

**PUBLIC**

**Upgrade Guide**



# **SAP NetWeaver 2004s** **Standalone Engine** **SAP liveCache** **Technology: Windows**

## **Target Audience**

- Technology Consultants
- System Administrators

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## Typographic Conventions

Example	Description
<>	Angle brackets indicate that you replace these words or characters with appropriate entries to make entries in the system, for example, "Enter your <User Name>".
®	Arrows separating the parts of a navigation path, for example, menu options
<b>Example</b>	Emphasized words or expressions
<b>Example</b>	Words or characters that you enter in the system exactly as they appear in the documentation
<u>Example</u>	Textual cross-references to a URL, for example, <a href="http://www.sap.com">www.sap.com</a>
/example	Shortcuts added to the URL of a homepage to enable quick access to specific content on the Web
<a href="#">123456</a>	Hyperlink to an SAP Note, for example, SAP Note <a href="#">123456</a>
<i>Example</i>	<ul style="list-style-type: none"> <li>■ Words or characters quoted from the screen. These include field labels, screen titles, pushbutton labels, menu names, and menu options.</li> <li>■ Cross-references to other documentation or published works</li> </ul>
<b>Example</b>	<ul style="list-style-type: none"> <li>■ Output on the screen following a user action, for example, messages</li> <li>■ Source code or syntax quoted directly from a program</li> <li>■ File and directory names and their paths, names of variables and parameters, and names of installation, upgrade, and database tools</li> </ul>
<b>EXAMPLE</b>	Technical names of system objects. These include report names, program names, transaction codes, database table names, and key concepts of a programming language when they are surrounded by body text, for example, <b>SELECT</b> and <b>INCLUDE</b>
<b>EXAMPLE</b>	Keys on the keyboard

## Document History



### Caution

Before you start the implementation, make sure you have the latest version of this document.

You can find the latest version in SAP Service Marketplace at the following internet address:

[service.sap.com/instguides](http://service.sap.com/instguides).

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

Version	Date	Description
1.03	01/27/2006	Initial Version (Minor Changes)

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# 1 Introduction

This documentation describes how to upgrade an SAP liveCache instance from at least Release 7.2.05.15 to Release 7.6.0. SAP liveCache is used in mySAP Supply Chain Management (SCM) and Workforce Deployment (WFD).



## Caution

Make sure you have the **latest version of this document**. See the version number on the front page. You can always find the latest version on SAP Service Marketplace:

[service.sap.com/upgradeNW2004s](https://service.sap.com/upgradeNW2004s)  *Upgrade – Standalone Engines and Clients*

For more information on mySAP SCM technology, see SAP Service Marketplace at:

[service.sap.com/scm](https://service.sap.com/scm)  *mySAP SCM Technology*

For more information on Resource Planning, see SAP Service Marketplace at either of the following:

[service.sap.com/crm](https://service.sap.com/crm)

[service.sap.com/cprojects](https://service.sap.com/cprojects)

## 1.1 Before You Start

Make sure that you read the following sections before you start the upgrade:

- *SAP Notes for the Upgrade* [page [1](#)]
- *Information Available on SAP Service Marketplace* [page [2](#)]
- *Naming Conventions* [page [2](#)]

### 1.1.1 SAP Notes for the Upgrade

Read the following SAP Notes, which you can find on SAP Service Marketplace at [service.sap.com/notes](https://service.sap.com/notes):

Note Number	Title
<a href="#">832561</a>	Amendments for Upgrade to liveCache 7.6.0
<a href="#">533076</a>	Importing a liveCache version as of 7.2.5 B18
<a href="#">498036</a>	Overview note on importing SAP DB versions
<a href="#">833216</a>	Parameter values as of liveCache version 7.6.00
<a href="#">337445</a>	liveCache and Storage Management
<a href="#">34690</a>	Add devspace/volume under SAP DB/MaxDB
<a href="#">201390</a>	Database backup SAP DB Versions 7.1 to 7.5 (MaxDB)

Note Number	Title
<a href="#">508979</a>	Upgrade of SAP DB/MaxDB/liveCache w/ Cluster MSCS Var.1
<a href="#">487972</a>	Operating system parameterization of liveCache



**Caution**

Before you begin the upgrade, make sure that you read **SAP Note [832561](#)** because it contains current information and corrections essential to the upgrade.

## 1.1.2 More Information on SAP Service Marketplace

You can find more information on SAP Service Marketplace as follows:

Description	Address
liveCache Upgrade Guide	<a href="http://service.sap.com/upgradeNW2004s">service.sap.com/upgradeNW2004s</a> <sup>®</sup> <i>Upgrade — Standalone Engines, Clients, and Tools</i>
Product Availability Matrix (PAM)	<a href="http://service.sap.com/pam">service.sap.com/pam</a>
SAP Notes	<a href="http://service.sap.com/notes">service.sap.com/notes</a>

## 1.1.3 Naming Conventions

### SAP SCM and SAP APO

SAP SCM and SAP APO As of Release 4.0, SAP Advanced Planning and Optimization (SAP APO) has been renamed to SAP Supply Chain Management (SAP SCM). In this documentation we use the term SAP Advanced Planning and Optimization (or the abbreviation SAP APO) to refer to Release 3.1 and lower, and SAP Supply Chain Management (or the abbreviation SAP SCM) to refer to Release 4.0.

### Release Names

Where Release descriptions are used in the following documentation, they correspond to the following SAP APO or SCM Releases:

SAP Basis or SAP Web Application Server Release	SAP APO / SCM Release
4.6A	2.0A
4.6C	3.0A
4.6D	3.1
6.20	4.0
6.40	4.1
7.0	5.0



**SAP System**

The SAP system name is called SAPSID below. Follow the notation in pointed brackets. If <SAPSID> is used, insert your SAP system name, for example PRD.

**<SAPSID> User Name**

The user name is written in uppercase and abbreviated with <SAPSID>ADM.

**Caution**

Always enter the user name <sapsid>adm in lowercase for the standalone database server.

**liveCache Application Routines (COM)**

Starting with APO Release SCM 4.0 (the successor to APO 3.1), the name COM is no longer used. Instead the liveCache application routines are now called "liveCache applications." We have already changed the application areas on SAP Service Marketplace from APO-COM to BC-DB-LCA, where the abbreviations have the following meanings:

- BC means Basis components
- DB means database
- LCA means liveCache applications

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## 2 Planning

To plan the upgrade you need to do the following:

1. You *check the software requirements* [page 5].
2. You *choose an upgrade strategy* [page 6].

### 2.1 Checking Software Requirements

1. Check that:
  - SAP liveCache is ready to run.
  - The system tables have been loaded at least once for the existing instance.
  - The database parameters of the database instance that you want to upgrade have not changed since the last restart.
  - The starting version of SAP liveCache (that is, before the upgrade) is at least **7.2.05.15**.



#### Caution

If the starting version of SAP liveCache does not meet the above requirement, you **must** upgrade to this version before starting the upgrade. For more information on how to upgrade to the correct starting version of SAP liveCache, see **SAP Note 498036** on SAP Service Marketplace at: [service.sap.com/notes](http://service.sap.com/notes)

2. Check that your operating system meets the following requirements:

Operating System	Platform	Supported Version
Windows	IA64	2003
Windows	x64	2003

For the most up-to-date release information on the database and operating system of your product, check the SAP Product Availability Matrix (PAM) on SAP Service Marketplace at:

[service.sap.com/pam](http://service.sap.com/pam)

There you can also find additional information on required operating system patch levels and patches for C++ RTE.

For additional operating system requirements, see the following SAP Notes:

- [337445](#) *liveCache and Storage Management*
- [487972](#) *Operating System Parameterization of liveCache*

You can find these notes on SAP Service Marketplace at:

[service.sap.com/notes](http://service.sap.com/notes)

## 2.2 Choosing an Upgrade Strategy

The upgrade strategy you choose depends on your existing release of SAP liveCache, your start release, and your target release of the SAP system.

### Prerequisites

The upgrade strategies differ as follows:

- **Inplace upgrade**  
Inplace upgrade does not change the structure, as occurs when the start and target releases for the SAP system or the SAP liveCache database are different. Therefore, only the SAP liveCache software is updated during an inplace upgrade.
- **SCM Extract / Load Upgrade**  
With the SCM extract / load upgrade, transaction data is backed up using ABAP reports during the APO system upgrade, that is, **before** the SAP liveCache upgrade. This type of upgrade overwrites data files and devspaces from APO Release 3.0A or 3.1 or SCM Release 4.0 or 4.1 during the installation of the new SAP liveCache software. You do not need to first deinstall anything. Finally, the SAP liveCache instance is recreated and initialized.



Caution

Use the SCM extract / load upgrade strategy **only** for an SCM upgrade to 5.0

### Procedure

Choose your upgrade strategy in one of the following ways:

- Follow the instructions in the relevant SAP system upgrade documentation.
- Use the tables below to determine your upgrade strategy.

SAP liveCache Upgrade During an SCM Upgrade to 5.0

APO or SCM Start Releases	SCM Target Release	SAP liveCache Start Release	Upgrade Strategy
3.0A, 3.1, 4.0, 4.1	5.0	>=7.2.05.15	SCM extract / load upgrade

SAP liveCache 7.6.0 Upgrade Without an SAP System Upgrade

SAP liveCache Start Release	Upgrade Strategy
7.6.00	Inplace upgrade

## 3 Preparation

You need to complete the following preparations:

1. You *upgrade the database manager* [page 7].
2. You *complete the upgrade preparations* [page 7].

### 3.1 Upgrading the Database Manager

If you want to administer your MaxDB or liveCache from a Windows PC with the Database Manager, you need to install or update the Database Manager.

liveCache Version 7.6.0 is delivered with **Database Manager 7.6**. After installing this, you can operate it at the same time as older versions of the Database Manager.

After the installation you can easily transfer the registered database instances from older versions of the Database Manager.

#### Prerequisites

You can find the Database Manager 7.6 on the liveCache DVD at:

- 32-bit systems  
<DVD>: \LC\_WINDOWS\_I386\SETUPS\DBM76.EXE
- 64-bit systems  
<DVD>: \LC\_WINDOWS\_IA64\SETUPS\DBM76.EXE

You can find the newest versions of the Database Manager 7.6 on SAP Service Marketplace at:

[service.sap.com/patches](http://service.sap.com/patches) <sup>®</sup> *Database Patches* <sup>®</sup> *MaxDB and SAP DB* <sup>®</sup> *MaxDB GUI Components/Tools*

#### Procedure

1. Install or upgrade the Database Manager as described in *Installing the Administration Tools* [page 13].
2. If required, transfer the registered database instances from an older version of Database Manager to the new one by choosing the following:  
*Start* <sup>®</sup> *Programs* <sup>®</sup> *MySQL MaxDB* <sup>®</sup> *Database Manager* <sup>®</sup> *Update Tool*

### 3.2 Completing the Upgrade Preparations

#### SCM Extract / Load Upgrade

1. Make sure that you stop SAP liveCache in the REQ\_APOUPG phase.
2. If an SCM instance or another MaxDB instance is running on the SAP liveCache server, stop it.

3. Make sure that, during the REQ\_APOUPG phase of the SCM upgrade, the SAP liveCache transaction data is downloaded to the SCM database.

**Note**

You **cannot** start the upgrade without a successful download. You do **not** need to copy the master data to the SCM database, because master data – unlike transaction data – is already present in the SCM database (this is true for the SCM system at all times).

4. Stop the server for Remote SQL using the command:  
**x\_server stop.**
5. Stop all DBMGUIs and all DBMCLI sessions.


**Inplace Upgrade**

1. Stop SAP liveCache with transaction LC10.
2. If an SCM instance or another MaxDB instance is running on the SAP liveCache server, stop it.
3. Stop the server for Remote SQL using the command:  
**x\_server stop.**
4. Stop all DBMGUIs and all DBMCLI sessions.

## 4 Upgrading liveCache

1. Log on as a user with administrator rights.
2. Load the liveCache DVD.
3. Change to the DVD:

<DVD>: \

4.  Note  
Start the upgrade tool from the command prompt. If you start it using the Explorer, error messages are not always displayed.

Start the upgrade tool as follows from the command prompt:

```
LCUPDATE.BAT -d <liveCache name> -u <DBM,DBM password> [ -dir <temporary directory> ]
```

 Note

The default temporary directory is C:\temp. If you want to change this setting, use the -dir parameter.

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## 5 Post-Upgrade

You perform the following post-upgrade steps:

1. You *perform post-upgrade activities* [page [11](#)].
2. If required, you *upgrade the liveCache client software* [page [12](#)].
3. You *set up a liveCache user* [page [13](#)].
4. You *install the administration tools* [page [13](#)].

### 5.1 Performing Post-Upgrade Activities

1. Check the setting of OMS\_HEAP\_LIMIT as described in [SAP Note 833216](#).



It is essential that the SAP liveCache parameter OMS\_HEAP\_LIMIT is set to a value greater than zero. The unit for this parameter is KB. If you have to change this parameter, restart the SAP liveCache instance so that the change takes effect.

2. Check the instructions in [SAP Note 833216](#) to parameterize the SAP liveCache Release 7.6.0 server initially if your SAP liveCache start release was 7.2.5.
3. Check the following prerequisites before you upgrade the SAP central or dialog instance:
  - If the liveCache instance is on the same host as the SCM instance, you do not need to update the client software.
  - For the client software upgrade for liveCache, you need to stop the central and dialog instance.
  - If other MaxDB instances are running on the central or dialog instance server, stop them.
  - If other MaxDB instances are running on the central or dialog instance server, stop the server for Remote SQL using the following command:  
**x\_server stop**
  - Stop all DBMGUI, SQL Studio, and DBMCLI sessions.
4. Upgrade the SAP central or dialog instance as follows:
  - a) Change to the following directory:  
**<DVD>:\LCUPDATE.BAT -client**
  - b) Enter the following required information:
    - A) Name of the SAP system (that is, SAPSYSTEMNAME).
    - B) Installation directory.
  - c) Restart the SAP instance service **SAP<SID>\_<instance number>**.
  - d) Start the SAP instance using the Microsoft Management Console.
  - e) If you stopped other MaxDB instances, restart them and also restart the server for Remote SQL using the following command:

**x\_server start**

5. If you are performing an upgrade with the SCM extract/load *upgrade strategy* [page 6], follow the SCM upgrade documentation and section C of report /SAPAPO/OM\_LC\_UPGRADE\_41, where you can find descriptions of when to restart liveCache and when to perform a complete liveCache backup.



Caution

**Non-Unicode Only**

If you are upgrading a non-Unicode system from SAP SCM 4.0 to SAP SCM 4.1 and you do **not** re-initialize liveCache with transaction LC10, you see the following error message:

Error NO\_CONNECTION during UPDATE TRANSACTION POSSIBLE check on ...

This is due to a codepage problem. To fix it, you need to:

- a) Set liveCache parameter DEFAULT\_CODE to ASCII.
- b) Make sure that there is no administration report entered for logical liveCache connection LCA.
- c) Initialize liveCache from transaction LC10. For more information on how to fix this problem, see [SAP Notes 606130](#) and [68055](#).

6. If you are performing an upgrade with the Inplace *upgrade strategy* [page 6]:
  - a) Start the server for Remote SQL using the command **x\_server start**.
  - b) If you need to import a new SAP liveCache version as part of the SAP liveCache upgrade, do this now. You can find the newest versions of SAP liveCache on SAP Service Marketplace at: [service.sap.com/patches](http://service.sap.com/patches) <sup>®</sup> *Entry by Application Group* <sup>®</sup> *SAP Application Components* <sup>®</sup> *SAP SCM* <sup>®</sup> *SAP SCM 5.0* <sup>®</sup> *Entry by Component* <sup>®</sup> *SCM LC* <sup>®</sup> *SAP LC/LCAPP 5.0*
  - c) Start the SCM and SAP liveCache instances using transaction LC10.
  - d) Perform a complete backup of the liveCache data so that you can recover the new liveCache if necessary.

## 5.2 Upgrading the liveCache Client Software

If required, you need to upgrade the database client software for the host where the SAP central or dialog instance runs.

### Prerequisites

You do **not** need to update the client software if:

- The database instance is on the same host as the SAP instance
- You already have client software 7.4.03 or higher – but in this case we recommend you to always use the latest client software

### Procedure

1. Stop the SAP central and dialog instances.
2. Log on as a user with administrator rights.
3. Load the liveCache 7.6.00 DVD in the drive.
4. Start the client software upgrade:
 

```
<liveCache DVD>\NT\COMMON\LCUPDATE.BAT -cclient
```

5. Enter the following information, choosing Next as required:
  - a) Name of the SAP system (that is, SAPSYSTEMNAME).
  - b) Name of the installation directory
6. Log on again as a user with administrator rights.



Note

Make sure that you log on from the beginning because the user environment has been changed.

7. Restart the SAP instance:

```
stopsap r3
```

```
startsap r3
```

## 5.3 Setting Up a liveCache Super User

### Process

You need to create a liveCache and liveCache applications super user for liveCache administration. Assign the roles SAP\_APO\_LC\_ALL or SAP\_LCA\_ALL and SAP\_BC\_LVC\_SUPERUSER to the user, as these roles already contain all required privileges.

If you want to create users with limited privileges for transaction LC10 see [SAP Note 452745](#) for more information about the authorization concept for transaction LC10.

## 5.4 Installing the Administration Tools

This section describes how to install the following administration tools for MaxDB and SAP liveCache on Windows systems:

- Database Manager GUI and Web DBM  
You can use Database Manager GUI and Web DBM to administer databases, including remote ones.
- SQL Studio and Web SQL Studio  
You can use SQL Studio and Web SQL Studio to send SQL statements to the database and evaluate the results.



Note

The use of these tools for the SAP liveCache is optional. If you do not want to use them, skip this section.

For more information on these tools, see the following documentation:

- *Database Manager GUI and Web DBM*
  - *SQL Studio and Web SQL Studio*
- You can find these at:  
[www.mysql.com/maxdb](http://www.mysql.com/maxdb)® *Documentation*® *MaxDB Online Library*® *Tools*

## Prerequisites

- You can install these administration tools on any Windows PC in your network, even if your database runs on UNIX. From the PC with the installed administration tool, you can then administer the database or send queries to it.
- Your PC must meet the following minimum operating system requirements:

Operating System	Version
Windows NT	4.0 SP 4
Windows 2000	Any
Windows Server 2003	Any
Windows XP	Any

- Your PC must meet the following minimum hardware requirements
  - Pentium II
  - 64 MB RAM
  - 100 MB disk space
- You need the MaxDB or SAP liveCache DVD.



### Caution

If MaxDB or SAP liveCache is installed on the PC, you must **not** install the administration tools in the same directory. You can check the directories used by MaxDB or SAP liveCache as follows:

```
dbmcli -d <SID> -u <controluser>,<password> dbm_getpath IndepDataPath
dbmcli -d <SID> -u <controluser>,<password> dbm_getpath IndepProgPath
```

## Process

1. Start the installation as follows:

- DBMGUI

```
<DVD>: \<LC760_x>\NT\SETUPS\DBM76.EXE
```

- SQL Studio

```
<DVD>: \<LC760_x>\NT\SETUPS\SQLSTD76.EXE
```



### Note

An installation shield guides you through the installation. If you already have an older version of the administration tools installed on the PC, the installation shield offers to upgrade it for you.

2. If you are prompted to restart the PC after the installation, bring down any databases that are running as follows:

```
dbmcli -d <SID> -u <controluser>,<password> db_offline
```

## 6 Additional Information

### 6.1 Operating Information for liveCache

If you manually re-initialize liveCache with transaction LC10, make sure that you **first delete all administration reports**, especially /SAPAPO/DELETE\_LC\_ANCHORS and SLCA\_INIT\_FOLLOW\_UP, from the definition of the logical liveCache LCA connection.

### 6.2 Secure Sockets Layer Protocol for Database Server Communication

The MaxDB database server supports the Secure Sockets Layer (SSL) protocol. You can use this protocol to communicate between the database server and its client, here the Application Server (AS). SSL guarantees encrypted data transfer between the MaxDB database server and its client applications. In addition, the server authenticates itself to the client.



#### Caution

There is a performance cost for SSL since the data has to be encrypted, which requires time and processing power.

To use SSL you need to:

1. *Install the SAP cryptographic library* [page 15] on the client host and on the server host machines
2. *Generate the Personal Security Environment* [page 17] (PSE) on the server (SSL Server PSE) and on the client (SSL Client PSE).

#### 6.2.1 Installing the SAP Cryptographic Library

The cryptographic functions required to build a database server-client connection using Secure Sockets Layer (SSL) protocol are supplied by the SAP Cryptographic Library. Therefore, you need to install the SAP Cryptographic Library on the host machine of the MaxDB database server and the SAP Application Server (AS).

The installation package `sapcrypto.car` consists of the following:

- SAP Cryptographic Library `sapcrypto.d11`
- License ticket `ticket`
- Configuration tool `sapgenpse.exe`

You use the configuration tool to generate key pairs and PSEs.

**Caution**

The SAP Cryptographic Library is subject to German export regulations and might not be available to some customers. In addition, the library might be subject to the local regulations of your country. These regulations might further restrict import, use, and export or re-export of cryptographic software.

For more information, contact your local SAP representative.

**Prerequisites**

Download the appropriate SAP Cryptographic Library installation package for your operating system from SAP Service Marketplace at [service.sap.com/swcenter](http://service.sap.com/swcenter).

**Procedure**

1. Unpack the installation package for the SAP Cryptographic Library using `sapcar.exe`, which you can find for example on your Installation Master DVD, using the following command:

```
car -xvf SAPCRYPTO.CAR
```

**Note**

The remainder of the procedure, as described below, does **not** apply to client applications such as SQL Studio, which do not recognize an “independent” directory. In this case, you must copy the SAPCRYPTO installation package to the installation directory of the application. In this directory you need to create a directory `sec`, into which you copy the `ticket` file.

2. Copy the `sapcrypto` library to the `lib` subdirectory of the “independent program” directory. You can find the value of the independent program directory by entering the following command:

```
dbmccli dbm_getpath IndepProgPath
```

**Example**

The independent program directory might be called the following:

```
<drive>:\sapdb\programs\lib
```

3. Copy the configuration tool `sapgenpse.exe` to the directory `<independent program>\lib`.
4. Create a subdirectory called `sec` under the “independent data ” directory and copy the `ticket` file into it.

**Example**

The result might look like the following:

```
<drive>:\sapdb\data\sec\ticket
```

5. Make sure that only the local system account is allowed to possess access rights to the `sec` directory and the files it contains — including the `ticket` file and the SSL Server PSE — and that access is restricted to `read&write`. Only members of the administrator group can own the files.

**Result**

The SAP Cryptographic Library is copied to the application server and the environment is correctly configured so that the server can find the library at run time.

## 6.2.2 Generating the Personal Security Environment

The information required by the database server or client application to communicate using Secure Sockets Layer are stored in the Personal Security Environment (PSE). The required information differs according to whether SSL PSE is for the server or client:

### ■ SSL Server PSE

This PSE contains the security information from the database server, for example, the public-private cryptographic key pair and certificate chain. To install the SSL Server PSE you need to generate the PSE. You can either do this for a single database server or system-wide. The SSL Server PSE is called `SDBSSLS.exe`.

### ■ SSL Client PSE

The client requires an anonymous certificate called `SDBSSLA.exe`, which contains the list of the public keys of trustworthy database servers.

### Procedure

To generate the SSL **Server** PSE, proceed as follows:



#### Note

You need to know the naming convention for the distinguished name of the database server. The syntax of the distinguished name, which you enter in the procedure below, depends on the Certification Authority (CA) that you are using.

1. Change to the `<independent programs>\lib` directory.
2. Set up the following environment variable:  
`SECUDIR=<independent data>\sec`
3. Create a SSL Server PSE, `SDBSSLS.pse`, and generate a certificate request file, `certreq`, in the directory defined by `SECUDIR` (see previous step):  
**`sapgenpse gen_pse -v -r <SECUDIR>\certreq -p SDBSSLS.pse "<your distinguished name>"`**  
For each database server that uses a server-specific PSE, you must set up a unique certificate request. If you are using a valid system-wide SSL Server PSE, you only need to set up a single certificate request for all servers.
4. Send the certificate request to the CA for signing. You can either send it to the SAP CA or to another CA. You must make sure that the CA offers a certificate corresponding to the PKCS#7 certificate chain format. Thawte CA at [www.thawte.com](http://www.thawte.com) offers a suitable certificate, either SSL Chained CA Cert or PKCS#7 certificate chain format.  
The CA validates the information contained in the certificate request, according to its own guidelines, and sends a reply containing the public key certificate.
5. After you have received the reply from the CA, make sure that the contents of the certificate request have not been destroyed during download.  
For example, if you requested the certificate on a UNIX system and stored it on a Windows front end, the formatting (that is, line indents and line breaks) is affected.  
To check the contents, open the certificate request with a text editor (such as Notepad) and repair the line indents and the line breaks.



## Example

This is an example of a certificate request:

```
-----BEGIN CERTIFICATE REQUEST-----
MIIBPzCBqQIBADAAMIGfMA0GCSqGSIb3DQEBAQUAA4GNADCBiQKBgQD/302IT+/Y
wpignSw7U9FWneyWz3Wi10S18aFCYkRo00wCpD8UwcaC4dds4uGT6h12W1J0/F0t
Ug+EQxonZbaRrk9sTa1kn1mqx3YAUe/gEaGdf1wvuYkb0gjMk81iM/jb9BJd8srM
PyoBy9jMC7v5u7+TZWmWa6RjnvC1vYGgMwIDAQABoAAwDQYJKoZIhvcNAQEFBQAD
gYEAx2zuaTAOKPdGmxUKY1WdasUpim4vhfaHa7ZDBwipvKJ8akYCT+dpmVjhcp9
E7cUjL80/6Rup5cnLAA05FhVt5MS6zNJa9YYSN9XP+5/MPF6Q4ayJ0VryTkSpbbp
rWLBKh1Dds97LQVuQ/myKIAHECwyW6t7sAFJWn4P0fdxmKo=
-----END CERTIFICATE REQUEST-----
```

6. Import the reply to the SSL Server PSE:
  - a) Copy the text to a temporary file called `srcert`.
  - b) Enter the following command:
 

```
sapgenpse import_own_cert -c srcert -p SDBSSLS.pse
```

 You have generated the SSL Server PSE. You can now start the XServer as usual (if it is already running, you must stop and restart it).
7. To check whether the SSL functionality is working correctly, view the trace file `niserver_<local computer name>.trace` in the `<independent data>\wrk` directory.

To generate the SSL **Client** PSE, proceed as follows:

1. Change to the `<independent programs>\lib` directory.
2. Set up the following environment variable:
 

```
SECUDIR=<independent data>\sec
```
3. Create an anonymous client SSL Client PSE, `SDBSSLA.pse` in the directory defined by `SECUDIR` (see previous step):
 

```
sapgenpse gen_pse -v -noreq -p SDBSSLA.pse
```

 You can leave the distinguished name empty.  
 Before you can establish an SSL connection to a database server, the server certificate must be entered in the PK list of the anonymous client certificate.
4. To see the database server certificate, enter the following command:
 

```
„x_ping -n <servermode> -c[apture]
```

 You can check whether to trust the database server certificate. The client certificate is not affected by this.
5. Start the import with this command:
 

```
„x_ping -n <servermode> -i[import]
```
6. To administer the PSE, use the configuration tool `sapgenpse`. For more information enter the following command:
 

```
sapgenpse -h
```



## Note

For applications such as SQL Studio replace the independent data or independent program in the above description with the installation directory.



## 6.3 Database Directory Structure

As of SAP DB Release 7.2.4, you can set up several database instances with different releases in one user environment. For this the database services are split into the following areas:

- Release-independent programs: **IndependentProgPath**

This area contains all services that are only allowed to exist once per computer and are downward compatible (for example, the server for Remote SQL, `x_server`). Therefore, only programs of the most recent installed version exist here.

You can check the path for `IndependentProgPath` with the following `dbmc1 i` command:

```
dbm_getpath IndepProgPath
```

By default, `IndependentProgPath` is set as follows for the installation:

```
<DB drive>: \sapdb\programs
```

The sub-directory `bin` and, for Windows, the extra directory `pgm` must be specified in the environment variable `path`.

- Instance data: **IndependentDataPath**

This area contains all data necessary for an instance, including run directories and their parameter files. The directory containing this data is called the `IndependentDataPath`.

You can check the path for `IndependentDataPath` with the following `dbmc1 i` command:

```
dbm_getpath IndepDataPath
```

By default, `IndependentDataPath` is set as follows for the installation:

```
<DB drive>: \sapdb\data
```

The sub-directory `bin` and, for Windows, the extra directory `pgm` must be specified in the environment variable `path`.

- Instance-dependent programs: **INSTROOT**

This area contains all programs necessary for a running instance. The programs must all correspond to the instance version and are installed once per instance. The programs include, for example, `kernel`, `console`, `dbmsrv`, and so on. The storage location is known as the `INSTROOT` of the instance.

The installation sets up the directory as follows:

```
<DB drive>: \sapdb\<DBNAME>\db
```

You can display instance names and associated `INSTROOTs` on a computer with the following `dbmc1 i` command:

```
db_enum
```

- Client-runtime libraries and dlls

This area contains shared libraries and dlls required by clients at runtime, including runtime precompilers, ODBC, and so on. The runtime libraries are installed on each computer, but different versions must be possible.

The directories for the runtime software are set up during the installation beneath `IndepProgPath` as follows:

```
<DB_DRIVE>: \<IndepProgPath>\runtime\<version>
```

- Client programs

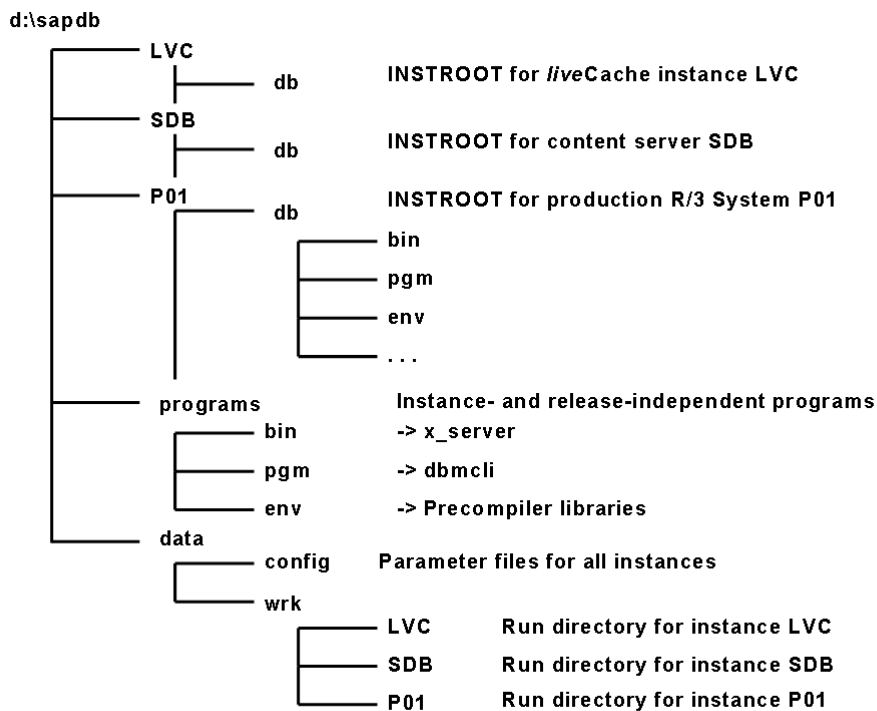
This area contains all client tools supported by MaxDB, including, for example, `dbmgu` and SQL Studio. These tools are currently only available on Windows.

You can install them on the database server, although this is not absolutely necessary. The GUI clients are installed once on each computer. The settings for each user are stored individually. You can choose any directory for the tools during the installation, independently of the directories named above.

## 6.4 Sample Directory Structure

The following graphic shows a sample directory structure:

Figure 1:



## 6.5 Log Files for Troubleshooting

All steps of the upgrade and the associated software installation are logged in the file `MaxDBUpgrade_install-<date>-<time>.log` with the following name:

`<independent_data_path>\wrk\MaxDBUpdate_install-<date>-<time>.log`

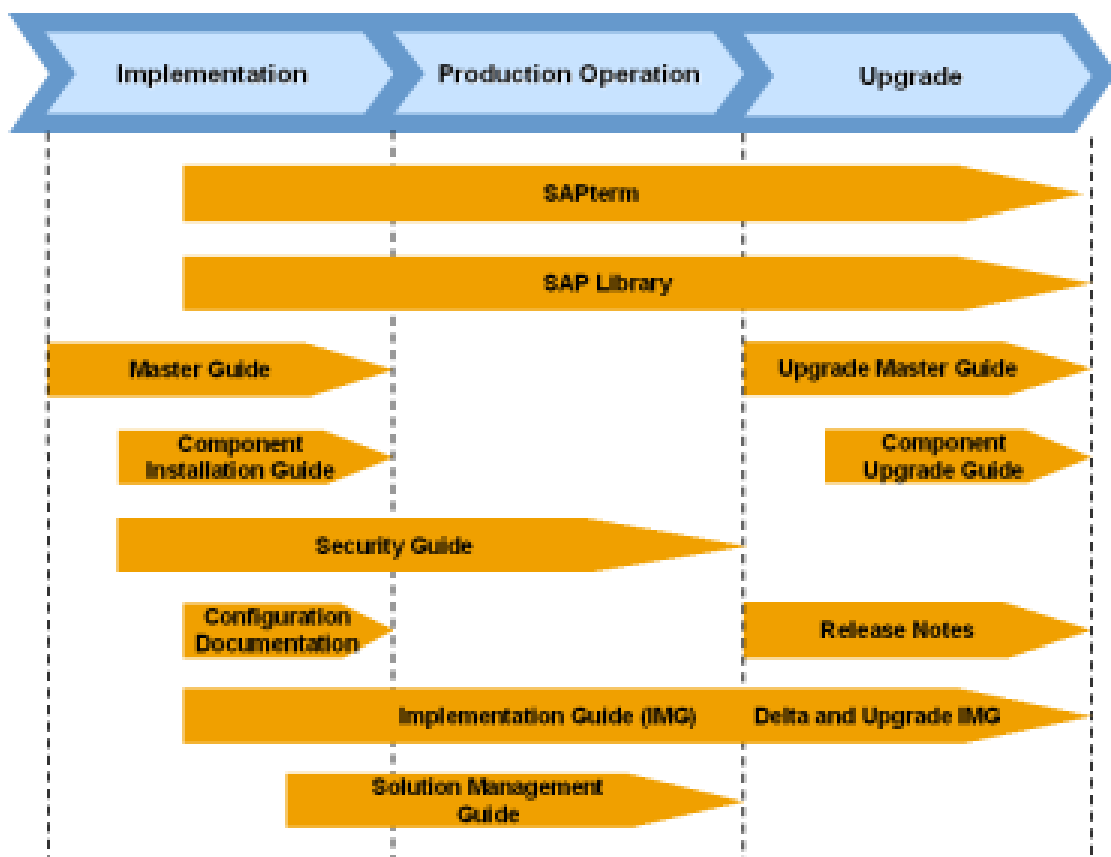
If the directory `<independent_data_path>` is not known at the time of failure, the log is written to the current directory.

## A Reference

### A.1 The Main SAP Documentation Types

The following is an overview of the **most important** documentation types that you need in the various phases in the life cycle of an SAP solution.

**Figure 2:** Documentation types in the software life cycle



#### Cross-Phase Documentation

**SAPterm**—SAPterm is SAP's terminology database. It contains SAP-specific vocabulary in over 30 languages, as well as many glossary entries in English and German.

- Target group:
  - Relevant for all target groups
- Current version:
  - Located in the SAP Help Portal at [help.sap.com](http://help.sap.com)® *Additional Information*® *Glossary* or *Terminology* (also available as terminology CD)

- In the SAP-System in transaction **STERM**

**SAP Library**—The SAP Library is a collection of function- and process-oriented documentation for SAP components. The SAP Library also contains the Business Scenario Descriptions.

- Target group:
  - Consultants
  - System administrators
  - Project teams for implementations or upgrades
- Current version:
  - Located in the SAP Help Portal at [help.sap.com](http://help.sap.com) (also available as documentation CD)
  - Located in the SAP Service Marketplace at [service.sap.com/ibc](http://service.sap.com/ibc) (only the Business Scenario Descriptions)

**Implementation Guide (IMG)**—The Implementation Guide is a tool for configuring the SAP system to meet customer requirements. Its structure and documentation are component-oriented.

- Target group:
  - Solution consultants
  - Project teams for implementations or upgrades
- Current version:
  - In the SAP menu of the SAP system under *Tools*® *Customizing*® *IMG*

**Security Guide**—The Security Guide describes the settings for a medium security level and offers suggestions for raising security levels. A collective security guide is available for the SAP NetWeaver technologies, such as the SAP Web Application Server (SAP Web AS). This document contains general guidelines and suggestions about system security. Other technologies and individual applications have a Security Guide of their own.

- Target group:
  - Technology consultants
  - Solution consultants
  - Project teams for implementations or upgrades
- Current version:
  - Located in the SAP Service Marketplace at [service.sap.com/securityguide](http://service.sap.com/securityguide)

### Implementation

**Master Guide**—The Master Guide is the starting point for implementing an SAP solution. It lists the required SAP components, and third-party applications that are required for each Business Scenario. It provides scenario-specific descriptions of preparation, execution, and follow-up of an implementation. It also offers references to other documents, such as Component Installation Guides and SAP Notes.

- Target group:
  - Technology consultants
  - System administrators
  - Project teams for implementations
- Current version:
  - Located in the SAP Service Marketplace at [service.sap.com/instguides](http://service.sap.com/instguides)

**Component Installation Guide**—The Component Installation Guide describes the technical implementation of an SAP component, taking into account the combinations of operating systems and databases. It does not describe any business-related configuration.

- Target group:
  - Technology consultants
  - Project teams for implementations
- Current version:
  - Located in the SAP Service Marketplace at [service.sap.com/instguides](http://service.sap.com/instguides)

**Configuration Documentation in SAP Solution Manager**—SAP Solution Manager is a tool with various functions, one of its main functions being the configuration of SAP solutions and Business Scenarios. It contains IMG activities, transactions, and so on, as well as documentation. Instead of the configuration documentation in SAP Solution Manager, there may be separate Business Scenario Configuration Guides in the SAP Service Marketplace for previous shipments of the Business Scenarios.

- Target group:
  - Solution consultants
  - Project teams for implementations
- Current version:
  - In SAP Solution Manager
  - Located in the SAP Service Marketplace at [service.sap.com/ibc](http://service.sap.com/ibc)

### **Production Operation**

**Solution Management Guide**—The Solution Management Guide is the starting point for operating an SAP solution. The guide refers users to the tools and documentation that are needed to carry out various tasks, such as monitoring, backup / restore, master data maintenance, transports, and tests. It also refers users to other documents, for example the SAP Library, the Master Guide, and the Component Management Guides.

- Target group:
  - System administrators
  - Technology consultants
  - Solution consultants
  - Project teams for implementations or upgrades
- Current version:
  - Located in the SAP Service Marketplace at [service.sap.com/instguides](http://service.sap.com/instguides)

### **Upgrade**

**Upgrade Master Guide**—The Upgrade Master Guide is the starting point for upgrading the Business Scenarios of an SAP solution. It provides scenario-specific descriptions of preparation, execution, and follow-up of an upgrade. It also refers to other documents, such as the Component Upgrade Guides and SAP Notes. Instead of an Upgrade Master Guide, there may be several Business Scenario Upgrade Guides or a Solution Upgrade Guide for previous shipments of the Business Scenarios of an SAP solution.

- Target group:
  - Technology consultants
  - Project teams for upgrades

■ Current version:

- Located in the SAP Service Marketplace at [service.sap.com/instguides](http://service.sap.com/instguides)

**Component Upgrade Guide**—The Component Upgrade Guide describes the technical upgrade of an SAP component, taking into account the combinations of operating systems and databases. It does not describe any business-related configuration.

■ Target group:

- Technology consultants
- Project teams for upgrades

■ Current version:

- Located in the SAP Service Marketplace at [service.sap.com/instguides](http://service.sap.com/instguides)

**Release Notes**—Release Notes are documents that contain short descriptions of new features or changes in an SAP component since the previous release. Release Notes about ABAP developments enable the SAP system to generate delta and upgrade IMGs

■ Target group:

- Consultants
- Project teams for upgrades

■ Current version:

- Located in the SAP Service Marketplace at [service.sap.com/releasenotes](http://service.sap.com/releasenotes)
- In the SAP menu of the SAP system under *Help*® *Release Notes* (only ABAP developments)

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