, your individual `httpd.conf` file may differ from the examples used here. Also, a good understanding of the overall structure of the `httpd.conf` file is essential, in case you decide to alter the settings manually. Refer to the reference materials listed under [General Information \[Page 5\]](#) above for further reading.

`httpd.conf` is usually located in the directory `./conf` under your Web server root directory. Only the points in the file that may be subject to a modification are listed here. Locate the lines in question using your editor's search function.

### Port Number

The default port for the Apache installation is 8080. During the installation, you are asked for port numbers for the content and cache servers. The default ports are 1090 and 1095 respectively. So the port line reads: `Port 1090`.

### Module Loader

Apache has to load the content server and cache server modules during startup. The corresponding Apache command is `LoadModule`. Apache loads all specified modules in reverse order. The content server and cache server module load lines appear first in the list, therefore they are loaded last.

```
LoadModule sapcs_module      libexec/mod_sapcs.so
or
LoadModule sapcsc_module     libexec/mod_sapcsc.so
```

A server profile should contain only one module load directive, in order to avoid port number conflicts.

### Module Registration

After the modules have been loaded into the process space of the Apache Web server, they have to be 'registered' – that is, added to the module handler list. This is done using the `AddModule` command. The sequence of module registration should be the same as during module loading, so that the content server and cache server modules appear at the top of the list.

```
AddModule mod_sapcs.cpp
or
AddModule mod_sapcsc.cpp
```

### Module Configuration

Almost every module has its own a specific configuration section in `httpd.conf`. This allows an administrator to influence the way this module behaves while it is being used in a particular HTTP request. Both the content server and the cache server require such a section. The configuration sections for the content server and the cache server are not part of the standard `httpd.conf` file, so they are simply added to the end of the file. Both configurations are very similar, and differ only in a few (but important) lines. These sections are shown below.

## Content Server Configuration Section

```
<IfModule mod_sapcs.cpp>
  AddModuleInfo sapcs "SAP Content Server (C) SAP AG 1998,2003"
  CSConfigPath /usr/users/sapcs/cs.conf

  <Location /sapcs>
    SetHandler sapcs_module
    Allow from all
  </Location>

  <Location /ContentServer/ContentServer.dll>
    SetHandler sapcs_module
    Allow from all
  </Location>

  <Location /contentserver/contentserver.dll>
    SetHandler sapcs_module
    Allow from all
  </Location>
</IfModule>
```

## Cache Server Configuration Section

```
<IfModule mod_sapcs.cpp>
  AddModuleInfo sapcsc "SAP Content Server Cache (C) SAP AG 1998,
2003"
  CSCConfigPath /usr/users/sapcsc/csc.conf

  <Location /sapcsc>
    SetHandler sapcsc_module
    Allow from all
  </Location>

  <Location /CacheServer/CacheServer.dll>
    SetHandler sapcsc_module
    Allow from all
  </Location>

  <Location /cacheserver/cacheserver.dll>
    SetHandler sapcsc_module
    Allow from all
  </Location>

  <Location /Cache/CSProxyCache.dll>
    SetHandler sapcsc_module
    Allow from all
  </Location>

  <Location /cache/csproxycache.dll>
    SetHandler sapcsc_module
    Allow from all
  </Location>
</IfModule>
```

Each module configuration consists of a generic “header” block and a handler directive. The header block consists of the variable `CSConfigPath/CSCConfigPath`, which points either to the content server or cache server configuration profile, and a copyright notice. Then, several URL prefixes are defined. Each prefix triggers the Apache Web server to pass the request to the module. A number of compatibility prefixes have also been added. The

keywords "Allow from" and "Deny from" are standard client access modifiers, which you could adjust in order to fine-tune the accessibility of your server instance.