Component Installation Guide

SAP ERP 2005 ABAP+Java on Windows: Oracle

Target Audience

- System administrators
- Technology consultants

Document version: 1.00 – October 24, 2005

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Documentation in the SAP Service Marketplace

You can find this document at the following address:

`service.sap.com/instguides`

Scope of this Guide

SAP ERP 2005 with the following software unit(s):
ERP Biller Direct (BD)
ERP Business Packages (BP-ERP)
ERP Learning Solution Content Player (LSOCP)
ERP Extended E-Selling Components (XECO)
ERP Self Services (XSS)
In addition you can install the following NetWeaver 2004s usage types:

NetWeaver ABAP Application Server (AS-ABAP)
NetWeaver Java Application Server (AS-Java)
NetWeaver Business Intelligence Java Components (BI)
NetWeaver Development Infrastructure (DI)
NetWeaver Enterprise Portal (EP)
NetWeaver Mobile Infrastructure (MI)
NetWeaver Process Integration (PI)

Typographic Conventions

Example	Description
Example Text	Words or characters that appear on the screen. These include field names, screen titles, pushbuttons as well as menu names, paths and options.
Example Text	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, names of variables and parameters, source code as well as names of installation, upgrade and database tools.
`Example Text`	Exact user entry. These are words or characters that you enter in the system exactly as they appear in the documentation.
`<ExampleText>`	Variable user entry. Pointed brackets indicate that you replace these words and characters with appropriate entries.
`Example Text`	Keys on the keyboard, for example, function keys (such as F2) or the ENTER key.

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`.

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

Version	Date	Description
1.00	10/24/2005	Initial Version

Table of Contents

1 Introduction

1.1 Target Audience

- System administrators
- Technology consultants

1.2 About this Document

This documentation explains how to install SAP ERP 2005. For more information on the technology provided by SAP ERP 2005, see SAP Service Marketplace at `service.sap.com/erp`.

You can install SAP ERP 2005 with the following software unit(s):

Only valid for: Biller Direct

- ERP Biller Direct

End of: Biller Direct

Only valid for: Business Packages for ERP (BP-ERP)

- ERP Business Packages

  You also have to install NetWeaver Enterprise Portal (EP) and ERP Self Services for this software unit.

End of: Business Packages for ERP (BP-ERP)

Only valid for: Learning Solution (Content Player)

- ERP Learning Solution Content Player

End of: Learning Solution (Content Player)

Only valid for: Extended E-Selling Components (XECO)

- ERP Extended E-Selling Components

End of: Extended E-Selling Components (XECO)

Only valid for: Self Services (XSS)

- ERP Self Services

  You also have to install NetWeaver Enterprise Portal (EP) and ERP Business Packages for this software unit.

End of: Self Services (XSS)

⚠ Caution

You must install **all** required software units in a **single** installation run.

You cannot add software units to an existing SAP system using the standard installation procedure described in this documentation. For more information, see **SAP Note** 883948.

You also install NetWeaver ABAP Application Server (AS-ABAP) with the ABAP software unit and the NetWeaver Java Application Server (AS-Java) with the Java software units.

⚠ Caution

When SAP ERP 2005 was released, certain functions were still not available. For up-to-date information, see **SAP Note** 852235.

SAP ERP 2005 is based on the SAP NetWeaver 2004s technology, which is the underlying technology of almost all solutions of mySAP Business Suite 2005. For more information about the technology provided by SAP NetWeaver, see SAP Service Marketplace at `service.sap.com/netweaver`.

In addition to the ERP software unit(s) you can install the following NetWeaver software unit(s) (for restrictions, see **SAP Note** 855534):

Only valid for: BI Java Components (BI-Java)

■ NetWeaver Business Intelligence Java Components (BI-Java)

You also have to install NetWeaver Enterprise Portal (EP).

End of: BI Java Components (BI-Java)

Only valid for: Development Infrastructure (DI)

■ NetWeaver Development Infrastructure (DI)

End of: Development Infrastructure (DI)

Only valid for: Enterprise Portal (EP)

■ NetWeaver Enterprise Portal (EP)

End of: Enterprise Portal (EP)

Only valid for: Mobile Infrastructure (MI)

■ NetWeaver Mobile Infrastructure (MI)

⚠ Caution

Usage type MI will be released with SAP NetWeaver 2004s SP 5. For more information, see **SAP Note** 852008.

End of: Mobile Infrastructure (MI)

Only valid for: Process Integration (PI)

■ NetWeaver Process Integration (PI)

End of: Process Integration (PI)

⚠ Caution

You must install **all** required NetWeaver usage types in a **single** installation run.

You cannot add NetWeaver usage types to an existing SAP system using the standard installation procedure described in this documentation. For more information, see **SAP Note** 883948

For more information about the usage types of SAP NetWeaver 2004s and their interdependencies, see the documentation *Master Guide — SAP NetWeaver 2004s* on *SAP Service Marketplace* [page 5].

Constraints

You need to consider the following constraints before you start your installation:

■ You **must** only use the SAP installation tools according to the instructions and for the purposes described in the SAP installation documentation. Improper use of the SAP installation tools can damage files and systems already installed.

■ SAP system installations should **only** be performed by SAP Technical Consultants, who are certified for your operating system, your database, and the SAP system that you are installing.

■ For downward-compatible releases of DB/OS platforms for SAP products, SAP plans to regularly release the newest database (DB) and operating-system (OS) versions of SAP products. These releases are downward-compatible with earlier SAP system releases.

Be aware that, for already shipped SAP components, we only support the installation for database versions proposed by the installation tool. Therefore, you must install a SAP component or perform a system copy using a downward-compatible database as follows:

- Install the component with the old proposed database version.
- Upgrade the old database version to the downward-compatible new version.

1.3 New Features

SAP System Installation

Area	Description
SAPinst	As of SAP NetWeaver 2004s SAPinst has the following new features: ■ You can check the prerequisites for the installation of your SAP system by using the *Prerequisite Checker* [page 30] tool. ■ You can uninstall an SAP NetWeaver system using the service *Uninstall — SAP System or Standalone Engines*. ■ There is a new F1 help displaying information about the input parameter fields of the SAPinst screens. This new field help replaces the previous "What's this" help on the SAPinst screens and the parameter tables in the installation guides.
Installation DVDs	You start the installation from a single Installation Master DVD, which is the same for all databases.
SAP SRM 5.0 as Add-On Component to SAP ERP 2005	In mySAP ERP 2005, you can deploy SRM as follows: ■ SAP SRM Server as an add-on to SAP ECC Server (product instance SAP ERP 2005 − SAP ECC) to run SRM in one client of the ERP system. This deployment option is new in mySAP ERP 2005. ■ Installation of SAP SRM Server as a separate installation apart from SAP ECC Server. This deployment option is the same as in mySAP ERP 2004. For more information, see the documentation *Master Guide — mySAP ERP 2005 powered by SAP NetWeaver 2004s* on SAP Service Marketplace at `service.sap.com/erp-inst`.
SAP Solution Manager	A key is required to perform the installation of your SAP system. You *generate this key with your SAP Solution Manager* [page 42].

Oracle Database

Area	Description
New features in Oracle 10g	For the complete list of new features, see further documentation from Oracle, which you can find at: `www.oracle.com/technology/products/database/oracle10g` See also: ■ `www.oracle.com/technology/documentation/database10g.html` ® *View Library* ■ The documentation provided by Oracle on the RDBMS DVD under `<DVD_Drive>:\NT\<platform>\DOC\index.htm`

Operating Systems

Area	Description
Support of Operating Systems	See the Product Availability Matrix (PAM) on SAP Service Marketplace at `service.sap.com/platforms` ® *Product Availability Matrix.*

Documentation

Area	Description
SAP Notes	You can now access SAP Notes directly in SAP Service Marketplace from your PDF. Place the cursor on the SAP Note "<number>" and double-click. A separate browser windows opens and the SAP Note is displayed.

1.4 Before You Start

The following sections provide information on:

- *SAP Notes for the Installation* [page 4]
- *Information in the SAP Service Marketplace* [page 5]
- *Naming Conventions* [page 6]

1.4.1 SAP Notes for the Installation

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

Make sure that you have the up-to-date version of each SAP Note which you can find in the SAP Service Marketplace at `service.sap.com/notes`.

You can directly access the SAP Notes related to SAP NetWeaver installation at `service.sap.com/sapnotesnw2004s`.

SAP Notes for the Installation

SAP Note Number	Title	Description
852008	Release Restrictions for SAP NetWeaver 2004s	Customer information on restrictions concerning the productive usage of certain functions.
855498	Installation Prerequisite Checker	SAP Software on UNIX and Windows: Checking OS Dependencies
852235	Release restrictions for SAP ERP 2005	At the time of the release of SAP ERP 2005, limitations exist concerning the productive usage of certain functions. This note provides customer information on these restrictions.
855830	ERP 2005 Installation on Windows	Windows-specific information about the SAP system and corrections to this documentation
848950	SAP NetWeaver 2004s Installation on Windows	Windows-specific information about the SAP system installation and corrections to this documentation
849141	SAP NetWeaver 2004s Installation on Windows: Oracle	Oracle-specific information about the SAP system installation and corrections to this documentation
828268	Oracle 10g : New functions	Information about new Oracle features released for the SAP system.

1.4.2 Information Available on SAP Service Marketplace

More information is available as follows on SAP Service Marketplace.

Documentation

Description	Internet Address	Title
Master Guide for mySAP ERP 2005	service.sap.com/erp-inst ® *mySAP ERP 2005*	*Master Guide — mySAP ERP 2005 powered by SAP NetWeaver 2004s*
Installation of SAP Solution Manager	service.sap.com/instguides ® *SAP Components ® SAP Solution Manager ® Release 3.2*	*Installation Guide — SAP Solution Manager 3.2 on <OS>: <Database>*
Configuration of SAP Solution Manager	service.sap.com/instguides ® *SAP Components ® SAP Solution Manager ® Release 3.2*	*Configuration Guide — SAP Solution Manager 3.2 on <OS>: <Database>*
Upgrade to SAP ERP 2005	service.sap.com/erp-inst	*Upgrade Master Guide - mySAP ERP 2005 powered by SAP NetWeaver 2004s — Using SAP ECC 6.0*
Installation of SAP NetWeaver Developer Workplace	service.sap.com/installNW2004s	*Installation Guide — SAP NetWeaver Developer Workplace*

Description	Internet Address	Title
Installation of SAP NetWeaver Developer Studio	`service.sap.com/installNW2004s`	*Installation Guide — SAP NetWeaver Developer Studio*
Installation of the SAP System Landscape Directory (SLD)	`service.sap.com/installNW2004s`	*Post-Installation Guide — System Landscape Directory SAP NetWeaver 2004s*
Front End installation	`service.sap.com/installNW2004s`	*Front End Installation Guide (this guide is also available on the Presentation DVD)*
Homogeneous and heterogeneous system copy for SAP systems based on NetWeaver 2004s	`service.sap.com/installNW2004s`	*Homogeneous and Heterogeneous System Copy for SAP Systems based on SAP NetWeaver 2004s*

General Quick Links

Description	Internet Address
SAP Help Portal	`help.sap.com`
SAP NetWeaver Library in SAP Help Portal	`help.sap.com/nw2004s`
SAP ERP 2005 Library in SAP Help Portal	`help.sap.com/SAPHELP_ERP2005`
SAP Notes	`service.sap.com/notes`
SAP Notes for SAP NetWeaver 2004s installation	`service.sap.com/sapnotes2004s`
Released platforms and operating systems	`service.sap.com/platforms`
Unicode SAP systems and their availability	`service.sap.com/unicode`
System sizing (Quick Sizer tool)	`service.sap.com/sizing`
High availability	`service.sap.com/ha`

Security	`service.sap.com/security`
	
	 💡 Note
	 For information on Windows operating system security, see:
	 `www.microsoft.com/security`

Information on SAP Support Package Stacks	`service.sap.com/sp-stacks`

1.4.3 Naming Conventions

In this documentation, the following naming conventions apply:

Terminology

- *SAP system* refers to *SAP ERP 2005.*
- *ABAP+Java system* refers to *SAP ERP 2005 ABAP+Java.*

Variables

Variables	Description
`<SAPSID>`	SAP system ID in uppercase letters
`<sapsid>`	SAP system ID in lowercase letters
`<DBSID>`	Database ID in uppercase letters
`<dbsid>`	Database ID in lowercase letters
`<host_name>`	Name of the corresponding host
`<INSTDIR>`	Installation directory for the SAP system
`<DVD_DIR>`	Directory on which a DVD is mounted
`<OS>`	Operating system name within a path
`<SCHEMA_ID>`	Database schema ID

The following example shows how the variables are used:

Example

Log on as user `<sapsid>adm` and change to the directory `\usr\sap\<SAPSID>`.

If your SAP system ID is C11, log on as user `c11adm` and change to the directory `\usr\sap\C11`.

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2 Standard Installation

2.1 Planning

This section provides information on how to plan the **standard** installation of your SAP system.

If you want to perform a high-availability installation with **Microsoft Cluster Service (MSCS)** , see section *Microsoft Cluster Installation.*

You have to complete the following planning activities:

1. You plan your SAP system landscape according to the documentation *Master Guide — mySAP ERP 2005 powered by SAP NetWeaver 2004s* that is available on SAP Service Marketplace at `service.sap.com/erp-inst`.
2. In addition, we recommend that you read the documentation *Technical Infrastructure Guide — SAP NetWeaver 2004s* that is available on SAP Service Marketplace at `service.sap.com/installNW2004s`.
3. You *choose your basic system variants* [page 9].
4. You *plan how to distribute the instances to hosts* [page 12].
5. You *plan your system configuration* [page 13].
6. You *identify basic SAP system parameters* [page 18].
7. You *decide whether you want to use Unicode and multi-language support* [page 23].
8. You make sure that the *SAP Solution Manager* [page 24] is available in your SAP system landscape.

   Only valid for: Development Infrastructure (DI)

9. You *read the information about the usage type Development Infrastructure (DI)* [page 25].

   End of: Development Infrastructure (DI)

   Only valid for: Business Packages for ERP (BP-ERP)

10. You *get an overview of the Business Packages for ERP 2005* [page 25].

    End of: Business Packages for ERP (BP-ERP)

11. You *decide if you want to use Internet Pricing and Configurator* [page 27].

    Only valid for: Enterprise Portal (EP)

12. If required, you read the information about *Application Sharing Server* [page 28].

    End of: Enterprise Portal (EP)

The following planning activities are **optional** and **only** apply, if you want to:

■ *Install multiple components in one database* [page 119].

2.1.1 Basic System Variants

The following section provides information about the basic SAP system variants and how you can distribute the SAP instances within them.

The distributed system installation option is used only when you want to start the database instance installation from a host other than the central instance host.

Here are the basic SAP system variants:

- **ABAP System**

  ABAP installation without a J2EE Engine

  Mandatory instances of an ABAP system are the central instance and the database instance.

  Optionally, you can install one or more dialog instances and gateway instances.

Figure 1: ABAP System
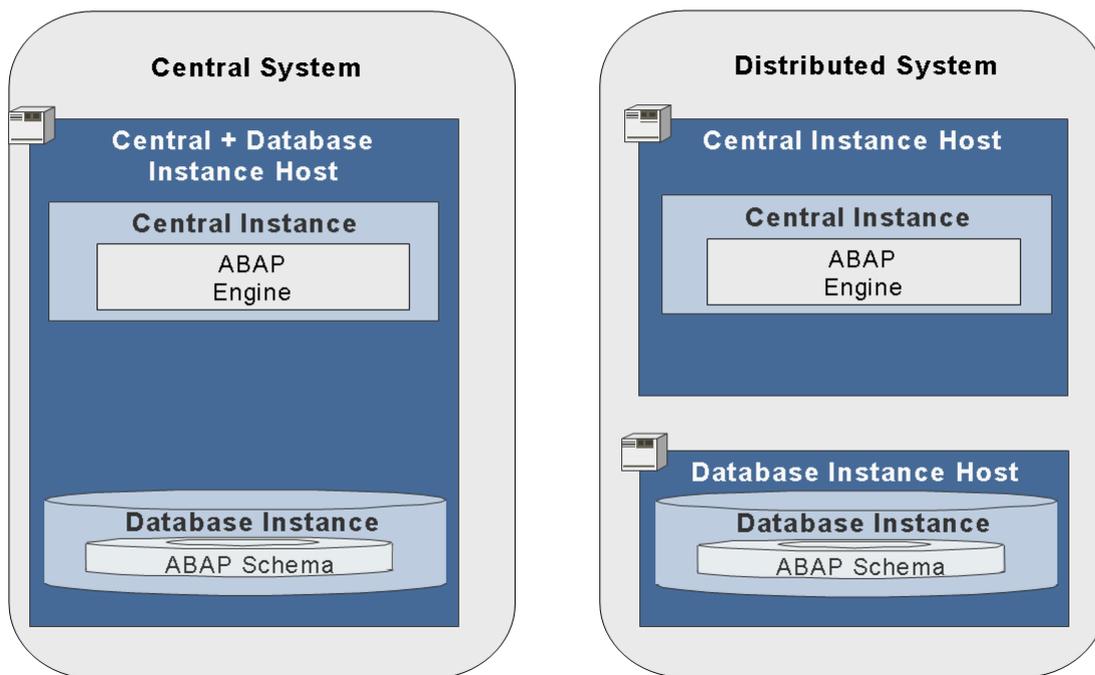
- **Java System**

  Java standalone installation (J2EE Engine and auxiliary services), without an ABAP application server

  Mandatory instances of a Java system are the central instance, the central services instance, and the database instance.

  The central instance and the central services instance run on the same host.

  Optionally, you can install one or more Java dialog instances.
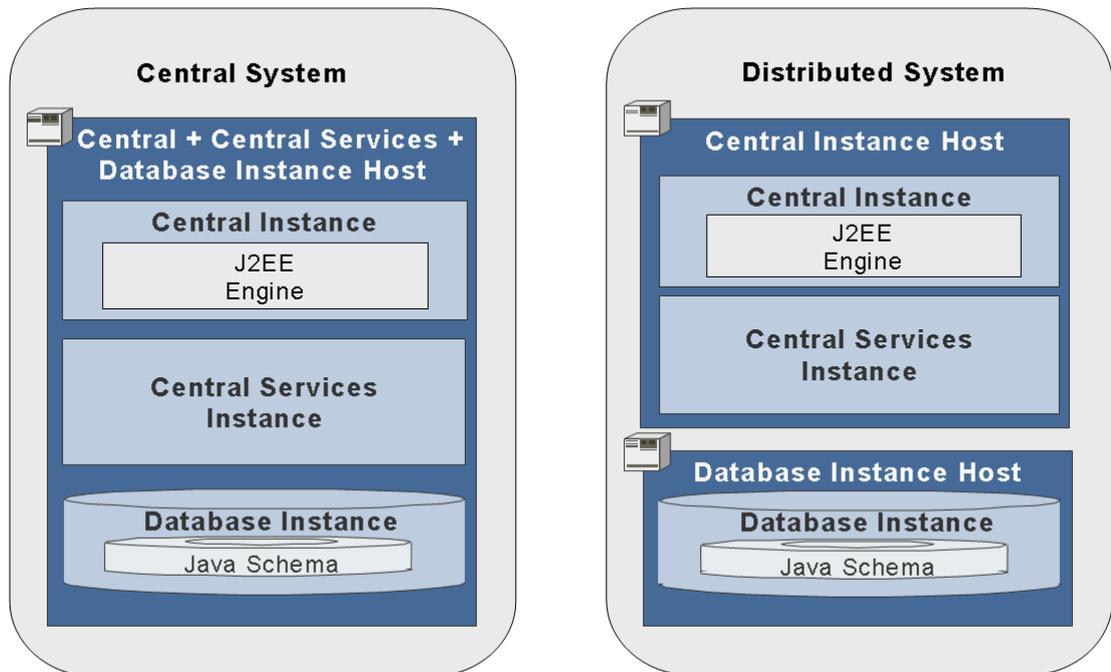
- **ABAP+Java System**
  - ABAP+Java installation
  - ABAP and Java Add-In installation

  You can then operate **both** the ABAP application server and the J2EE Engine on the SAP system.

  Mandatory instances of an ABAP+Java system are the central instance, the central services instance, and the database instance.

  Optionally, you can install one or more dialog instances, if required.

Figure 3: ABAP+Java System
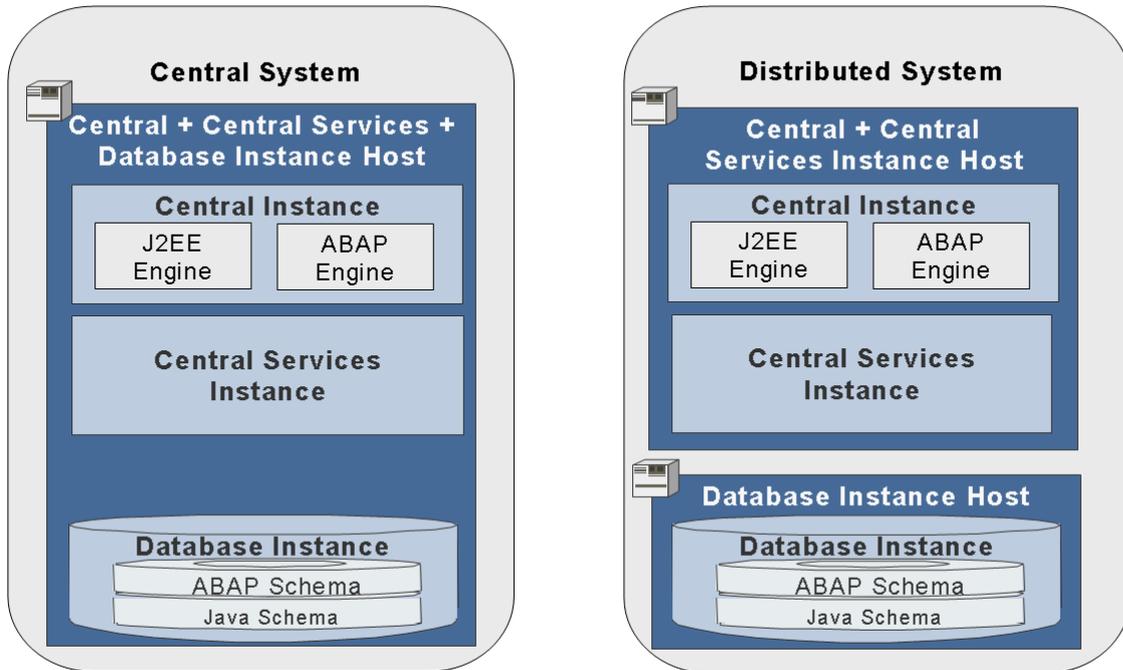
2.1.2 How to Distribute Instances to Hosts

The following provides information on how you can distribute the SAP instances for the different SAP system variants. You use SAPinst to install the SAP instances as a:

- **Central** system on a **single** host
  You run SAPinst and install all instances — except the dialog instance or the standalone gateway instance, if relevant — on one host.
- **Distributed** system on **several** hosts
  You perform the following steps:
  1. You specify or create a shared transport directory.
  2. You run SAPinst and install the:
     - Central services instance (SCS) on the global host
     - Database instance on the database host
     - Central instance on the global host
     - Dialog instance(s), if required, on the dialog instance host(s)

The following graphic shows how to distribute your instances to several hosts:

Figure 4: Distribution of Instances in an ABAP+Java System

1. Specify or create (if not available) a shared transport directory
2. Perform *Central Services Instance (SCS)* installation
3. Perform *Database Instance* installation
4. Perform *Central Instance* installation
5. Perform *Dialog Instance* installation (Optional)

2.1.3 System Configuration

You need to consider the following aspects:

- You and your hardware partner *plan the distribution of your SAP system instances* [page 9].
- You and your hardware partner work out a high-performance configuration based on sizing information that reflects the system workload, such as:
  - The set of applications to be deployed
  - How intensively the applications are to be used
  - The number of users
- Your decide whether to perform a domain or local installation:
  - Local installation
    You need to be `Local Administrator` of the machine involved. In a local installation, all Windows account and user information is stored locally on one host and is not visible to any other hosts in the system.
    If the SAP system is to run on a **single** machine, you can perform a local installation.

    > **Note**
    > If you install a distributed system as a local installation this can lead to authorization problems for the operating system users `<sapsid>adm` and `SAPService<SAPSID>`. Therefore, SAP recommends you to install a distributed system as a **domain** installation.

● Domain installation

You need to be `Domain Administrator` of the domain involved, and all machines in the system must belong to the same domain. In a domain installation, the user information is stored centrally on the domain controller and is accessible to all hosts in the system.

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

⚠️ Caution

If for any reason, you are not granted domain administrators rights, you can perform the installation as a domain user who is a member of the local administrators group. However, the domain administrator has to prepare the system appropriately for you.

For more information, see *Performing a Domain Installation without being a Domain Administrator* [page 38].

For more information on user rights for a local or domain installation, see: *Granting User Rights for the Installation* [page 37].

2.1.3.1 Distribution of Components to Disks

When you install the SAP system, the installation tools prompt you to enter drive letters for the main components of the system. This gives you the opportunity to distribute components to disks in the system as you wish. The way in which you do this significantly affects system throughput and data security, and must therefore be carefully planned. The best distribution depends on your specific environment and must take into consideration factors such as the size of the components involved, security requirements and the expected workload.

When you work out the assignment of components to disks, you first need to get an overview of the main components and their corresponding directories. Then, on the basis of sample configurations and the recommendations provided in this documentation, you can decide which assignment is best for your particular system.

SAP systems are normally installed on RAID arrays that ensure data redundancy. This documentation therefore focuses on RAID subsystems and drives.

Minimal Configuration

The following illustrates a disk configuration for a small test or demo system. As security and performance play a less crucial role in this type of system, many different configurations are feasible. The following shows one of the possible options.

⚠️ Caution

Use the illustrated configuration exclusively for test or demo systems with a final database size of less than 10 GB. It is unsuitable for production systems because it only minimally satisfies security and performance requirements.

Figure 5: Distribution of Components to Disks
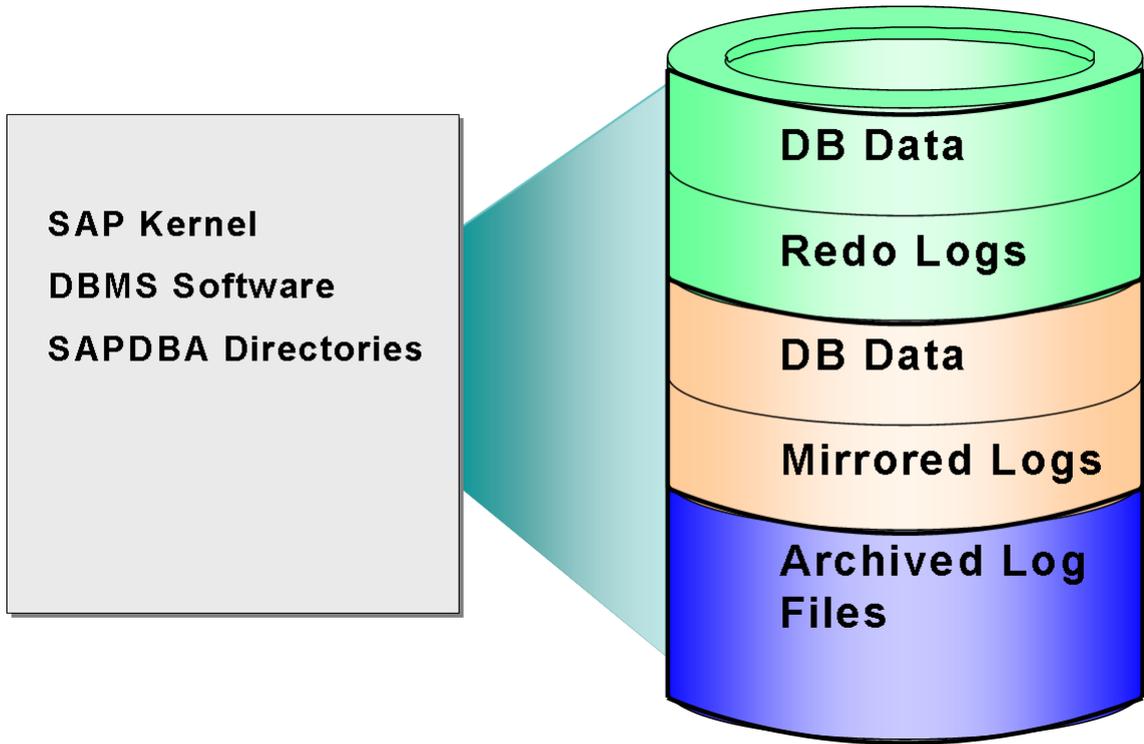
Distribution of Directories to Disks

Disk	Directories
Disk 1	\ORACLE\<DBSID>\101 \ORACLE\<DBSID>\sapreorg \ORACLE\<DBSID>\origlogA \ORACLE\<DBSID>\origlogB \ORACLE\<DBSID>\sapdata1 \ORACLE\<DBSID>\sapdata2
Disk 2	\ORACLE\<DBSID>\mirrlogA \ORACLE\<DBSID>\mirrlogB \ORACLE\<DBSID>\saptrace \ORACLE\<DBSID>\sapbackup \ORACLE\<DBSID>\sapcheck \ORACLE\<DBSID>\sapdata3 \ORACLE\<DBSID>\sapdata4
Disk 3	\ORACLE\<DBSID>\saparch

Comments

- The configuration ensures that no data can be lost, but the process for recovering a damaged database is complicated and time-consuming.
- The redo logs and database files are located on the same disks. This means that a single disk failure can result in the loss of both the redo logs and database data.
- The I/O-intensive redo logs are on the same disk volumes as the data files. This can impede performance.
- An equally good alternative would be to simply place all components on a single RAID 5 array.

2.1.3.2 SAP Directories

During the SAP system installation, the `\usr\sap` directory is created on the:

- Global host and shared with the name `sapmnt`

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

    All instances of an SAP system access this directory on the global host using the Universal Naming Convention (UNC) path.
- Local host and shared with the name `saploc`.

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

    The executables on the local host are replicated from those on the global host each time the local instance is started.

> 💡 Note
>
> Since SAP traces for the instance are created in `\usr\sap`, make sure there is sufficient space available in this directory. Changes in SAP profiles can also affect the disk space.

The following graphic shows how the physical directory `\usr\sap` is shared on the global host and in a distributed installation. In both cases, the UNC pathes are used as follows:

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

Figure 6: Directory Structure on the Global Host in an ABAP+Java System
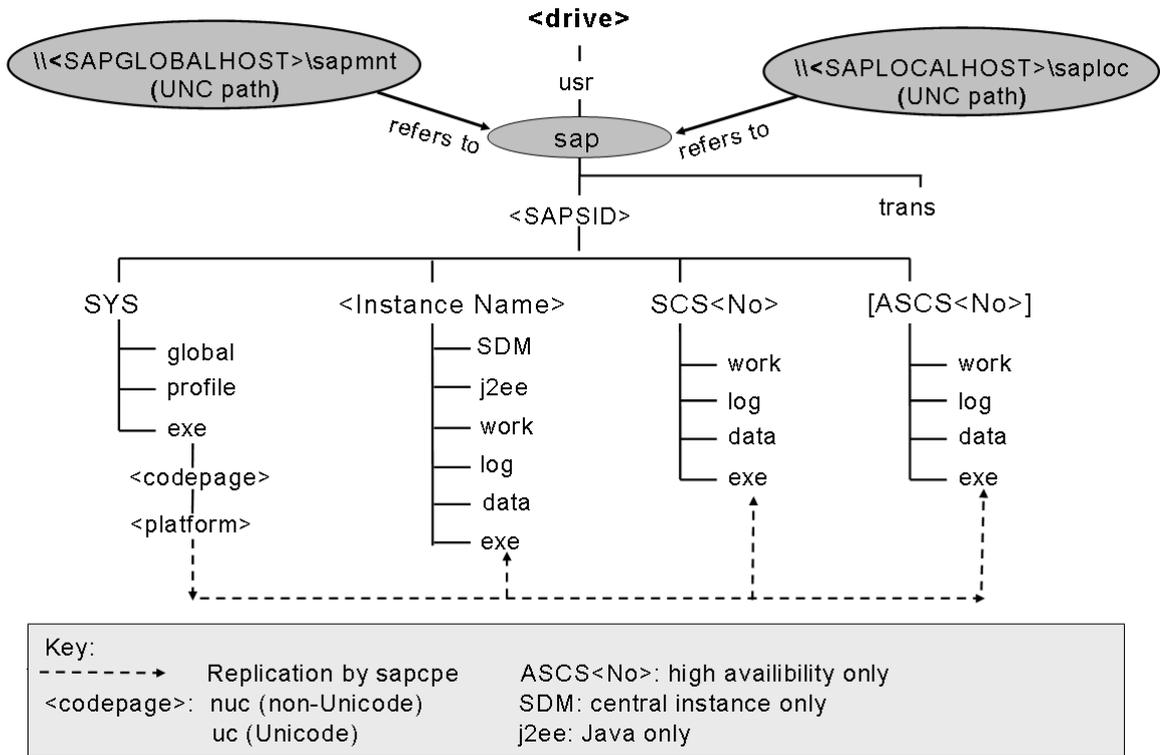
The above graphic shows the directory structure on the global host. The global data (binaries) is stored in the global directories on the global host and physically exists only once for each SAP system. Other application server access the data using the UNC path, \\<SAPGLOBALHOST>\sapmnt, where SAPGLOBALHOST is replaced by the SAP system with the name of the global host. The global host has the SAP\<SAPSID>\SYS directory structure.

Every time an instance starts, the SAP copy program sapcpe compares the binaries in the <platform>-directory on the global host and the binaries in the exe-directory on the application server. If the binaries in the exe directory are elder than those in the <platform>-directory, sapcpe replaces them with the newer version of the global host.

Figure 7: Directory Structure for a Distributed ABAP+Java System

Global Host with SCS Instance

Access to global directories

<drive>
|
usr
|
sap ← refers to \\<SAPGLOBALHOST>\sapmnt (UNC path) / \\<SAPLOCALHOST>\saploc (UNC path)
|
<SAPSID>
|
SYS
— global
— profile
— exe
    <codepage>
    <platform>

SCS
— work
— log
— data
— exe

[ASCS]
— work
— log
— data
— exe

Application Server (Central Instance, Dialog Instance)

Access to local instance directories

<drive>
|
usr
|
sap ← refers to \\<SAPLOCALHOST>\saploc (UNC path)
|
<SAPSID>
|
<Instance Name>
— SDM
— j2ee
— work
— log
— data
— exe

Key:
- - → Replication by sapcpe

<codepage>:
   nuc (non-Unicode)
   uc   (Unicode)

On global host:
SAPGLOBALHOST = SAPLOCALHOST

ASCS: high availibility only
SDM: central instance only

The above graphic shows how the distributed instances, interacts with the global host.

Distributed instances use SAPGLOBALHOST to access global data on the global host

In a distributed system, the parameters SAPGLOBALHOST and SAPLOCALHOST have **different** values.

In a distributed system, the parameters SAPGLOBALHOST and SAPLOCALHOST have the **same** values on the global host with an SCS instance.

2.1.4 Basic SAP System Parameters

The tables below list the basic system parameters that you need to determine before installing your SAP system. For all other SAP system parameters, use the F1 help in the SAPinst dialogs.

> **Note**
> In the column "Enter Your Values", you write down the values that you plan to use, for example, the *Message Port Number*.

SAP System ID and Database ID

Parameters	Description	Enter Your Values
SAP System ID `<SAPSID>`	The SAP System ID `<SAPSID>` identifies the whole SAP system. ⚠ **Caution** Choose your SAP system ID carefully. You **cannot** change the SAP system ID after the installation. Make sure that your SAP system ID: ■ Is unique throughout your organization ■ Consists of exactly three alphanumeric characters ■ Contains only uppercase letters ■ Has a letter for the first character ■ Does not include any of the following, which are reserved IDs: `ADD ALL AND ANY ASC COM DBA END EPS FOR GID IBM INT KEY LOG MON NIX NOT OFF OMS RAW ROW SAP SET SGA SHG SID SQL SYS TMP UID USR VAR` ⚠ **Caution** If you want to install a **standalone gateway** you must choose an SAP system ID that is different from the SAP system ID of the central instance.	...
Database ID `<DBSID>`	The `<DBSID>` identifies the database instance. The database ID `<DBSID>` can be different from the SAP system ID.	...

Parameters Relevant for the System Landscape

Parameters	Description	Enter Your Values
Instance Number	**Instance Number:** Technical identifier for internal processes. Consists of a two-digit number from 00 to 97. The instance number must be unique on a host. That is, if more than one SAP instance is running on the same host, these instances must be assigned different numbers. ⚠ **Caution** Do not use 43, 60, 89 for the instance number because: ■ 43 is used by MSCS ■ 60 is used by iSCSI ■ 89 is used by Windows Terminal Server ⚠ **Caution** If you want to install a **standalone gateway** you must choose an instance number that is different from the instance number of the central instance.	...

Parameters	Description	Enter Your Values
Name of Instance Host	**Instance Host:** Host name of the specific instance. To find out the host name, open a command prompt and enter `hostname`. For more information about the allowed host name length and characters, see **SAP Note** 849423.	...
Message Server Port	⚠ Caution Make sure that all message server port numbers on the same host are unique. **Port number of the SAP Message Server:** If you do not specify a value, the default port number is used. The message port number must be unique for the SAP system on all hosts. **ABAP Message Server Port** There is an external message server port using the parameter `rdisp/msserv` and an internal message server port using the parameter `rdisp/msserv_internal`. The ABAP message server uses both the internal and the external message server ports. Both message server ports are configured in the default profile. The **external** message server port uses the parameter `rdisp/msserv` with default value 36<nn>, where <nn> is the instance number of the ABAP message server instance. The **internal** message server port uses the parameter `rdisp/msserv_internal` with default value 39<nn>, where <nn> is the instance number of the ABAP message server instance. **Java Message Server Port** The Java message server only uses the **internal** message server port. The Java message server is configured in the SCS instance profile. The parameter `rdisp/msserv` is set to `0`, so that the external port is not open. The internal message server port uses the parameter `rdisp/msserv_internal` with default value 39<nn>, where <nn> is the instance number of the SCS message server instance. For more information about the parameters used for internal and external message server ports, see **SAP Note** 821875.	...
Windows Domain	SAPinst creates the `<sapsid>adm` and `SAPService<SAPSID>` user in the domain specified. Make sure that you have domain administrator rights before you start the installation. If not, these users have to be created manually before starting the installation. For more information, see *Granting User Rights for the Installation* [page 37].	...
ABAP RFC User, Password	The user `DDIC` is normally used for the RFC logon ABAP RFC user. It has the required special administrator rights. Alternatively, you can use user `SAP*`.	...

Parameters	Description	Enter Your Values
Java Administrator and Guest Name, Role, Password	**Administrator Name:** Name of the existing SAP Java system administrator. The name depends on the kind of Java system and the user configuration: ■ For an ABAP+Java system: **J2EE_ADMIN**. If the UME is configured against the user management of an ABAP system, enter the name of the ABAP user that is defined as administrator for this system. **Guest Name:** For users who do not belong to a company or who have registered as company users and are pending approval. Guest users belong to the default group Authenticated Users. The user must exist on the central ABAP system that is used for the central user management.	...
Data required to establish the SAP Enterprise Portal URL	The portal URL consists of the following: ■ **AS-Java system host name** The name of the host on which the J2EE Engine was installed. ■ **AS-Java system port** The port on which the portal is listening. http://<hostname>:<port>/irj For more information, see *Establishing the Portal URL* [page 65].	...
SAPJSF Password	User SAPJSF is used for Java communication processes in the SAP system.	...
Cryptography Level — Java Cryptography Extension (JCE)	**Cryptography Level:** **Java Cryptography Extension (JCE):** The SAP Java Libraries need the JCE files for strong cryptography. For more information see *Preparing the System for the J2EE Engine* [page 43].	...
SAP Solution Manager key	To perform the installation of your SAP system, you need to *generate a SAP Solution Manager key* [page 42], which the installation requires to continue. For more information, see **SAP Note 805390**.	...

Parameters Relevant for the Connectivity to System Landscape Directory

Parameters	Description	Enter Your Values
SLD HTTP Host	The host name of the System Landscape Directory (SLD)	...
SLD HTTP Port	The HTTP port of the Java system where the SLD is installed. The following naming convention applies: 5<instance_number>00. **Example** If the instance number of your Java system is 01, the SLD HTTP Port is 50100.	...

Parameters	Description	Enter Your Values
SLD Data Supplier User and password	■ If you want to install a local SLD, SAPinst creates this user during the installation. ■ If you want to connect your system to an existing central SLD, you have to enter the existing SLD Data Supplier User and password of the central SLD during the installation. ⬆ Recommendation We recommend that you name this user SLDDSUSER	...
SLD ABAP API User and password	■ If you want to install a local SLD, SAPinst creates this user during the installation. ■ If you want to connect your system to an existing central SLD, you have to enter the existing SLD Data Supplier User and password of the central SLD during the installation. ⬆ Recommendation We recommend that you name this user SLDAPIUSER	...
RFC User, Password	The ABAP RFC user of the SLD	...
SLD Gateway Host	The host on which the gateway instance of the SLD is running	...
SLD Gateway Instance Number	The instance number of the gateway instance of the SLD	...
SAP System Client	The client in which the ABAP RFC user exists	...

Parameters for SAPDATA Drives

Parameters	Description	Your Values
Installation drive	Base directory for the SAP system. Do **not** add <SAPSID> as subdirectory because the system adds this directory automatically .	...

Parameters	Description Example	Your Values
	If you enter **D:**, the system adds the directory `D:\usr\sap\SAPSID`.	
Oracle parameters	■ Oracle home ■ SAPDATA drives ■ Drives for redolog and archives (`oraarch`)	...

Parameters Relevant for the Database

Parameters	Description	Enter Your Values
Code page	The code page that is used by your database (Unicode or Non-Unicode).	...
Database schemata, Passwords		...
Oracle Listener Name, Oracle Listener Port	■ If you install the database instance on a host where no other Oracle database is installed, you normally do not have to change the default values for Listener Name and Listener Port. ■ If you install the database instance on a host where already another Oracle database is installed you have the following options: 　● If you install it in the same Oracle home, you use the default values for Listener Name and Listener Port. 　● If you install it in a different Oracle home, you specify an unused Listener Name and Listener Port for the new Oracle Listener. ■ All dialog instances of an SAP system must use the same Listener Port than the database instance.	...

2.1.5 Multi-Language and Unicode Support

This section describes SAP support for multiple languages with or without Unicode:

■ **Unicode systems**
   ● The **default** for all new installations is Unicode.
   ● Unicode (and the parallel ISO 10646 standard) defines the character set necessary for efficiently processing text in any language and for maintaining text data integrity. In addition to global character coverage, the Unicode standard is unique among character set standards, because it also defines data and algorithms for efficient and consistent text processing. This enables high-level processing and ensures that all compliant software produces the same results.

   The widespread adoption of Unicode over the last decade has made text data truly portable and formed a cornerstone of the Internet.

- Unicode is the **recommended** system type for all SAP systems that deploy Unicode-enabled solutions and components.
- Unicode is the **mandatory** system type for:
    - ◆ SAP systems requiring a combination of languages that are based on more than one non-Unicode code page
    - ◆ SAP systems that deploy Java applications (for example Java applications, WebDynpro applications)
    - ◆ SAP ABAP systems that communicate with Java components (for example via the SAP Java Connector)
- ■ **Non-Unicode systems**

  SAP supports more than 30 languages in non-Unicode systems, but due to the technical limitations of non-Unicode code pages, only certain combinations of languages can be used without restrictions.

Integration

The default setup of the system is Unicode.

- ■ If you want to use English only, you do not have to do anything further.
- ■ If you want to use languages other than English, *you have to install them* [page 73] after the installation of your SAP system.

More Information

For more information, see **SAP Notes** 79991, 73606, and 838402.

2.1.6 SAP Solution Manager

By using SAP Solution Manager throughout the life cycle of your SAP Business Suite solution you can achieve faster implementation and more efficient operation of your system. The SAP Solution Manager provides you with all implementation and upgrade content for commonly used standard processes. In addition, projects become more transparent because you have the up-to-date central project documentation all in one place at any time.

To make sure that this application management platform is available you require a SAP Solution Manager system (minimum requirement 3.2 SP4) to perform any upgrade or installation of your SAP system.

During the installation process a SAP Solution Manager system is required to generate the "SAP Solution Manager key" for the installation of your SAP Business Suite Solution. Without this key, the installation process cannot continue. You can generate the required key with SAP Solution Manager Release 3.2 SP4.

Make sure that a SAP Solution Manager is available for your SAP system. If required, you can install SAP Solution Manager as described in the documentation *Installation Guide – SAP Solution Manager 3.2 on <OS> : <Database>* on SAP Service Marketplace at:

service.sap.com/instguides ® *SAP Components* ® *SAP Solution Manager* ® *Release 3.2.*

2.1.7 Usage Type Development Infrastructure

The SAP NetWeaver Development Infrastructure (NWDI) is the environment for all processes in Java-based development and software life-cycle management. You can centrally manage all development phases with the Change Management Service (CMS), from the definition of a central development environment for each software project through to quality management and production. The CMS controls the management of sources in the Design Time Repository (DTR) and archives in the Component Build Service (CBS). The component model adds metadata to Java-based projects, which is the basis for the new development process.

There are the following Java development scenarios with SAP NetWeaver:

■ Scenario "Java Projects with Central Source File Storage": development with central source code version control only
■ Scenario "Developing Components with the NWDI": all services of the Development Infrastructure and the SAP component model are used

Prerequisites

Usage Type DI requires usage type Application Server Java (AS—Java). Optionally, you can also combine it with other usage types in one system.

Features

The installation of the NWDI is pre-configured. It is optimized for the installation on a single host.

More Information

■ You can set the sizing of the Development Infrastructure according to your needs.
  For information on the hardware requirements for the Development Infrastructure, which depends on the size of your development team, see **SAP Note** 737368.
■ For all manual configuration steps, see the *SAP Solution Manager* [page 84].

2.1.8 Overview of Business Packages for ERP

All business packages are available on SAP Service Marketplace. SAPinst only installs the first group (New Roles for ERP2005), which is shown in the first table below. This group is included in the software unit ERP 2005 Business Packages (BP-ERP).

⚠️ Caution

Software unit BP-ERP is not yet released. For more information, see **SAP Note** 852235. However, you can *install all ERP business packages manually* [page 113].

The following business packages are included in software unit BP-ERP:

New Roles for ERP 2005 (on the Java DVD)

Component Version	Business Package	File
BP for Business Unit Analyst 2.0 (mySAP ERP) 1.0	Business Unit Analyst 2.0	`BPERP5BUA000.sca`
BP for Employee Self-Service (mySAP ERP) 1.0	Employee Self-Service	`BPERP5ESS000.sca`
BP for HR Administrator (mySAP ERP) 1.0	HR Administrator	`BPERP5HRA000.sca`
BP for Manager Self-Service (mySAP ERP) 1.0	Manager Self-Service	`BPERP5MSS000.sca`
BP for Project Self-Service (mySAP ERP) 1.0	Project Self-Service	`BPERP5PSS000.sca`
BP for Self-Service Administrator (my SAP ERP) 1.0	Self-Service Administrator	`BPERP5ASS000.sca`
BP for Buyer (mySAP ERP) 1.0	Buyer	`BPERP5BUY000.sca`
BP for Common Parts (mySAP ERP) 1.0	Common Parts ERP	`BPERP5COM000.sca`
BP for Development Collaboration (mySAP ERP) 1.0	Development Collaboration	`BPERP5DC0000.sca`
BP for Internal Sales Representative (mySAP ERP) 1.0	Internal Sales Representative	`BPERP5SAL000.sca`
BP for Invoicing Clerk (mySAP ERP) 1.0	Invoicing Clerk	`BPERP5INV000.sca`
BP for Maintenance Technician (mySAP ERP) 1.0	Maintenance Technician	`BPERP5MTC000.sca`
BP for Plant Manager 2.0 (mySAP ERP) 1.0	Plant Manager 2.0	`BPERP5PLA000.sca`
BP for Production Supervisor (mySAP ERP) 1.0	Production Supervisor	`BPERP5PRS000.sca`
BP for Quality Inspector (mySAP ERP) 1.0	Quality Inspector	`BPERP5QIN000.sca`
BP for Supplier (mySAP ERP) 1.0	Supplier	`BPERP5SUP000.sca`

The following business packages are **not** included in software unit BP-ERP:

Unchanged Versions of Business Packages for ERP 2004 (not on the Java DVD, only available on SAP Service Marketplace)

Component Version	Business Package	File
BP for Compensation Specialist (mySAP ERP 2004) 60.2	Compensation Specialist	BPERP4CSP00_0.sca
BP for Sales Analysis 60.1	Sales Analysis	BPSALESAN601_0.ZIP
BP for Environment, Health & Safety 50.1	Environment, Health & Safety	BPEHS501_0.ZIP

New Versions of Business Packages for ERP 2004 (on the Java DVD)

Component Version	Business Package	SCA File
BP for Learning (mySAP ERP) 1.0	Learning	BPERP5HER00_0.sca
BP for SAP Higher Education & Research (mySAP ERP) 1.0	Higher Education and Research	BPERP5HER00_0.sca

Prerequisites

Software unit BP-ERP depends on the following software units:

- Application Server Java (AS-Java)
- Enterprise Portal (EP)
- Self Services (XSS)
- To use the search functions, you need SAP Retrieval and Classification Engine (TREX).

More Information

- For an overview of support for components of SAP NetWeaver 2004s, see SAP Service Marketplace at:
  `service.sap.com/pam`
- For more information about how to size the Enterprise Portal, see SAP Service Marketplace at:
  `service.sap.com/nw-ep` ® *SAP NetWeaver* ® *SAP NetWeaver in Detail* ® *Solution Life-Cycle Management* ® *Hardware Sizing*
- For more information about software unit BP-ERP, see:
  `help.sap.com/SAPHELP_ERP2005` ® *SAP ERP Central Component* ® *Business Packages*

End of: Business Packages for ERP (BP-ERP)

2.1.9 Internet Pricing and Configurator

Internet Pricing and Configurator (IPC) is delivered as part of SAP AP (Application Platform) and processed on normal application servers.

SAP IPC is required for IPC Web Applications (product instance SAP INTERNET SALES R/3 5.0-SAP AP), which are part of software unit Extended E-Selling Components (XECO). For more information, see the documentation *Master Guide — mySAP ERP 2005 powered by SAP NetWeaver 2004s* on SAP Service Marketplace at `service.sap.com/erp-inst`.

Prerequisites

The IPC (SAP AP IPC JAVA 7.00) requires the Virtual Machine Container (VMC, VM Container, JTS, Java Transaction Server) as runtime environment. The VMC is part of SAP Basis 7.00.

Integration

No separate IPC installation steps are necessary. No separate host or separate Java runtime environment is necessary. IPC functionality is processed on each application server. The IPC does not support any special methods to support high availability or load balancing. By running on each application server, SAP standard load balancing or high-availability mechanisms apply.

You need to enable the VMC after the installation of your SAP system. For more information, see *Activating Internet Pricing and Configurator* [page 97].

Only valid for: Enterprise Portal (EP)

2.1.10 Application Sharing Server as a Standalone Engine

Application Sharing Server for real-time collaboration provides data streaming services that enable application sharing capabilities provided by SAP NetWeaver collaboration. The server handles the flow of data between portal users collaborating through the real-time based application sharing feature.

Application Sharing Server lets users share their Windows desktop or individual applications with other portal users in real time. Remote users can interact directly with the shared desktop or application as if they were sitting at the host's machine.

The server is installed automatically with usage type Enterprise Portal (EP)on the portal host. In a cluster environment, the load generated by the Application Sharing Server is replicated to all instances of the cluster. This generates load on all dialog instance hosts. You can only use Application Sharing Server with SAP NetWeaver systems running usage type EP.

Planning

For test or demo purposes, you can run the Application Sharing Server on the portal machine.

   Recommendation

For production use, however, we recommend that you install the server as **a standalone engine on a dedicated host**. To do this, you run a separate installation procedure, as described in this documentation. By removing Application Sharing Server traffic from the portal host, you reduce the networking and J2EE Engine demands that it would generate on that machine, which improves the overall performance of the portal.

When you install usage type EP, the Application Sharing Server is installed automatically. If you do not intend to use the Application Sharing Server, you can disable it.

You can install Application Sharing Server on a dedicated machine before or after installing the usage type EP. However, you can only complete the post-installation steps once you have installed usage type EP.

Installation Process

1. Install usage type EP on your dedicated portal host machine.
2. Determine if the Application Sharing Server is required in your environment:
   - If not, disable the Application Sharing Server service on the portal. For more information, see *Post-Installation Tasks for Application Sharing Server* [page 115].
   - If yes, are you running a production system?
     - If yes, install Application Sharing Server on a dedicated host and define the connection on the portal host to the new Application Sharing Server. For more information, see *Installing Application Sharing Server as a Standalone Engine* [page 59].
     - If not and your system is for testing and development, do nothing.

End of: Enterprise Portal (EP)

2.2 Preparation

This section provides information on how to prepare the installation of your SAP system.

You perform the following steps:

1. You *check the hardware and software requirements* [page 29] using the Prerequisites Checker.
2. You *check for the Windows file system* [page 36].
3. You *check the Windows domain structure* [page 36].
4. If required, you *reduce the size of the file cache* [page 37].
5. If required, you *grant user rights for the installation* [page 37].
6. If required, you *perform a domain installation without being a domain administrator* [page 38].
7. You *prepare the SAP system transport host* [page 41].
8. You *install the SAP front-end software* [page 42].
9. You *generate the SAP Solution Manager Key* [page 42].
10. You *prepare the system for SAPinst* [page 43].
11. You *prepare the installation DVDs* [page 44].

The following preparation activity is **optional** and **only** applies, if you want to *prepare the user management for an external ABAP system* [page 121].

2.2.1 Hardware and Software Requirements

You check the hardware and software requirements for your operating system (OS) and the SAP instances using the **Prerequisite Checker** tool.

The Prerequisite Checker provides detailed information about the requirements that you need to meet before you start the installation. For example, it checks the requirements for the different installation services.

You can run the *Prerequisite Checker* as follows:

- **Standalone (optional):**
  To check the hardware and software requirements of host on which you want to install an SAP system at a later point in time, you can *run the Prerequisite Checker standalone* [page 30].
- **Integrated in SAPinst (mandatory):**

The Prerequisite Checker is run automatically by SAPinst when installing your SAP system variant.

In addition, we recommend you to also consult the requirements checklists tables, which provide the **minimum** requirements for SAP system installations. However, these tables do not take account of customer data. Depending on the amount of data involved, the requirements might change.

⬆ Recommendation

For a more precise sizing definition reflecting your particular system load, we strongly recommend that you use the *SAP Quick Sizer* tool available on SAP Service Marketplace. You enter information on your planned system and the tool calculates the requirements.

For more information, see SAP Service Marketplace at `service.sap.com/sizing`.

Alternatively, you can contact a hardware vendor. The vendor analyzes the load and calculates suitable hardware sizing.

- For supported operating system releases, see SAP Service Marketplace at `service.sap.com/platforms` ® *Product Availability Matrix*.
- Contact your OS vendor for the latest OS patches.
- Make sure that the host name fulfills the requirements listed in **SAP Note** 849423.

Process Flow

1. If required, you *run the Prerequiste Checker standalone* [page 30] to check the hardware and software requirements for the SAP system instances that you want to install.
2. In addition, we recommend that you check the following sections, which list the hardware and software requirements for the:
   - *Central services instance* [page 31]
   - *Database instance* [page 32]
   - *Central instance* [page 33]
   - *Dialog instance* [page 34], if you want to install an additional dialog instance
   - *Gateway instance* [page 35], if you want to install an additional gateway

   💡 Note

   If you install multiple SAP system instances on one host, you need to add up the requirements.

2.2.1.1 Running the Prerequisite Checker in Standalone Mode (Optional)

Before installing your SAP system, you can run the *Prerequisite Checker* standalone to check the hardware and software requirements for your operating system (OS) and the SAP instances.

⬆ Recommendation

We recommend that you use **both** the *Prerequisite Checker* and the requirements tables for reference.

> **Note**
> When installing your SAP system, SAPinst automatically starts the *Prerequisite Checker* and checks the
> hardware and software requirements in the background.

Procedure

1. You *start SAPinst* [page 48].
2. On the *Welcome* screen, choose *<SAP System>* ® *Lifecycle Management* ® *Preparation* ® *Prerequisites Check*.
3. Enter the required parameters when prompted in the SAPinst dialogs.

> **Note**
> For more information about each parameter, position the cursor on the parameter field and choose
> F1 in SAPinst.

When you have finished, the *Start Execution* screen appears summarizing all parameters you have entered. To change a parameter, choose *Back* and enter a new value.

4. To start the *Prerequisite Checker* choose *Start*.

Result

After the check has successfully completed, the *Prerequisite Check Results* screen appears displaying the results found.

If required, you can also check the results in file `prerequisite_checker_results.html`, which you can find in the installation directory.

2.2.1.2 Requirements Checklist for Central Services Instance

The central services instance host must meet the following requirements:

Requirement Type	Requirement

Hardware	■ Suitable backup system
	■ Minimum disk space
	  ● Central Services Instance (SCS) (not including virtual memory):
	    5 GB
	  ● ABAP Central Services Instance (ASCS) (not including virtual memory):
	    5 GB
	  ● 4.3 GB of temporary disk space for every required installation DVD that you have to copy to a local hard disk.
	To check disk space:
	  1. Choose *Start* ® *Programs* ® *Administrative Tools* ® *Computer Management* ® *Disk Management*.
	  2. Right-click the local drive and choose *Properties*.
	■ Minimum RAM:
	  1 GB
	  To check RAM, in the Windows Explorer choose *Help* ® *About Windows*.
	■ Paging File Size (also known as virtual memory):
	  1 times RAM plus 8 GB
	  To check paging file size:

Requirement Type	Requirement
	1. Right-click *My Computer* and choose *Properties*. 2. Choose *Advanced* ® *Performance Options*. 3. If required, in section *Virtual Memory*, choose *Change*.

Software	■ English international version of one of the following:
	   ● Windows Server 2003 Standard Edition
	   ● Windows Server 2003 Enterprise Edition
	   ● Windows Server 2003 Datacenter Edition
	 To check the Windows version:
	
	 1. Choose *Start* ® *Programs* ® *Accessories* ® *Command Prompt*.
	 2. Enter the command `winver`.
	 ■ Suitable Windows Resource Kit is strongly recommended.

2.2.1.3 Requirements Checklist for the Database Instance

The database instance host must meet the following requirements:

Requirement Type	Requirement

Hardware	■ Suitable backup system
	 ■ Minimum disk space:
	   ● Oracle database software: 2 GB
	   ● SAP system (not including virtual memory):
	     78 GB
	   ● 4.3 GB of temporary disk space for every required installation DVD you have to copy to a local hard disk.
	 To check disk space:
	
	 1. Choose *Start* ® *Programs* ® *Administrative Tools* ® *Computer Management* ® *Storage* ® *Disk Management*.
	 2. Right-click the local drive and choose *Properties*.
	 ■ Minimum RAM:
	   ● Non-Unicode:
	     1 GB
	   ● Unicode:
	     2 GB
	 To check RAM, in the Windows Explorer choose *Help* ® *About Windows*.
	 ■ Paging file size (also known as virtual memory):
	 1.5 times RAM (recommended by Microsoft)
	 To check:
	
	 1. Right-click *My Computer* and choose *Properties*.
	 2. Choose *Advanced* ® *Performance Options..*.
	 3. If required, in section *Virtual Memory*, choose *Change*.

Software	■ Oracle 10g database server software
	 ■ Current Oracle patch set and hot fix, if available.
	
	   💡 Note
	   For more information on the current patch set, see **SAP Note** 829486.

Requirement Type	Requirement

	■ English international version of one of the following:
	  ● Windows Server 2003, Standard Edition
	  ● Windows Server 2003, Enterprise Edition
	  ● Windows Server 2003, Datacenter Edition
	To check the Windows version:
	
	1. Choose *Start* ® *Programs* ® *Accessories* ® *Command Prompt*.
	
	2. Enter the command `winver`.
	■ Make sure that the required fonts or code pages are installed.
	■ Make sure that NLS and corresponding saplocales are installed.
	■ Suitable Windows Resource Kit is strongly recommended.

2.2.1.4 Requirements Checklist for the Central Instance

The central instance host must meet the following requirements:

Requirement Type	Requirement

Hardware	■ Suitable backup system
	■ Minimum disk space:
	  ● 5 GB (not including virtual memory)
	  ● 4.3 GB of temporary disk space for every required installation DVD that you have to copy to a local hard disk
	To check disk space:
	
	1. Choose *Start* ® *Programs* ® *Administrative Tools* ® *Computer Management* ® *Disk Management*.
	
	2. Select the local drive.
	
	3. Choose *Properties*.
	■ Minimum RAM:
	1024 MB − 4096 MB (depending on system load)
	To check RAM, in the Windows Explorer choose *Help* ® *About Windows*.
	
	⚠ Caution
	During the installation with SAPinst, make sure not to enter a value larger than the maximum Java heap size of your platform. For more information, see the corresponding documentation of your Java Development Kit - JDK.
	
	■ Paging File Size (also known as virtual memory):
	1 times RAM plus 8 GB
	For 64-bit systems, also see **SAP Note** 153641. If you want to install only a small system, contact your hardware partner for appropriate swap space values.
	To check paging file size:
	
	1. Right-click *My Computer* and choose *Properties*.
	
	2. Choose *Advanced* ® *Performance Options*.

Requirement Type	Requirement
	3. If required, in section *Virtual Memory*, choose *Change*.
Software	■ English international version of one of the following: ● Windows Server 2003 Standard Edition ● Windows Server 2003 Enterprise Edition ● Windows Server 2003 Datacenter Edition To check your Windows version: 1. Choose *Start* ® *Programs* ® *Accessories* ® *Command Prompt*. 2. Enter the command `winver`. ■ Make sure that the required fonts or code pages are installed. ■ Make sure that NLS and corresponding saplocales are installed. ■ Suitable Windows Resource Kit is strongly recommended.

2.2.1.5 Requirements Checklist for the Dialog Instance

The dialog instance host must meet the following requirements:

Requirement Type	Requirement
Hardware	■ Suitable backup system ■ Minimum disk space: ● 2.5 GB (not including virtual memory) ● 4.3 GB of temporary disk space for every required installation DVD that you have to copy to a local hard disk. To check disk space: 1. Choose *Start* ® *Programs* ® *Administrative Tools* ® *Computer Management* ® *Disk Management*. 2. Right-click the local drive and choose *Properties*. ■ Minimum RAM: 1024 MB − 4096 MB (depending on system load) To check RAM, in the Windows Explorer choose *Help* ® *About Windows*. ⚠ Caution During the installation with SAPinst, make sure that you do not enter a value larger than the maximum Java heap size of your platform. For more information, see the documentation for your Java Development Kit (JDK). ■ Paging File Size (also known as virtual memory): 1 times RAM plus 8 GB For 64-bit systems, also see **SAP Note** 153641. If you want to install only a small system, contact your hardware partner for appropriate swap space values. To check paging file size: 1. Right-click *My Computer* and choose *Properties*. 2. Choose *Advanced* ® *Performance Options*

Requirement Type	Requirement
	3. If required, in section *Virtual Memory*, choose *Change*.
Software	■ English international version of one of the following: 　● Windows Server 2003 Standard Edition 　● Windows Server 2003 Enterprise Edition 　● Windows Server 2003 Datacenter Edition 　To check the Windows version: 　1. Choose *Start* ® *Programs* ® *Accessories* ® *Command Prompt*. 　2. Enter the command `winver` ■ Suitable Windows Resource Kit is strongly recommended

2.2.1.6 Requirements Checklist for a Gateway Instance

The gateway instance host must meet the following requirements:

Requirement Type	Requirement
Hardware	■ Suitable backup system ■ Minimum disk space: 　● 1 GB (not including virtual memory) 　● 4.3 GB of temporary disk space for every required installation DVD that you have to copy to a local hard disk. 　To check disk space: 　1. Choose *Start* ® *Programs* ® *Administrative Tools* ® *Computer Management* ® *Disk Management*. 　2. Right-click the local drive and choose *Properties*. ■ Minimum RAM: 　512 MB 　To check RAM, in the Windows Explorer choose *Help* ® *About Windows*. ■ Paging File Size (also known as virtual memory): 　1 times RAM + 8 GB. 　For 64-bit systems, also see **SAP Note** 153641. If you want to install only a small system, contact your hardware partner for appropriate swap space values. 　To check paging file size: 　1. Right-click *My Computer* and choose *Properties*. 　2. Choose *Advanced* ® *Performance Options*. 　3. If required, in section *Virtual Memory*, choose *Change*.
Software	■ English international version of one of the following: 　● Windows Server 2003 Standard Edition 　● Windows Server 2003 Enterprise Edition 　● Windows Server 2003 Datacenter Edition 　To check the Windows version: 　1. Choose *Start* ® *Programs* ® *Accessories* ® *Command Prompt*. 　2. Enter the command `winver`. ■ Suitable Windows Resource Kit is strongly recommended.

2.2.2 Checking for the Windows File System

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

Note

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

Procedure

1. Open the Windows Explorer.
2. Select the root directory.
3. Choose *File* ® *Properties* ® *General*.
4. The system displays the type of file system in use.
5. Check that the file system is NTFS.

2.2.3 Checking the Windows Domain Structure

Note

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

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

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

Prerequisites

■ You are performing a domain installation.
■ You are familiar with checking Windows domain structures. For more information, see the Windows documentation.

Caution

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

Procedure

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

2.2.4 Reducing the Size of the File Cache

The Windows file cache directly competes with SAP programs for memory. Therefore, you should adjust the file cache as described below.

Procedure

1. Choose *Start* ® *Control Panel* ® *Network Connections* ® *Local Area Connections*.
2. In the *Local Area Connection Status* dialog box, choose *Properties*.
3. In the *Local Area Connection Properties* dialog box, double-click *File and Printer Sharing for Microsoft Networks*.
4. Select *Maximize data throughput for network applications*.

> ⚠ Caution
>
> If you cannot select *File and Printer Sharing for Microsoft Networks*, this option has not yet been installed. To install it, you need the Windows Server CDs.

5. To confirm your entries, choose *OK*.

2.2.5 Granting User Rights for the Installation

You have to grant the required rights and privileges that authorize you to install the SAPinst tool and the SAP system.

> ⚠ Caution
>
> If you attempt the installation without the required authorization, the system aborts.

If necessary, you have to ask the system administrator to grant you the necessary authorization **before** you start the installation.

Prerequisites

■ The authorization required depends on whether you intend to perform a domain or local installation. For more information, see *System Configuration* [page 13].
■ A domain installation requires a domain controller to store user and account information centrally for the whole system.

> ⚠ Caution
>
> ● For performance and security reasons, make sure that you do **not** run an SAP instance (including the database instance) on the host where the domain controller is running.
> SAP does not support an SAP system installation on a domain controller.
> ● Do not use the user `<sapsid>adm` for the installation of the SAP system.

Local Installation

1. Check that you have `Local Administrators` rights for the central instance host.

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

2. If required, obtain these rights by asking the system administrator to enter you as a member of the `Local Administrators` group.

Domain Installation

> 💡 **Note**
>
> SAP recommends to perform a domain installation.

1. Check that you have `Domain Administrators` rights.
   In a domain installation, the user information is stored centrally on the domain controller and is accessible to all hosts in the system.
2. If required, obtain these rights by asking the system administrator to enter you as a member of the `Domain Administrators` group.

   > 💡 **Note**
   >
   > ■ If you are **not** granted domain administrators rights, you can perform the installation as a domain user who is a member of the `Local Administrators` group. However, the domain administrator has to prepare the system appropriately for you.
   >   For more information, see *Performing a Domain Installation without being a Domain Administrator* [page].
   > ■ If you use an MSCS configuration, you always have to perform a domain installation.

2.2.6 Performing a Domain Installation Without Being a Domain Administrator

If you are not granted domain administrator rights, you can perform the installation as a domain user who is a member of the `Local Administrators` group. In this case, the domain administrator must prepare the system for you appropriately, as described in this section.

> 💡 **Note**
>
> You normally perform a domain installation of the SAP system as a user with domain administrators rights, as described in *Granting User Rights for the Installation* [page].
>   The domain administrator has to:
>
> 1. Create the new global group `SAP_<SAPSID>_GlobalAdmin`.
> 2. Create the two new SAP system users `<sapsid>adm` and `SAPService<SAPSID>`.
> 3. Add the users `<sapsid>adm` and `SAPService<SAPSID>` to the newly created group `SAP_<SAPSID>_GlobalAdmin`.

Prerequisites

You must perform this procedure as a domain administrator.

Creating the New Global Group SAP_<SAPSID>_GlobalAdmin

1. Log on as domain administrator.
2. To start the *Active Directory Users and Computers Console*, choose:
   Start ® *Programs* ® *Administrative Tools* ® *Active Directory Users and Computers*

   > **Note**
   > If you cannot find *Active Directory Users and Computers*, start it as follows:
   > a) Choose *Start* ® *Run* and enter `mmc`.
   > b) Choose *Console* ® *Add/Remove Snap-in...* ® *Add*.
   > c) Select *Active Directory Users and Computers*.
   > d) Choose *Add*.
   > e) Choose *Close* ® *OK*.

3. Right-click *Users* in *Tree*, and choose *New* ® *Group*.
4. Enter the following:
   Group name: `SAP_<SAPSID>_GlobalAdmin`

   > **Note**
   > Enter the `SAP_<SAPSID>_GlobalAdmin` group exactly as specified in the correct uppercase and lowercase.

5. Select the following:
   a) *Group scope:* Global
   b) *Group type*: Security
6. Choose *OK*.

Creating the New SAP System Users <sapsid>adm and SAPService<SAPSID>

1. In *Active Directory Users and Computers Console*, right-click *Users* in *Tree* and choose:
   New ® *User*
2. Enter the following:

   > **Note**
   > Enter the `<sapsid>adm` and `SAPService<SAPSID>` user exactly as specified in the correct uppercase and lowercase.

Field	Input for <sapsid>adm	Input for SAPService<SAPSID>
First name:	None	None
Initials:	None	None
Last name:	None	None

Field	Input for <sapsid>adm	Input for SAPService<SAPSID>
Full name:	<sapsid>adm	SAPService<SAPSID>
User logon name:	<sapsid>adm	SAPService<SAPSID>

3. Choose *Next* and enter the following:

    Password: **<password>**

    Confirm password: **<password>**

4. Select *Password never expires*

    > **Note**
    >
    > Make sure that no other options are selected.

5. Choose *Next* ® *Finish*.

Adding the <sapsid>adm User to the SAP_<SAPSID>_GlobalAdmin Group

1. In the *Users* folder, double-click the newly created user account `<sapsid>adm` in the list on the right.
2. Choose *Member* ® *Add*.
3. Select the new *SAP_<SAPSID>_GlobalAdmin* group and choose *Add* to add it to the list.

    > **Note**
    >
    > By default, the user is also a member of the `Domain Users` group.

4. Choose *OK* twice.

Adding the SAPService<SAPSID> User to the SAP_<SAPSID>_GlobalAdmin Group

1. In the *Users* folder, double-click the newly created user account *SAPService<SAPSID>* in the list on the right.
2. Choose *Member* ® *Add* .
3. Select the new *SAP_<SAPSID>_GlobalAdmin* group.
4. Choose *Add* to add it to the list.
5. Choose *OK*.

    > **Caution**
    >
    > The `SAPService<SAPSID>` user must **not** be a member of the `Domain Users` group.
    >
    > To remove this group from the *Member of* list:
    >
    > a) Select the *SAP_<SAPSID>_GlobalAdmin* group.
    > b) Choose *Set Primary Group.*
    > c) Select the `Domain Users` group.
    > d) Choose *Remove* to delete it from the *Member of* list.

6. Choose *OK* to close *SAPService<SAPSID> Properties*.
7. Close the *Active Directory Users and Computers Management Console*.

2.2.7 Preparing the SAP System Transport Host

You need to prepare one transport host in the SAP system. This host has the function of controlling the import or export of files between the current SAP system and other SAP systems (for example, a test or development system). The transport host uses the `usr\sap\trans` directory to temporarily store files that have been exported from one system and are waiting to be imported into another system. Depending on your requirements, you can decide to use the central instance host, the dialog instance host, or any other host as the transport host.

> **Note**
>
> For more information on preparing the SAP system transport host, see **SAP Note** [360515](#).

Procedure

1. Map the IP address of the transport host to the alias `SAPTRANSHOST`, using one of the following methods:
    - On the DNS server
      If a DNS server is available for your system, ask your administrator to map the IP address of the transport host to the alias `SAPTRANSHOST`.
      The DNS server is a database that contains a set of files with information about the TCP/IP network, including the mapping of host names or aliases to IP addresses.
    - In the hosts files
      If no DNS server is available, you can map the IP address to the alias `SAPTRANSHOST` in the hosts file, which you can find in the Windows default directory:
      `<Drive>:\%windir%\system32\drivers\etc`
      Perform the mapping as follows:
      a) Open the hosts file with an editor.
      b) Add the following line:
          `<IP_address> <hostname> SAPTRANSHOST`
          This step assigns the alias `SAPTRANSHOST` to the transport host.
      c) Copy the newly edited hosts file to all hosts where an SAP instance is to run.

    > **Note**
    >
    > If the transport host has more than one network card, take special care when you determine the IP address that is entered in the hosts file or on the DNS server:
    > - Make sure that you enter the main IP address and that the binding order is correctly defined.
    > - To check the binding order, choose:
    >   *Start* ® *Settings* ® *Network and Dial-up Connections* ® *Advanced* ® *Advanced Settings*.

2. If your transport host is not the central instance host, you have to create the transport directory as follows:
    a) On the transport host, create the directory `\usr\sap\trans`.
    b) Grant *Everyone* the permission *Full Control* for the directory.

💡 Note

These permissions are only necessary during the SAPinst installation.

After the installation, you only need grant *Full Control* on the directory to the
`SAP_<SAPSID>_GlobalAdmin` groups of all the systems that are part of your transport infrastructure.
SAPinst assigns the appropriate rights with the help of an additional `SAP_LocalAdmin` group.
For more information, see *Automatic Creation of Accounts and Groups* [page 140].

c) If no SAP instance is to be installed on the transport host, share the `usr\sap` directory on the transport
host as `SAPMNT`.
This enables SAPinst to address the transport directory in the standard way as
`\\SAPTRANSHOST\SAPMNT\trans`.

Result

You have configured your system so that the installation tool SAPinst can recognize the transport host.

2.2.8 Installing the SAP Front-End Software

For the installation, make sure that the front-end software is installed on at least **one** host machine in your
system environment. To simplify the administration of your SAP system, we recommend you install the
software on the central instance host.

With the SAP front-end installation software, SAPSetup, you can optimize the deployment of SAP GUI to
thousands of clients. You can easily tailor installation packages to match your requirements, distribute patches,
and set up automatic update processes for your clients.

For more information on installing the front-end software, see the documentation on SAP Service
Marketplace at `service.sap.com/installNW2004s`:

- ◼ *SAP Front End Installation Guide* (English version)
- ◼ *SAP Frontend-Installationsleitfaden* (German version)

2.2.9 Generating the SAP Solution Manager Key

You need to generate the solution manager key because SAPinst prompts for it during the input phase of
the installation process.

Prerequisites

You have installed SAP Solution Manager as described in the documentation *Installation Guide — SAP Solution
Manager 3.2 on <OS> : <Database>* on SAP Service Marketplace at:

`service.sap.com/instguides` ® *SAP Components* ® *SAP Solution Manager* ® *Release 3.2*

Procedure

1. In your SAP Solution Manager, call the System Landscape Solution Manager with transaction SMSY.
2. Choose *Other object....*

3. Set the indicator *System*.
4. From the input help, choose the system on which you want to install your SAP system.
5. Choose *Generate Installation / Upgrade Key*.
6. Enter the requested information.
    If necessary, change the default values.
7. Choose *Generate Key*.
    The system displays the key.
8. If you have problems while generating the solution manager key, proceed as follows:
    a) Create an OSS-message.
    b) Enter the following data:
        ■ Component: **SV-SMG**
        ■ Short text: **Schluesselgenerierung**
        ■ Long text:
            ● System ID (triple-digit)
            ● System number (two-digit)
            ● Server on which SAP system is to be installed

More Information

For more information, see also **SAP Note** 805390.

2.2.10 Preparing the System for SAPinst

You need to prepare the system for the J2EE Engine by installing the Java Development Kit (JDK).

As of SAP NetWeaver 2004s you must install the J2EE Engine with strong encryption.

The J2EE Engine requires a Java Development Kit (Java™ 2 SDK, Standard Edition = JDK) on every host where the J2EE Engine is to be installed. You need this for the *system variants* [page 9] with Java.

The JDK includes the Java Runtime Environment (JRE), which is required both for SAPinst and the SAPinst GUI.

> Note
>
> If required, you can perform a **remote** installation using a standalone SAPinst GUI on a separate Windows or UNIX host. This lets you perform the installation on a remote host, controlling it with the SAPinst GUI from a local host.
>
> If you want to perform a remote installation, see *Starting SAPinst on the Remote Host* [page 55]. In this case, you need at least a JRE on the local host to start the SAPinst GUI there.

Procedure

1. Check the JDK versions that are released for SAP systems on SAP Service Marketplace at:
    service.sap.com/pam ® *SAP NetWeaver* ® *SAP NetWeaver 2004s* ® *JSE Platforms*
2. Make sure a valid JDK version is installed on every host on which you want to install an SAP instance with the J2EE Engine, as follows:
    ■ If JDK is not already installed
        Since JDK is not part of the SAP shipment, you need to download and install it.

For additional information on the recommended JDK version, see **SAP Note** 709140.

■ If JDK is already installed

Check the installed version of JDK by entering the following command:

`java –version`

> 💡 Note
>
> SAPinst checks environment variable `SAPINST_JRE_HOME` for a valid Java runtime environment.
>
> If `SAPINST_JRE_HOME` is not found, SAPinst also checks `JAVA_HOME`.

3. As of SAP NetWeaver 2004s strong encryption is mandatory for the J2EE Engine and for all usage types that are deployed on it. You need to obtain the JCE policy files beforehand so that they can be installed by SAPinst:

a) Download the JCE policy files for your platform at `http://java.sun.com/j2se/1.4.2/downloads`.

b) SAPinst installs the JCE policy files during the installation process.

2.2.11 Preparing the Installation DVDs

You use this procedure to prepare the installation DVDs.

> ⬆ Recommendation
>
> We recommend that you make all required DVDs available **in parallel**.

Procedure

1. Identify the required DVDs for your installation as listed below and keep them separate from the remaining DVDs. This helps you to avoid mixing up DVDs during the installation.

> ⚠ Caution
>
> The DVD names listed below are **abbreviated**.
>
> You can find the **full names** in *Media Information* in the documentation *Master Guide — mySAP ERP 2005 powered by SAP NetWeaver 2004s* on SAP Service Marketplace at `service.sap.com/erp-inst` ® *mySAP ERP 2005*
>
> You can find the **full names** of all media shipped with SAP NetWeaver 2004s in *Media Information for SAP NetWeaver 2004s* on SAP Service Marketplace at `service.sap.com/installNW2004s`.

The following table shows the required DVDs for the installation of an SAP System based on the usage type **AS-ABAP and AS-Java**:

SAP Instance Installation	Required DVDs
Central Services Instance, Central Instance, Dialog Instance	■ Installation Master DVD ■ Kernel DVD ■ Java DVD
Oracle Database Instance	■ Installation Master DVD ■ Java DVD ■ RDBMS DVD ■ RDBMS Client DVD ■ RDBMS Patch DVD ■ Export DVD
Gateway Instance	■ Installation Master DVD ■ Kernel DVD Note The installation service for the gateway instance is also available on the Presentation DVD.

2. Use one of the following methods to make DVDs available in parallel:
   - Before the installation:
     - Have sufficient DVD drives
     - Copy DVDs manually to local hard disks
   - During the installation:
     Use the SAPinst DVD / CD Browser dialog. You can check the entered location and then copy the entire DVD to the path you entered in column *Copy Package to.*

2.3 Installation Process

This section provides information about how to perform a **standard** installation of your SAP system.

If you want to perform a **Microsoft Cluster Service (MSCS)** installation, see section *Microsoft Cluster Installation.*

You have completed the planning and preparation activities, before you start the installation.

Process Flow
You perform the following steps:

1. *You install the Oracle database software* [page <u>46</u>].
2. You *configure the Oracle listener* [page <u>48</u>].
3. You *install the SAP system using SAPinst* [page <u>48</u>].

   Only valid for: Enterprise Portal (EP)

4. If required, you *install the Application Sharing Server as a Standalone Engine* [page <u>59</u>].

   End of: Enterprise Portal (EP)

2.3.1 Installing the Oracle Database Software

This section describes how to install the Oracle 10g database server software on the database host.

> **Note**
>
> ■ As of Oracle 10g there is no need to manually install the Oracle client software on the application server, as SAPinst automatically installs the client software in the DIR_CT_RUN directory .
>
> ■ For supplementary information about Oracle 10g , see the documentation provided by Oracle on the RDBMS DVD under `<DVD_Drive>:\NT\<platform>\DOC\index.htm`

> **Caution**
>
> **MSCS only:**
>
> You have to install the Oracle server software on both nodes.

Procedure

1. On the database server, start the Oracle Universal Installer as follows:

   Place the Oracle in the DVD drive and change to the directory: `<DVD_DRIVE>:\NT\<platform>`

2. Double-click the file `sapserver.cmd`.
3. In the dos-box, specify the drive letter of the local disk where you want to install the Oracle software, and the `<DBSID>`.

   > **Note**
   >
   > The dos-box only appears if you perform a new installation (or under a different user), or if `<Oracle_Home>` and `<DBSID>` are not set.

4. In the *Oracle Universal Installer*, enter the information as shown in the following table:

Window	Entry
Specify File Locations	If this screen appears, do the following: ■ Under *Source*: For *Path*: Shows the path to the Oracle source software. Do **not** change the path. ■ Under *Destination*: ● For *Name*: Enter the name of the new `<Oracle_Home>` directory. We recommend that you use the name `<SAPSID><ORACLE_VERSION>`, for example, `C12101` ● For *Path*: Enter the path of a **new** `<Oracle_Home>` directory. We recommend that you use the path: `<DRIVE>:\ORACLE\<DBSID>\<ORACLE_VERSION>`, for example, `C:\ORACLE\C12\101` Note Do **not** specify an already existing `<Oracle_Home>` directory. You must specify a new directory. Choose *Next*.
Summary	Choose *Install*.
Oracle Net Configuration Assistant: Welcome	If this dialog appears, select *Perform typical configuration*.
Configuration Assistants	Note If you get an error message, choose *OK*. Ignore the following *Warning* screen and choose *OK*. Choose *Next*.
End of Installation	Choose *Exit* to close the Oracle Universal Installer.

5. Install the latest patch set and hot fix (if available) as described in **SAP Note** 829486.

   Note
   Check **SAP Note** 839182, if you require an interim patch and the respective Perl version for the Oracle database installation.

> **Note**
> You have to install the current Oracle patch set and hot fix (if available) on both nodes.

2.3.2 Configuring the Oracle Listener

If the Oracle security setup defined by the standard installation is not restrictive enough for your purposes, see **SAP Note** 186119 to configure the Oracle listener to accept only connections from specific host.

2.3.3 Installing an SAP System Using SAPinst

The following sections provide the steps that you have to perform to install the various instances of an SAP system, or a standalone engine:

- *Running SAPinst on Windows* [page 48]
- *Using SAPinst GUI* [page 53]
- *Interrupted Installation with SAPinst* [page 54]
- *Starting SAPinst on the Remote Host (Optional)* [page 55]
- *Starting SAPinst GUI Separately (Optional)* [page 56]
- *Troubleshooting with SAPinst* [page 58]

2.3.3.1 Running SAPinst on Windows

This procedure tells you how to install an SAP system with SAPinst. SAPinst includes a SAPinst GUI and a GUI server, which both use Java.

This section describes an installation where SAPinst, SAPinst GUI, and the GUI server are running on the same host. If required, you can instead perform a *remote installation with SAPinst* [page 55], where SAPinst GUI is running on a **separate** host from SAPinst and the GUI server.

Note the following about SAPinst:

- When you start SAPinst, SAPinst GUI and the GUI server also start. SAPinst GUI connects via a secure SSL connection to the GUI server and the GUI server connects to SAPinst.
- SAPinst normally creates the installation directory `sapinst_instdir` where it keeps its log files, and which is located directly below the `Program Files` directory. If SAPinst is not able to create `sapinst_instdir` directly below the `Program Files` directory, SAPinst tries to create `sapinst_instdir` in the directory defined by the environment variable `TEMP`.
- SAPinst creates a subdirectory for each installation service, called `<sapinst_instdir>\<installation_service>` which is located below `%ProgramFiles%\sapinst_instdir`.
- The SAPinst Self-Extractor extracts the executables to a temporary directory (`TEMP`, `TMP`, `TMPDIR`, or `SystemRoot`). These executables are deleted after SAPinst has stopped running.
  Directories with the name `sapinst_exe.xxxxxx.xxxx` sometimes remain in the temporary directory. You can safely delete them.
  In the temporary directory you can also find the SAPinst Self-Extractor log file `dev_selfex.out`, which might be useful if an error occurs.

⚠ Caution

If SAPinst cannot find a temporary directory, the installation terminates with the error FCO-00058.

■ If you want to terminate SAPinst and the SAPinst Self-Extractor, do one of the following:
  ● Right-click the icon for the SAPinst output window located in the Windows tray and choose *Exit*.
  ● Click the icon for the SAPinst output window located in the Windows tray and choose *File* ® *Exit*.

Prerequisites

■ You are logged on as user with the required rights and privileges that authorize you to install the SAPinst tool and the SAP system. For more information, see *Granting User Rights for the Installation* [page 37].
■ Each SAP instance requires a separate installation directory.

⬆ Recommendation

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

■ If you are installing a second or subsequent SAP system into an existing database, make sure that the database is **up and running before** starting the installation. For more information, see *Installation of Multiple Components in One Database* [page 119].

Procedure

1. Insert the *SAP Installation Master DVD* in your DVD drive or mount it locally.
2. Start SAPinst from the SAP Installation Master DVD by double-clicking `sapinst.exe` from the following path:
   <DVD drive>:\IM_WINDOWS_<platform>
   SAPinst GUI starts automatically by displaying the *Welcome* screen.
   However, if there is only one component to install, SAPinst directly displays the first input dialog without presenting the *Welcome* screen.

   💡 Note
   ■ During the installation, the default ports 21200 and 21212 are used for communication between SAPinst, GUI server, and SAPinst GUI. SAPinst uses port 21200 to communicate with the GUI server. The GUI server uses port 21212 to communicate with SAPinst GUI. You get an error message if one of these ports is already in use by another service.
   In this case, open a command prompt and change to the required directory as follows:
   <DVD drive>:\IM_WINDOWS_<platform>.
   Enter the following command in a single line:
   sapinst.exe SAPINST_DIALOG_PORT=<free_port_number_sapinst_gui_to_gui_server>
   GUISERVER_DIALOG_PORT=<free_port_number_gui_server_to_sapinst_gui>
   ■ For a list of all available SAPinst properties, enter the following command:
   sapinst –p.

3. In the *Welcome* screen, choose one of the following installation services:

■ If you want to use global accounts which are configured on a separate host, you have to run the installation service *Operating System Users and Groups* **before** you start the installation: Choose *<SAP System>* ® *Lifecycle Management* ® *Preparation* ® *Operating System Users and Groups*.

■ If you want to check your hardware and software requirements **before** the installation, choose *<SAP System>* ® *Lifecycle Management* ® *Preparation* ® *Prerequisites Check*. Otherwise, SAPinst automatically checks the hardware and software requirements during the installation with the *Prerequisite Checker*. If any changes are necessary to SAP system or operating system settings, SAPinst automatically prompts you. For more information, see *Running the Prerequisites Checker in Standalone Mode* [page 30].

■ If you perform a system copy and want to install a target system, choose *<SAP System>* ® *Lifecycle Management* ® *System Copy* ® *<Database>* ® *Target System* ® *<System Variant>*.

■ If you want to install a standalone gateway instance, choose *SAP NetWeaver 2004s* ® *Standalone Engines* ® *Gateway* ® *Gateway installation*. With the standalone gateway, you can install the gateway service separately from the SAP system. In this case, the SAP system can access each external gateway under a different RFC connection.

■ If you want to install a SAP system with usage types or software units, choose *<SAP system>* ® *System with* *<Usage Types | Software Units>* ® *<Database>* ® *<System Variant>*.

The following tables provide an overview of the installation services available for the system variants:
● Central System
● Distributed System
● High Availability System

  Note
  Choose the corresponding installation services from the tree structure **exactly** in the order they appear for each system variant.

Installation Services for a Central System

Installation Services	Remarks
Central System Installation	Installs a complete SAP system including the following instances on one host: ● Central services instance (SCS) ● Database instance ● Central instance Note You require at least usage type AS-Java or AS-ABAP. You can choose the usage types or software units on

Installation Services	Remarks
	the next screen. ⚠️ Caution Usage type MI will be released with SAP NetWeaver 2004s SP 5. For more information, see **SAP Note** 852008.
Dialog Instance	Installs a dialog instance in an already installed SAP system, if required. ⚠️ Caution The technical stack of the dialog instance must correspond to the technical stack of the central instance. For example, you can only install an ABAP+Java dialog instance in an ABAP+Java system or a Java dialog instance in a Java system.

Installation Services for a Distributed System

Installation Services	Remarks
Central Services Instance (SCS)	Mandatory step in installing a distributed SAP system with usage types or software units based on *AS-ABAP and AS-Java*. Installs a central services instance (SCS) and prepares the SAP global host.
Database Instance	Mandatory step in installing a distributed SAP system. You must have finished the *Central Services Instance (SCS)* installation, before you can choose this installation service. Installs a database instance.
Central Instance	Mandatory step in installing a distributed SAP system on several hosts. You must have finished the database instance installation. Installs a central instance and enables additional usage types or software units. ⚠️ Caution Usage type MI will be released with SAP NetWeaver 2004s SP 5. For more information, see **SAP Note**

Installation Services	Remarks
	852008.
Dialog Instance	Installs a dialog instance in an existing SAP system, if required. ⚠️ Caution The technical stack of the dialog must correspond to the technical stack of the central instance. For example, you can only install an ABAP+Java dialog instance in an ABAP+Java system or a Java dialog instance in a Java system.

Installation Services for a High Availability System

Installation Services	Remarks
Central Services Instance for ABAP (ASCS)	Installs a central services instance for ABAP (ASCS).
Central Services Instance (SCS)	Installs a central services instance (SCS) and prepares the SAP global host.
MSCS Cluster Node A	This step performs the following on Microsoft Cluster Service (MSCS) node A: ● Creates the SAP cluster group ● Adds the ASCS and SCS instances to the SAP cluster group.
Database Instance	Installs a database instance.
MSCS Cluster Node B	This step configures an additional Microsoft Cluster Service (MSCS) node to run the SAP cluster group. You must have completed the configuration of MSCS node A and the database instance installation.
Central Instance	Installs a central instance and enables additional usage types or software units. ⚠️ Caution Usage type MI will be released with SAP NetWeaver 2004s SP 5. For more information, see **SAP Note** 852008.
Dialog Instance	Installs a dialog instance in an already installed SAP system, if required.

Installation Services	Remarks
	⚠️ Caution The technical stack instance of the dialog must correspond to the technical stack of the central instance. For example, you can only install an ABAP+Java dialog instance in an ABAP+Java system or a Java dialog instance in a Java system.

4. If SAPinst prompts you to log off from your system, log off and log on again. SAPinst restarts automatically.
5. Follow the instructions in the SAPinst dialogs and enter the required parameters.

> 💡 Note
> For more information about the input parameters, position the cursor in the field of the respective parameter and press `F1`.

After you have entered all required input information, SAPinst starts the installation and displays the progress of the installation. If the installation was successful, the screen *Finished installation successfully* is displayed.

6. We recommend you to delete all files in the directory `%userprofile%\.sdtgui\`.

2.3.3.2 Using SAPinst GUI

The following table shows the most important functions that are available in SAPinst GUI:

SAPinst GUI Functions

Button / Function Key / Menu Entries	Description
F1	Displays detailed information about each input parameter.
Exit	Cancels the installation with the following options: ■ *Stop* Stops the installation without further changing the installation files. You can restart SAPinst to continue the installation later from this point. ■ *Continue* Continues the installation.

Button / Function Key / Menu Entries	Description
Log off	Stops the SAPinst GUI, but SAPinst and the GUI server continue running. 💡 Note If for some reason you need to log off during the installation from the host where you control the installation with SAPinst GUI, the installation continues while you are logged off. You can later reconnect to the same SAPinst installation from the same or another host. For more information, see *Starting SAPinst GUI Separately* [page 56].
Retry	Performs the installation step again (if an error has occurred).
Stop	Stops the installation without further changing the installation files. You can continue the installation later from this point.
Continue	Continues with the option you have chosen before.

2.3.3.3 Interrupted Installation with SAPinst

The SAP system installation might be interrupted for one of the following reasons:

■ An error occurred during the dialog or processing phase:
SAPinst does not abort the installation in error situations. If an error occurs, the installation pauses and a dialog box appears. The dialog box contains a short description about the choices listed in the table below as well as a path to a log file that contains detailed information about the error.

■ You interrupted the installation by choosing *Exit* in the SAPinst menu.

The following table describes the options in the dialog box:

Option	Definition
Retry	SAPinst retries the installation from the point of failure without repeating any of the previous steps. This is possible because SAPinst records the installation progress in the `keydb.xml` file. We recommend that you view the entries in the log files, try to solve the problem and then choose *Retry*. If the same or a different error occurs again, SAPinst displays the same dialog box again.
Stop	SAPinst stops the installation, closing the dialog box, the SAPinst GUI, and the GUI server. SAPinst records the installation progress in the `keydb.xml` file. Therefore, you can continue the installation from the point of failure without repeating any of the previous steps. See the procedure below.
Continue	SAPinst continues the installation from the current point.

Procedure

This procedure describes the steps to restart an installation, which you stopped by choosing *Stop*, or to continue an interrupted installation after an error situation.

1. Log on to your remote host as a user who is a member of the local administrators group.
2. Insert the Installation Master DVD in your DVD drive.
3. Enter the following commands at the Windows command prompt:
   ```
   cd <DVD drive>:\IM_WINDOWS<platform>
   sapinst.exe
   ```
4. From the tree structure in the *Welcome* screen, select the installation service that you want to continue and choose *Next*.

   > **Note**
   > If there is only one component to install, the *Welcome* screen does not appear.

   The *What do you want to do?* screen appears.
5. In the *What do you want to do?* screen, decide between the following alternatives and confirm with *OK*.

Alternative	Behavior
Run a new Installation	SAPinst does not continue the interrupted installation. Instead, it moves the content of the old installation directory and all installation-specific files to the backup directory. Afterwards, you can no longer continue the old installation. For the backup directory, the following naming convention is used: `<log_day_month_year_hours_minutes_seconds>` (for example, `log_01_Oct_2003_13_47_56`).
Continue old installation	SAPinst continues the interrupted installation from the point of failure.

2.3.3.4 Starting SAPinst on the Remote Host (Optional)

You can use this procedure to install your SAP system on a **remote** host. In this case, SAPinst and the GUI server run on the remote host, and SAPinst GUI runs on the local host. The local host is the host from which you want to control the installation with SAPinst GUI.

Prerequisites

- You have *prepared your system for SAPinst* [page 43].
- Both computers are in the same network 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>`.

Your Remote Host Runs on a Windows Platform

1. Log on to your remote host as a user who is a member of the local administrators group.
2. Insert the Installation Master DVD in the DVD drive on your remote host.

3. To change to the relevant directory enter the following command:

   cd <DVD drive>:\IM_WINDOWS<platform>

   sapinst.exe —nogui

   For more information, see *Running SAPinst on Windows* [page 48].

   SAPinst now starts and waits for the connection to the SAPinst GUI. You see the following at the command prompt:

   `guiengine:  no GUI connected; waiting for a connection on host <host_name>, port`

   `<port_number> to continue with the installation.`

4. Start SAPinst GUI on your **local** host, as described in *Starting SAPinst GUI Separately* [page 56].

Your Remote Host Runs on a UNIX Platform

1. Log on to your remote host as user `root`.

   ⚠ Caution

   Make sure that the root user has not set any environment variables for a different SAP system or database.

2. Mount the Installation Master DVD.

3. Enter the following commands:

   cd <Installation_Master_DVD>/IM_<OS>

   ./sapinst —nogui

   For more information, see *Running SAPinst on UNIX* in the installation guide for UNIX.

   SAPinst now starts and waits for the connection to the SAPinst GUI. You see the following at the command prompt:

   `guiengine:  no GUI connected; waiting for a connection on host <host_name>, port`

   `<port_number> to continue with the installation.`

4. Start SAPinst GUI on your **local** host, as described in *Starting SAPinst GUI Separately* [page 56].

2.3.3.5 Starting SAPinst GUI Separately (Optional)

You use this procedure to start SAPinst GUI separately. You might need to start SAPinst GUI separately in the following cases:

■ You have logged off from SAPinst.
  If you logged off during the installation and you later want to reconnect to the still running installation, you can start SAPinst GUI separately.
■ You want to perform a remote installation.
  If SAPinst GUI runs on a **different** host than SAPinst and the GUI server, you also have to start SAPinst GUI separately.

Prerequisites

You *have prepared your system for SAPinst* [page 56].

Starting SAPinst GUI on a Windows Platform

1. Log on as a member of the local administrators group.
2. Insert the SAP Installation Master DVD into your DVD drive.
3. To change to the relevant directory enter the following command:

   `cd <DVD drive>:\IM_WINDOWS<platform>`

4. Start SAPinst GUI in one of the following ways:
   - If SAPinst GUI runs on the same host as SAPinst and the GUI server, enter the following command **without** additional parameters:

     `startinstgui.bat`

     SAPinst GUI uses as default the local host.
   - If SAPinst and the GUI server runs on a different host than SAPinst GUI (remote installation), enter the following command **with** additional parameters:

     `startinstgui.bat -host <host_name>`

     `<host_name>` is the host name of the installation host.

     > **Note**
     > - If you enter the command without additional parameters, SAPinst GUI uses as default the local host. SAPinst GUI starts and tries to connect to the GUI server and SAPinst. As SAPinst and the GUI server are running on another host, SAPinst GUI cannot connect and the *SAP Installation GUI Connection* dialog appears.
     >   In this case, enter the host name where SAPinst is running and choose *Log on*.
     >   The first dialog of the installation appears and you can perform the remote installation from your local host.
     > - For a list of options to start SAPinst GUI, change to the same directory as your SAPinst executable and enter the command `startinstgui.bat –h`.

Starting SAPinst GUI on a UNIX Platform

1. Log on as user `root`.

   > **Caution**
   > Make sure that the root user has not set any environment variables for a different SAP system or database.

2. Mount your installation DVD.

   > **Note**
   > Mount the DVD locally. We do **not** recommend that you use Network File System (NFS).

3. To change to the mount directory enter the following command:

   `cd <Installation_Master_DVD>/IM_<OS>`

4. Start the SAPinst GUI in one of the following ways:
   - If SAPinst GUI runs on the same host as SAPinst and the GUI server, enter the following command **without** additional parameters:

     `./startInstGui.sh`

SAPinst GUI uses as default the local host.

■ If SAPinst and the GUI server runs on a different host than SAPinst GUI (remote installation), enter the following command **with** additional parameters:

`./startInstGui.sh -host <host_name>`

`<host_name>` is the host name of the installation host

> 💡 Note
>
> ● If you enter the command without additional parameters, SAPinst GUI uses as default the local host. SAPinst GUI starts and tries to connect to the GUI server and SAPinst. As SAPinst and GUI server are running on another host, SAPinst GUI cannot connect and the *SAP Installation GUI Connection* dialog appears.
> In this case, enter the host name where SAPinst is running and choose *Log on*.
> The first dialog of the installation appears and you can perform the remote installation from your local host.
> ● For a list of options to start SAPinst GUI, change to the same directory as your SAPinst executable and enter the command `./startInstGui.sh —h`.

2.3.3.6 Troubleshooting with SAPinst

The following tells you how to proceed when errors occur during the installation with SAPinst.

If an error occurs, SAPinst:

■ Stops the installation
■ Displays a dialog informing you about the error

Procedure

1. You can directly view the log file by choosing *View Logs*.
2. If an error occurs during the dialog or processing phase, you can:
    ■ Try to solve the problem
    ■ Abort the installation with *Exit*
        For more information, see *Interrupted Installation with SAPinst* [page 54].
    ■ Continue the installation by choosing *Retry*.
3. We recommend that you check the log and trace files of the GUI server and SAPinst GUI in the directory `%userprofile%\.sdtgui\` for errors.
4. If you find error messages in the SDM logs that software components are not available, you can ignore them. For more information, see **SAP Note** 828978.

2.3.4 Installing Application Sharing Server as a Standalone Engine

When you install Application Sharing Server as a standalone engine on a dedicated machine, the NetWeaver Java Application Server (AS-Java) is also installed. In SAPinst, there are no specific input screens for Application Sharing Server; all input screens are related to the installation of the new AS-Java.

> **Note**
>
> If you install Application Sharing Server on machine which already has an AS-Java installed on it, an additional Java system will be installed on that machine. You will then have two engines running on that machine. Typically, this is not recommended as the machine should be fully dedicated to Application Sharing Server.

Prerequisites

■ Make sure that you have read the information provided in section *Application Sharing Server as a Standalone Engine* [page 28].

■ You have a machine that meets the hardware requirements of AS-Java.

Procedure

1. *Start SAPinst* [page 48] on the dedicated machine.
2. In the *Welcome* screen, choose *SAP NetWeaver 2004s* ® *Standalone Engines* ® *RTC Application Sharing Server* ® *<Database>* ® *RTC Application Sharing Server Installation*.
3. To start the installation, choose *Next*.
4. Follow the instructions in the SAPinst dialogs and enter the required parameters.

More Information

Post-Installation Steps for Application Sharing Server [page 115]

2.4 Follow-Up Activities

This section provides information on how to perform the post-installation activities of your SAP system.

You perform the following steps:

1. You *start and stop the SAP system* [page 62].
2. You *log on to the SAP system* [page 63].

Only valid for: Enterprise Portal (EP)

3. You *establish the Enterprise Portal URL* [page 65].

End of: Enterprise Portal (EP)

Only valid for: Enterprise Portal (EP)

4. You *log on to Enterprise Portal* [page 66].

End of: Enterprise Portal (EP)

5. You *check the SAP Java documentation* [page 67].

6. You *start the administration tool of the J2EE Engine* [page 68].

7. You *set up load balancing* [page 69].

8. You *install the SAP license* [page 70].

9. You *install the SAP online documentation* [page 70].

10. You *check the RFC Destination* [page 70].

11. You *configure SAProuter for remote connection to SAP Support* [page 71].

12. You *configure the transport management system* [page 71].

13. You *perform basic operations* [page 71].

14. You *check the configured number of work processes* [page 72].

15. You *activate the integrated Internet Transaction Server* [page 72].

16. If required, you *install additional languages* [page 73].

17. You *apply the latest kernel and Support Packages* [page 73].

18. You *perform a full installation backup* [page 74] .

19. You *configure Single Sign-On with Microsoft Lan Manager SSP* [page 75].

20. You *configure Single Sign-On with Microsoft Kerberos SSP* [page 80].

21. You *access the configuration documentation in the SAP Solution Manager* [page 84].

Only valid for: Application Server (AS)

22. You *create a service user in the ABAP environment* [page 85].

End of: Application Server (AS)

Only valid for: Application Server (AS)

23. You *perform quick tests for the installation of Adobe Document Services* [page 86].

End of: Application Server (AS)

Only valid for: Application Server (AS)

24. You *configure and check the BI Java Connectors* [page 87].

End of: Application Server (AS)

Only valid for: BI Java Components (BI-Java)

25. You *perform the post-installation steps for Business Intelligence Java Components (BI Java)* [page 93].

End of: BI Java Components (BI-Java)

Only valid for: Process Integration (PI)

26. You *perform post-installation steps for Process Integration (PI)* [page 95].

End of: Process Integration (PI)

Only valid for: Development Infrastructure (DI)

27. You *run the Template Installer for Development Infrastructure (DI)* [page 96].

End of: Development Infrastructure (DI)

28. You *activate the Internet Pricing and Configurator* [page 97].

29. You *implement the ERP ABAP Add-On Components* [page 97].

Only valid for: Extended E-Selling Components (XECO)

30. You *check the availability of back-end systems for Extended E-Selling Components (XECO)* [page 97].

End of: Extended E-Selling Components (XECO)

Only valid for: Extended E-Selling Components (XECO)

31. You *perform the post-installation steps for Workforce Deployment Application and Calculation Services for Extended E-Selling Components (XECO)* [page 101].

End of: Extended E-Selling Components (XECO)

Only valid for: Biller Direct

32. You *check the availability of software unit Biller Direct* [page 105].

End of: Biller Direct

Only valid for: Learning Solution (Content Player)

33. You *perform the installation check and configuration for Learning Solution – Content Player* [page 106].

End of: Learning Solution (Content Player)

Only valid for: Business Packages for ERP (BP-ERP)

34. You *perform the post-installation steps for the ERP Business Packages* [page 109].

End of: Business Packages for ERP (BP-ERP)

Only valid for: Business Packages for ERP (BP-ERP)

35. You *install the ERP Business Packages that were not installed by SAPinst* [page 113].

End of: Business Packages for ERP (BP-ERP)

Only valid for: Self Services (XSS)

36. You *configure ERP Business Packages and Self Services* [page 114].

End of: Self Services (XSS)

Only valid for: Enterprise Portal (EP)

37. You *perform the post-installation steps for Application Sharing Server* [page 115].

End of: Enterprise Portal (EP)

Only valid for: Application Server (AS)

38. You *configure access to SAP Knowledge Warehouse content from the SAP Internet Knowledge Servlet* [page 115].

End of: Application Server (AS)

39. You *maintain your company address for initial users* [page 116].

40. You *ensure user security* [page 116].

41. You *prepare the SAP system for using business applications* [page 118].

2.4.1 Starting and Stopping the SAP System

You use this procedure to check that you can start and stop the SAP system after the installation with the SAP Microsoft Management Console (SAP MMC).

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

> **Note**
>
> For more information, see:
>
> `help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Solution Life Cycle Management by Key Capability* ® *Solution Monitoring* ® *Monitoring in the CCMS* ® *Microsoft Management Console: Windows*

Prerequisites

- You have logged on to the SAP system host as user `<sapsid>adm`.
- You have checked the settings for VM parameters as described in **SAP Note** 723909.

Procedure

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

   > **Note**
   > You can also start and stop a UNIX system with the MMC.

2.4.2 Logging On to the SAP System

You need to check that you can log on to the SAP system using the following standard users.

ABAP Users

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

ABAP+Java User

User	User Name Storage: ABAP System
Administrator	`J2EE_ADMIN`

Java Standalone Users

User	User Name Storage: Database	User Name Storage: External ABAP System
Administrator	`Administrator`	You create this user manually during the installation process. **Recommendation** We recommend that you call the user `J2EE_ADM_<SAPSID_Java_System>` The maximum length is **12** characters.

Prerequisites

- You have already started the SAP system.
- You have already installed a front end.

Logging On to the ABAP System

1. Start *SAP Logon* on the host where you have installed the front end as follows:
   - SAP GUI for **Windows**:
     Choose *Start* ® *Programs* ® *SAP Front End* ® *SAP Logon*.
   - SAP GUI for **Java**:
     Choose *Start* ® *Programs* ® *SAP Clients* ® *SAP GUI for Java<Release>*.

     Note
     You can also enter the command `guilogon` in the SAP GUI installation directory to start SAP GUI for Java.

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

Logging On to the J2EE Engine

1. Start a Web browser and enter the following URL:
   `http://<hostname_of_SAP_J2EE_Engine_Server>:5<Instance_Number>00`

⚙️ Example

　　　　If you installed the J2EE Engine on host `saphost06` and the instance number of your J2EE Engine is
　　　　15, enter the following URL:

　　　　`http://saphost06:51500`

　　The start page of the J2EE Engine appears in the Web browser.

2.　Log on by pressing *EXAMPLES* in the upper right corner of the Web page.

💡 Note

　　　　To deactivate the J2EE Engine, use transaction RZ11 to set the parameter `rdisp/j2ee_start` from 1 to **`0`** in
　　　　the instance profile of every installed SAP instance.

| Only valid for: Enterprise Portal (EP) |

2.4.3 Establishing the Portal URL

All portal users, administrators and end users access the portal with a URL using a browser application from
their client machines. You access the Enterprise Portal from your client machine via a browser application by
entering a default URL.

　　The default URL consists of the installation host name and the port on which the portal is listening,
combined as follows:

　　`http://<fully qualified portal machine name>:<HTTP port number>/irj`

⚙️ Example

　　　　If the portal is installed on a computer identified on the network as PORTAL01, and the J2EE instance
　　　　number is 16, enter the following address:

　　　　　　`http://Portal01.sap.corp:51600/irj`

To access the portal using secured socket layer communication (SSL), use the HTTPS protocol and the
corresponding port, as follows:

　　`https://<fully qualified portal machine name>:<HTTPS port number>/irj`

⚙️ Example

　　　　If the portal is installed on a computer that is identified on the network as Portal01, and the J2EE instance
　　　　number is 16, enter the following address:

　　　　　　`https://Portal01.sap.corp:51601/irj`

Calculating the HTTP Port Number of the Portal

The HTTP port number is based on the number of the SAP J2EE instance on which you have installed the
portal, according to the following formula:

　　`HTTP Port = 50000 + (100*<instance number>)`

Example

If the portal is installed on J2EE instance number 01,

   Portal HTTP Port = 50000 + (100 * 1) = 50100

Calculating the HTTPS Port Number of the Portal

The HTTPS port number is based on the following formula:

   ```
   HTTPS Port = 50000 + (100*<instance number>) + 1
   ```

Example

If the portal is installed on SAP J2EE instance number 01,

   Portal HTTPS Port = 50000 + (100 * 1) + 1 = 50101

End of: Enterprise Portal (EP)

Only valid for: Enterprise Portal (EP)

2.4.4 Logging on to the Enterprise Portal for the First Time

User names and passwords are registered in a directory server or a user list. Initially, there is no directory server or user list associated with the portal. To connect to a user list, you have to create a user management configuration. Until you establish a connection with a user list, you log on to the portal using a **default user**. The default user is the *J2EE system administrator*. You provided the user name and password for this user during the SAP system installation.

Note

The default user logon provides you with access to the portal as a fully qualified administrator (super user). After you have logged on, you can work as a portal administrator using your own name and password.

   To do so, make sure that you are registered in the directory server or user list to which your security configuration points and that you are associated with the portal administrative role. Then log on to the portal with your own name and password.

Procedure

1. Open your web browser and enter the portal URL as described in *Establishing the Portal URL* [page 65].
2. Confirm your entry by choosing *Enter*.
    The *Enter Network Password* screen appears.
3. Enter the following information:
    ■ User Name: **<J2EE Administrator name>**
    ■ Password: **<J2EE Administrator password>**
    Once you have logged on to the portal, the installation phase is complete. The portal is now ready to be configured for your chosen IT scenario.
4. Configure the portal as described in the SAP Library at:

`help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *Technology Consultants Guide* ® *Running an Enterprise Portal* ® *<your scenario variant>*

End of: Enterprise Portal (EP)

2.4.5 Checking the SAP Java Documentation

You need to check important information about the configuration of the J2EE Engine and about SAP Java technology in the SAP Library.

Procedure

1. Go to the following place in the documentation:
   `help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Application Platform by Key Capability* ® *Java Technology*.
2. Check the following:

Manual	Contents
Architecture Manual	This manual describes the architecture of a Java or ABAP+Java system. It contains information on: ■ Java cluster architecture including central services, load balancing, and high availability. ■ J2EE Engine system architecture ■ SAP NetWeaver Java development infrastructure, including SAP NetWeaver Developer Studio **Note** The SAP NetWeaver Developer Studio is the SAP development infrastructure for Java. The Architecture Manual describes the integration of the SAP NetWeaver Developer Studio into the SAP development infrastructure.
Administration Manual	This manual describes how to administer the SAP system, focusing on the J2EE Engine. It contains information on: ■ System landscape administration ■ Software life-cycle management **Note** This part of the manual contains important information about:

Manual	Contents
	• Installation information • SAP System Landscape Directory (SLD) • Software Lifecycle Manager (SLM) • Java Support Package Manager • Administration of SAP NetWeaver Java Development Infrastructure (JDI) ■ J2EE Engine and J2EE Engine security ■ Supportability and performance management ■ Administration and configuration of Web Dynpro runtime environment ■ Administration of the XML Data Archiving Service (XML DAS) ⚠ Caution Make sure that you check the mandatory post-installation procedures listed in the Administration Manual under *J2EE Engine* ® *Installation Information* ® *Post-Installation Procedures*.
Java Development Manual	This manual describes the technologies for developing Java-based business applications. It explains how to use the SAP Netweaver Developer Studio, which is the SAP Java development environment.
Migration Manual	This manual contains all the information you need to migrate an application created in J2EE Engine 6.20.

2.4.6 Starting the Administration Tool of the J2EE Engine

This section tells you how to start the Visual Administrator, which is the administration tool of the J2EE Engine.

💡 Note
For more information about the Visual Administrator, see:
`help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Application Platform by Key Capability* ® *Java Technology* ® *Administration Manual* ® *J2EE Engine* ® *J2EE Engine Administration Tools* ® *Visual Administrator*

Procedure

1. Make sure that the `JAVA_HOME` environment variable of the user who runs the administration tool (for example, `<sapsid>adm`), contains the path to the Java Development Kit (JDK) of the J2EE Engine.
2. Make sure that your `DISPLAY` environment variable is set to **`<host_name>:0.0`**, where `<host_name>` is the host on which the administration tool is displayed.
3. Enter the following command to start the administration tool:

   `/usr/sap/<SAPSID>/<Instance_Name>/j2ee/admin/go`

   `<Drive>:\usr\sap\<SAPSID>\<Instance_Name>\j2ee\admin\go.bat`

   The *J2EE Engine — Administration* screen with the dialog box *Connect to J2EE Engine* appears.
4. To connect do the following:

Installation Option	How to Connect
Java system	Choose *Connect* to use the *Default* login and enter the password for the *Administrator* user of the J2EE Engine.

ABAP+Java system	You cannot use the *Default* login. Instead, perform the following steps:
	
	a)
	    Choose *New*.
	
	b)
	    Enter a display name and choose *Direct Connection to a dispatcher Node*.
	
	c)
	    Choose *Next*.
	
	d)
	    Enter at least the following:
	    ■ *User Name*: **J2EE_ADMIN**
	    ■ *Host*: **`<host_name>`** of the J2EE engine
	    ■ Port: **`<P4_Port>`**
	    The following convention applies for the port:
	    5`<Instance_Number_of_SAP_J2EE_Engine>`04. For example, if your J2EE instance number is **15**, the P4port is **51504**.
	
	e)
	    Choose *Save* and connect with your new login account by choosing *Connect*.
	
	f)
	    Enter the password for the *J2EE_ADMIN* user and choose *Connect*.

2.4.7 Setting Up Load Balancing

To distribute requests between multiple SAP instances, you have to set up a load-balancing mechanism.

One possibility is to use the SAP Web Dispatcher, which is delivered with the SAP system software.

For more information about load balancing, see:

`help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Application Platform by Key Capability* ® *Java Technology* ® *Architecture Manual* ® *Java Cluster Architecture* ® *Load Balancing of Java Applications* ® *Load Balancing Between Many Java Instances*.

2.4.8 Installing the SAP License

You must install a **permanent** SAP license. When you install your SAP system, a **temporary** license is automatically installed. This temporary license allows you to use the system for **only four weeks** from the date of installation.

⚠️ Caution

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

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

Procedure

For information about the installation procedure for the SAP license, see:

`help.sap.com/nw2004s` ® *SAP Net Weaver* ® *SAP Net Weaver Library* ® *SAP Net Weaver by Key Capability* ® *Solution Life Cycle Management by Key Capability* ® *SAP Licenses*

More Information

For more information about SAP license keys, see SAP Service Marketplace at `service.sap.com/licensekey`.

2.4.9 Installing the SAP Online Documentation

SAP currently provides an HTML-based solution for the online documentation, including the Application Help, Glossary, Implementation Guide (IMG), and Release Notes. You can display the documentation with a Java-compatible Web browser on all front-end platforms supported by SAP.

You can always find the up-to-date SAP online documentation at `help.sap.com/nw2004s`.

Process

Install the SAP online documentation in your SAP system as described in the `README.TXT` file contained in the root directory of the online documentation DVD, delivered as part of the installation package.

2.4.10 Checking the RFC Destination

In a system configuration where the central and database instance run on **different** hosts, you have to test whether the database host has been correctly set up as a remote function call (RFC) destination. The database host must be defined as an RFC destination to enable the system to access monitoring data that is collected for the database and operating system.

Procedure

1. Choose *Tools* ® *Administration* ® *Network* ® *RFC destinations* or call transaction `SM59`.
    The initial screen of the transaction displays the different RFC connection types.
2. Expand *TCP/IP connections* and double-click *SAPOSCOL_<DB_hostname>*.
    A screen displaying information about the selected destination appears.

3. Choose *Test Connection.*

    If you find that the destination has not been set up correctly, you have to maintain it. For more
    information, see:

    `help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Application Platform by
    Key Capability* ® *ABAP Technology* ® *ABAP Programming and Runtime Environment* ® *External Programming Interfaces* ®
    RFC Programming in ABAP ® *Maintaining Remote Destinations*

2.4.11 Configuring SAProuter for Remote Connection to SAP Support

SAP offers its customers access to support and a number of remote services such as the EarlyWatch Service
or the GoingLive Service. To establish the remote connection to your SAP system, you need the SAProuter
software, which controls and monitors communication between your SAP system servers and the frontend
computers. For more information, see SAP Service Marketplace at `service.sap.com/remoteconnection`.

2.4.12 Configuring the Transport Management System

You configure the domain controller in the Transport Management System (TMS) by calling transaction
STMS.

Procedure

1. In your SAP system, call transaction STMS.
2. Enter the required information to configure the domain controller.

    Note
    If you are not sure how to configure the domain controller, choose *Save* and configure the controller
    later or choose *Information* to display the TMS online documentation.

2.4.13 Performing Basic Operations

You need to perform some basic operations that are described in the SAP documentation.

Procedure

1. Choose `help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Solution Life
    Cycle Management* ® *System Management.*
2. Choose the relevant section to perform the following operations:

Operation	Section in SAP Documentation
Set up operation modes – transaction RZ04	*Configuration* ® *Operation Modes*
Set up logon groups –transaction SMLG	*Configuration* ® *Logon Load Distribution* ® *SAP Logon*
Set up administrators	*Background Processing* ® *Authorizations for Background Processing*
Schedule background jobs	*Background Processing*
Install a printer	*SAP Printing Guide*
Configure the system log	*Tools for Monitoring the System* ® *System log* ® *Configuring the System Log*

2.4.14 Configured Number of Work Processes

SAPinst installs SAP systems with a minimum number of work processes. This is only an initial configuration to get you started after the installation. It is not detailed enough for a production system because the optimal number of each type of work process depends on the system resources and on the number of users working in each SAP system application.

For a detailed configuration contact SAP Technical Consulting.

2.4.15 Activating the Integrated Internet Transaction Server

When you install the SAP kernel, the integrated Internet Transaction Server (ITS) function is installed automatically.

To be able to use the integrated ITS, you must perform the following steps:

■ Configure and activate the Internet Communication Manager (ICM).
■ Make sure that the service that you want to execute and the service
   `default_host/sap/public/bc/its/mimes` are activated in the Internet Communication Framework (ICF).
■ Make sure that in addition to the Internet service that you are going to use, two Internet services systems and web GUIs have been published to site INTERNAL, because objects of these services can also be used by other services.
   To check the publishing status of your system, see:
   `help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Application Platform by Key Capability* ® *ABAP Technology* ® *ABAP Workbench (BC-DWB)* ® *ABAP Workbench: Tools* ® *Web Application Builder for ITS Services* ® *Basic Functions* ® *Publishing a Service* ® *Statuses of Web Development Objects.*

For more information, see:
`help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Application Platform by Key Capability* ® *ABAP Technology* ® *UI Technology* ® *Web UI Technology* ® *ITS/SAP@Web Studio* ® *SAP ITS in the SAP Web Application Server.*

More Information

For additional information about ITS, also see **SAP Note** 742048 . There you can also find the necessary information if you do **not** want to use the integrated ITS.

2.4.16 Installing Additional Languages (Optional)

This section tells you how to install an additional language.

Procedure

1. Configure the language settings according to *Multi-Language and Unicode support* [page 23] by using transaction I18N *I18N Customizing* ® *I18N System Configuration* or by executing report RSCPINST directly. For more information, see **SAP Note** 42305.
2. Perform the language transport using transaction SMLT:
   a) Classify the language.
   b) Schedule the language transport.
   c) Schedule the language supplementation.

> Note
>
> You can also install additional languages later, but if you install any Support Packages in the meantime, you have to do one of the following:
>
> ■ Install the Support Packages again.
> ■ Use the report RSTLAN_IMPORT_OCS to extract the language-relevant information from each Support Package.
>
> For more information about how to transport an additional language, see *Language Transport*, which you can find in either of the following:
>
> ■ SAP Service Marketplace at:
>   service.sap.com/instguidesNW2004s ® *Maintenance*
> ■ SAP Library at:
>   help.sap.com/nw2004s ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Solution Life Cycle Management* ® *Software Life Cycle Management* ® *Software Change Management* ® *Change and Transport System* ® *Language Transport*.

2.4.17 Applying the Latest Kernel and Support Packages

You use this procedure to apply the latest kernel and Support Packages for your SAP system from SAP Service Marketplace.

> ⚠ Caution
>
> You must have applied **all** ABAP Support Packages, before you run CTC online configuration.

You can use Java Support Package Manager (JSPM) to apply both the latest ABAP+Java or Java kernel and Java support packages.

JSPM is a Java standalone tool that you can use with SAP NetWeaver 04s. JSPM uses the Software Deployment Manager (SDM) to apply support packages and patches and to deploy software components.

For more information about JSPM and how to use it, see `help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Solution Life Cycle Management by Key Capability* ® *Software Life Cycle Management* ® *Software Maintenance* ® *Java Support Package Manager*

Procedure

1. Apply the latest kernel.
   You must **always** replace the installed kernel with the latest kernel from SAP Service Marketplace. In particular, you must replace the installed kernel if:
   - You installed the kernel executables locally on every host.
   - Your central instance host runs on a different operating system than your dialog instance host or your gateway instance host.

   For more information about how to download a kernel, see **SAP Note** 19466.

   To exchange the ABAP+Java kernel, you can use Java Support Package Manager (JSPM).

2. Apply Support Packages.
   a) For up-to-date information about recommended combinations of Support Packages and patches, see SAP Service Marketplace at: `service.sap.com/sp-stacks` ® *SAP ERP 2005*.
      For current Support Package Stack release information, see **SAP Note** 849887.
   b) Alternatively, you can download Support Packages from SAP Service Marketplace at:
      `service.sap.com/patches`
   c) Apply Support Packages to your SAP system with the help of the Java Support Package Manager (JSPM).

   For more information about the availability of Support Packages, see the SAP Service Marketplace at:
   `service.sap.com/ocs-schedules`

   > **Note**
   > The SAP Note Assistant lets you load, implement, and organize individual SAP Notes efficiently. It also recognizes dependencies between SAP Notes, Support Packages, and modifications.
   > For more information, see the SAP Service Marketplace at:
   > `service.sap.com/noteassistant`

2.4.18 Performing a Full Installation Backup

You must perform an offline full backup at the end of the installation.

Prerequisites

- You have completed client maintenance (for example, client copy).
- You have stopped:
  - The SAP system
  - SAP-related services (`SAP<SAPSID>_<instance>` and `SAPOSCol`)

● The database

■ You are logged on as user `<sapsid>adm`.

■ You have shut down the SAP system and database.

Procedure

1. Save the registry:
   a) Choose *Start* ® *Programs* ® *Accessories* ® *System Tools* ® *Backup*.
   b) Choose *Emergency Repair Disk*.

      The *Emergency Repair Diskette* dialog box appears.
   c) Select *Also Backup the Registry to the Repair directory…*

      When you confirm your entry, the registry is written to diskette.

2. Save the system state data:
   a) Choose *Start* ® *Programs* ® *Accessories* ® *System Tools* ® *Backup*.
   b) Choose *Backup Wizard* ® *Next*.
   c) Select *Only back up the System State data* and choose *Next*.
   d) In *Where to Store the Backup*, select the *Backup media type* and enter the *Backup media* or *file name*.
   e) Choose *Next*.
   f) Check the information displayed and choose *Finish* to start the backup.

3. Back up all SAP-specific and all database-related directories:
   a) Choose *Start* ® *Programs* ® *Accessories* ® *System Tools* ® *Backup*.
   b) Choose *Backup Wizard* ® *Next*.
   c) Select *Back up selected files, drives, or network data* and choose *Next*.
   d) In *What to back up*, select the Windows directory and all SAP and database-related directories, including:

      `\USR\SAP`

      `<HOMEDIR> of <sapsid>adm`

      `\%WINDIR%`
   e) Choose *Next*.
   f) In *Where to Store the Backup*, select the *Backup media type* and enter the *Backup media or file name* for the backup.
   g) Choose *Next*.
   h) Check the information displayed and then choose *Finish* to start the backup.

2.4.19 Single Sign-On with Microsoft Lan Manager SSP

Single Sign-On (SSO) is a secure method of logging on to the SAP system that simplifies the logon procedure without reducing security. When your system is configured for SSO, an authorized user who has logged on to the operating system can access the SAP system simply by selecting it in the SAP logon window or clicking the shortcut. No SAP system user name or password is necessary. SSO makes it significantly easier for you to manage SAP system users.

In this section, we describe the option that is the easiest to implement when using a full 32-bit Microsoft Windows landscape (Windows 9x, Windows ME, Windows NT, Windows 2000 and higher). It is a tailored version for SSO with Secure Network Communications (SNC), which uses Microsoft's domain authentication, LAN Manager Security Service Provider (NTLM SSP).

For more information on SNC, see the *SNC User's Guide* in the SAP Service Marketplace at
`service.sap.com/security`

Prerequisites

- Typically, SNC requires an external security product that adheres to the Generic Security Service API V2 (GSS-API V2) interface and that has been certified by the SAP Software Partner Program. However, in this scenario, we provide a library that adheres to the GSS-API V2 interface on one side and that communicates with Microsoft's NTLM SSP on the other. Since NTLM SSP is already built into Microsoft Windows 32-bit platforms, you do not need to purchase an additional security product to use SSO.

    Note
    The Microsoft NTLM SSP only provides authentication based on a challenge-response authentication scheme. It does **not** provide data integrity or data confidentiality protection for the authenticated network connection. All third-party SNC certified security products offer data integrity and privacy protection. If you want to use these security features, you have to obtain a certified security product. If you use Windows 2000 and higher, we offer an alternative library (`gsskrb5.dll`) that uses the Microsoft Kerberos SSP instead of the NTLM SSP for authentication. For more information, see *Single Sign-On with Microsoft Kerberos SSP* [page 80].
    We distribute two different versions of the wrapper library for Microsoft's NTLM SSP. The older version is called `gssapi32.dll` and the newer version is called `gssntlm.dll`. For more information about how to get the `gssntlm.dll` file, see **SAP Note** 595341.

- A pure Microsoft Win32 environment is required (Windows 9x, Windows ME, Windows NT, Windows 2000 and higher). The Microsoft NTLM SSP is **not** available for UNIX or any other operating system.
- Bi-directional trust between Windows domains is required if there are separate domains for users, front-end PCs, and SAP application servers.
- The GSS-API V2 library wrapper (`gssntlm.dll`) must be installed on every application server.
- The GSS-API V2 library wrapper must also be installed on every front-end PC.
- We recommend that you use the 7-bit ASCII character set for all Windows user IDs.
- When the code page of the SAP system is different from the code page on the Windows machines, it is not possible to enter Windows user IDs that contain 8-bit characters into the USRACL table (for example, by calling transaction SU01). The combination of Windows ANSI (=ISO Latin 1) and the default SAP code page 1100 provides the same encoding of 8-bit characters and permits the use of 8-bit characters with `gssntlm.dll`.
- For more information on how to improve the security of your system with third-party products, see:
    `help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Security* ® *Network and Transport Layer Security* ® *Secure Network Communications*

Process Flow

To implement SSO with the Microsoft NTLM SSP you:

1. *Prepare the application server for Single Sign-On* [page 77].
2. *Prepare SAP GUI and SAP logon for Single Sign-On* [page 78].
3. *Map SAP system users to Windows users for Single Sign-On* [page 79].

2.4.19.1 Preparing the Application Server for Single Sign-On

1. Start the service *NT LM Security Support Provider*:
   a) Choose *Start* ® *Programs* ® *Administrative Tools* ® *Services*.
   b) Select the service *NT LM Security Support Provider*.
   c) Choose *General*.
   d) Change the startup type from *manual to automatic*.
2. Copy the `gssntlm.dll` file to the following directory on your global host:
   `<DRIVE>:\USR\SAP\<SAPSID>\SYS\EXE\<codepage>\<platform>`
   For more information about how to get the `gssntlm.dll` file see **SAP Note** 595341.
3. Set the environment variable `SNC_LIB` to the location of the library.
4. In the central instance profile, set the following SNC parameters:
   `snc/data_protection/max =1`
   `snc/data_protection/min =1`
   `snc/data_protection/use =1`
   `snc/enable =1`
   `snc/gssapi_lib =`
   `(<DRIVE>:\USR\SAP\<SAPSID>\SYS\EXE\<codepage>\<platform>\<gssntlm.dll>)`
   `snc/identity/as =p:<DOMAIN_NAME>\SAPService<SAPSID>`
   `SAPService<SAPSID>` is the user who runs the SAP system.
   `<DOMAIN_NAME>` is the Windows domain of this user.

   > 💡 Note
   > If you use a local account for `SAPService<SAPSID>`, most operations are successful. However, any
   > operations or communications where the SAP system initiates SNC-protected communication to
   > a remote machine, do **not** work with a local account for `SAPService<SAPSID>`. Therefore, use a
   > domain account.

   Additional SNC Parameters
   The following profile parameters let you continue with password-based access to the SAP system when SNC
   has been enabled. To log on to the SAP system as an administrator to maintain the mapping of Windows
   user accounts to SAP system user IDs (user and client), you have to use these additional parameters at least
   once after enabling SNC. Once the mapping (at least for the administrator) has been entered, you can
   disable further password-based logons by removing the respective profile parameters.
   `snc/accept_insecure_cpic =1`
   `snc/accept_insecure_gui =1`
   `snc/accept_insecure_rfc =1`
   `snc/permit_insecure_start =1`
   `snc/permit_insecure_comm =1`
5. Stop and restart the SAP system to activate the profile parameters. Changes to SNC profile parameters
   always require an application server restart to take effect.

2.4.19.2 Preparing SAP GUI and SAP Logon for Single Sign-On

You need to perform this procedure as part of *Single Sign-On with Microsoft LAN Manager SSP* [page 75].

Prerequisites

You have completed *Preparing the Application Server for Single Sign-On (SSO)* [page 77].

Procedure

1. Copy the `gssntlm.dll` file to the SAP GUI directory.
   For downloading the `gssntlm.dll` file, see **SAP Note** 352295.
2. Set the Windows environment variable `SNC_LIB` on the PC where your SAP GUI runs.
   The variable specifies the path to the `gssntlm.dll` file. You can do this using one of the following methods:
   - Copy `gssntlm.dll` to a location of your choice and set the environment variable `SNC_LIB` to that location, for example,
     `<DRIVE>:\<SAPGUI_PATH>\gssntlm.dll`
     a) Right-click *My Computer* and choose *Properties* ⓡ *Advanced* ⓡ *Environment Variables*.
     b) In *User Variables for <user>* enter the following:
        Variable: **SNC_LIB**
        Value: **<DRIVE>:\<SAPGUI_PATH>\gssntlm.dll**
     c) Confirm your entries with *OK*.
     d) To activate the new environment variable setting, log off and log on to your Windows system again as the same user.
   - Copy `gssntlm.dll` to a directory of the default search path, for example, `%SystemRoot%\system32` and rename the file to `sncgss32.dll` This is the default file name that SNC uses when `SNC_LIB` is neither entered on the command line nor available in the environment.
3. Set the required logon options to activate SSO:
   a) In the SAP logon window, right-click an entry and choose *Properties*.
   b) Select the *Network* tab and activate *Activate Secure Network Communication*.
   c) In the *SNC name* field, enter:
      `p:<DOMAIN_NAME>\SAPService<SAPSID>`
      `<DOMAIN_NAME>` is the Windows domain that the user `SAPService<SAPSID>` belongs to.

   > Example
   >
   > If the system HWA is running on account `SAPServiceHWA` of the `DEC_NT` domain, you enter:
   > `p:DEC_NT\SAPServiceHWA`

Result

The SAP Logon window now displays an icon with a small yellow key beside the system entry. This indicates that SSO is active.

   When the SAP administrator has entered the *mapping* [page 84] between a user's Windows Account and the user's SAP system user ID, the next time this SAP system user logs on to the system, the application is opened without requiring the user to enter a user name and password.

If only one possible match exists between the Windows account and the SAP system user ID, the logon screen is skipped, unless the profile parameter `snc/force_login_screen = 1` is present in the instance profile of the application server.

2.4.19.3 Mapping SAP System Users to Windows Users for Single Sign-On

You need to perform this procedure as part of *Single Sign-On with Microsoft LAN Manager SSP* [page 75]. When you have configured your system, you can enable SAP system users to log on with Single Sign-On (SSO) by mapping them to Windows users.

Prerequisites

You have completed the following procedures:

- *Preparing the Application Server for Single Sign-On* [page 77]
- *Preparing SAP GUI and SAP Logon for Single Sign-On* [page 78]

Procedure

1. Log on to the SAP system.
2. Choose *Tools* ® *Administration* ® *User Maintenance* ® *Users* or call transaction SU01.
   The *User Maintenance* window appears.
3. Enter the name of the SAP system user and choose *User names* ® *Change*.
4. Choose *SNC*.
5. In *SNC name*, use **uppercase** to enter the name of the Windows user that is to be assigned to the SAP system user:

   `p:<DOMAIN_NAME>\<NT_USERNAME>`

   `<DOMAIN_NAME>` is the Windows domain that the Windows user belongs to `<NT_USERNAME>` is the logon ID of the Windows user.

   p is a prefix that all SNC names require.

   > **Example**
   >
   > For the Windows user `Kissnerj`, belonging to the domain `SAP_ALL`, enter:
   >
   > `p:SAP_ALL\Kissnerj`

6. Select *Insecure communication permitted*.
   This lets the user work in a different domain because it permits the user to access the system without SSO.
7. Save your entries.

Result

You have now finished setting up SSO.

2.4.20 Single Sign-On with Microsoft Kerberos SSP

Kerberos Single Sign-On (SSO) is a secure method of logging on to the SAP system that simplifies the logon procedure without reducing security. It is suitable if you use Windows 2000 and higher in your system landscape.

When your system is configured for SSO, an authorized user who has logged on to Windows can access the SAP system simply by selecting it in the SAP logon window or clicking the shortcut. No SAP system user name or password is necessary. SSO makes it significantly easier for you to manage SAP system users.

The Application Programming Interface (API) and Kerberos provide the security required for authentication. The advantage of the Kerberos SSO solution is that the security information that has to be exchanged between the SAP front end and the SAP application server is encrypted. In contrast, encryption is **not** implemented for SSO with Microsoft NTLM SSP, which is based on the Generic Security Service API (GSS-API) interface

> **Example**
>
> When using `gsskrb5.dll`, the Microsoft Kerberos Security Service Provider (SSP) is interoperable with Kerberos implementations from other vendors and suppliers. To use SSO with application servers on UNIX and Windows front ends with `gsskrb5.dll`, you might have to purchase a Kerberos implementation for the UNIX machines.

Prerequisites

SSO based on Kerberos can only be set up for users that are members of a Windows 2000 and higher domain.

Process Flow

To implement SSO with the Microsoft Kerberos NTLM SSP, you have to:

1. *Prepare the central instance* [page].
2. *Configure the SAP front ends* [page].
3. *Configure the SAP logon* [page].
4. *Map SAP users to Windows users* [page].

2.4.20.1 Preparing the Central Instance

To set up Single Sign-On (SSO) for Kerberos, you need to adapt the central instance profile and make sure that the necessary Dynamic Link Library (`DLL`) is located in the Windows directory.

Procedure

1. Copy the `gsskrb5.dll` file to the following directory on the central instance:
   `Drive:\%windir%\system32`.
   For more information about how to get the `gsskrb5.dll` file, see **SAP Note** 595341.
2. In the instance profile of the central instance, set the SAP parameters:
   `snc/enable = 1`
   `snc/gssapi_lib =<DRIVE>:\%windir%\system32\gsskrb5.dll`
   `snc/identity/as =p:SAPService<SAPSID>@<DOMAIN_NAME>`

<DOMAIN_NAME> is the Windows domain that the SAPService<SAPSID> user belongs to, for example, NT5.SAP-AG.DE.

⚠ Caution

<DOMAIN_NAME> and the SAPService<SAPSID> user are case-sensitive. Make sure that you enter uppercase and lowercase correctly, for example:
p:SAPServiceC11@NT5.SAP-AG.DE.

💡 Note

Although you can freely choose the Windows account under which the SAP system runs, it is normally SAPService<SAPSID>.

If you use a local account for the SAPService<SAPSID> user, most operations are successful. However, any operations or communications where the SAP system initiates SNC-protected communication to a remote machine, do not work with a local account for the SAPService<SAPSID> user. Therefore, use a domain account.

In the central instance profile, set the following SNC parameters:

snc/data_protection/max =1

snc/data_protection/min =1

snc/data_protection/use =1

snc/enable =1

snc/gssapi_lib =

(<DRIVE>:\USR\SAP\<SAPSID>\SYS\EXE\<codepage\<platform>\<gssntlm.dll>)

snc/identity/as =p:<DOMAIN_NAME>\SAPService<SAPSID>

SAPService<SAPSID> is the user who runs the SAP system.

<DOMAIN_NAME> is the Windows domain of this user.

💡 Note

■ Although you can freely choose the Windows account under which the SAP system runs, it is normally SAPService<SAPSID>.

■ If you use a local account for SAPService<SAPSID>, most operations are successful. However, any operations or communications where the SAP system initiates SNC-protected communication to a remote machine, do **not** work with a local account for SAPService<SAPSID>. Therefore, use a domain account.

Additional SNC Parameters

The following profile parameters let you continue with password-based access to the SAP system when SNC has been enabled. To log on to the SAP system as an administrator to maintain the mapping of Windows user accounts to SAP system user IDs (user and client), you have to use these additional parameters at least once after enabling SNC. Once the mapping (at least for the administrator) has been entered, you can disable further password-based logons by removing the respective profile parameters.

snc/accept_insecure_cpic =1

snc/accept_insecure_gui =1

snc/accept_insecure_rfc =1

```
snc/permit_insecure_start =1
snc/permit_insecure_comm =1
```

3. Stop and restart the SAP system so that the profile parameters take effect.

2.4.20.2 Configuring the SAP Front End

To configure the SAP front end for SSO, you choose between the following approaches:

■ Configure each SAP front end individually
   You configure each machine where the SAP front end is running.
■ Configure all SAP front ends automatically
   You define a *Group Policy* for a Windows domain. This policy causes the wizard for configuring SSO to be
   started automatically in the background the next time any member of the domain logs on to an SAP
   front end.

These approaches are described below.

Prerequisites

You have completed *Preparing the Central Instance* [page 80].

Configuring SAP Front Ends Individually

1. Log on to the host where the SAP front end is running.
2. Copy the SAPSSO.MSI program to a local directory or to a shared directory on the network.
    For downloading the `SAPSSO.MSI` file, see **SAP Note** 352295.
3. Double-click the `SAPSSO.MSI` file.

The wizard *SAP Kerberos SSO Support* automatically starts and configures the SAP front end for SSO.

Configuring SAP Front Ends Automatically

1. Log on to a front-end machine as domain administrator of the Windows domain.
2. Copy the program `SAPSSO.MSI` to a **shared** directory.
    For more information about how to get the `SAPSSO.MSI` file, see **SAP Note** 595341.
3. Choose *Start* ® *Programs* ® *Administrative tools* ® *Active Directory Users and Computers*.
    The dialog box *Active Directory Users and Computers* appears.
4. Right-click the domain for which you want to set up SSO and choose *Properties*.
    The dialog box `<Domain_Name>` Properties appears.
5. Choose *Group Policy* ® *New to start creating a new policy object*.
    The dialog box for creating a new policy object appears.
6. In Group *Policy Object Links*, enter a name for the new policy object, such as `SAPSSO`.
7. Choose *Edit* to define the contents of the policy.
8. In the *Group Policy Editor* choose *User Configuration* ® *Software Settings* ® *Software Installation*.
    The *Deploy Software* dialog box appears.
9. Right-click *Deploy Software* and choose *New* ® *Package*.
    The *Open* dialog box appears.

10. Select the file `SAPMSSO.MSI` from the shared location.
11. Specify the path with the UNC name (`\\<hostname>\<share>`).
12. Select *Assign* and confirm with *OK*.

You have now created a new *Group Policy*.

   The next time any user logs on to the domain with the SAP front end, the wizard *SAP Kerberos SSO Support* automatically starts and configures the front end for SSO.

2.4.20.3 Activating Single Sign-On for the SAP Logon

The *SAP Logon* window includes a list of systems or machines that you can log on to. For each of the systems or machines in the list for which you want to implement SSO, follow the procedure below.

Prerequisites

■ You have completed the following:
   ● *Preparing the Central Instance* [page 80]
   ● *Configuring the SAP Front End* [page 82]

Procedure

1. Right-click an entry in the *SAP Logon* window and choose *Properties*.
2. In the *Network* tab, select *Activate Secure Network Communication.*.
3. In *SNC name*, enter:
    `p:SAPService<SAPSID>@<DOMAIN_NAME>`
    where `<DOMAIN_NAME>` is, for example, `NT5.SAP-AG.DE.`

    > 💡 Note
    > Enter the same string that you entered in the central instance profile for
    > `snc/identity/as`
    > If the system *C11* is running on account `SAPServiceC11` of the domain `NT5.SAP-AG.DE`, you would enter:
    > `P:SAPServiceC11@NT5.SAP-AG.DE`

    > 💡 Note
    > If the entry you selected in the logon dialog box is a group entry, for example, *C11 (PUBLIC)*, the *SNC name* field is already filled.

4. Choose *OK* to confirm your entries.

The *SAP Logon* window now displays an icon with a key beside the system entry. This indicates that Single Sign-On is active for the system.

2.4.20.4 Mapping SAP Users to Windows Users

Prerequisites

You have completed the following:

■ *Preparing the Central Instance* [page 80]
■ *Configuring the SAP Front End* [page 82]
■ *Activating Single Sign-On for the SAP Logon* [page 83]

Procedure

1. Log on to the SAP system as administrator.
2. Choose *Tools* ® *Administration* ® *Maintain Users* ® *Users* or call transaction SU01.
   The *User Maintenance* window appears.
3. Enter the name of the SAP user and choose *User names* ® *Change*.
4. Choose *SNC*.
5. In *SNC name*, use **uppercase** to enter the name of the Windows user that is to be assigned to the SAP user:
   `p:<WINNT_USERNAME>@<DOMAIN_NAME>`
   where `<WINNT_USERNAME>` is the logon ID of the Windows user and `<DOMAIN_NAME>` is the Windows domain that the user is logged on to.

   > Example
   >
   > For the user *Kissnerj*, belonging to the domain `NT5.SAP-AG.DE` , enter:
   > `p:kissnerj@NT5.SAP-AG.DE`

6. Select *Insecure communication permitted.*
   This lets the user work in a different domain because it permits the user to access the system without SSO.
7. Save your entries.

Result

Kerberos SSO is now set up.

2.4.21 Accessing Configuration Documentation in the SAP Solution Manager

To access configuration documentation in the SAP Solution Manager, you have to connect your newly-installed SAP system to the SAP Solution Manager.

> Note
>
> For SAP NetWeaver 2004s usage types you can also find configuration documentation in the Implementation Guide at:
> `help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *Technology Consultant's Guide*

Prerequisites

■ You have installed an SAP Solution Manager system as described in the documentation *Component Installation Guide − SAP Solution Manager <Release> on <OS>: <Database>*.

■ You have connected your SAP system to the SAP Solution Manager as described in the documentation *Configuration Guide − SAP Solution Manager <Release>*.

For more information, see SAP Service Marketplace at `service.sap.com/solutionmanager` ® *Installation Guides* .

Procedure

1. Log on to your SAP Solution Manager system.
2. To be able to access configuration documentation, create a project as follows:
    a) Create your project with transaction SOLAR_PROJECT_ADMIN for project administration.
    b) Connect your SAP system to the SAP Solution Manager with transaction SMSY for the SAP Solution Manager system landscape.
    c) Create a project structure and add the required scenarios for your SAP system to your project structure with the Business Blueprint transaction SOLAR01,
    d) Add your SAP system configuration structures to your project structure with the configuration transaction SOLAR02.

    For more information about creating projects, assigning scenarios to projects, and creating configuration structures, see:

    `help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Solution Life Cycle Management by Key Capability* ® *SAP Solution Manager* ® *Using the SAP Solution Manager in Projects*
3. Go to the project structure folder `<project name>` using transaction SOLAR02.
4. Access configuration documentation for SAP NetWeaver usage types at *Configuration* ® *SAP NetWeaver 2004s*.
5. Access configuration documentation for all areas of SAP ERP 2005 at *Configuration* ® *mySAP ERP 2005*.
    Here you can also find documentation about how to use the Extended Configuration Management (XCM) Administration Tool.

Result

You can now configure your SAP system according to the configuration documentation in the SAP Solution Manager.

Only valid for: Application Server (AS)

2.4.22 Creating a Service User in the ABAP Environment

1. Log on to the AS-ABAP system to the client specified in the profile parameter `login/system_client`.
2. Choose transaction `SU01` (*User Management*).
3. Enter the name **ADS_AGENT** in the *User* field and choose *User* ® *Create*.
4. Choose the *Logon data* tab and assign a password.
5. Choose *Service* as the user type for `ADS_AGENT`.
6. Choose the *Role* tab and assign the role `SAP_BC_FP_ICF` to the user `ADS_AGENT`.

> 💡 **Note**
>
> You can copy the role `SAP_BC_FP_ICF` first. For more information, see:
> <u>help.sap.com/nw2004s</u> ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Security* ®
> *Identity Management* ® *Users and Roles (BC-SEC-USR)* ® *SAP Authorization Concept* ® *Organizing Authorization*
> *Administration* ® *Organization if You Are Using the Profile Generator* ® *Role Maintenance* ® *Role Maintenance*
> *Functions* ® *Changing Standard Roles*

7. Save your settings.

| End of: Application Server (AS) |

| Only valid for: Application Server (AS) |

2.4.23 Installation Check - Quick Tests for Adobe Document Services

With these quick tests you can check whether your entries for the user, security role, passwords, and RFC
destination are correct.

2.4.23.1 Checking the User and Password

1. Enter the following URL in your web browser:
   `http://<server>:<port>/AdobeDocumentServices/Config` where `<server>`
   is the name of the J2EE engine where the Adobe document services are installed, and `<port>` is
   the port of the J2EE engine.

   > 💡 **Note**
   >
   > Note that the entries in the URL are case-sensitive.

2. The web page of the Web service *AdobeDocumentServices* is displayed. Choose *Test*.
3. Choose *rpdata(test...)*.
4. Choose the *Send* button without entering any parameters.
5. Enter `ADSUser` as user name and the password you entered for this user previously.
6. Choose *Submit*.

Result

If the setup is correct, the system displays the version number in the response area.
   If the setup is not correct, the page does not change and *Submit* remains on the screen.

2.4.23.2 Checking the ABAP Connection

1. Log on to your SAP System.

2. Call transaction `SE38`.
3. Enter the name of the test report **FP_PDF_TEST_00**.
4. Choose *Execute* (⌷ **F8** ⌷).

Result

If the setup is correct, the system displays the version number.

If the setup is not correct, the system displays a dialog box with input fields for the user and password. Check your settings for the ABAP connection.

| End of: Application Server (AS) |

| Only valid for: Application Server (AS) |

2.4.24 Configuring and Checking the BI Java Connectors

2.4.24.1 Configuring the BI Java Connectors

Configure the BI Java Connectors as follows:

1. Check the prerequisites in the table below.
   Depending on the connector you want to use, specific prerequisites may be necessary.

Connector	Prerequisites
BI JDBC Connector	If you have not already done so, you must first deploy your data source's JDBC driver, performing the following steps:
	a) Start the Visual Administrator. If you do not know how to start, see section *How to start the SAP J2EE Administration Tool*.
	b) In the Cluster tab select *Server x* ® *Services* ® *JDBC Connector*.
	c) In the right frame, select the node *Drivers* on the *Runtime* tab.
	d) From the icon bar choose *Create New Driver or Data source*.
	e) In the *DB Driver* field in the *Add Driver* dialog box, enter a name of your choice for your JDBC driver.
	f) Navigate to your JDBC driver's JAR file and select it.
	g) To select additional JAR files, select *Yes* when prompted; if finished, select *No*.

Connector	Prerequisites
	💡 Note If any changes are made to the JDBC Connector, the properties all need to be added and re-saved (see *Services* ® *Connector Container* ® *JDBC Connector* ® *Managed connections tab* ® *Properties*.
BI ODBO Connector	As the ODBO connector leverages Microsoft's OLE DB for OLAP, this connector can only be used on Windows 2003 systems.
BI SAP Query Connector	No prerequisites.
BI XMLA Connector	No prerequisites.

2. Start the Visual Administrator.

3. In the *Cluster* tab, choose *Server <x>* ® *Services* ® *Connector Container*.

4. In the *Runtime* tab (right frame), choose the tab *Managed Connection Factory* ® *Properties*.

5. You configure the properties for each connector as follows:

   a) In the *Connector Container* box select the connector (*Connectors* ® *Connector 1.0*) that you want to configure. If you have selected a connector, you can configure it in the already opened *Properties* tab.

   b) Configure each connector according to the tables below.

   c) When you have configured a connector, choose *Add* on the *Properties* tab to transfer the changes into the active properties and save your settings.

Connection Properties for the BI JDBC Connector

Property	Description	Examples
USERNAME	Data source user name User with at least reading authorization for the data source. (These authorizations differ according to the used data source.)	(your user name)
PASSWORD	Data source password	(your password)
URL	URL string specifying the location of a database (used by the `java.sql.DriverManager` to determine which driver to use)	`jdbc:inetdae7:domain:port? database=mydatabase`
DRIVERNAME	Class name of JDBC driver used for this connection	`com.inet.tds.TdsDriver`
FIXED_CATALOG	**Optional** Restriction of metadata access to metadata contained in specified catalog. *Null* means no restriction.	null (no restriction) xyz (restrict to catalog "xyz")

Property	Description	Examples
FIXED_SCHEMA	**Optional** Restriction of metadata access to metadata contained in specified schema. *Null* means no restriction.	null (no restriction) xyz (restrict to schema "xyz")
LANGUAGE	**Optional** Two-letter abbreviation of language. The language property specifies the language of exceptions evoked on the BI Java SDK layer. JDBC databases themselves do not support this property.	EN = English DE = German
LOGON_AS_USER_ID	**Optional** User name of a given windows domain account. Empty string means property not set.	(your username)
LOGON_AS_USER_PASSWORD	**Optional** Password for a given windows domain account. Empty string means property not set.	(your password)
LOGON_AS_USER_DOMAIN	**Optional** Windows domain account name. Empty string means property not set.	(a Windows domain name)

Note

For the BI JDBC Connector only:

Configure a reference to your JDBC driver using the steps below:

1. In the *Connector Container* box, choose the BI JDBC Connector in the *Connectors* tree.
2. Choose the *Resource Adapter* tab.
3. In the *Loader Reference* box, choose *Add* to add a reference to your JDBC driver.
4. Enter `library:<jdbc driver name>` and choose *OK*.
   The `<jdbc driver name>` is the name you entered for your driver in step 1 above.
5. Save your settings.

Connection Properties for the BI OBDO Connector

Property	Description	Examples
USERNAME	Data source user name User with at least reading authorization for the data source. (These authorizations differ according to the used data source.)	(your user name)

Property	Description	Examples
PASSWORD	Data source password	(your password)

CONNECTION_STRING	Connection string information such as provider name, file name, remote provider, remote server, and URL.
	
	💡 Note
	    For BW OLAP providers, to completely suppress the SAP Logon screen at runtime, make sure that you also provide values for the USERNAME, PASSWORD, and LANGUAGE properties above. If you want to evoke the logon screen, you might specify the *ConnString* property only.
	
	Preconfigured value:
	`Data Source="C:\\public\Sales.cub"; Provider=msolap`
		Local cube:
		`Provider=MSOLAP;Location = "c:\public\Sales Overview.cub"`
		Microsoft Analysis Server:
		`Provider=MSOLAP;data source=palbiteam`
		BW OLAP provider:
		`Data Source=BWP;Provider=MDrmSAP; SFC_CLIENT=010;SFC_LANGUAGE=EN`

💡 Note
    The BI ODBO Connector can only be configured against a local cube file.

💡 Note
    For the set of connection properties relevant for your system, refer to the JCo documentation in your JCo download.

      If you have troubles establishing a connection to a server that does not have a PUBLIC logon group, try removing the properties for `R3NAME` and `SERVERGROUP`. For more connection troubleshooting information see the JCo documentation on SAP Service Marketplace (`service.sap.com/connectors`).

Connection Properties for the BI SAP Query Connector

Property	Description	Examples
USERNAME	Data source user name User with at least reading authorization for the data source. (These authorizations differ according to the used data source.)	(your user name)
PASSWORD	Data source password	(your password)
LANGUAGE	Two-letter abbreviation of language The language property sets the logon language for your system and also specifies the language of exceptions evoked on the BI Java SDK layer.	`EN` = English `DE` = German

Property	Description	Examples
CLIENT	Client specified as three-digit integer	`000`
MESSAGESERVER	Host name for message server	`server1.mydomain.com`
APPLICATIONSERVER	Host name for application server	`server1.mydomain.com`
SYSTEMNUMBER	Two-digit integer identifying the R/3 instance	`00`
SERVERGROUP	Logon group for load balancing	a string, such as `PUBLIC` or `SPACE`
R3NAME	R/3 name	`OSS`

Connection Properties for the BI XMLA Connector

Property	Description	Examples
USERNAME	Data source user name User with at least reading authorization for the data source. (These authorizations differ according to the used data source.)	(your user name)
PASSWORD	Data source password	(your password)
LANGUAGE	**Optional** Two-letter abbreviation of language The language property specifies the language of exceptions evoked on the BI Java SDK layer. JDBC databases themselves do not support this property.	`EN` = English `DE` = German

URL	Server URL
	You can find the URL of a BW XMLA provider by executing the function module `RSBB_URL_PREFIX_GET` in transaction `SE37`.
	For the import parameters of the function module, use the following values:
	■ `I_HANDLERCLASS = CL_RSR_MDX_SOAP_HANDLER`
	■ `I_PROTOCOL = HTTP`
	■ `. = X`
	The URL path is always
	`*/sap/bw/xml/soap/xmla`
		BW XMLA provider:
		`http://[domain:port]/sap/bw/xml/soap/xmla`
		MS Analysis Server:
		`http://[domain:port]/isapi/msxisapi/dll`

DATASOURCE	Data source info property	Local Analysis Server

Property	Description	Examples
STATEFULNESS	**Optional** Statefulness support. Default is `false`.	`true` or `false`
LOGONMETHOD	Specifies authentication mechanism (logon method).	**UIDPW** Log on to your XMLA provider using User/Password. Use this method for XMLA-based access to BW providers. This is the sole authentication method supported in the unmanaged environment. **SAPLOGONTICKET** Log on to your XMLA provider using SAP Logon Ticket (supported by SAP BW XMLA providers). If you want to use the SAP Logon Ticket (SSO) to access BW systems, use this property .

> **Note**
>
> **For the BI XMLA Connector only:**
>
> If you are using the `SAPLOGONTICKET` authentication method, configure BW to accept user\SAPLogonTicket pairs for authentication (instead of only user\password pairs) using the procedures below:
>
> 1. Configure SSO between the J2EE engine and the SAP BW system (so that ABAP accepts SSO from the J2EE engine) using the instructions at `help.sap.com` ® *Documentation* ® *SAP NetWeaver* ® *Security* ® *User Authentication and Single Sign-On* ® *Authentication on the J2EE Engine* ® *Configuring Authentication Mechanisms* ® *Using Logon Tickets for Single Sign-On* ® *Configuring the Use of Logon Tickets* ® *Configuring the SAP Web AS ABAP to Accept Logon Tickets from the J2EE Engine.*
> 2. Configure SSO between the SAP BI system and the J2EE engine (so that the J2EE engine accepts SSO from ABAP) using the instructions at `help.sap.com` ® *Documentation* ® *SAP NetWeaver* ® *Security* ® *User Authentication and Single Sign-On* ® *Authentication on the J2EE Engine* ® *Configuring Authentication Mechanisms* ® *Using Logon Tickets for Single Sign-On* ® *Configuring the Use of Logon Tickets* ® *Configuring the J2EE Engine to Accept Logon Tickets.*
>
> Configure BI to accept user\SAPLogonTicket pairs for authentication (instead of only user\password pairs) using the procedure below.

> **Note**
>
> **For the BI XMLA Connector only:**
>
> If an error occurs when configuring and testing the BI XMLA Connector, apply SAP Note 863672.

2.4.24.2 Checking the Connectors Implementation

After the configuration of the different connectors, you can perform a rough installation check by just displaying the different connector pages.

Connector	URL	Result
BI JDBC Connector	`http://<host:port>/TJdbc/servlet/TestJdbc`	A list of Cubes and/or tables is displayed.
BI ODBO Connector	`http://<host:port>/TOdbo/servlet/TestOdbo`	
BI SAP Query Connector	`http://<host:port>/TSapq/servlet/TestSapq`	
BI XMLA Connector	`http://<host:port>/TXmla/servlet/TestXmla`	

Note

Your connector is now ready for use in a managed environment.

You can also clone an existing connection by using the *Clone* button in the toolbar.

For *Universal Data Connect (UD Connect)* only:

When entering the resource adapter name during the cloning process, you must prefix the name with `SDK_` in order to properly recognize the connector.

Note

If you encounter problems when saving your configuration data, the corresponding connector might be not up and running. You will have to stop and restart the application in the deploy service of the Visual Administrator.

End of: Application Server (AS)

Only valid for: BI Java Components (BI-Java)

2.4.25 Post-Installation Steps for Usage Type BI Java

The following post-installation steps are performed by SAPinst automatically. If you want to adjust existing parameters or set additional parameters, you have to perform these steps manually:

2.4.25.1 Configuring BI Java Information Broadcasting

For the configuration of the BI Information Broadcasting you need to carry out the following steps in your ABAP system:

1. Call transaction `SPRO` and carry out the following steps:
   a) **Settings for Information Broadcasting:**
      Go to *SAP NetWeaver* ® *Business Intelligence* ® *Reporting-relevant Settings* ® *Settings for Information Broadcasting*
   b) **Destinations for Web Dynpro ALV:**
      Go to *SAP NetWeaver* ® *Application Server* ® *Web Dynpro for ABAP* ® *Set-Up Printing for Web Dynpro ABAP ALV*
      ▪ Create RFC destination in the SAP NetWeaver Portal
      ▪ Create RFC destination to the SAP NetWeaver Portal
      ▪ Set-Up Web Service destination for the Adobe Document Services
2. **Installation of BI Content:**

Call transaction `RSTCO_ADMIN` to check whether the installation has been carried out successfully. If the installation status is red, restart the installation by calling transaction `RSTCO_ADMIN` again. Check the installation log if you need further assistance or information.

For more information, see SAP Note 834280.

2.4.25.2 Process Chains: Transporting Texts for Alert Category

Alerts can be triggered and sent for BI process chains that contain errors. Defining the alert categories is necessary for this purpose. Alert category `BWAC_PROCESS_CHAIN_FRAMEWORK` is returned for errors in background processing of process chains. This category has set texts that are not transported when the alert category is transported.

Procedure

See SAP Note 601619 *Transporting texts from the alert category* to manually transport the texts.

2.4.25.3 Setting Environment Variable CPIC_MAX_CONV

1. Log on to your operating system as user `<SAPSID>adm`.
2. Set environment variable `CPIC_MAX_CONV` to a higher value (at least **200**) and restart the system.

2.4.25.4 Post-Installation Steps by Configuration Template for Usage Type BI

After SAPinst has finished, you need to run the configuration template `BIPostInstallProcess` using the Template Installer.

> Note
>
> **You can do this only once and only directly after the installation**.

You start the Template Installer for your scenario from the NetWeaver Administrator.

For more information about **how to start the Template Installer** see:

`help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *Technology Consultant's Guide* ® *Developing, Configuring, and Adapting Applications* ® *Creating Java Applications Using Web Dynpro* ® *J2EE Engine Configuration* ® *Template Installer*

For more information on see *Accessing Configuration Documentation in the SAP Solution Manager* [page 84].

End of: BI Java Components (BI-Java)

2.4.26 Post-Installation Steps for Usage Type Process Integration (PI)

You need to perform the following post-installation steps for usage type PI after SAPinst has finished.

2.4.26.1 Assigning SAP_ALL Rights to User XISUPER

1. Log on to your SAP NetWeaver AS-ABAP host as user with SAP_ALL rights (use DDIC or SAP*).
2. Call transaction SU01.
3. Select user XISUPER.
4. Navigate to the *Profiles* tab and switch to change mode.
5. In the row *Profile*, add **SAP_ALL**.
6. Save your settings.

2.4.26.2 Activating the ICF Services

Call transaction SE38 and execute the report RSXMB_ACTIVATE_ICF_SERVICES.
    For more information, see SAP Note 736312.

2.4.26.3 Setting Environment Variable CPIC_MAX_CONV

1. Log on to your operating system as user <SAPSID>adm.
2. Set environment variable CPIC_MAX_CONV to a higher value (at least **200**) and restart the system.

2.4.26.4 Manual Configuration for External or Already Existing SLD

If you use an **external or an already existing System Landscape Directory (SLD)** , you have to execute the following PI-specific steps for the SLD configuration manually:

Procedure

1. *Maintaining SLD Connection Parameters* [page 130]
2. *Checking the CR Data in the SLD (optional)* [page 132]
3. *Checking the SLD Bridge* [page 132]
4. *Maintaining the ABAP Connection* [page 132]
5. *Configuring the SLD Data Supplier Service* [page 132]

2.4.26.5 Post-Installation Steps Performed by Configuration Template for Usage Type PI

After SAPinst has finished and you have performed the necessary *Post-Installation Steps for Usage Type PI* [page 95], you need to run the configuration template `PIPostInstallProcess` by using the Template Installer.

💡 Note

You can do this only once and only directly after the installation.

You start the Template Installer for your scenario from the NetWeaver Administrator.

For more information about **how to start the Template Installer** see:

`help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *Technology Consultant's Guide* ® *Developing, Configuring, and Adapting Applications* ® *Creating Java Applications Using Web Dynpro* ® *J2EE Engine Configuration* ® *Template Installer*

You find configuration documentation in the Implementation Guide in the SAP Library at

`help.sap.com/nw2004s` ® *SAP NetWeaver* ® *Technology Consultant's Guide* ® *<choose your scenario>* ® *Configuration of Usage Type Process Integration (PI)*.

💡 Note

For more information about **how to access the configuration documentation** see *Accessing Configuration Documentation in the SAP Solution Manager* [page 84].

End of: Process Integration (PI)

Only valid for: Development Infrastructure (DI)

2.4.27 Running the Template Installer for Usage Type DI

After SAPinst has finished, you need to run the configuration template `DI Postinstallation` by using the Template Installer.

💡 Note

You can do this only once and only directly after the installation.

You start the Template Installer for your scenario from the NetWeaver Administrator.

For more information about **how to start the Template Installer** see the *SAP Library* under *SAP NetWeaver2004s* ® *SAP NetWeaver Library* ® *Technology Consultant's Guide* ® *Developing, Configuring, and Adapting Applications* ® *Creating Java Applications Using Web Dynpro* ® *J2EE Engine Configuration* ® *Template Installer*

You find configuration documentation in the Implementation Guide in the SAP Library at

`help.sap.com/nw2004s` ® *SAP NetWeaver* ® *Technology Consultant's Guide* ® *<choose your scenario>* ® *Configuration of Usage Type Development Infrastructure(DI)*.

> **Note**
>
> For more information about **how to access the configuration documentation** see *Accessing Configuration Documentation in the SAP Solution Manager* [page 84].

End of: Development Infrastructure (DI)

2.4.28 Activating Internet Pricing and Configurator

If you want to use Internet Pricing and Configurator, you have to enable the Virtual Machine Container (VMC) as described in **SAP Note** 854170.

2.4.29 Implementing ERP ABAP Add-On Components

You can install several Add-On Components to your ERP ABAP system.

Procedure

You find a detailed description about how to implement each available ERP Add-On Component in the related SAP Notes on SAP Service Marketplace at `service.sap.com/erp-inst` ® *mySAP ERP 2005* ® *SAP Notes*

Only valid for: Extended E-Selling Components (XECO)

2.4.30 Checking the Availability of Back-End Systems for Extended E-Selling Components (XECO)

Only valid for: Extended E-Selling Components (XECO)

After the installation, you have to check the availability of back-end systems for Extended E-Selling Components (XECO) as follows:

End of: Extended E-Selling Components (XECO)

1. To test the connection to the ABAP back-end system, you *create a back-end user* [page 97].
2. Depending on various business processes, you check the following back-end systems:
   - *ABAP system* [page 98]
   - *TREX Server* [page 99]
   - *http access to eBay (selling via eBay processes only)* [page 100].

Only valid for: CRM Java Components (JCRM);Extended E-Selling Components (XECO)

2.4.30.1 Creating a Back-End User

You need service users to provide the anonymous remote function call (RFC) stateless connection between your backend system and your Web-based applications.

Prerequisites

You have installed and configured ERP E-Commerce Web-based applications.

Procedure

You create a service user in your backend ERP system and assign it to the Web-based application as follows:

1. In your ABAP back end system in the SAP Easy Access Menu, choose *Tools* ® *Administration* ® *User Maintenance* ® *Users* (transaction SU01).
2. Create a user of the type Service User and enter all required data.
3. Assign the appropriate service user authorization role to the user on the *Roles* tab page. For a list of service user roles for the various Web-based applications, see the following table:

Application	Authorization Role for Service User
B2C	SAP_ISA_B2C_RFC
B2B	SAP_ISA_B2B_RFC
Shop Management	SAP_ISA_SHOPMGMT_RFC
User Management	SAP_ISA_UADM_RFC

4. *Save* your entries.

More Information

Only valid for: Extended E-Selling Components (XECO)

For more information about service users see *mySAP ERP 2005* ® *Basic Settings for Operations* ® *ERP E-Commerce* ® *User Management* in the *SAP Solution Manager* [page 84].

End of: Extended E-Selling Components (XECO)

End of: CRM Java Components (JCRM);Extended E-Selling Components (XECO)

Only valid for: CRM Java Components (JCRM);Extended E-Selling Components (XECO)

2.4.30.2 Checking the Connection to the ABAP System

This section tells you how to check the connection to the ABAP system.

Prerequisites

To be able to test the connection to the ABAP system, you need to *create a user on this system* [page 97].

Procedure

1. Start the Visual Administrator as described in *Starting the Administration Tool of the J2EE Engine* [page 68].
2. Log on to the Visual Administrator with administrator rights.

Only valid for: Extended E-Selling Components (XECO)

💡 Note

If you chose configuration *Use ABAP in the User Management Engine (UME)* [page 121] and selected ERP ABAP as your ABAP back end with UME during the installation, a successful logon to the Visual Administrator means that the ERP ABAP back-end system is available and you have now finished this procedure.

Otherwise, continue with the next step.

End of: Extended E-Selling Components (XECO)

Only valid for: Extended E-Selling Components (XECO)

3. Start an application that uses the ERP ABAP system, if it is stopped:

End of: Extended E-Selling Components (XECO)

a) In the left pane of the Visual Administrator, open `cluster/server/services` and choose *Deploy service*.

b) Select the Application:

Application	Context Root
crm~b2b	b2b
crm~sve	sve

c) To start the selected application, choose *Start*.

4. Open the user interface for the Extended Configuration Management (XCM) Administrator as follows:

a) Open a web browser and enter the following URL:

`http://<host>:<port>/<context root>/admin`

where `<host>` is the host name of the SAP NetWeaver Java system,

`<port>` is the http port and `<context root>` is the context root of the application started in the previous step.

b) In the *Further Information* field, choose *Information how to configure components*.

c) To create a `jco Component`, follow the instructions provided in the *Example of component configuration* field.

If the test described in this example was successful, the ABAP system can be reached from the Java system

More Information

For more information about XCM, see *Accessing Configuration Documentation in the SAP Solution Manager* [page 84].

End of: CRM Java Components (JCRM);Extended E-Selling Components (XECO)

Only valid for: CRM Java Components (JCRM);Extended E-Selling Components (XECO)

2.4.30.3 Configuring and Checking the TREX Service

You need to configure and check the TREX service.

Configuring the TREX Service

1. Start the J2EE Visual Administrator.
2. Connect to the J2EE server.
3. Choose *Server node* ® *Open Services Node* ® *Select TREX Service*.
4. Maintain the values for `nameserver.address` and `nameserver.backupserverlist`.

For more information, see *Specifying the Address of the TREX Name Server* in *Installation Guide — SAP NetWeaver 2004s TREX Single Host* on SAP Service Marketplace at `service.sap.com/instguidesNW2004s`.

Checking the TREX Service

1. Start the application `sap.com/crm~b2b` as described in step 3 of *Checking the ABAP System* [page 98].
2. Open a web browser and enter the following URL:

   `http://<host>:<port>/b2b/admintrex/trex_640.jsp`

   where `<host>` is the host name of the SAP NetWeaver Java system and `<port>` is its http port.

Result

If the connection was established successfully, the message `TREX Server is available` appears.

| End of: CRM Java Components (JCRM);Extended E-Selling Components (XECO) |

| Only valid for: CRM Java Components (JCRM);Extended E-Selling Components (XECO) |

2.4.30.4 Checking the Selling via ebay Processes

To use the selling Via Ebay (SVE) processes, the Java system requires a http connection to `http://www.ebay.com`. To test the connection, you need to create an `XCM component ebayCommunicator` for the `sap.com/crm~sve` application.

Procedure

To create the Extended Configuration Management (XCM) component `ebayCommunicator` using application `sap.com/crm~sve`, proceed as described in *Checking the ABAP System* [page 98].

> 💡 Note
>
> Make sure that you replace `jco component` with `ebayCommunicator component` when following the procedure in *Checking the ABAP System* [page 98].

More Information

For more information about XCM, see *Accessing Configuration Documentation in the SAP Solution Manager* [page 84].

| End of: CRM Java Components (JCRM);Extended E-Selling Components (XECO) |

| End of: Extended E-Selling Components (XECO) |

Only valid for: CRM Java Components (JCRM);Extended E-Selling Components (XECO)

2.4.31 Post-Installation Steps for Workforce Deployment Application and Calculation Services

Only valid for: CRM Java Components (JCRM);Extended E-Selling Components (XECO)

You have to perform the following steps to check and configure Workforce Deployment Application and Calculation Services (WFD AS/CS):

■   You *implement WFMCORE 200 using transaction SAINT* [page 101].
■   You *configure the XCM administration tool for WFD AS/CS* [page 101].
■   You *check WFD calculation services* [page 103].
■   You *check the installation of WFD AS/CS* [page 104].

End of: CRM Java Components (JCRM);Extended E-Selling Components (XECO)

Only valid for: CRM Java Components (JCRM);Extended E-Selling Components (XECO)

2.4.31.1 Implementing WFMCORE 200 Using Transaction SAINT

Before you can check and configure the Java part of Workforce Deployment Application and Calculation Services (WFD AS/CS), you need to implement WFMCORE 200. The WFMCORE 200 component contains all necessary ABAP classes and libraries required for the various Workforce Deployment scenarios, including Service Workforce Deployment, Workforce Deployment Server, and Retail and Interaction Center Workforce Deployment.

Procedure

1.   *Log on to your ABAP system* [page 63].
2.   Install WFMCORE 200 using transaction SAINT as described in **SAP Note** 830595.

End of: CRM Java Components (JCRM);Extended E-Selling Components (XECO)

Only valid for: CRM Java Components (JCRM);Extended E-Selling Components (XECO)

2.4.31.2 Configuring the XCM Administration Tool for WFD Application and Calculation Services

Workforce Deployment Application Services (WFD AS) sends calculation and forecasting requests to a CRM ABAP back-end system. WFD Calculation Services (WFD CS) picks up the requests from this CRM ABAP back-end system. You define the connection to the CRM ABAP back-end system through Extended Configuration Management (XCM) Admin.

For more information about XCM, see *Accessing Configuration Documentation in the SAP Solution Manager* [page 84].

The `cs.jco.xxxxx` XCM parameters define the JCO connection to the SAP CRM ABAP system where the WFD CS maintains forecast and calculation requests. You can connect to the CRM ABAP system using one of the following:

- A message or dispatching server by specifying `cs.jco.mshost`, `cs.jco.group`, and `cs.jco.r3name`
- An application server by specifying `cs.jco.ahost` and `cs.jco.sysnr`

In either case, you must also specify `cs.jco.client`, `cs.jco.user`, and `cs.jco.password`.

XCM Parameter Name	Example Value	Description
`cs.jco.ahost`	`us0091.wdf.sap.corp`	Application server host name of the SAP CRM Calculation Service
`cs.jco.sysnr`	`91`	System number of the R/3 Calculation Service (for example, 09)
`cs.jco.mshost`	`us0091.wdf.sap.corp`	Message server host name of the SAP CRM Calculation Service
`cs.jco.group`	`PUBLIC`	Group of the SAP CRM Calculation Service (case sensitive; for example, PUBLIC)
`cs.jco.r3name`	`Q5C`	System ID of the SAP CRM Calculation Service (for example, IDES)
`cs.jco.client`	`505`	Client of the SAP CRM Calculation Service
`cs.jco.user`		Back end user for JCO connection to the SAP CRM Calculation Service
`cs.jco.password`		Password for the back-end user

You need to configure these `cs.jco.xxxxx` XCM parameter values in each instance of WFD AS and WFD CS. Make sure that the values are the same in all instances.

WFD Calculation Services

This business scenario is relevant for defining the WFD CS. You must perform this XCM configuration for the WFD CS to run.

1. Start the XCM administration tool using the following URL:
   `http://<J2EEHOST>:<J2EEHTTPPORT>/wfdcs/admin/xcm/init.do`.
2. Access the configuration using the following path: *General Application Settings* ® *Customer* ® *sisopt* ® *sisoptconfig*.

Process	Description	Web Application	XCM Application Configurations
Calculations Service	Workforce scheduling application	`wfdcs`	`sisoptconfig`

3. In addition to the `cs.jco.xxxx` XCM parameters, you need to define the http port of the J2EE instance where WFD CS is running:

XCM Parameter Name	Example Value	Description
`cs.http.port`	`51000`	The http port of the web server where the WFD Calculation Services application is running (for example, 50000).

4. Restart the application after saving the XCM configuration.

WFD Application Services

This business scenario is relevant for connecting the WFD AS to the WFD CS.

1. Start the XCM Administration Tool using the following URL:
   `http://<J2EEHOST>:<J2EEHTTPPORT>/wfd/admin/xcm/init.do`

2. Access the configuration using the following path: *General Application Settings* ® *Customer* ® *sis* ® *sisconfig*.

Process	Description	Web Application	XCM Application Configurations
Application Services	Web-based scheduling application	`wfd`	`sisconfig`

3. Restart the application after saving the XCM configuration.

End of: CRM Java Components (JCRM);Extended E-Selling Components (XECO)

Only valid for: CRM Java Components (JCRM);Extended E-Selling Components (XECO)

2.4.31.3 Checking Workforce Deployment Calculation Services

After performing the Extended Configuration Management (XCM) configuration for Workforce Deployment Calculation Services (WFD CS) and restarting the application, you need to go to the WFD CS configuration page to check that it is running.

Prerequisites

■ You have completed the WFD Application Service (AS) and CS installation procedures as described in this documentation.

■ You have downloaded all appropriate content from www.iviewstudio.com.

Only valid for: Extended E-Selling Components (XECO)

For more information about the portal content versions for your release, see the documentation *Master Guide — mySAP ERP 2005 powered by SAP NetWeaver 2004s* at service.sap.com./erp-inst.

End of: Extended E-Selling Components (XECO)

■ You must have access to the *Portal Admin* role in SAP CRM through the Enterprise Portal to complete this part of the WFD AS/CS installation. For more information, see *Configuring the CRM Business Package* on the SAP Service Marketplace at service.sap.com/crm-inst. Section *CRM Portal Administrator* contains specific instructions on configuring the portal for access.

■ You have configured your portal users based on the required settings as described in the configuration documentation for your IT scenario.
For more information, see *Accessing Configuration Documentation in the SAP Solution Manager* [page 84].

Procedure

1. Access the WFD CS configuration page through the Enterprise Portal using the role Portal Administrator.
2. Choose *WFD Calculation Services* ® *Configuration*.
   The *Configuration tab* looks as follows:

Tab	To Complete Installation.	For ongoing Configuration Management
Calculation Servers	Required for at least one calculation server	Required for each additional calculation server
Logging Localization	No	Required to add or change logging once fully operational

End of: CRM Java Components (JCRM);Extended E-Selling Components (XECO)

Only valid for: CRM Java Components (JCRM);Extended E-Selling Components (XECO)

2.4.31.4 Checking the Installation of WFD Application Services and WFD Calculation Services

This section tells you how to check that the Workforce Deployment Application Services (WFD AS) and WFD Calculation Services (WFD CS) Java components are each installed correctly. This section does **not** tell you how to check the connection between the WFD AS and the WFD CS.

   With the procedure below you can create a simple calculation request and verify that the Calculation Server has received the request. This helps you check that all WFD AS/CS components have been correctly installed and are communicating with each other.

Prerequisites

■ You have completed all the installation steps described in this documentation.
■ You have connected WFD AS/CS components with the Enterprise Portal.
■ You have downloaded the appropriate iViews from www.iviewstudio.com. You must download both the iViews for the Interaction Center Manager and Portal Admin roles.

Only valid for: Extended E-Selling Components (XECO)

For more information about the portal content versions for your release, see the documentation *Master Guide — mySAP ERP 2005 powered by SAP NetWeaver 2004s* at service.sap.com./erp-inst.

End of: Extended E-Selling Components (XECO)

Procedure

1. To check that WFD AS is working and listening for HTTP requests, enter the following URL:

`http://<J2EEHOST>:<J2EEHTTPPORT>/wfd/logon.do`.

The following error confirms that the application is working:

`Your session has expired.  Please renew your session by clicking a section link in the Portal menu.`

2. Access the WFD CS from the Enterprise Portal through the `Portal Admin` role and check that the WFD CS page comes up without an error.

   If the page does not come up, possible errors are:

Error Message	Cause
`Missing value for XCM configuration parameter cs.http.port`	The XCM parameter `cs.http.port` was not filled.
`The request could not be completed due to the following errors:<followed by details of the particular error, usually related to the JCO connection>`	One of the XCM parameters `cs.jco.xxxxx` might be incorrect. Example The user or password are incorrect.

3. Test the submission of a calculation request to see if the WFD CS can process the request.
   You can simulate a calculation request submission by executing the RFC `TEST_WFDCS_CALCREQ_SUBMIT` from the CRM back-end system, defined in the `cs.jco.xxxxx` XCM parameters of WFD CS.

   Example

   For example, when you installed WFD CS, you configured the `cs.jco.xxxxx` XCM parameters to point to system ID Q5C ,client 505. You now need to log in to Q5C client 505 and execute `TEST_WFDCS_CALCREQ_SUBMIT` with transaction SE37 using the default import parameters.

4. Check the `Requests` tab of the WFD CS page to check the status of entries with the location name `SMOKETEST`: has the status `FAILED`.
   - Status `FAILED` indicates a successful smoke test. It means that the Request Manager successfully sent the request to the Solver, which successfully processed it.
   - Status `QUEUED` probably means that the XCM parameter `cs.http.port` was incorrect.

End of: CRM Java Components (JCRM);Extended E-Selling Components (XECO)

End of: CRM Java Components (JCRM);Extended E-Selling Components (XECO)

Only valid for: Biller Direct

2.4.32 Checking Biller Direct

After the installation of your SAP system, you check the availability of Biller Direct (BD).

Procedure

Open a web browser and enter the following URL:

`http://<host>:<port>/bd`,

A message is displayed asking you to configure the application using Extended Configuration Management (XCM). This message also indicates that BD is available.

> **Note**
>
> If you want to configure BD using XCM, enter the following URL in your browser:
>
> `http://<host>:<port>/bd/admin/xcm/init.do`
>
> For more information about how to configure BD using XCM, see *Electronic Bill Presentment and Payment* of the *SAP Solution Manager* [page 84].
>
> To activate the new settings, stop and restart BD.

End of: Biller Direct

Only valid for: Learning Solution (Content Player)

2.4.33 Performing the Installation Check and Configuration for Learning Solution – Content Player

This section tells you how to check and configure the installation for Learning Solution — Content Player (LSO-CP). You must configure the entire solution correctly for LSO-CP to work correctly.

The LSO-CP cannot run a Web-based Training (WBT) course until it has been published successfully on the content management system and booked by learners.

> **Note**
>
> For more information about post-installation check and configuration, see **SAP Note** 746917.

To check whether the installation of LSO-CP was successful and to configure LSO-CP, you need to perform the following steps:

- You *check whether you can access the configuration web page* [page 106].
- You *perform and check the technical configuration* [page 107].

2.4.33.1 Accessing the Configuration Web Page of Learning Solution – Content Player

After the Learning Solution — Content Player (LSO—CP) has been installed, you have to configure the components using a Web interface.

Procedure

1. If the installation was successful, you can access the configuration interface using the following URL:

   `http://<host>:<port>/lms/mediator/config`

Replace the `<AS Java host>:<port>` with the access path to your AS Java installation.

> **Example**
>
> If the AS Java installation is on the `lcocp.mycompany.corp` search engine and can be accessed using the `50080` port, use the following URL for the configuration interface:
>
> `http://lsocp.mycompany.corp:50080/lms/mediator/config`

> **Note**
>
> You get access using the Internet Communication Manager (ICM) of the application server installation. For more information about ICM, see the SAP Library at `help.sap.com/nw2004s` ®
> *SAP NetWeaver* ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Platform-Wide Services* ®
> *Architecture of the SAP NetWeaver Application Server* ® *Internet Communication Manager (ICM)*.

Access to this configuration interface is restricted to the `Administrators of J2EE Engine` user group, such as the `Administrator` user.

2. You specify which users can belong to this user group, which gives them access to this interface, using the *administration tool of the J2EE Engine* [page 68].

2.4.33.2 Performing and Checking the Configuration of Learning Solution – Content Player

Access data for various Enterprise Learning systems and associated Content Management Systems can be created using the configuration interface. Once you have finished your system planning and configured the integrated solution, you can check the settings on the `/lms/mediator/config` page.

To create a new configuration, proceed as follows:

Procedure

1. To check the configuration, perform settings in the Implementation Guide (IMG) on the ERP ABAP system (transaction SPRO):
    a) Store the address of the content management system used in the IMG for the SAP ERP 2005 ABAP system under *Training and Event Management* ® *SAP Learning Solution* ® *Learning Portal* ® *LMS Configuration* ® *Specify CMS Address*.
    b) Make the following settings so that the Content Player can run Web Based Training (WBT):
        ■ *Training and Event Management* ® *SAP Learning Solution* ® *Learning Portal* ® *LMS Configuration* ® *Set Up RFC Connection*
        ■ *Training and Event Management* ® *SAP Learning Solution* ® *Learning Portal* ® *LMS Configuration* ® *Define URL for Course Retrieval*
        ■ *Training and Event Management* ® *SAP Learning Solution* ® *Learning Portal* ® *Select Learning Strategies*
2. Choose *New Configuration* and complete the required fields:

Field Name	Meaning	Example
System	Description of the SAP ECC system used	`EL1`
Client	Client used in the SAP ECC system to be used	`100`
Application server	Address of the application server	`105.265.73.71` or myserver.domain.com or myserver
System number	System number of the SAP ECC system used	`00`
User	User that writes learning progress data to the SAP ECC system	`EL_USER`
Password	User password	`*****`
Language	Language with which the user logs on (entry is optional)	`en` or `de`
CMS user	User that loads learning content from the Content Management System If the Content Management System does not require the user to log on, then this field can remain empty.	`CMS_USER`
CMS password	User password of the CMS user If the Content Management System does not require the user to log on, then this field can remain empty.	`*******`

3. Choose one of the following:
   - *Update* to make the values entered available to the Content Player. You do not need to restart the Content Player.
   - *Refresh* to view the new configuration in the list of all available configurations.
   - *Check* to check the validity of the new configuration or any other configuration. A new browser window then opens, containing information about the functionality.
   - *Configure* to change existing configurations. You cannot change the name of the system and the company. In addition, you must enter the passwords each time you change information.
   - *Delete* to delete existing configurations.

Result

If the configuration has been successful, you see the following data displayed on the `/lms/mediator/config` page:

- The access data used to access the SAP ERP 2005 ABAP system.
- The configuration parameters in the SAP ERP 2005 ABAP system relevant for the Content Player.
- Information that indicates whether you can access the content management system.

> **Example**
>
> Sample output:
>
> ```
> Username='wbt', Client='100', Host='lsotm.mycompany.corp', Language='de',
> SystemNumber='71', EnablePoolSharing='true', MaxConnection=50, AbapDebug=false:
> CPCFG.RSURL =
> http://cms.mycompany.corp:1080/irj/servlet/prt/portal/
> prtroot/com.sapportals.km.docs/documents/wbt CPCFG.REPUS = admin
> Http-Repository:  [ServerURL=
> http://cms.mycompany.corp:1080/irj/servlet/prt/
> portal/prtroot/com.sapportals.km.docs/documents/wbt] ok!
> ```

End of: Learning Solution (Content Player)

Only valid for: Business Packages for ERP (BP-ERP)

2.4.34 Post-Installation Steps for the SAP ERP Business Packages

Here you can find what to do after importing the business packages for SAP ERP:

- You *create roles for SAP ERP business packages* [page 109].
- If required, you *increase the number of JCO connections* [page 110].
- *Troubleshooting* [page 110]

Only valid for: Business Packages for ERP (BP-ERP)

2.4.34.1 Creating Roles for ERP Business Packages

This section tells you how to create roles for the business packages installed for ERP.

Procedure

If you create your own roles from the Business Packages for SAP ERP, add each user role — `eu_core_role` and `com.sap.pct.erp.common.erp_common` — to your role. Each user role contains the personalization functionality for the SAP NetWeaver Portal (Usage Type EP)..

More Information

For more information about user roles, see:

`help.sap.com` ® *SAP Net Weaver Library* ® *SAP NetWeaver by Key Capability* ® *People Integration by Key Capability* ® *Portal* ® *Portal Administration Guide* ® *Super Administration* ® *Pre-configured Roles* ® *Every User Roles*.

End of: Business Packages for ERP (BP-ERP)

2.4.34.2 Increasing the Number of JCO Connections

This section tells you how to increase the number of concurrent Java Connector (JCO) connections.

By default, the maximum number of concurrent JCO connections is 100. The value depends on the number and behavior of the users in the portal. For more information see **SAP Note** 316877.

You can specify this value when you plan the installation of your Enterprise Portal. To do so, analyze the number and behavior of the users.

Procedure

To increase the maximum number of concurrent JCO connections, increase the value of the environment variable `CPIC_MAX_CONV`.

> **Example**
>
> Initial default value: `CPIC_MAX_CONV=100`
>
> Increased value: `CPIC_MAX_CONV=1000`

2.4.34.3 Troubleshooting for SAP ERP Business Packages

The following sections describe the steps that you have to perform if you have problems after the installation:

- Activating BI Templates Manually
- Troubleshooting when Importing PAR Files
- Troubleshooting in SSO with SAP Logon Tickets

2.4.34.3.1 Activating BI Templates Manually

If you have installed the Business Package, you might get error messages when loading the BI templates. This procedure describes how you can activate the templates afterwards.

Procedure

1. Note the technical name of all templates in your portal interface that are not working.
2. Log on to your BI system.
3. In the *SAP Easy Access* screen, choose *Modeling* ® *Administrator Workbench: Modeling* (transaction RSA1 or RSOR).
4. Choose *Business Content* ® *Object Types* ® *Web Template Name* ® *Select Objects*.
   A new window containing a list of BW objects and templates opens.
5. Find your missing templates, for example, `0TPL_0CRM_Cnn_Qnnn_Vnnn_M`, and select the entries.

6. Choose *Transfer Selection.*

    The template now appears on the right-hand side of the screen. The *Transfer* checkbox has been selected and cannot be changed. Nevertheless, we recommend that you repeat the following procedure so that your templates can be displayed.

7. Select the template.

8. Choose *Transfer* ® *Transfer*.

Result

You have successfully activated your missing templates and no error messages appear in the portal.

2.4.34.3.2 Troubleshooting when Importing PAR Files

This section tells you how to check whether the import succeeded.

Prerequisites

You have imported the Business Package.

Procedure

1. Log on to the server with a user who has been granted write access in the file system. The J2EE service must be installed on this server.

2. Go to the following directory: `<servlet engine>\irj\root\WEB-INF\deployment`.

    This directory contains all the imported `PAR` files. All files have the extension `.BAK` to indicate that they have been imported successfully.

3. Go to the following directory: `<servlet engine>\irj\root\WEB-INF\deployment\PCD`.

    This directory contains all the imported PAR files that are available in the Portal Content Directory. All files have the extension `.BAK` to indicate that they have been imported successfully. If any of the `com.sap.pct.crm` files have the extension `.ERR`, the import procedure has failed.

4. Check your J2EE log file to establish the reason for the import procedure.

5. Correct the problem.

6. Remove the `.ERR` suffix.

7. Restart the J2EE service.

2.4.34.3.3 Troubleshooting in SSO with SAP Logon Tickets

This section tells you how to troubleshoot Single Sign-On (SSO) with SAP Logon Tickets.

SSO gives Enterprise Portal users access to many systems and applications, without requiring them to log on separately to each system. With SSO, users only have to identify themselves once and can then log on to all systems that are part of the Single Sign-On environment.

Depending on your security requirements and the supported external applications, the SSO mechanism used in the Enterprise Portal is one of the following:

■ SSO with SAP Logon Tickets — discussed in this section

■ SSO with user ID and password — not discussed in this section

The SAP Logon Ticket contains all logon data for a registered user. After the user has logged on successfully for the first time, the portal server issues the user with a logon ticket. The logon ticket is saved as a cookie on the client and identifies the portal user to all external applications that the user logs on to.

For more information, see:

`help.sap.com/nw2004s` ® *SAP Net Weaver Library* ® *SAP NetWeaver by Key Capability* ® *People Integration by Key Capability* ® *Security* ® *SAP NetWeaver Security Guide* ® *User Administration and Authentication* ® *User Authentication and Single Sign-On.*

Prerequisites

■ The user must have the same user ID in all SAP systems that are part of the SSO environment and that are accessed by means of a logon ticket.

■ An Enterprise Portal certificate must be installed in the SAP system.

If your logon to the Enterprise Portal fails, you can try to find the logon ticket in the following ways:

Finding the Logon Ticket in the Browser Cookie

To ensure that the SAP system has received the logon ticket, check whether the logon ticket is saved as a cookie on your client as follows:

1. Start your browser, in this case, Microsoft Internet Explorer.
2. Choose *Tools* ® *Internet Options* ® *Security*.
3. Choose *Local intranet*.
4. Choose *Custom Level*.
5. Scroll down to *Cookies* in the *Security Settings* dialog box.
6. Set the *Prompt* flag in the *Allow per-session cookies (not stored)* screen area.

■ If the cookie was created correctly, a dialog box with the cookie information appears the next time you log on to the Enterprise Portal. The name of the cookie must be `MYSAPSSO2` and the name of the domain must correspond to the name of your portal instance. This name should only contain the domain and not the full host name, for example, `wdf.sap-ag.de.`

■ If an ITS (Internet Transaction Server) is involved, make sure that `~mysapcomusesso2cookie = 1.` For more information, see:

`help.sap.com/nw2004s` ® *SAP Net Weaver Library* ® *SAP NetWeaver by Key Capability* ® *People Integration by Key Capability* ® *Security* ® *SAP NetWeaver Security Guide* ® *User Administration and Authentication* ® *User Authentication and Single Sign-On.*

Finding the Logon Ticket in the SAP System

If the cookie has been saved on the client but you still cannot log on, look for the logon ticket in the SAP system as follows:

1. Log on to the required SAP system server.
2. Start transaction SM50.
3. Ensure that the load on the system is not too high.
4. Select the first few processes at the top of the list, for example, the first five.

5. Choose *Process* ® *Trace* ® *Active Components*.

6. Set the *Security* flag and deselect all other flags.

7. In the *Trace Level* field, enter the value **2**.

8. Save your data.

9. Check the log file for each process that you selected:

    a) Position the cursor on the required process.

    b) Choose *Process* ® *Trace* ® *Display File*.

    c) Scroll down to the bottom of the text.

    d) Find the name of the logged-on user.

    The entry in the log file should look like this:

    ```
    dy_signi_ext:  valid ticket with RFC ticket

    dy_signi_ext:  ab_RfcValidateSSOInfo() rc=0

    DyISigni:  client=050, user=MYUSER, lang=E, access=F, auth=T

    usrexist:  effective authentification method:  mySAP.com logon ticket

    DyISignR: return code=0
    ```

10. Analyze the entries in the log file:

    ■ If the user name does **not** appear in the log file, a connection to the server cannot be established. This means that you either selected the wrong server instance to troubleshoot, or one of the files `systems.xml` or `jcoDestinations.xml` contains an error.

    ■ If the return code is **not** 0, see SAP Note 320991.

Result

After you have successfully completed the troubleshooting and error correction procedure, the user only has to log on to the Enterprise Portal once and does not have to repeat the logon for each SAP System.

> End of: Business Packages for ERP (BP-ERP)

> End of: Business Packages for ERP (BP-ERP)

> Only valid for: Business Packages for ERP (BP-ERP)

2.4.35 Installing ERP Business Packages Not Covered By SAPinst

The following Business Packages are not included in Software Unit ERP 2005 Business Packages (BP-ERP). If you want to install them, you need to do this manually:

New Versions of Business Packages for ERP 2004 (on the Java DVD)

Component Version	Business Package	SCA File
BP for Learning (mySAP ERP) 1.0	Learning	BPERP5HER00_0.sca
BP for SAP Higher Education & Research (mySAP ERP) 1.0	Higher Education and Research	BPERP5HER00_0.sca

Unchanged Versions of Business Packages for ERP 2004 (not on the Java DVD, only available on SAP Service Marketplace)

Component Version	Business Package	File
BP for Compensation Specialist (mySAP ERP 2004) 60.2	Compensation Specialist	`BPERP4CSP00_0.sca`
BP for Sales Analysis 60.1	Sales Analysis	`BPSALESAN601_0.ZIP`
BP for Environment, Health & Safety 50.1	Environment, Health & Safety	`BPEHS501_0.ZIP`

Procedure

1. Download the business package from *SAP Software Distribution Center*:
   `http://service.sap.com/swdc` ® *Download* ® *Installations and Upgrades* ® *Entry by Application Group* ® *SAP Application Components* ® *SAP ERP* ® *SAP ERP 2005* ® *SAP Business Packages* ® *Portal Content*
   The business package is delivered in either EPA or SCA file format.
2. Import the business packages as described in **SAP Note** 731386.

⚠ Caution
   After successfully installing the business package, perform required configuration activities as described in the documentation available in the *SAP Solution Manager* [page 84].

End of: Business Packages for ERP (BP-ERP)

Only valid for: Self Services (XSS)

2.4.36 Configuring ERP Business Packages (BP-ERP) and Self Services (XSS)

After finishing the installation of ERP Business Packages (BP-ERP) and Self Services (XSS), you need to configure the following:

- Employee Self-Service (ESS)
- Manager Self-Service (MSS)
- Project Self-Service (PSS)
- Business Unit Analyst (BUA)
- E-Recruiting (ECR)
- HR Administrative Services (ASR)
- Higher Education & Research (IS-HER-CSS)
- General Parts (PCUI_GP)

For more information, see the configuration documentation at:
   `help.sap.com/SAPHELP_ERP2005` ® *SAP ERP Central Component* ® *Business Packages*.

End of: Self Services (XSS)

2.4.37 Post-Installation Steps for Application Sharing Server

After you have installed the necessary software, you must complete a number of configuration steps in the portal to fully implement application sharing functionality in the portal. These steps are valid if you installed Application Sharing Server as a standalone engine or are using the default server installed on the portal machine.

For more information, see `help.sap.com/nw2004s` ® *SAP NetWeaver* ® *SAP NetWeaver by Key Capability* ® *People Integration* ® *Collaboration* ® *Administration Guide* ® *Real-Time Collaboration* ® *Configuring the Application Sharing Server (RTC)*. Also included in the documentation reference is information on how you define which Application Sharing Server the portal must use.

If you do not intend to use Application Sharing Server, you can disable it. For more information, see `help.sap.com/nw2004s` ® *SAP NetWeaver* ® *SAP NetWeaver by Key Capability* ® *People Integration* ® *Collaboration* ® *Administration Guide* ® *Real-Time Collaboration* ® *Configuring the Application Sharing Server (RTC)* ® *Enabling / Disabling the Application Sharing Server (RTC)*.

2.4.38 Configuring Access to Knowledge Warehouse Content from the SAP Internet Knowledge Servlet

You need to perform this step if you want to use the variant Documentation Manuals and Training Materials Management of the scenario Enterprise Knowledge Management.

For more information, see SAP Library at `help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *IT Scenarios at a Glance* ® *Enterprise Knowledge Management* ® *Documentation, Manuals and Training Materials Management*.

The SAP Internet Knowledge Servlet (IKS) is a Java servlet based on the J2EE Engine. It is used to display content stored in the Knowledge Warehouse (KW) in the browser.

Prerequisites

You have completed the installation of AS-ABAP and AS-Java as described in this documentation.

Procedure

1. Create a user of type `system` in your ABAP system using transaction SU01 and assign this user to the role SAP_KM_KW_RFC_CPIC_USER.
   This user is needed for the connection between the SAP IKS and the ABAP system.
2. Make sure that the `Administrator` user of the J2EE Engine has the required authorizations to perform the configuration:
   a) Log on to the User Management Engine (UME) using the URL
      `http://<host>:<port>/useradmin/index.jsp`.
   b) Assign either the role SAP_J2EE_ADMIN or KW_ADMINISTRATOR to the `Administrator` user.

c) If none of these roles exists, you need to create one of them. You do **not** need to perform further configuration of the newly created role.

d) Log off from the UME.

3. Open a browser window and enter the following URL:

    `http://<server>:<port>/SAPIKS2`

    where `<server>` is the server on which the J2EE Engine is running and `<port>` is the J2EE Engine's port. The UME logon page appears.

4. Log on as the `Administrator` user of the J2EE Engine.

5. In the next screen, choose *Direct Access to the SAP Knowledge Warehouse*.

6. Choose *Continue*.

7. In the next screen, enter the connection parameters to the KW back-end system.

8. Choose *Test*.

9. If the connection was successfully established, save the parameters. If not, correct the parameters.

10. After saving the parameters you can access the Knowledge Warehouse directly from the next screen.

2.4.39 Maintaining Your Company Address for Initial Users

Maintain your company address in your SAP system using transaction SU01. A maintained company address is mandatory for creating ABAP system users.

2.4.40 Ensuring User Security

You need to ensure the security of the users that SAPinst creates during the installation. For security reasons, you also need to copy the installation directory to a separate, secure location — such as a DVD — and then delete the installation directory.

Recommendation

In all cases, the user ID and password are only encoded when transported across the network. Therefore, we recommend using encryption at the network layer, either by using the Secure Sockets Layer (SSL) protocol for HTTP connections, or Secure Network Communications (SNC) for the SAP protocols dialog and RFC.

For more information, see:

`help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Security* ® *Network and Transport Layer Security*

Caution

Make sure that you perform this procedure **before** the newly installed SAP system goes into production.

Prerequisites

If you change user passwords, be aware that SAP system users might exist in multiple SAP system clients (for example, if a user was copied as part of the client copy). Therefore, you need to change the passwords in all the relevant SAP system clients.

Procedure

For the users listed below, take the precautions described in the relevant SAP security guide, which you can find on SAP Service Marketplace at `service.sap.com/securityguide`:

Operating System and Database Users

User	User Name	Comment
Operating system user	`<sapsid>adm`	SAP system administrator
	`SAPService<SAPSID>`	User to run the SAP system
Oracle database user	`SAP<SCHEMA_ID>`	Oracle database owner (that is, the owner of the database tables)
	`SYSTEM`	–
	`SYS`	–
	`OUTLN`	–
	`DBSNMP`	–

ABAP+Java Users

User	User Name	Comment
SAP system user	`SAP*`	User exists at least in SAP system clients 000, 001 and 066.
	`DDIC`	User exists at least in SAP system clients 000 and 001.
	`EARLYWATCH`	User exists at least in SAP system client 066.
	`SAPCPIC`	User exists at least in SAP system clients 000 and 001.
Administrator	`J2EE_ADMIN`	This user's password is stored in secure storage. Therefore, whenever you change the administrator's password, you must also change the password in secure storage. For more information, see *Checking the SAP Java Documentation* [page 67].
Guest	`J2EE_GUEST`	—
Communication user for the J2EE Engine	`SAPJSF`	—
User for Adobe Document Services	`ADSUSER`	User exists at least in SAP system clients 000 and 001.

User	User Name	Comment
Data supplier user for System Landscape Directory (SLD) (optional)	The name that you gave this user during the installation. The recommended name is SLDDSUSER.	User exists at least in SAP system clients 000 and 001. 💡 Note SAPinst created this user automatically if you chose *Configure local SLD* during the installation.
ABAP API user for System Landscape Directory (SLD) (optional)	The name that you gave this user during the installation. The recommended name is SLDAPIUSER.	User exists at least in SAP system clients 000 and 001. 💡 Note SAPinst created this user automatically if you chose *Configure local SLD* during the installation.

2.4.41 Preparing the SAP System for Business Application

If required, prepare the SAP system for using business applications, which includes customizing the ABAP system and the business components.

For more information, see:

`help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Solution Life Cycle Management by Key Capability* ® *Customizing* .

2.5 Additional Information

The following sections are **optional** and provide important additional information:

Preparation

■ *Installation of Multiple Components in One Database* [page 119]
■ *Preparing User Management with an External ABAP system* [page 121]

Post-Installation

■ *Entries in the Services File Created by SAPinst* [page 123]
■ *Configuring the Connection for SAP System Landscape Directory* [page 123]
■ *Post-Installation Steps for Adobe Document Services (Manual Procedure)* [page 124]
■ *Post-Installation Steps for Composite Application Framework Core (Manual Procedure)* [page 128]

■ *Post-Installation Steps for Enterprise Portal (Manual Procedure)* [page 129]

■ *Post-Installation Steps for usage type Process Integration (PI) (Manual Procedure)* [page 129]

■ *Performing a client copy* [page 134]
■ *Deleting an SAP System* [page 135]
■ *SAP System Security on Windows* [page 138]
■ *Automatic Creation of Accounts and Groups* [page 140]
■ *Manually Granting User Rights for the Installation* [page 142]

2.5.1 Installation of Multiple Components in One Database (Optional)

You can install **multiple** SAP systems in a **single** database. This is called Multiple Components in One Database (MCOD).

> ⚙ Example
>
> You install an SAP NetWeaver central system and an SAP CRM central system in a single database.

MCOD is available with all SAP components. We are releasing this technology on all the major databases for the SAP system, in line with our commitment to deliver platform-independent solutions.

Using this technology is as easy as installing a separate component. No extra effort is required because the MCOD installation is fully integrated into the standard installation procedure. MCOD is not an additional installation service. Instead, it is an option of the database instance installation.

With MCOD we distinguish two scenarios:

■ The installation of an SAP system in a new database
■ The installation of an additional SAP system in an existing database

Prerequisites

■ For more information on MCOD and its availability on different platforms, see the SAP Service Marketplace at `service.sap.com/mcod`.
■ For information about the availability of MCOD with Unicode, see **SAP Note** 79991.
■ Improved sizing required
  In general, you calculate the CPU usage for an MCOD database by adding up the CPU usage for each individual SAP system. The same applies to memory resources and disk space.
  You can size multiple components in one database by sizing each individual component using the SAP Quick Sizer and then adding the requirements together. For more information on the SAP Quick Sizer, see the SAP Service Marketplace at `service.sap.com/sizing`.

Features

- Reduced administration effort
- Consistent system landscape for backup, system copy, administration, and recovery
- Increased security and reduced database failure for multiple SAP systems due to monitoring and administration of only one database
- Independent upgrade

  In an MCOD landscape you can upgrade a single component independently from the other components running in the same database, assuming that the upgraded component runs on the same database version. However, if you need to restore a backup, be aware that all other components are also affected.

> **Note**
>
> Special MCOD considerations and differences from the standard procedure are listed where relevant in the installation documentation.

Constraints

> **Recommendation**
>
> We **strongly recommend** that you test MCOD in a test or development system.
>
> We recommend that you run MCOD systems in the same context. We do not recommend that you mix test, development, and production systems in the same MCOD.

- In the event of database failure, all SAP systems running on the single database are affected.
- Automated support in an MCOD landscape for the following administrative tasks depends on your operating system and database:
  - Copying a single component from an MCOD landscape to another database at database level.
  - De-installing a single component from an MCOD landscape requires some additional steps. You can use remote connection to SAP support to request help with these tasks. For more information see `service.sap.com/remoteconnection`.
- You **cannot** install a Unicode SAP system with a non-Unicode SAP system in one database.
- **MSCS only:** You **cannot** install multiple components in one database with Microsoft Cluster Service (MSCS). For more information on MSCS, see *Microsoft Cluster Installation*.
- For the first SAP system, the database system ID can be different from the SAP system ID.
- For the second SAP system, make sure that you use the same `DBSID` as for the first SAP system.
- If you install a system into an existing database (MCOD), make sure that the SYSTEM tablespace contains at least 350 MB of free space. If there is not enough space left, increase the size of this tablespace with BRSPACE or BRTOOLS.
- If you decide to turn off database logging during the database load phase of the installation, you need to plan downtime for all MCOD systems sharing the database.

2.5.2 Preparing User Management for an External ABAP System

For a Java system, you can also deploy user management for an external ABAP system. In this case, you configure the User Management Engine (UME) of the J2EE Engine for the user management of a separate ABAP system.

   If you want to connect more than one Java system to the same ABAP system, you need to work out a concept for the communication, administrator, and guest users for each engine.

   You can take one of the following approaches:

Approach	Advantages	Disadvantages
Each Java system uses different users	No interdependencies between the connected engines	Initially more administration to create the users in the ABAP system
All Java systems use the same configuration	You create the users only once and enter the same information for every Java system that you install.	Interdependencies between the connected engines: ■ If you change the password of any of the users on the ABAP system, this change affects **all** connected engines. ■ If you change the administrator user's password, you must also change the password in secure storage on **all** of the connected J2EE Engines

> Recommendation
>
> For security reasons, we recommend the first approach.

The procedures below assume that you are using the first approach.

Prerequisites

■ The ABAP system is based on at least SAP Web AS ABAP release 6.20 SP25.
■ In transaction PFCG, check that the roles `SAP_BC_JSF_COMMUNICATION` and `SAP_BC_JSF_COMMUNICATION_RO` exist and make sure that their profiles are generated.
■ In transaction PFCG, check that the roles `SAP_J2EE_ADMIN` and `SAP_J2EE_GUEST` exist. Neither role contains any ABAP permissions, so you do not need to generate any profiles.
■ For more information, see:
   `help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Security* ® *Identity Management* ® *User Management Engine*

Administration of the ABAP system

Perform the following administration steps in the **ABAP** system:

1. In transaction SU01 create a new communication user and assign it to the role `SAP_BC_JSF_COMMUNICATION_RO`.

> **↑ Recommendation**
>
> We recommend that you assign this user the role `SAP_BC_JSF_COMMUNICATION_RO` for read-only
> (display) access to user data with Java tools. If you intend to maintain user data (that is, to change,
> create, or delete users) with Java tools, you need to assign the role `SAP_BC_JSF_COMMUNICATION` instead.
> We recommend that you name the user `SAPJSF_<SAPSID_Java_System>`.
> You can use any password.

In addition, to make sure that this user can only be used for communication connections between systems
and not as a dialog user, assign it the type *Communications* under *Logon data*.

2. In transaction SU01 create a new dialog user and assign it to role `SAP_J2EE_ADMIN`. This is your administrator
   user in the J2EE Engine.

   > **↑ Recommendation**
   >
   > We recommend that you name the user `J2EE_ADM_<SAPSID_Java_System>`. You can use any password.

   > **⚠ Caution**
   >
   > Log on to the SAP system once with this user to change its initial password. Because the installer of the
   > J2EE Engine verifies this password, the installation fails if this password is initial

3. In transaction SU01 create a new dialog user and assign it to role `SAP_J2EE_GUEST`. This is your guest
   user in the J2EE Engine.

   > **↑ Recommendation**
   >
   > We recommend that you name the user `J2EE_GST_<SAPSID_Java_System>`. You can use any password.
   > As this user is only used for anonymous access to the system, we recommend you to deactivate the
   > password and, if required, lock it after installation to prevent anyone from using it for explicit named
   > logons.

4. In transaction SU01 create the following dialog users (you do not need to assign them to a role):

   > **⚠ Caution**
   >
   > You must have *changed the initial passwords of these users* [page 116] **before** you start the installation of the
   > Java system.

   - `ADSUSER`:
     User for Adobe document services
   - SLD Data supplier user (optional):
     You only have to create this user if you want to install SAP System Landscape Directory (SLD). The SLD
     data supplier user name that you enter later on during the Java system installation must be identical
     to this user.

     > **↑ Recommendation**
     >
     > We recommend that you name this user `SLDDSUSER`

■ SLD ABAP API user (optional):
You only have to create this user if you want to install SAP System Landscape Directory (SLD). The SLD ABAP API user name that you enter later on during the Java system installation must be identical to this user.

> **Recommendation**
> We recommend that you name this user `SLDAPIUSER`

Installation of the Java system

Perform the following steps in the **Java** system:

1. **Before** the installation of the Java system, make sure that you have the correct user names and passwords of the users listed above for the separate ABAP system.
2. **During** the installation of the Java system, make sure that you enter the correct users and passwords in the corresponding SAPinst dialogs.

2.5.3 Entries in the Services File Created by SAPinst

After the installation has finished successfully, SAPinst has created the following entries for port names in `<drive:>\WINDOWS\system32\drivers\etc\services`:

```
sapdpXX = 32XX/tcp
sapdbXXs = 47XX/tcp
sapgwXX = 33XX/tcp
sapgwXXs = 48XX/tcp
```

where XX is set from 00 to 99.

> **Note**
> If there is more than one entry for the same port number, this is **not** an error.

2.5.4 Configuring the Connection for System Landscape Directory

SAPinst automatically configures the connection for System Landscape Directory according to the parameters you entered on the related SAPinst screens during the input phase. If you want to change existing parameters or if you want to set additional parameters, you have to perform the required configuration steps manually.

This section provides information about how to configure your SAP System for System Landscape Directory (SLD).

You can now configure your SAP System for SLD as follows:

■ As an **SLD server** (and client)
■ As an **SLD client**

For more information, see *Configuration of Data Suppliers* in the documentation *Post Installation Guide — System Landscape Directory SAP NetWeaver 2004s* on SAP Service Marketplace at `service.sap.com/installNW2004s`.

2.5.5 Post-Installation Steps for Adobe Document Services (Manual Procedure)

The following post-installation steps are performed by SAPinst automatically. If an error occurs, you have to perform them manually.

For further configuration see the configuration guide for *Adobe Document Services* at service.sap.com/instguidesNW2004s under *SAP NetWeaver 2004s* ® *Configuration* ® *Additional Guides* ® *Advanced Configuration*.

2.5.5.1 Checking the IIOP Service

Check if the startup mode of the service `iiop` is set to `always`. You need to check special settings on the central instance host. If necessary, adapt these settings manually.

Procedure

1. Start the configuration tool of the J2EE engine:
   - Run `\usr\sap\<SAPSID>\DVEBMGS<xx>\j2ee\configtool.bat`

   The *J2EE Engine — Config Tool* screen appears.
   a) In the left frame, open the tree *cluster data* ® *Global dispatcher configuration* ® *services*.
   b) Choose service *iiop*.
   c) The field *Startup mode* in the right frame must be set to `always`.
   d) Choose *Apply changes*.
   e) Repeat the steps b. — d. for the following path: *cluster data* ® *Global server configuration* ® *services*.

2.5.5.2 Checking Java Startup Properties

Check if the Java startup property for Adobe document services is set. You need to check special settings on the central instance host. If necessary, adapt these settings manually.

Procedure

1. Start the configuration tool of the J2EE engine:
   - Run `\usr\sap\<SAPSID>\DVEBMGS<xx>\j2ee\configtool.bat`

   The *J2EE Engine — Config Tool* screen appears.
   a) Select *cluster data* ® *instance_<IDxxxx>* ® *server_<IDxxxx>*.
   b) In the right frame, check if the following line exists in the section *Java Parameters* of the tab *General*:
      `-Dorg.omg.PortableInterceptor.ORBInitializerClass.com.sap.engine.`
      `services.ts.jts.ots.PortableInterceptor.JTSInitializer`
      If it is not true, add the line to this section.

2.5.5.3 Creating a User for Basic Authentication

To ensure secure access, you must create a user and assign this user the security role of `ADSCaller`. The ADSCaller security role was created when your system was installed. You should not assign this security role to users other than the system user that you will use for accessing Adobe document services.

You can create this user in the J2EE Engine or in the SAP NetWeaver usage type AS-ABAP depending on the J2EE installation settings for the SAP User Management Engine (UME). You create this user in the SAP NetWeaver usage type AS-ABAP when the UME is configured against the SAP NetWeaver usage type AS-ABAP backend. In this case you also have to create a role `ADSCallers` in the SAP NetWeaver usage type AS-ABAP and assign the user `ADSUser` to this role.

Procedure

To create a user in AS-Java:

1. Log on to the Visual Administrator of the J2EE Engine.
2. On the *Cluster* tab, choose *Server <x>* ® *Services* ® *Security Provider*.
3. On the *User Management* tab, choose *Create Group* to create a group called `ADSCallers`, if the group does not exist. In the dialog box that follows, enter the name and choose *OK*.
4. Choose *Create User*. The *Create New User* dialog box is displayed.
5. In the *User name*, *Password*, and *Confirm password* boxes, enter `ADSUser` for the user name and enter a password.
6. Choose the *Tree* tab in the right panel. In the *User Tree*, select `ADSCallers`, and then choose *OK*.
7. Choose the *Tree* tab in the left panel. Select *ADSCallers* ® *ADSUser*.
8. In the *Authentication* area, select *No password change required*.
9. On the *Policy Configurations* tab, in the *Components* area, select
   `com.adobe/AdobeDocumentServices*AdobeDocumentServicesAssembly.jar`.
10. On the *Security Roles* tab, select `ADSCaller` from the *Security Roles* list.
11. In the *Mappings* area, choose *Add*, which is assigned to *Users*. The dialog *Choose Users or Groups* is displayed.
12. Choose the *Tree* tab.
13. In the *User Tree*, under the *ADSCallers* group, select the *ADSUser* you just created and choose *OK*. This assigns the new user to the ADSCaller security role.

To create a user in AS-ABAP:

1. Log on to the SAP system with an admin user, in the client that is used for the UME authentication.
2. Choose *Tools* ® *Administration* ® *User Maintenance* ® *User* (transaction `SU01`).
3. Enter `ADSUser` as user name and choose *Create*.
4. Choose *system user* as type for ADSUser.
5. Choose *Tools* ® *Administration* ® *User Maintenance* ® *Role Administration* ® *Roles* (transaction `PFCG`).
6. Create a role `ADSCallers` (no authorizations required).
7. Activate the role.
8. Assign the user `ADSUser` to this role.
9. Log on to the Visual Administrator of the J2EE Engine.
10. On the *Cluster* tab, choose *Server <x>* ® *Services* ® *Security Provider*.
11. On the *User Management* tab, choose the *Tree* tab in the left panel.
12. In the *User Tree*, ensure that the user you created in ABAP appears under the *ADSCallers* group.

13. On the *Policy Configurations* tab, in the *Components* area, select
    `com.adobe/AdobeDocumentServices*AdobeDocumentServicesAssembly.jar`.
14. On the Security Roles tab, select ADSCAller from the Security Roles list.
15. In the *Mappings* area, choose *Add*, which is assigned to *Users*. The dialog *Choose Users or Groups* is displayed.
16. Choose the *Tree* tab.
17. In the *User Tree*, under the *ADSCallers* group, select the *ADSUser* you just created and choose *OK*. This assigns the new user to the ADSCaller security role.

2.5.5.4 Creating a WebService Destination

1. Log on to the Visual Administrator of the J2EE engine.
2. On the *Cluster* tab, choose *Server <x>* ® *Services* ® *Web Services Security*.
3. Choose *Web Service Clients* ® *sap.com* > *tc~wd~pdfobject* ®
   *com.sap.tc.webdynpro.adsproxy.AdsProxy*ConfigPort_Document*.
4. From the *Authentication* list, select *BASIC*.
5. In the *User* and *Password* boxes, enter as user name **ADSUser** and a password.
6. Choose *Save*.
7. The authentication data must be activated. For doing this, navigate to *Services* ® *Deploy*.
8. Choose the button *Application*.
9. Choose *sap.com/tc~wd~pdfobject* in the tree.
10. Choose *Stop Application*.
11. For restarting the application, choose *Start Application*.

> 💡 Note
>
> If the Adobe document services and the Web Dynpro runtime environment are not installed on the same J2EE Engine, you have to configure a *Custom* URL. For more information, see:
> `help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Application Platform by Key Capability* ® *Java Technology* ® *Administration Manual* ® *Administration/Configuration of Web Dynpro Runtime Environment* ® *Web Dynpro-Specific URL Parameters* ® *Configuring the Web Dynpro Runtime Environment*.

2.5.5.5 Creating a HTTP Destination

1. Log on to the Visual Administrator of the J2EE Engine.
2. On the *Cluster* tab, choose *Server <x>* ® *Services* ® *Destinations*. Under *Runtime*, select *HTTP*. The available destinations are displayed. The information that applies to a selected destination is displayed in the right pane.
3. Choose *New* in the navigation panel.
4. In the dialog box that follows, enter the name **FP_ICF_DATA_<SID>** (where <SID> specifies the backend where the Adobe document services are installed) for the new destination and choose *OK*.
5. As the target URL, enter the message server (or Web Dispatcher) of the SAP NetWeaver AS-ABAP in the URL field:

```
http://<hostname>:<HTTP_port>
```
and in case of SSL:
```
http://<hostname>:<HTTPS_port>
```

> **Note**
>
> To display the host name of your SAP NetWeaver AS-ABAP, log on your ABAP system and call transaction SICF. In the main menu, choose *Goto* ® *Port Information.* The information is displayed on a screen; where the HTTP_port is specified under *Services*.

6. Select the authentication method to use for the connection, and enter the parameters for the authentication method in the corresponding fields (if applicable).
   - In the *Username* field, enter **ADS_AGENT** (must exist as service user in usage type AS-ABAP).
   - In the *Password* field, enter the same password as given for the AS-ABAP service user ADS_AGENT.
7. If the connection is to use HTTPS, specify how the connection should handle SSL server authentication.
8. Save your settings.

2.5.5.6 Creating the ADS Connection in ABAP

Prerequisites

This procedure applies only in the scenario of print forms and if you have installed Abode document services on a ABAP+Java system.

The purpose of this procedure is to create a connection in the ABAP environment to use when connecting to Adobe document services.

Procedure

1. Log on to you AS central instance host.
2. Call transaction SM59.
3. Choose *Create*.
4. Enter at least the following:
   - RFC destination: **ADS**
   - Connection type: **G**
   - Description: **<your description>**
5. Choose ENTER .
6. Choose the *Technical settings* tab and enter at least the following:
   - *Target host*:
     Enter the host name where you J2EE engine is located or the host name of the Windows dialog instance.
   - *Service No.*:
     - Enter the J2EE HTTP port number.
       The following naming convention applies:
       5<J2EE_instance_number>00 (**50**0**00** for example, if your J2EE instance is 00).
     - **Or** enter the port number of the Windows dialog instance.
   - *Path prefix*:

Enter exactly the string **/AdobeDocumentServices/Config?style=rpc** or, if you want to set up SSL,
/AdobeDocumentServicesSec/Config?style=rpc

> 💡 Note
>
> A warning is displayed: `Query String Not Allowed`. Ignore this warning by pressing `ENTER`.

7. Choose the *Logon/Security* tab and configure the security account to your security requirements.
8. Save your settings.
9. Choose *Test Connection*.
10. A screen is displayed. The field *status_reason: OK* indicates that the test was successful.

2.5.5.7 Activating the ICF Service FP

The communication between the Destination Service of the SAP NetWeaver AS-Java and AS-ABAP uses the
Internet Communication Framework (ICF). You have to activate the corresponding service.

Procedure

1. Choose transaction `SICF`.
2. Choose *default_host* ® *sap* ® *bc* ® *fp* in the tree.
3. Choose *Service/Virt.Host* ® *Activate*.

The ICF service is now active.

End of: Application Server (AS)

2.5.6 Post-Installation Steps for Composite Application Framework Core (Manual Procedure)

SAPinst automatically performs the following post-installation steps for Composite Application Framework
(CAF) Core:

- Create role CAFAdmin and CAFUIAdmin
- Create user CAF_ADMIN
- Map user to role
- Set config parameters

If you want to change existing parameters or if you want to set additional parameters, you have to perform
these steps manually, as described here:

`help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *Technology Consultant's Guide* ® *Developing, Configuring, and
Adapting Applications* ® *Creating Composite Applications* ® *Composite Application Framework Core Configuration Guide*

2.5.7 Post-Installation Steps for Usage Type EP (Manual Procedure)

SAPinst performs the following post-installation steps automatically:

- Copying CMS_MAPPING Properties
- Renaming InitialPermissions.xml.template
- Renaming initialPermissionsKMC.xml.template

Copying CMS_MAPPING Properties

Copy file `cms_mapping.properties` from source directory

```
<drive:>\usr\sap\<sid>\JCxx\j2ee\cluster\server<x>\apps\sap.com\irj\
servlet_jsp\irj\root\WEB-INF\portal\system\pcd\Migration\mapping\
```

to target directory

```
<drive:>\usr\sap\<sid>\SYS\global\pcd\Migration\mapping\.
```

> **Note**
> If the target directory does not exist, you have to create it as well.

Renaming InitialPermissions.xml.template

1. Go to directory
   ```
   <drive:>\usr\sap\<sid>\JCxx\j2ee\cluster\server<x>\apps\sap.com\irj\ .
   servlet_jsp\irj\root\WEB-INF\portal\system\xml\acl
   ```
2. Rename file `initialPermissions.xml.template` to **`initialPermissions.xml`**.

Renaming initialPermissionsKMC.xml.template

1. Go to directory
   ```
   <drive:>\usr\sap\<sid>\JCxx\j2ee\cluster\server<x>\apps\sap.com\irj\
   servlet_jsp\irj\root\WEB-INF\portal\system\xml\acl
   ```
2. Rename file `initialPermissionsKMC.xml.template` to **`initialPermissionsKMC.xml`**.

2.5.8 Post-Installation Steps for Usage Type PI (Manual Procedure)

The following post-installation steps are performed by SAPinst automatically. If you want to adjust existing parameters or set additional parameters, you have to perform these steps manually:

2.5.8.1 Importing the SAP Exchange Profile

You must import the SAP Exchange Profile manually.

Procedure

1. On your PI server host, open the following URL:

   `http://<J2EE_host>:<J2EE_Port>/exchangeProfile`

   The following naming convention applies for <J2EE_Port>:

   `5<J2EE_instance_number>00`

   `50000`, for example, if your J2EE instance is **00**

2. Enter the logon information:

   User Name: `XISUPER`

   Password: `<xisuper_password>`

   The *Exchange Profile* page appears

3. Choose *Connection*.

   The *Server Settings* page appears.

4. Enter the required information for the PI host.

   Use the logon information of user XILDUSER.

5. Choose *Set*.

   The *Exchange Profile* page appears.

6. Choose *Import*.

   The *Import Profile* page appears.

7. Choose *Browse* and select the following file:

   `/usr/sap/<SID>/SYS/global/exchange_profile.xml`

   > ⚠ Caution
   >
   > If you cannot run a Web Browser on your PI host, you need to copy the file `exchange_profile.xml`
   > from the PI host to a host were a Web browser runs.

8. Choose *Import Data*.

   The profile will be imported.

> ⚠ Caution
>
> As the file `exchange_profile.xml` contains secure information like passwords, we highly recommend
> that you delete the file after importing or to save it by using high security standards, such as encryption.

2.5.8.2 Maintaining SLD Connection Parameters

1. Log on to the SAP System as user DDIC and call transaction `SLDAPICUST`. The screen *Maintain SLD Access Data* is displayed.

2. Choose *Display <-> Change* and proceed as follows:

   a) Choose *Insert Row*.

   b) Enter the connection parameters to the SLD:

■ Host Name: host name of the SLD host
■ Port: HTTP port of the J2EE engine

> 💡 Note
>
> The following naming convention applies: 5<J2EE_instance_number>00.
>
> 50000, for example, if your J2EE instance is **00**.

■ User
■ Password

> 💡 Note
>
> As user enter **XIAPPLUSER**.

c) Set your entry as *Primary*.

> 💡 Note
>
> Only the *Primary* marked entry is active.

d) Save your settings.

2.5.8.3 Maintaining Server Settings in the SLD

1. On your SLD host, start the SLD configuration by entering the following URL in your Internet browser:
   `http://<host>:<HTTP_port>/sld`
   where <host> is the host name of the SLD host and <HTTP_port> is the HTTP port of the J2EE engine.
   The following naming convention applies: 5<J2EE_instance_number>00.
   50000, for example, if your J2EE instance is **00**.
2. Enter the log on information:
   User Name: **XISUPER**
   Password: **<xisuper_password>**
   The *System Landscape Directory* page appears.
3. Choose *Administration*.
   The *Administration* page appears.
4. Make sure that the field *Status* indicates *Stopped.*
   The server must be stopped to perform this activity. If the server is running
   choose *Stop Server*.
5. Choose *Server Settings* and enter the following:
   a) Object Server: Enter the host name where your SLD is located.
      Choose the *Information* button for more information.
   b) Working Directory: Enter the path to the global SLD directory (`/usr/sap/<SAPSID>/SYS/global/sld`).
6. Under *Persistence* select *Database*.
7. Leave the fields under *ABAP Connection Parameters* empty.
8. Choose *Set*.

9. Start the SLD server as follows:
   a) From the menu, choose *Administration*.
   b) Choose *Start Server*.

2.5.8.4 Checking the CR Data in the SLD (optional)

Since `CR_Content.zip` contains all available SAP components, the content of this file grows with time. The extensions contain information about new components (new releases and Support Packages, for example). This content in the SLD has to be updated from time to time. You can download the most up-to-date files from the SAP Service Marketplace. See SAP Note 669669 for details.

2.5.8.5 Checking the SLD Bridge

1. In the *System Landscape Directory* page on your SLD host, choose *Administration*. The *Administration* page appears.
2. Choose *Data Supplier Bridge*. The *Data Supplier Bridge Administration* page appears.
3. Make sure that the *Update local SLD* (`sld/active`) is set to *true*.
4. Under *Gateway* check that the following values are set:
   ■ Server: `<host_name_of_SLD>`
   ■ Service: `<gateway_service_of_SLDhost>`

2.5.8.6 Maintaining ABAP Connections

1. On your PI host, call transaction `RZ70`.
2. In the group box *Transport Information*, enter in the *Host* field the host name of the gateway where your SLD bridge is registered.
3. In the *Service* field, enter the service name of the gateway.
4. In the group box *Data Collector Programs*, choose the item with the quick info *Proposal*. The system displays a dialog box asking you whether you want to use the default installation settings.
5. Choose *Yes*.
6. Save your settings by choosing the item with the quick info *Activate Current Configuration*.
7. Choose the item with the quick info *Start Data Collection*. The system displays a list of the executed programs on a separate screen. This screen also informs you whether the initial transfer of data by RFC was successful.

> **Note**
> You can ignore the message `Could not open file rfcexec.sec`.

2.5.8.7 Configuring the SLD Data Supplier Service

1. Start the J2EE Engine Visual Administrator.
2. Choose *Cluster* ® *Server* ® *Services* ® *SLD Data Supplier*.

3. On the *Runtime* tab in the right frame, select the tab *HTTP Settings*.
4. Enter the data required for the HTTP connection from the SLD service to the SLD as follows:
   - *Host*: Enter the name of the host where the SLD bridge runs
   - *Port*: specify the HTTP standard access port of the SLD where this is the HTTP port of the J2EE engine. The following naming convention applies: 5<Java_instance_number>00. (5**00**00, for example, if your Java instance is **00**.)
   - *User*: Specify a Java user that already exists on the host where the SLD Bridge runs (XISUPER, for example)
   - *Password*: Enter the user password.

   If you want to use HTTPS for the connection from the SLD service to the SLD, choose *Use HTTPS*. The Trust Store field is now ready for input.

   > **Note**
   >
   > A trust store contains the root certificates of the trusted roots, and checks the authentication of a received server certificate. The default setting for the trust store is *TrustedCAs*. You can change this setting if necessary. For a list of the available trust stores, see the *Key Storage* service (*Runtime* ® *Views*).

5. Save your entries. If an error occurs, an error message appears. If your entries were saved successfully, the connection data is saved in encrypted form in the secure store in the database.

   > **Note**
   >
   > Alternatively, you can use an RFC connection to send data to the SLD (tab page RFC Settings). However, we recommend that you use this type of connection for test purposes only.

6. If you want to test your settings by sending test data to the SLD, click the blue arrow with the quick info text *Trigger data transfer to System Landscape Directory*.
7. To apply the new configuration immediately, restart the SLD service as follows:
   a) On the *Cluster* tab page, click *SLD Data Supplier* with the secondary mouse button.
   b) Choose *Stop*.
   c) When the service has been stopped, click *SLD Data Supplier* with the secondary mouse button again, and choose *Start*.

   The service is restarted within a few seconds, and the first data transfer to the SLD takes place after several minutes.

2.5.8.8 Assigning Role "Administrator" to Group SAP_XI_ADMINISTRATOR

You perform the following steps to get the system up and running after SAPinst has finished successfully.

Procedure

1. Start the Visual Administrator of the J2EE engine.
2. Choose *Cluster* ® *Server* ® *Services* ® *Security Provider* ® *sap.com.\com.sap.rprof.remoteprofileexchangeprofile*.
3. Select *Security Roles*.

4. Select *Administer*.
5. Select the group `SAP_XI_ADMINISTRATOR`.
6. Choose *Add* and assign the role `administrator`.
7. Save your settings.

2.5.8.9 Assigning Security Role LcrAdministrator to Group SAP_SLD_ADMINISTRATOR

1. Start the Visual Administrator of the J2EE engine.
2. Choose *Cluster* ® *Server* ® *Services* ® *Security Provider*.
3. On the *Runtime* tab in the right frame, choose *Policy Configuration* ® *Component*.
4. Select `sap.com/com.sap.lcr*sld`.
5. On the right, choose *Security Roles* and select the role `LcrAdministrator`.
6. Select the role type *Security Role*.
7. In the lower frame, add group `SAP_SLD_ADMINISTRATOR`.

2.5.8.10 Maintaining User Authorization For Data Supplier Service

In order to maintain the user for the Data Supplier Service, you need to map the user `SLDUSER1` to the security role `DataSupplierLD`.

Procedure

1. Start the Visual Administrator of the J2EE engine.
2. Choose *Cluster* ® *<SID>* ® *Server* ® *Services* ® *Security Provider*.
3. On the *Runtime* tab in the right frame, choose *Policy Configuration* ® *Component*.
4. Select `sap.com/com.sap.lcr*sld`.
5. On the right, choose *Security Roles* and select the role `DataSupplierLD`.
6. Select the role type *Security Role*.
7. In the lower frame, add user `SLDUSER1` and delete user `slduser1` (if existing).

> End of: Process Integration (PI)

2.5.9 Performing the Client Copy

Client copy means that you perform a copy of client 000, which is created by SAPinst during the installation.

 If you install a new ABAP or ABAP+Java system, in most cases you do not need to perform the client copy for the ABAP stack. SAPinst creates three ABAP clients during the installation, client 000, client 001, and client 066. You can use client 001 for production.

 The following procedure describes how to perform a client copy manually.

Procedure

1. Maintain the new client with transaction SCC4.
2. Activate kernel user `SAP*`:
   a) Set the profile parameter `login/no_automatic_user_sapstar` to `0`.
   b) Restart the application server.
3. Log on to the new client with kernel user **SAP*** and password **PASS**.
4. Copy client `000` with transaction SCCL and profile `SAP_CUST`.
5. Check the log files with transaction SCC3.
6. Deactivate kernel user `SAP*`:
   a) Reset `login/no_automatic_user_sapstar` to `1`.

   ⚠ Caution

   You create SAP system user `SAP*` on the new client before resetting
   `login/no_automatic_user_sapstar`.

   b) Restart the application server.

For more information, see:

`help.sap.com/nw2004s` ® *SAP NetWeaver Library* ® *SAP NetWeaver by Key Capability* ® *Solution Life Cycle Management by Key Capability* ® *Software Lifecycle Management* ® *Software Logistics* ® *Change and Transport System* ® *BC — Client Copy and Transport*

Only valid for: Process Integration (PI)

💡 Note

For usage type Process Integration (PI), make sure you use the profile `SAP_UCUS`.
Do **not** use the profile `SAP_CUST` as stated in the SAP Library documentation.

End of: Process Integration (PI)

2.5.10 Deleting an SAP System

The following sections describe how to delete a single instance, a standalone engine or a complete SAP system with SAPinst.

To delete your system, you use the SAPinst service *Uninstall − System or Standalone Engine*, which you find under *<SAP System>* ® *Lifecycle Management* ® *Uninstall* ® *Uninstall — System or Standalone Engine*

💡 Note

The description assumes that the installation of your SAP system has been performed with SAP standard tools according to the installation documentation.

⚠️ Caution

If you delete network-wide users, groups or service entries in an environment with Network Information System (NIS), other SAP installations might also be affected. Make sure that the users, groups, and service entries to be deleted are no longer required.

Process Flow

1. You *run SAPinst and delete the required instances or standalone engines* [page 136].
2. You *delete the Oracle database software* [page 137].

2.5.10.1 Running SAPinst to Delete an SAP System

You can use SAPinst to delete an SAP system.

Prerequisites

Make sure that you start this procedure **locally** on the database host. You cannot delete an SAP system remotely.

Procedure

1. Start SAPinst and on the *Welcome* screen, choose:
   <SAP System> ® *Lifecycle Management* ® *Uninstall* ® *Uninstall – System or Standalone Engine.*

   💡 Note

   With this SAPinst service you do **not** delete the database software.

2. Follow the instructions in the SAPinst input dialogs.
   SAPinst first asks you which instances you want to delete.

   💡 Note

   For more information about the input parameters, place the cursor on the relevant field and press
   F1 in SAPinst.

3. Use the following options to delete the database instance and schema.

Options	Remarks
Drop database	Select this option if you want to delete the database instance, including all database schemas, all tablespaces and their corresponding data files. The database software will not be deleted.

Options	Remarks
Select schemas and tablespaces to drop only	Select this option only if you use **MCOD** and you want to delete the selected database schema and the selected tablespaces. The database instance and the database software will not be deleted. ⚠️ Caution Before deleting any database schema, make sure that: ■ You have performed a recent offline database backup. ■ You have stopped or deleted all SAP instances belonging to this database schema. ■ If you have installed a Java system, you have stopped the J2EE Engine with transaction SMICM. ■ You only delete the tablespaces that belong to the selected schema. The Java schema `SAP<SAPSID>DB`default belongs to the database tablesspace `PSAP<SAPSID<DB`. All other SAP tablespaces belong to the ABAP schema `SAP<SAPSID>` or `SAPR3`
Keep database and its content	Select this option if you only want to delete the previously selected SAP instance(s). With this option, you do **not** delete the database instance, database content or the database software.

2.5.10.2 Deleting the Oracle Database Software

You use the Oracle Universal Installer to delete the Oracle database software.

Prerequisites

Before you delete the database software, make sure that you delete the groups `ORA_<DBSID>_DBA` and `ORA_<DBSID>_OPER` as follows:

1. Choose *Start* ® *Programs* ® *Administrative Tools* ® *Computer Management*
2. Choose *Local Users and Groups* ® *Groups*.
3. Select and delete the local groups `ORA_<DBSID>_DBA` and `ORA_<DBSID>_OPER` with *Action* ® *Delete*.

Procedure

💡 Note
The Oracle software is installed on all hosts where an SAP instance is running, for example, on a central instance host, database host, or dialog instance host. Do **not** delete the Oracle database software, if another SAP instance is running on the same host.

⚠️ Caution

MSCS only:

■ Deinstall the Oracle Fail Safe (OFS) software with Oracle Universal Installer before deleting the Oracle database software.

■ Delete the Oracle database software on both nodes.

1. Stop all Oracle Services and the *Microsoft Distributed Transaction Coordinator*.
   To access the services choose *Start* ® *Programs* ® *Administrative Tools* ® *Services*.
   Select a service and then choose *Action* ® *All Tasks* ® *Stop*.
2. Delete the Oracle database software with the Oracle Universal Installer as follows:
   a) Start the Oracle Universal Installer under *Start* ® *Programs* ® *Oracle Installation Products* ® *Universal Installer*.
   b) Choose *Installed Products* or *Deinstall Products*.
   c) Select the database product (`<DBSID>_101_32` or `<DBSID>_101_64`) you want to uninstall.
   d) Select the Oracle 10G database and choose *Remove*.
   e) Confirm with *Yes* and choose *EXIT*.
3. Delete the Oracle home directory and all its subdirectories under `<DRIVE>:\ORACLE_HOME`.
4. Edit the Oracle Registry entries as follows:
   a) Choose *Start* ® *Run* and enter **REGEDIT**.
   b) Delete the key *HKEY_LOCAL_MACHINE* ® *SOFTWARE* ® *ORACLE*.
   c) Delete all Oracle references under *HKEY_LOCAL_MACHINE* ® *SYSTEM* ® *CURRENTCONTROLSET* ® *SERVICES*.
5. Delete all Oracle references from the Windows user and system environment:
   a) Choose *Start* ® *Programs* ® *System*.
   b) Choose the *Advanced* tab and then click *Environment Variables*.
   c) For example, delete the variables:
      `TNS_ADMIN, NLS_LANG, ORACLE_HOME, ORACLE_<DBSID>`.
   d) Also delete `Oracle` from the `PATH` variable.
6. Delete the Oracle entries from the *Start* menu:
   a) Choose *Start* ® *Settings* ® *Taskbar & Start Menu*.
   b) On the *Advanced* tab, click *Advanced*.
   c) On the *Start Menu* screen, look under
      `All Users\Start Menu\Programs`.
      Select and delete the folders for Oracle with *File* ® *Delete*.
   d) Delete the Oracle shortcut from the desktop.

2.5.11 SAP System Security on Windows

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

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

User Accounts

SAPinst creates the following accounts for SAP system administration:

■ `<sapsid>adm`

This is the SAP system administrator account that enables interactive administration of the system.

■ `SAPService<SID>`

This is the user account that is required to start the SAP system. It has the local user right to log on as a service.

The advantage of the additional `SAPService<SAPSID>` account is that it does not allow an interactive logon, which prevents abuse of the account. Therefore, you do not need to set an expiration date for the password and you do not have to set the option *user must change password at next logon.*

Groups

SAPinst creates the following groups during a domain installation:

■ `SAP_<SAPSID>_GlobalAdmin`

This global group is a domain-level SAP administration group for organizing SAP system administrators. The only function of a global group is to group users at the domain level so that they can be placed in the appropriate local groups.

■ `SAP_<SAPSID>_LocalAdmin`

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

■ `SAP_LocalAdmin`

This group is created on all hosts, but is particularly important for the transport host. Members of the group have full control over the transport directory (`\usr\sap\trans`) that allows transports to take place between systems.

The `SAP_<SAPSID>_GlobalAdmin` groups of all the SAP systems that are part of the transport infrastructure are added to the `SAP_LocalAdmin` group. As a consequence, the users `<sapsid>adm` and `SAPService<SAPSID>` of all systems in the transport infrastructure are members of the `SAP_LocalAdmin` group and have the required authorizations necessary to initiate and execute transports.

SAP Directories

SAPinst protects the SAP directories under `\usr\sap\<SAPSID>` by only granting the group `SAP_<SAPSID>_LocalAdmin` full control over these directories.

The following graphic illustrates the user accounts and groups created by SAPinst in a system infrastructure consisting of two SAP systems.

Figure 8: User Groups and Accounts
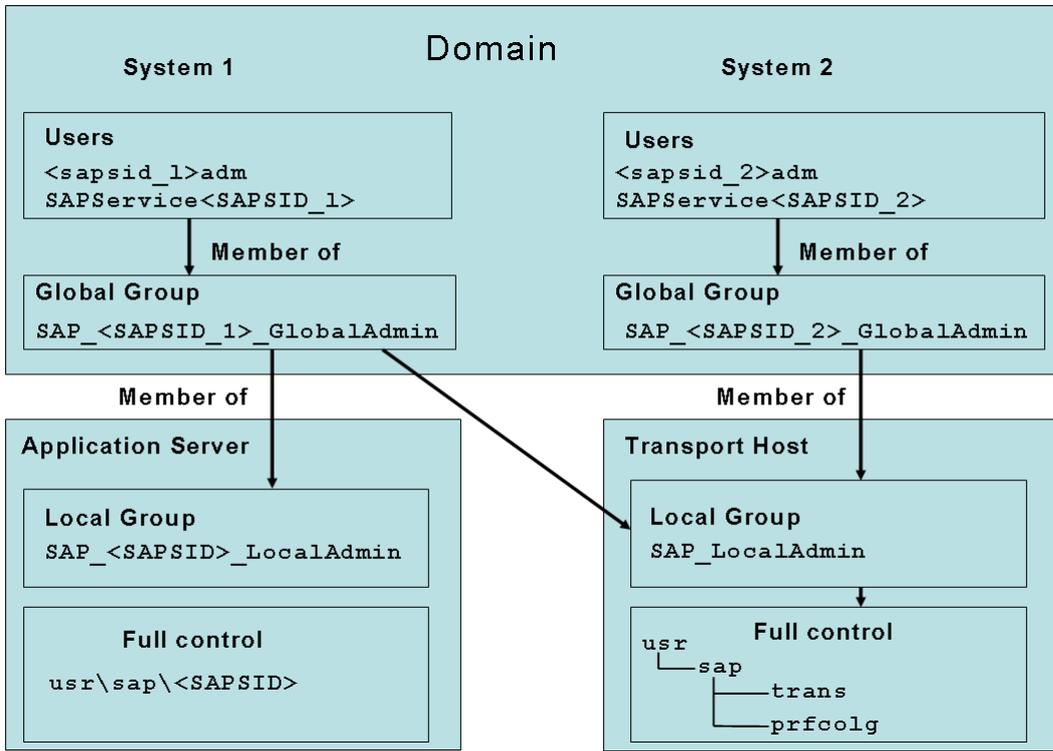
> 💡 Note
>
> An access control list (ACL) controls access to SAP system objects. For maximum security in the SAP system, only the following are members of **all** SAP system object ACLs:
>
> - Local group SAP_<SAPSID>_LocalAdmin
> - Group Administrators
> - Account SYSTEM

2.5.12 Automatic Creation of Accounts and Groups

SAPinst automatically creates the accounts and groups required for the *secure operation of the SAP system with Windows* [page <u>138</u>] during the installation.

Features

The following graphics show the steps that SAPinst performs to create the users and groups and assign the required rights to SAP directories.

Figure 9: Creating Users and Groups

Creation of Accounts	Creation of SAP domain user accounts
	SAP Administrator `<sapsid>adm` SAP Service Account `SAPService<SAPSID>`

Creation and Modification of Global Group in the Domain	Creation of global group `SAP_<SAPSID>GlobalAdmin`
	Addition of `<sapsid>adm` and `SAPService<SAPSID>` to group `SAP_<SAPSID>_GlobalAdmin`
	Addition of `<sapsid>adm` and `SAPService<SAPSID>` to the local Administrators group
	Addition of `<sapsid>adm` to the Windows domain user groups

Creation and Modification of Local Group on Each Application Server	Creation of the local group `SAP_<SAPSID>_LocalAdmin` on the application server
	Addition of the global `SAP_<SAPSID>_GlobalAdmin` to the local group `SAP_<SAPSID>_LocalAdmin`
	Creation of the local group `SAP_LocalAdmin` on the application server
	Addition of the global group `SAP_<SAPSID>_GlobalAdmin` to the local group `SAP_LocalAdmin` on the application server
	Addition of the `SAP_<SAPSID>_GlobalAdmin` group to the local group `SAP_LocalAdmin` on the transport host

Figure 10: Assigning Rights to SAP Directories
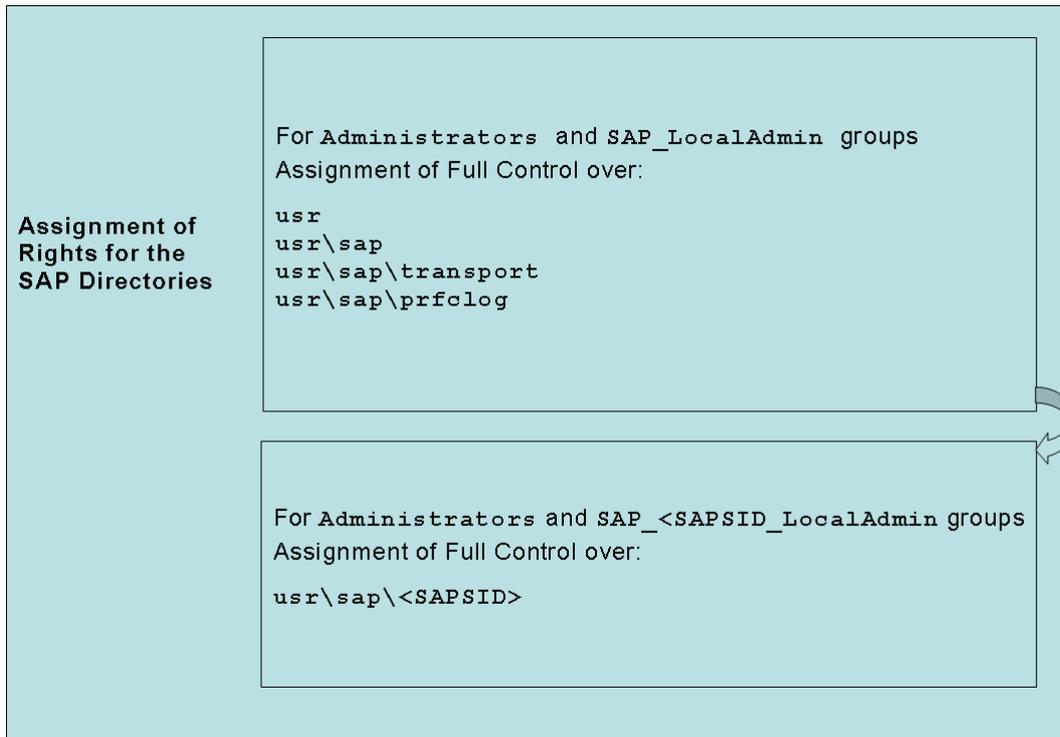
2.5.13 Manually Granting User Rights for the Installation

Although the rights required for the installation are automatically granted to the user who installs the SAPinst tool, you might need to manually grant user rights for the installation to another user, as described in this section.

Prerequisites

The Windows user that performs the SAP system installation must be authorized to perform the actions necessary for the installation.

For a domain installation, this means that the user must belong to the `Domain Administrator` group and be authorized to:

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

The procedure below assigns these rights to a user of your choice.

⚠ Caution

Be aware that domain policies override locally defined policies. This means that if you want to grant domain administrator rights for a local user, make sure that you have also defined domain administrator rights for this user on domain level.

Procedure

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

More Information

Granting User Rights for the Installation [page 37]

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3 Microsoft Cluster Installation

3.1 High Availability with Microsoft Cluster Service

You can install a high-availability SAP system with Microsoft Cluster Service (MSCS). For this type of installation, you have to set up the system on two clustered hosts (called "MSCS nodes") and configure it so that it can take advantage of the MSCS software. The MSCS software improves the availability of the system and safeguards it against failure and unplanned downtime, enabling 24-hour operation, 365 days a year.

With high availability you enable critical system components, so-called Single Points of Failure (SPOFs) to be automatically switched from one machine to the other, if hardware or software problems arise on one machine. With the help of this switchover – or failover – the system can continue functioning normally so that unplanned system downtime is avoided.

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

> 💡 Note
>
> ■ Make sure that you read **SAP Note** 849791, which contains the most recent information as well as corrections for MSCS for SAP NetWeaver 2004s. For more information, see the *SAP installation notes* [page 4] before you begin the installation.
> ■ When you are setting up the SAP system with MSCS, you combine standard installation steps, described earlier in this documentation, with cluster-specific steps, described here.
> ■ Currently we support high availability with MSCS on two hosts only.
> In this documentation the two hosts in MSCS are referred to as MSCS node A (initial node) and MSCS node B (additional node).

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

■ Since the cluster hardware has two nodes that have access to both local and shared storage devices, you have to install some components on both nodes and observe special rules for distributing components to local or shared disks.
■ Since the correct configuration of network addresses is absolutely essential to enable the cluster to function properly, you have to perform a number of additional steps that are necessary to set up and check addressing.

Note

If you have an existing SAP system and plan to migrate to a cluster with new hardware, you install the SAP system using a **system copy**. Therefore, you have to prepare for the installation by creating a **homogeneous** or a **heterogeneous** copy of the database. After you have created a copy of the database, you can install your system with MSCS. However, instead of loading the database from the Export DVDs in the installation package, you load it using your exported database.

For more information about a homogeneous or heterogeneous system copy, see the documentation *Homogeneous and Heterogeneous System Copy for SAP Systems based on SAP Web Application Server* on SAP Service Marketplace at `service.sap.com/instguidesNW04`*Installation*. In addition, for more information about a heterogeneous system copy, see `service.sap.com/osdbmigration`.

The documentation for a homogeneous or heterogeneous system copy , does not include the cluster-specific information, which is described here.

3.2 MSCS System Landscape

In an MSCS configuration you have the following components for your SAP system:

SAP System Components in an MSCS Configuration

Component	Number of Components per SAP System	Single Point of Failure
SCS instance (message services and enqueue services)	1	yes
ASCS instance (message services and enqueue services)	1	yes
Database instance	1	yes
Application server (central instance, dialog instance)	1–n	no

■ To protect the SPOFs (SCS instance and database instance) you have to use MSCS.
   If a hardware or software problem occurs the clustered SCS instance and the clustered database automatically fail over to the other node.
   If you need to maintain the node where the SCS instance and database are running you can switch these instances on the other node. When maintenance work is finished you move the SCS and database instance back to the original node.
■ To protect system components that are non-SPOFs, for example application servers, you have to install them as multiple components. In this case you must install at least two application servers (one central and at least one dialog instance) on two different hosts. You have the following options:
   ● You install the central instance and the dialog instance on two MSCS nodes. You install them on a local disk.
      If you have to maintain an MSCS node, you have to stop the central or dialog instance on that node. When you have finished maintenance, you restart the instance(s).

Any additional application servers (dialog instances) are installed outside of MSCS.

Figure 11: ABAP+Java System
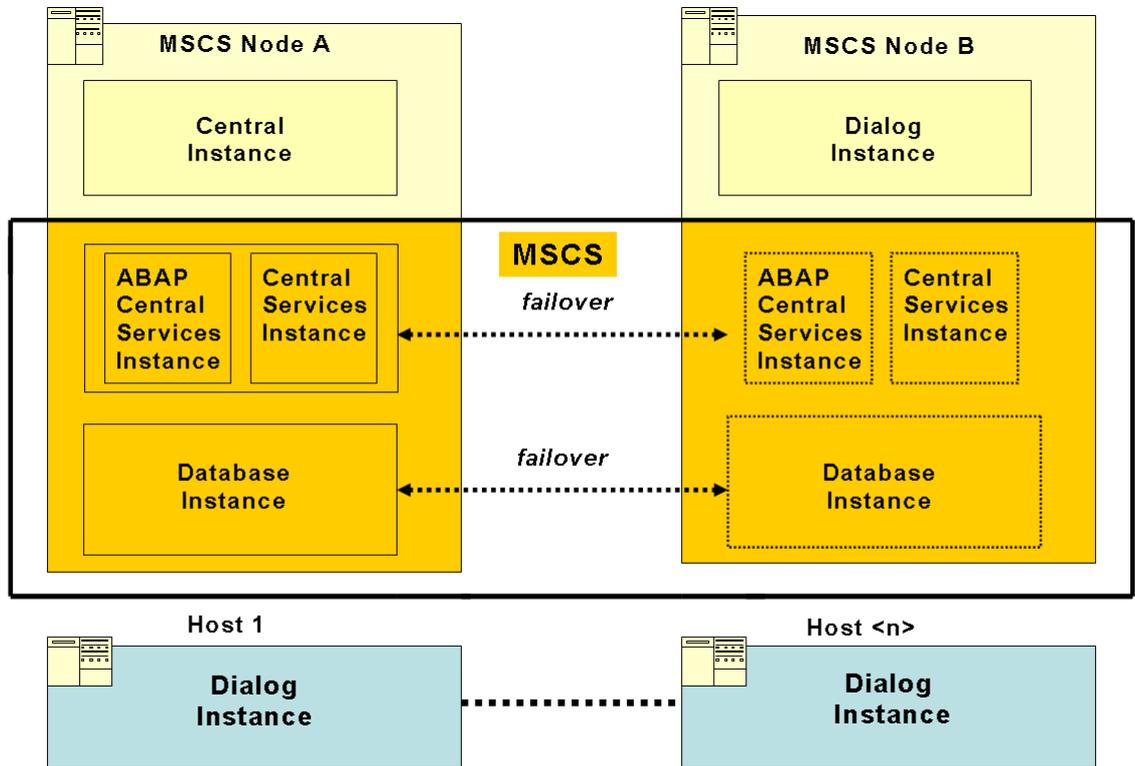
● You install the central instance and all dialog instances outside of MSCS on different hosts. Only the SCS instance and the database instance are installed on the cluster nodes.

Figure 12: ABAP+Java System
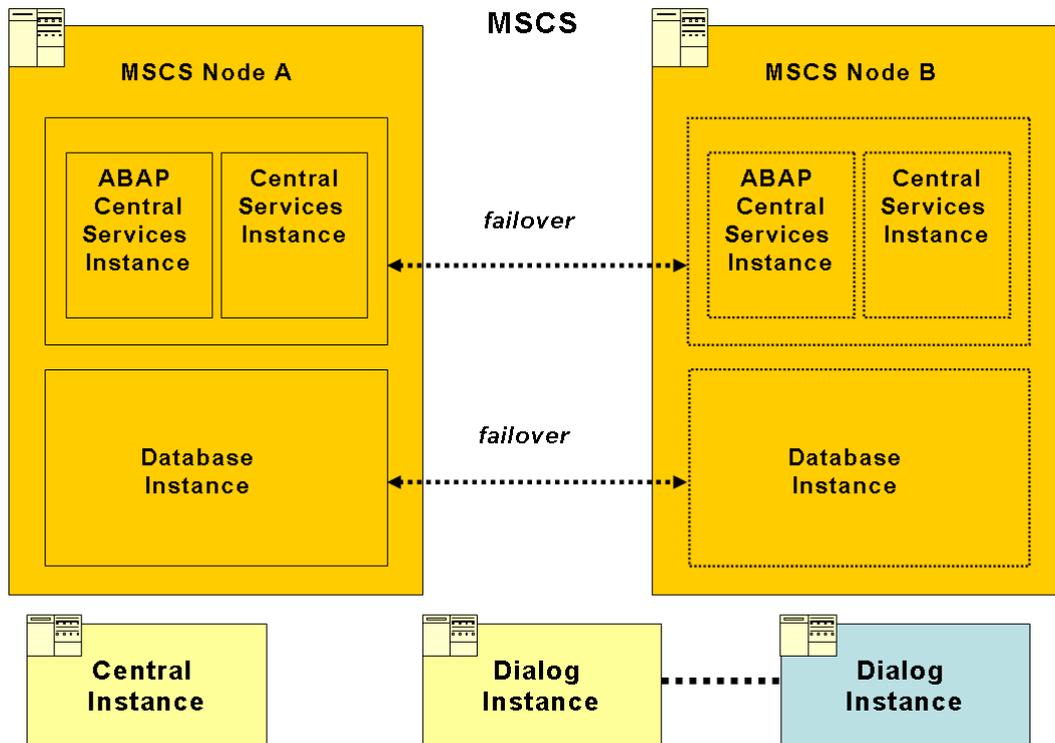
3.3 Planning

You need to plan the installation of the SAP system on cluster hardware using Microsoft Cluster Service (MSCS).

Process Flow

1. You *distribute components to disks for MSCS* [page 148].
2. You read section *Directories in an MSCS Configuration* [page 152]
3. You read section *IP Addresses in an MSCS Configuration* [page 153]
4. You *obtain IP addresses for MSCS* [page 157].
5. You *check the hardware and software requirements for MSCS* [page 159].

3.3.1 Distribution of Components to Disks for MSCS

One of the central points to keep in mind, when planning the MSCS installation, is that the cluster hardware has two different sets of disks:

- Local disks that are connected directly to node A and node B.
- Shared disks that can be accessed by both nodes via a shared interconnect.

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

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

- Separately on both nodes A and B to use the local storage on each node.
  You install the Oracle database server software and the Oracle Fail Safe software on local disks.
- On the shared storage that is used in common by nodes A and B.
  You install the following on **different** shared disks:
  - Database data files
  - SAP system executables
  - Quorum resource

    The quorum resource is unique to a cluster installation and is always owned by one of the nodes. It has the following main functions in the cluster:
    - It logs changes to the cluster configuration that are entered in the *Registry*.
    - It arbitrates between competing nodes when the communication between nodes breaks down. This means that cluster resources are forced to fail over to the node that owns the quorum resource.

    > **Note**
    >
    > The default quorum log size is 64 MB. If you use a larger number of shares, the quorum disk size may be too small. To increase the quorum log size, carry out the following steps:
    > 1. Right-click the cluster and choose *Properties*.
    > 2. Select *quorum* and increase the quorum log to 4096.
    >
    > For more information, see also Microsoft Knowledge Base Article 225081.

The following graphic illustrates how to distribute the database data files, the SAP system executables and the quorum resource to **different** disks. Only with this distribution of files to distinct disks it is possible to move the SAP system and database as separate entities in a failover situation.

Figure 13:
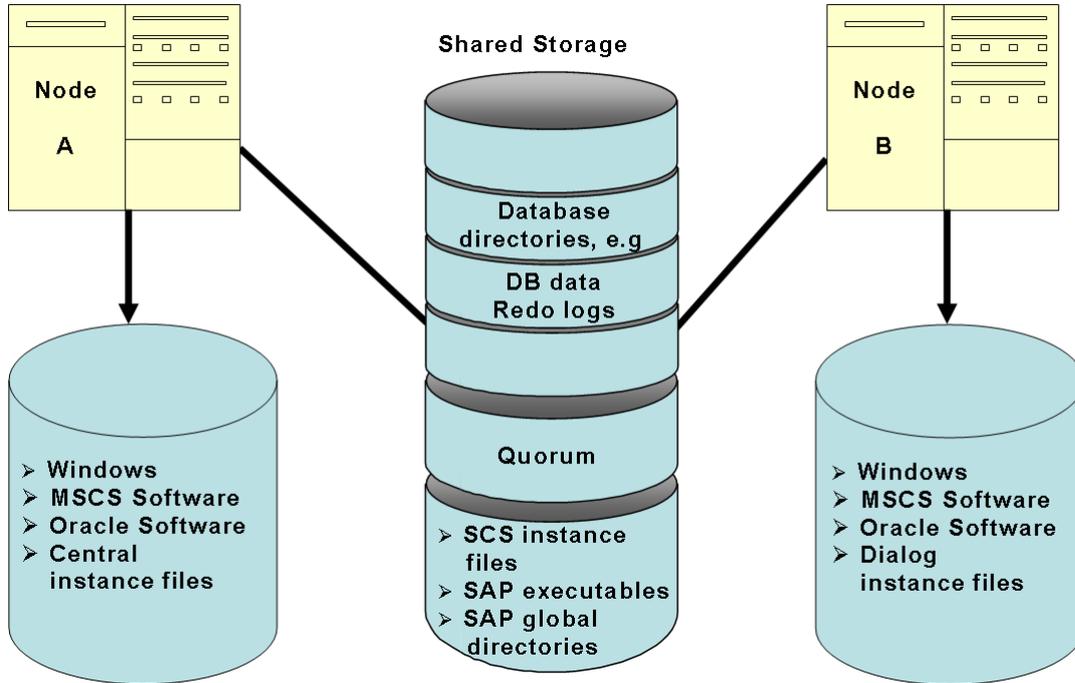
> **Note**
>
> The Oracle server software in the ORACLE HOME directory must have the same drive letter and path on both nodes.

Distribution of Database Files in a RAID Configuration

> **Caution**
>
> Microsoft does not support a Windows operating system-based RAID configuration (Dynamic Disks).

The following graphics show a secure method how to distribute the database files to different RAID volumes. You must always locate the database data and redo logs on **separate** RAID volumes.

Figure 14: Distribution of Database Files to Different RAID Volumes for Test or Development Systems

Database RAID Volumes

Operating System Level   **RAID Configuration Level**

Disk 1   DB Data   RAID 5

Disk 2   Redo Logs Set A
              Mirrored Redo Logs Set A

Disk 3   Redo Logs Set B   RAID 1
              Mirrored Redo Logs Set B

Disk 4   Archived Redo Logs
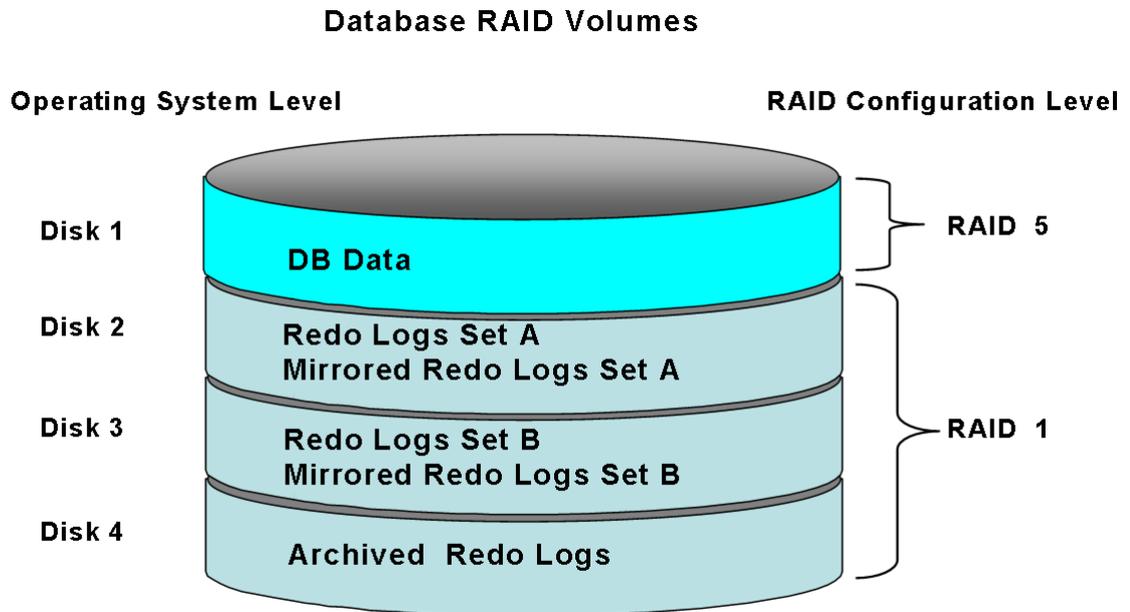
Figure 15: Distribution of Database Files to Different RAID Volumes for Production Systems
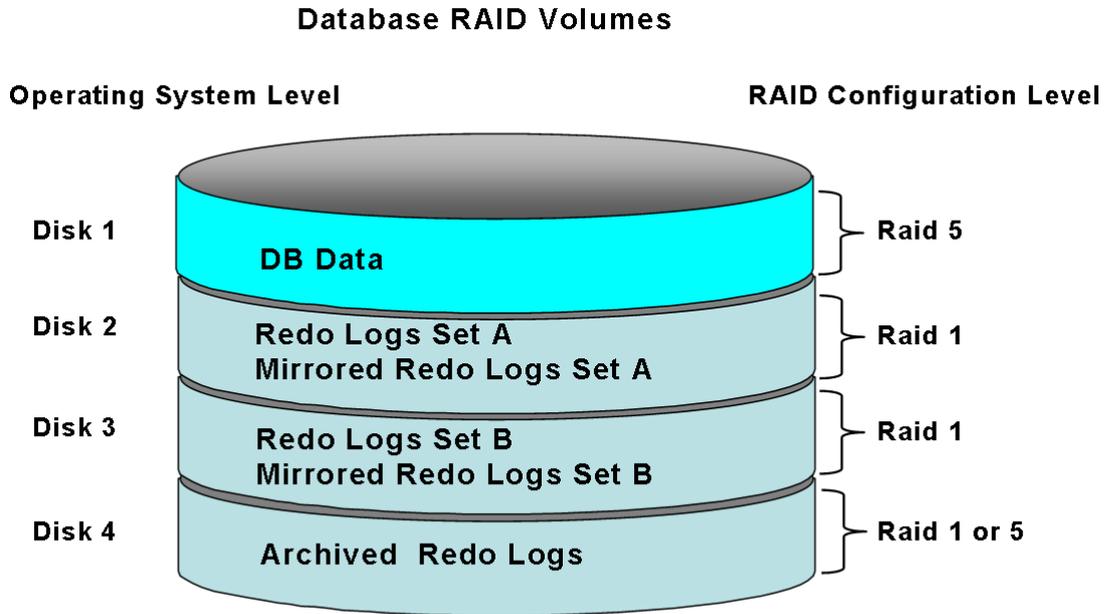
For high-performance production systems, we recommend that you locate the database files on at least four RAID volumes.

Note that the BR*Tools directories \sapreorg, \saptrace, \sapbackup, \sapcheck are not shown in the graphics. You can locate these directories on any of the database volumes as they do not require special security measures.

More Information

Directories in an MSCS Configuration [page]

3.3.2 Directories in an MSCS Configuration

The following tables show the directories where the main software components for the SAP cluster installation are stored:

Directories on Local Disks on Both Node A and B

Component	Default Directory
A supported *operating system* [page 159]	`%windir%`
MSCS software	`%windir%\Cluster`

Component	Default Directory
SAP cluster files	`%windir%\SAPCluster`
Oracle server software	`<drive>:\oracle\<SAPSID>\101`
Oracle Fail Safe software	`<drive>:\oracle\OFS`

Directories on Shared Disks

Component	Default Directory
Cluster *quorum resource*	`<drive>:\MSCS`
SAP global and instance directories	`<drive>:\usr\sap ...`

SAP data files	`<drive>:\ORACLE\<SAPSID>\<SAPSID>DATA1`
	 `...`
	 `\<SAPSID>DATA<n>`

Online redo logs, set A	`<drive>:\ORACLE\<SAPSID>\origlogA`
Online redo logs, set B	`<drive>:\ORACLE\<SAPSID>\origlogB`
Mirrored online redo logs, set A	`<drive>:\ORACLE\<SAPSID>\mirrlogA`
Mirrored online redo logs, set B	`\ORACLE\<SAPSID>\mirrlogB`
Backup of online redo logs	`<drive>:\ORACLE\<SAPSID>\oraarch`

BR*Tools directories	`...\sapreorg, \saptrace,`
	 `...\sapbackup, \sapcheck,`
	 `...\saparch`

💡 Note

In a live system with intense I/O activity, you must reserve at least 3 times the minimum amount of space specified above for the redo logs and mirrored redo logs.

SapCluster Directory

In an SAP cluster installation, an additional directory — `%WINDIR%\SapCluster` — is created under the system directory.

This contains all the SAP files required by both cluster nodes, independently of the node the SAP instance is running on. The files are database tools and program files (executables) used by the operating system monitor (SAPOsCol).

The directory is added to the path variable of the user `<sapsid>adm`.

3.3.3 IP Addresses in an MSCS Configuration

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

This section explains the different types of IP addresses and their function in the switchover mechanism of the cluster.

Types of IP Addresses

In a correctly configured cluster, there are seven IP addresses and corresponding host names. Some of the addresses are physical IP addresses that are assigned to the **network adapters** (cards), others are virtual IP addresses that are assigned to the **cluster groups**.

Physical IP Addresses Assigned to Network Adapters

An MSCS configuration usually has two networks:

- A public network that is used for the communication between the central instance, application servers and the LAN.
- A private network that is used internally for communication between the nodes of the cluster.

To set up these two networks, each node needs an adapter for both the private and public network. This means that each node must have an adapter for the private network and an adapter for the public network and each of these adapters has its own physical IP address and corresponding host name.

> **Note**
>
> For more information on network configuration, see also the Microsoft Knowledge Base Article 259267.

The following graphic illustrates the adapters required for the public and private networks, and their corresponding physical IP addresses. A physical IP address, as opposed to a virtual one, is stationary and permanently mapped to the same adapter.

Figure 16: Adapters and IP Addresses Required for Public and Private Networks
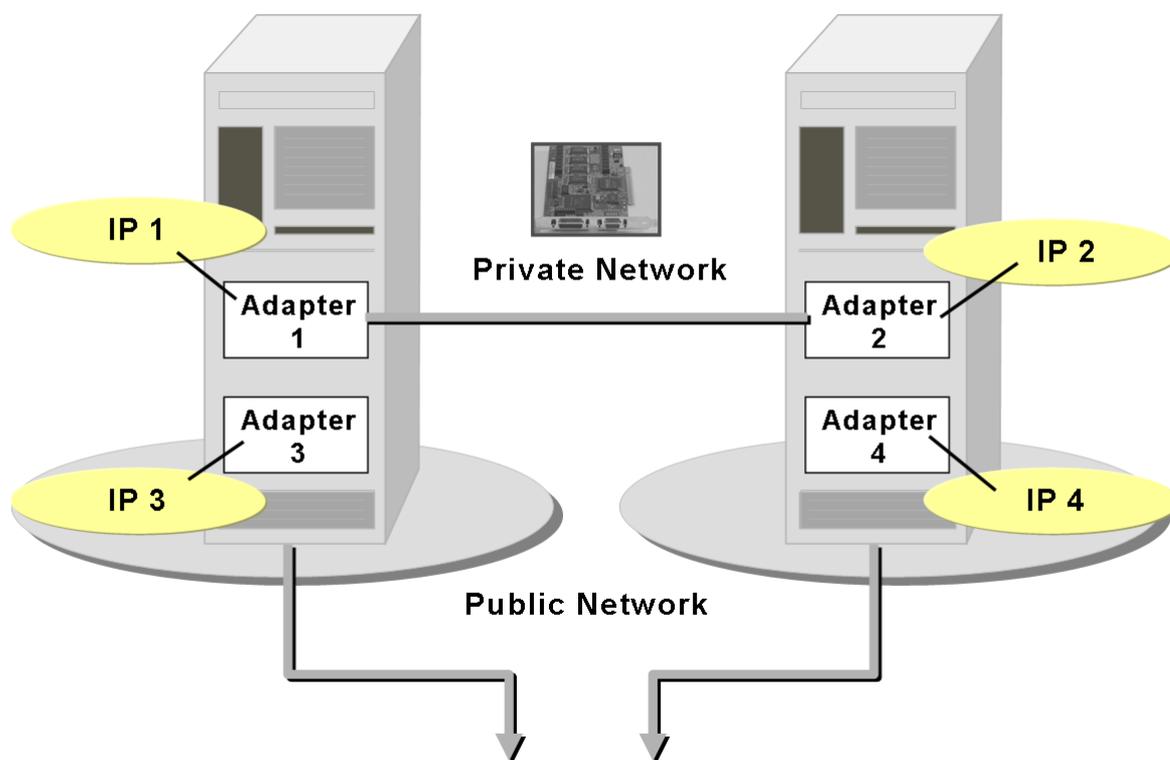
Host Names Assigned to Network Adapters

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

IP Addresses and Host Names

Network Adapter	IP Address	Host Name
Adapter 1 (private network)	10.1.1.1	clusA_priv
Adapter 3 (public network)	129.20.5.1	clusA

⚠ Caution

Make sure that you are aware of the following:

- The IP address and host name of the **public** network adapter is also the IP address and name of the machine. In our example, this means that the machine that is the MSCS node on the left in the graphic has the name clusA.
- Do **not** confuse the **host name** with the **computer name**. Each node also has a computer name, which is often the same as the host name, but is written in uppercase.
  The computer name is displayed in the node column of the *Cluster Administrator*. However, it is **not** required for the TCP/IP communication in the cluster. When you configure IP addresses and

corresponding names, keep in mind that it is the **host names** that are important for the cluster, not the computer names.

Virtual IP Addresses Assigned to Cluster Groups

When you have installed the SAP system and fully configured the cluster, the critical system resources are bound together in three different **groups**. Each of these groups requires a virtual IP address and host name that is permanently mapped to the group and not to a particular node. This has the advantage that, whenever a group is moved between nodes, its IP address and host name move together with it.

A cluster configuration has the following groups:

■ SAP cluster group
■ Database cluster group
■ Cluster group

Each group consists of a set of related resources that work together to offer a service to the system. For example, the database cluster group comprises all the resources that enable the database server to fulfill the requests of a client. When the group is moved from one node to the other, due to node failure, the virtual IP address and host name move with it. Therefore, there is a failover not only of resources, but also of the virtual IP address and host name. As a result, all clients can still reach the database server with the same IP address as before.

The following graphic illustrates how the virtual IP addresses of the database group and SAP group can move from one node to the other when failover occurs.

Figure 17: Failover of Virtual IP Addresses
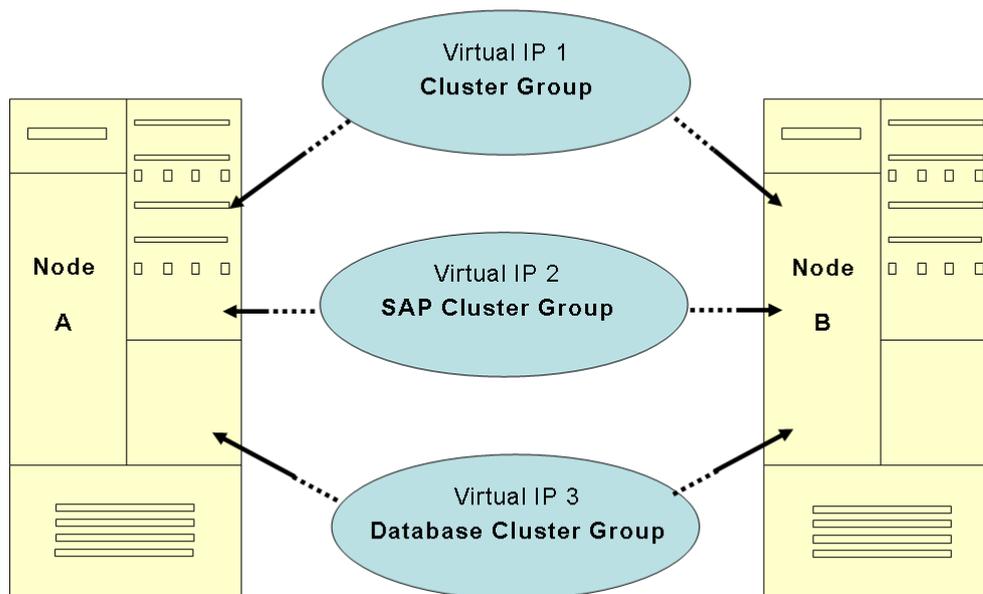
3.3.4 Obtaining IP Addresses for MSCS

You need to correctly configure IP addresses for a cluster system. During the installation procedure you have to assign seven IP addresses and host names. You normally obtain these names and addresses from the system administrator.

Prerequisites

■ If you are installing Windows for the first time on your system, follow the procedure "Obtaining IP Addresses" below.

■ If Windows has already been installed on your system, the host names and IP addresses of the network adapters (cards) have already been defined and exist in your system.
  This means that you can find out the IP addresses for the network adapters using the procedure "Determining Existing IP Addresses" below.
  However, you still need to use the table *Virtual IP Addresses* in the procedure *Obtaining IP Addresses*.

Obtaining IP Addresses

Ask the system administrator to give you the addresses and host names listed in the tables below. You will need to enter them later during the installation process.

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

⚠ Caution

Use the names **exactly** as specified by the system administrator, carefully observing upper and lowercase letters.

Physical IP Addresses

Component	Example for Physical IP Address	Example for Physical Host Name	Purpose	Defined During
Node A: adapter for private network	10.1.1.1	`clusA_priv`	Address for inter-node communication on the private network	Windows installation
Node A: adapter for public network	129.20.5.1	`clusA`	Address of node A for communication with application servers and LAN (this is the same as the address of node A)	Windows installation

Component	Example for Physical IP Address	Example for Physical Host Name	Purpose	Defined During
Node B: adapter for private network	10.1.1.2	clusB_priv	Address for inter-node communication on the private network	Windows installation
Node B: adapter for public network	129.20.5.2	clusB	Address of node B for communication with application servers and LAN (this is the same as the address of node B)	Windows installation

Virtual IP Addresses

Component	Example for Virtual IP Address	Example for Host Name	Purpose	Defined During
Cluster group	129.20.5.3	clusgrp	Virtual address and name of the cluster group. It identifies the cluster and is used for administration purposes.	MSCS software installation
SAP cluster group	129.20.5.4	sapgrp	Virtual address and name for accessing the group of SAP resources, regardless of the node it is running on	Configuration of SAP system for MSCS with SAPinst on node A
Database cluster group	129.20.5.5	dbgrp	Virtual address and name for accessing the group of database resources, regardless of the node it is running on	Execution of MSCS wizard or database-specific cluster scripts

Determining Existing IP Addresses

To find out the existing IP addresses and corresponding host names and addresses, proceed as follows:

1. Choose *Start* ® *Settings* ® *Network and dial-up Connections*.
   The *Network and dial-up Connections* window appears
2. Select one of the network cards that are displayed and choose *File* ® *Properties*.
   A dialog box opens.
3. Choose *TCP/IP Protocol* ® *Properties*.
   The *TCP/IP Properties* dialog box appears and shows the IP address of the initially selected network card.
4. To find out the host name that is mapped to the IP address, use the ping command:
   ping -a <IP_Address>
   The system returns the host name assigned to the IP address.

Do not forget to ping your local machine as well.

5. Repeat these steps for the other network cards.

For more information about IP addresses in the cluster environment, see *IP Addresses in an MSCS Configuration* [page 153].

3.3.5 Checking Hardware and Software Requirements for MSCS

When you install the SAP system on cluster hardware, you have to meet the hardware requirements shown below. This makes sure that the system can take advantage of the MSCS functionality and achieves an acceptable performance level.

Procedure

1. Check that your cluster hardware is certified.
   AddOn Technology Center for SAP (Add On TCS) certifies hardware platforms for SAP on Microsoft Windows. The cluster must be included in the Microsoft list of certified clusters and its components. You can access the lists at the following Internet addresses:

   `www.microsoft.com/hcl`

   `www.saponwin.com`

2. Make sure that both nodes of the cluster are connected by a private and public network:
   - The public network enables communication from the nodes of the cluster to other resources in the local area network (LAN).
   - The private network enables internal communication between the nodes. In particular, it enables the Cluster Service running on both nodes to regularly exchange messages on the state of the nodes so that the failure of resources is quickly detected.

3. Check that sufficient storage space is available.
   Each of the nodes in the cluster must have its own local disks and have access to shared disks that can be reached by both nodes via a shared bus.
   All software – except the Windows operating system, the Oracle home directory, and the MSCS software – is stored on the shared disks.
   One of the shared disks must be used exclusively by the Quorum resource that stores the cluster registry and records information about the state of the cluster.

Disks	Required Space	How to Check
1 local disk on each node	4 GB	a) Choose *Start* ® *Programs* ® *Administrative Tools* ® *Computer Management* ® *Disk Management*. b) Right-click the disk and choose *Properties*.
At least 6 shared disks	78 GB	a) Choose *Start* ® *Programs* ® *Administrative Tools* ® *Computer Management* ® *Disk Management*.

Disks	Required Space	How to Check
		b) Right-click the disk and choose *Properties*.

> **Note**
> All disk controllers must be able to support hardware-based RAID.

4. Check the RAM and paging file size on each node:

Requirement	How to Check
Minimum RAM: 1024 MB to 4096 MB (depending on system load)	In the Windows Explorer choose *Help* ® *About Windows*.
Paging file size of 1 times RAM plus 8 GB.	a) Right-click *My Computer* and choose *Properties*. b) Choose *Advanced* ® *Performance Options*. c) If required, in section *Virtual Memory*, choose *Change*. Only select the local disks.

5. Check that the software you install on the cluster nodes meets the following requirements:

Software Requirement	How to Check
English international version of one of the following: ■ Windows Server 2003 Enterprise Edition ■ Windows Server 2003 Datacenter Edition	To check the Windows version a) Choose *Start* ® *Programs* ® *Accessories* ® *Command Prompt* b) Enter the command **winver**
Oracle Enterprise Edition 10g with the current patch set, and hotfix (if available).	For more information on the current patch set, see **SAP Note** 829486. > **Note** > You have to install the Oracle patch set and hotfix (if available) on both nodes.
Oracle Fail Safe software version 3.3.3	-
MSCS software	-
Suitable Windows Resource Kit is strongly recommended	-

3.4 Preparation

Before you install the SAP system, you need to prepare the system for cluster installation.

> ⚠️ Caution
>
> You **cannot** use a host with a domain controller as a cluster node.

Prerequisites

- You have finished the installation planning, especially the *hardware and software requirements* [page 159]
- On **both nodes**, you install the *operating system* [page 159] with the option *Cluster Service*. For more information, see the Windows documentation.

> 💡 Note
>
> When you install the *Cluster Service*, you specify a separate, shared disk for the quorum resource.

Process Flow

1. On both nodes, you *manually assign drive letters to the shared disks* [page 161] using the *Windows Disk Administrator*. Both nodes must access the shared disks with the same drive letters.
2. On **both nodes**, you adjust the size of paging file and the file cache. For more information, see *Hardware and Software Requirements* [page 159] and *Reducing the Size of File Cache* [page 37].
3. You *map the seven IP addresses to host names* [page 161] on the Domain Name System (DNS) Server or in the `hosts` file.
4. You *check the mapping of host names for MSCS* [page 162].

3.4.1 Assigning Drive Letters for MSCS

We recommend that you assign drive letters for MSCS.

In a cluster, the shared disks that can be accessed by both nodes via a common bus must be addressed by both nodes with the same drive letters.

Procedure

1. Choose *Start* ® *Programs* ® *Administrative Tools* ® *Computer Management* ® *Storage* ® *Disk Management*.
2. Select a disk and choose *Action* ® *All tasks* ® *Change drive*.
3. Enter a new drive letter.

3.4.2 Mapping Host Names to IP Addresses for MSCS

To enable correct operation of the failover mechanism, you have to map all IP addresses in the cluster to host names.

The mapping enables the system to translate host names into IP addresses. Host names are normally used for administrative tasks because they are easier to use than the long, numeric IP addresses. However, the system can only respond to host names if they are translated into IP addresses.

Prerequisites

■ You have installed the Windows operating system.
■ You have the *list of IP addresses* [page 157].
■ You have entered correctly **all** seven IP addresses required for the MSCS configuration.

> ⚠ Caution
>
> Missing or incorrect entries for the IP addresses can cause problems later during the installation.

Procedure

To map the host names to the IP addresses, do one of the following:

■ You map the host names to IP addresses on a Domain Name System (DNS) server.
■ You map the IP addresses in the Windows `hosts` file.
  The file is located in the default directory for Windows:
  `%SystemRoot%Drive\system32\drivers\etc`

> ⬆ Recommendation
>
> We recommend that you perform the mapping on the DNS server because this only requires a single entry.
>   If you perform the mapping in the hosts file, you have to maintain the `hosts` file on both nodes of the cluster, and on all application servers and front ends, as each host in the system has its own `hosts` file.

3.4.3 Checking the Mapping of Host Names for MSCS

You need to check the mapping of host names to IP addresses as otherwise you might have serious problems later.

Prerequisites

You have *mapped the host names to the IP addresses* [page 161] on the DNS Server or in the `hosts` file.

Procedure

1. For **each** IP address enter the following commands:
   a) `ping -a <IP_Address>`
      The system returns the host name that is assigned to the IP address.
   b) `ping hostname`
      The system returns the IP address that is assigned to the host name.

      > 💡 Note
      >
      > ■ When you enter the ping command, you do not get a reply, if the host does not yet exist.
      > ■ If the address you are checking already exists in the system, you also receive a reply from the host. For example, after the installation of Windows and the configuration of the network, you get a reply when entering the IP addresses of the network adapters.

2. Compare the output with your own record of addresses and host names, and check for the following possible errors:
   - Incorrect output of uppercase and lowercase

     Make sure that you correct the error before you proceed with the installation.
   - Error in the network bindings

     If you enter the name of the **public** network adapter, which is usually also the name of the local host, and the system returns the IP address of the **private** network, there is an error in the network bindings.

     To correct the network bindings, do the following on **both** nodes:

     a) Choose *Start* ® *Settings* ® *Network and Dial-up Connections*

        The *Network and Dial-up Connections* window appears.

     b) Choose *Advanced* ® *Advanced Settings* ® *Adapters and Bindings*

        The network cards of the private and public networks are displayed for the current node.

     > **Note**
     >
     > The card of the **public** network must be displayed **before** that of the **private** network. If necessary, change the order in which the cards are listed by using the *Move Up* and *Move Down* arrows

3.5 Installation Process

You install the SAP System for MSCS.

Prerequisites

- You have completed the installation preparations for MSCS.

  > **Note**
  >
  > To make sure that all preparation steps have been correctly performed, check that you can move the disk resources from one node to the other so that they are only accessible from a single node at any time.

- You are logged on as domain administrator, unless otherwise specified.

  If for any reason, you are not granted domain administrators rights, you can perform the installation as a domain user who is a member of the local administrators group. However, the domain administrator has to prepare the system appropriately for you. Do not use the user `<sid>adm` unless specified.
- On node A, in the *Cluster Administrator*, you make sure that all existing cluster groups are online.

Process Flow

> **Caution**
>
> - If you are prompted during the installation process, log off and log on again.
> - When you *reboot during the installation process* [page 165], resources fail over to the second node. Therefore, after each reboot, you have to return the system to the state it had before the reboot.

1. In the *Cluster Administrator*, you *move all disk groups and the cluster group to node A* [page 164].
2. On **both nodes**, you *install the Oracle database server software and the current patch set and hot fix (if available)* [page 46].
3. On **both nodes**, you *install the Oracle Fail Safe Software 3.3.3* [page 165].
    After the installation you *reboot* [page 165].

> ⚠ Caution
>
> Do **not** install the Fail Safe Software **in parallel** on both nodes.

4. You *install the central services instance for ABAP (ASCS) on node A* [page 169].
5. You *install the central services instance (SCS) on node A* [page 169].
6. You *cluster node A* [page 170].
7. You *create the Oracle Failsafe group* [page 171].
8. You *install the database instance on node A* [page 172].
9. You *set up as shared database directory in your Oracle Home* [page 172].
10. You *add the Oracle database resource to the Fail Safe group* [page 173].
11. You *cluster node B* [page 174].
12. You *install the central instance* [page 175].
13. You *install at least one dialog instance* [page 176].

3.5.1 Moving MSCS Groups

During various stages of the cluster installation, you have to move the database, SAP or disk cluster groups from one node to the other before you can continue.

You can use the *Cluster Administrator* or the *Fail Safe Manager*. The following describes the procedure for both.

Prerequisites

■ For more information if you need to reboot during the installation, see *Rebooting During the Installation or Conversion for MSCS* [page 165]

Procedure

Moving Groups with the Cluster Administrator

You use the Cluster Administrator for groups that do not belong to the Oracle database groups.

1. Start the *Cluster Administrator* with *Start ® Programs ® Administrative Tools ® Cluster Administrator*.
2. In the *Cluster Administrator*, select the group you want to move, and drag it to the required node on the left-hand pane.
3. Repeat the previous step for each group that you want to move.

Moving Groups with the Fail Safe Manager

You use the Fail Safe Manager to move the Oracle resources, for example, the Oracle database group

1. Start the *Fail Safe Manager* with *Start ® Programs ® Oracle <Home_Name_fail safe> ® Oracle Fail Safe Manager*.

2. On the left-hand pane, right-click the group you want to move, and choose *Move to a Different Node* on the context menu
The group is now moved to the other node.

3.5.2 Rebooting During the Installation or Conversion for MSCS

You only need to perform this procedure if you have to reboot during the installation or conversion for MSCS. A reboot means that resources fail over to the second node. Therefore, after each reboot, you have to return the system to the state it had before the reboot, as described below.

Procedure

1. In the *Cluster Administrator*, move all resources back to the original node.
2. If you have **not** yet clustered the database, restart the database service.
3. If you have **already** clustered the database, bring the database group online.
4. Recreate the `SAPMNT` share for the directory `usr\sap`.

> ⚠️ Caution
>
> You have to reset the permissions for the `SAPMNT` share from *Read* to *Full Control*, as follows:
> a) Right-click on the directory `usr\sap` and choose *Sharing and Security*.
> b) Select *Sharing* and in the *Share Name* field, enter `SAPMNT`.
> c) Under *Permissions*, make sure that the permission for User Everyone for `SAPMNT` is set to *Full Control*.

3.5.3 Installing the Oracle Failsafe Software

To enable the database to take advantage of the cluster functionality, you have to install an additional component, the Oracle Fail Safe software. The installation procedure differs depending on whether you install the Oracle Fail Safe software in a 32-bit or a 64-bit system.

> 💡 Note
>
> The Oracle Failsafe Service from previous Oracle releases is now called **OracleMSCSServices**. You might still see the old name in certain SAP Notes.
> Be sure that you always use the new name `OracleMSCSServices`.

> ⚠️ Caution
>
> Before you install the Oracle Failsafe software, make sure that you have installed the Oracle database software locally on both nodes, using the same Oracle home.

3.5.3.1 Installing the Oracle Fail Safe Software in a 32-Bit System

> 💡 Note
>
> You have to install the Oracle Fail Safe (OFS) Software on both nodes.

1. In the *Cluster Administrator* make sure that the:
   - ■ Second cluster node is not set to *Pause*.
   - ■ SAP group is offline on the node where you are installing.
2. Make sure that the Cluster Server service is started on both nodes.
3. Start the *Oracle Universal Installer* from the Oracle RDBMS DVD.

   To do this, double-click the file `sapofs.cmd` in the directory `<DVD_DRIVE>:\OFS333I386`

   The *Installer* opens and guides you through the installation process in a series of screens. Enter the required information as follows:

   💡 Note

Screen	Entry
Welcome	Choose *Next*.
Specify File Locations	■ *Source...* For *Path* The path to the Oracle software on the DVD is displayed. Do **not** change the path. ■ *Destination...* ● For *Name* Enter the name of the `<Oracle_Home>` for the Fail Safe software. The Fail Safe software must be installed in a separate `<Oracle_Home>` directory, for example **OFS**. Use the same `<Oracle_Home>` for both nodes. ● For *Path* Enter the path of the `<Oracle_Home>` directory for the Fail Safe software. It must be on a local disk, for example: `F:\Oracle\OFS`
Available Products	Select *Oracle Fail Safe 3.3.3.0.0* and choose *Next*.
Installation types	Choose *Typical*.
Reboot Needed After Installation	Choose *Next*.
Summary	View the information and choose *Install*.
Install	Wait while the software is installed.
Configuration Tools	On the dialog box *Oracle Fail Safe Account/Password* enter the account and password under which the *Fail Safe* software is to run. This must be the same account as the one under which the Cluster *Server service* is running. To find out which account must be entered, choose *Start < ® Settings > ® Control Panel* ® *Administrative Tools* ® *Services*. Select the Cluster Service and click *Startup…* The log on account for the service is displayed. Enter this account for *Oracle Fail Safe Account/Password*.
End of Installation	Choose *Exit* to close the Oracle Universal Installer.

4. Reboot and log on again.

> ⚠️ **Caution**
>
> Do not reboot a node, if the installation of OFS 3.3.3 is in progress on the other node.

3.5.3.2 Installing the Oracle Fail Safe Software in a 64-Bit System

If you use a 64-bit system you first have to install the 64-bit Fail Safe server software, and then the 32-bit Fail Safe client software.

> 💡 **Note**
>
> You have to install the Oracle Fail Safe (OFS) Software on both nodes.

Prerequisites

■ In the *Cluster Administrator* make sure that the:
  ● Second MSCS node is not set to *Pause*.
  ● SAP group is offline on the node where you are installing.
■ Make sure that the *Cluster Server* service is started on both nodes.

Procedure

1. Start the *Oracle Universal Installer* from the Oracle RDBMS DVD to install the Fail Safe server software:
    a) Double-click the file `sapofs.cmd` in the directory `<DVD_DRIVE>:\OFS333IA64`.
    b) Enter the required information as shown in the following table:

Screen	Entry
Welcome	Choose *Next*.
File Locations	*Source...* For *Path* The path to the Oracle software on the DVD is displayed. Do not change the path. *Destination...* For *Name* Enter the name of the `Oracle_Home` for the *Fail Safe* software. The Fail Safe software must be installed in a separate `Oracle_Home` directory, for example `OFSSRV`. Use the same `Oracle_Home` for both nodes. For *Path* Enter the path of the `Oracle_Home` directory for the *Fail Safe* software. It must be on a local disk, for example: `F:\Oracle\OFS\SRV` Choose *Next*.
Installation Types	Choose *Typical*.

Screen	Entry
Reboot Needed After Installation	Choose *Next*.
Summary	View the information and choose *Install*.
Install	Wait while the software is installed.
Configuration Tools	On the dialog box *Oracle Fail Safe Account/Password* enter the account and password under which the *Fail Safe software* is to run. This must be the same account as the one under which the *Cluster Server* service is running. To find out which account must be entered, choose *Start* < ® *Settings* > ® *Control Panel* ® *Administrative Tools* ® *Services*. Select the Cluster Service and choose*Startup...* The log on account for the service is displayed. Enter this account for *Oracle Fail Safe Account/Password….*
End of Installation	Choose *Exit* to close the Oracle Universal Installer.

2. Start the *Oracle Universal Installer* from the Oracle RDBMS DVD to install the 32-bit Fail Safe client software:
   a) Double-click the file `sapofs.cmd` in the directory `<DVD_DRIVE>:\OFS333I386`
   b) Enter the required information as shown in the following table:

Screen	Entry
Welcome	Choose *Next*.
File Locations	*Source...* For *Path* The path to the Oracle software on the DVD is displayed. Do **not** change the path. *Destination...* For *Name* Enter the name of the `Oracle_Home` for the Fail Safe software. The Fail Safe software must be installed in a separate `Oracle_Home` directory, for example `OFSCLI`. Use the same `Oracle_Home` for both nodes. For *Path* Enter the path of the `Oracle_Home` directory for the Fail Safe software. It must be on a local disk, for example: `F:\Oracle\OFS\CLI`.
Available Products	Select *Oracle Fail Safe 3.3.3.0.0* and choose *Next*.
Installation Types	Choose *Client Only*.
Summary	View the information and choose *Install*.
Install	Wait while the software is installed.
End of Installation	Choose *Exit* to close the Oracle Universal Installer.

3. Reboot and log on again.

⚠️ Caution

Do not reboot a node, if the installation of OFS 3.3.3 is in progress on the other node.

3.5.4 Installing the Central Services Instance for ABAP (ASCS)

1. *Run SAPinst* [page 48] *and choose <Your SAP System>* ® *System with Usage Types | Software Units* ® *<Database>* ® *High Availibility System* ® *<Usage Type>* ® *Central Services Instance for ABAP (ASCS).*

2. If you install the ASCS instance with SAPinst for the first time, you are asked to log off. In this case, choose *OK* and log on again.
   Re-choose *<Your SAP System>* ® *System with Usage Types | Software Units* ® *<Database>* ® *High Availibility System* ® *<Usage Type>* ® *Central Services Instance for ABAP (ASCS).*
   Select *Run a new installation* and choose *OK*.

3. Follow the instructions in the SAPinst dialogs and enter the required parameter values.

   💡 Note

   For more information about the input parameters, position the cursor on the field of the respective parameter and press the F1 key in SAPinst.

   ⚠️ Caution

   The ASCS installation drive must be a **shared** disk, which belongs to the SAP cluster group.

4. Check that the ASCS instance is running.

3.5.5 Installing the Central Services Instance (SCS)

⚠️ Caution

Make sure that you install the SCS instance on the same shared disk as the ASCS instance.

1. *Run SAPinst* [page 48] *and choose <Your SAP System>* ® *System with Usage Types | Software Units* ® *<Database>* ® *High Availibility System* ® *<Usage Type>* ® *Central Services Instance (SCS).*

2. If you install the SCS instance with SAPinst for the first time, you are asked to log off. In this case, choose *OK* and log on again.
   Re-choose *<Your SAP System>* ® *System with Usage Types | Software Units* ® *<Database>* ® *High Availibility System* ® *<Usage Type>* ® *Central Services Instance (SCS).*
   Select *Run a new installation* and choose *OK*.

3. Follow the instructions in the SAPinst dialogs and enter the required parameter values.

   💡 Note

   For more information about the input parameters, position the cursor on the field of the respective parameter and press the F1 key in SAPinst.

> ⚠ Caution
>
> The SCS installation drive must be a **shared** disk which belongs to the SAP cluster group.

4. Check that the SCS instance is running.

3.5.6 Configuring MSCS Cluster Node A

To configure node A so that it functions properly in MSCS, you have to run the cluster configuration option offered by the SAPinst tool. When you run this option it:

■ Creates the SAP cluster group
■ Copies tools to the `SAPCluster` directory
■ Sets the `SAPService` to *manual*
■ Makes sure that the `SAPOsCol` service is started from the `SAPCluster` directory

> ⚠ Caution
>
> When you *reboot during the conversion to MSCS* [page 165], resources fail over to the second node. Therefore, after each reboot, you have to return the system to the state it had before the reboot.

Prerequisites

■ You are logged on to **node A** as domain administrator or as a local user with domain administration rights. For more information, see *Performing ad Domain Installation without being a Domain Administrator* [page 38].
■ The ASCS and SCS installation drive(s) must be online on MSCS Node A.

Procedure

1. *Run SAPinst* [page 48] and choose *<Your SAP System>* ® *System with Usage Types | Software Units* ® *<Database>* ® *High Availability System* ® *<Usage Type>* ® *MSCS Cluster Node A*.

    > 💡 Note
    >
    > If SAPinst prompts you to log off from your system, log off and log on again.

2. Enter the required parameter values.

    > 💡 Note
    >
    > Make sure that you choose instance type *ABAP + Java SCS Instances (ABAP+Java)*.

    > 💡 Note
    >
    > For more information about the input parameters, position the cursor on the field of the respective parameter and press the F1 key in SAPinst.

Result

SAPinst converts the SAP instances on Node A for operation in MSCS.

3.5.7 Creating the Oracle Fail Safe Group

You perform the following steps in the Fail Safe Manager on the primary node A.

Procedure

1. Choose *Start ® Programs ® Oracle - <OFSClient_Home> ® Oracle Fail Safe Manager.*
    The window *Add Cluster To Tree* appears.
2. Insert your virtual cluster name.
3. Right-click the cluster and choose *Connect to cluster*.
4. Enter the following and then confirm your entries with *OK*:

User name	`<user>` (user with the account under which the service *ClusterServer* is running)
Password	`<password>`
Cluster Alias	`<virtual_cluster_name>` (name of the cluster you are installing)
Domain	`<domain_name>`

5. In the *Welcome* dialog box, choose *Verify Cluster*.

    > **Note**
    > Both cluster nodes must be up and running for this step.

    The window *Clusterwide Operation: Verifying Fail Safe Cluster* shows the steps that are executed to verify the cluster. When you are informed that the operation has completed successfully, close the window.
6. In the *Oracle Fail Safe Manager*, create the *Fail Safe* group `ORACLE<DBSID>`.
    Choose *Groups ® Create*.
    The window *Create Group:..* appears.
7. Enter the *Group Name* **ORACLE<DBSID>**.
    In answer to the question *Do you want to allow the group to failback to preferred node?*, select *Prevent failback*.
    The window *Finish Creating the Group* appears and displays information about the group. Choose *OK*.
8. In the window *Add Virtual Address*, select *Yes* to indicate that you want to add a virtual address to the group.
    The *Add Resource to Group: – Virtual Address* appears.
9. Select *Show networks accessible by clients* and enter the following information:
    Under *Network* leave the entry **public**
    Under *Virtual Address* for *Host Name* enter the **<virtual_hostname>** .
    The *IP Address* is automatically recognized.
    Choose *Finish*.
    The window *Add the Virtual Address to the Fail Group* appears. Choose *OK*.

    > **Note**
    > If the *Fail Safe Manager* cannot create the *Fail Safe* group, look at the *Windows Event Logs* on both nodes to find out the reason for the failure.

3.5.8 Installing the Database Instance

Prerequisites

■ The SAP cluster group is *Online* on Node A.
■ The Oracle shared disk is *Online* on Node A.
■ You have added the Oracle virtual IP network name to the Oracle cluster group and brought it online on Node A.

Procedure

Perform the following steps on MSCS node A.

1. On MSCS node A, *run SAPinst* [page 48] and choose *<Your SAP System>* ® *System with Usage Types | Software Units* ® *<Database>* ® *High Availability System* ® *<Usage Type>* ® *Database Instance*.

2. Follow the instructions in the SAPinst dialogs and enter the required parameter values.

> ⚠ Caution
>
> For the profile UNC path you have to use the virtual SCS host name, for example:
> `\\<SAPGLOBALHOST>\sapmnt\<SAPSID>\SYS\profile`.

> 💡 Note
>
> For more information about the input parameters, position the cursor on the field of the respective parameter and press the `F1` key in SAPinst.

3.5.9 Setting Up a Shared Database Directory in Oracle Home

As of Oracle 10g your database is configured for using an `spfile`. With an `spfile` you can set up a central (shared) `<Oracle_Home>\database`-directory for MSCS with a link or junction.

A central `<Oracle_Home>\database`-directory has the following advantages:

■ You can also use *sqlplus* remotely to make changes to your profile parameters
■ You only have to make the changes in the parameter files once in the shared `<Oracle_Home>\database`-directory.

> 💡 Note
>
> In the past, you had to apply all changes in the parameter file `init<DBSID>.ora` in the `<Oracle_Home>\database`-directories on both nodes.

Prerequisites

You have one of the following executables available:

■ `linkd.exe`
   This executable is part of the Microsoft Windows 2003 Server Resource Kit. You can download the kit from `www.microsoft.com` . Search for *Microsoft Windows 2003 Server Resource Kit*.

> **Note**
>
> After you have installed the resource kit you can copy `linkd.exe` to a local directory.

- `junction.exe`

  You can download this executable from **www.sysinternals.com** (Search for *junction*).

Procedure

1. Stop the Oracle database and the Oracle Service.
2. In the `sapdata1` directory create the directory `database`.
   The `sapdata1` directory is located on a shared disk in the cluster.
3. On node A, change to the Oracle Home directory, and enter the following command:
   `move * <path to_sapdata1>\database`
4. Delete the `<Oracle_Home>\database`-directory with the command:
   rd /q /s database

   > **Note**
   >
   > You can also use the Windows Explorer to delete the directory.

5. Create the junction or link with the following command:
   - If you use `junction`, enter:

     <path_to_junction.exe> %Oracle_Home%\database <complete_path_to_sapdata1>\database
   - If you use `linkd` enter:

     <path_to_linkd.exe> %Oracle_Home%\database <complete_path_to_sapdata1>\database

   > **Note**
   >
   > You can also use the 32-bit `junction.exe` or `linkd.exe` in a 64-bit Windows operating system.

6. Move the disk, where the …`\sapdata1\database` directory is located, to node B.
7. Repeat steps 4 and 5 on MSCS Node B.
8. Create the `init<DBSID>_OFS.ora` file in the `database` directory, and enter the following line:
   spfile = <path_to_Oracle_Home>\database\SPFILE<DBSID>.ora

3.5.10 Adding the Oracle Database Resource to the Fail Safe Group

1. Copy the `sqlnet.ora` file from the directory `<ORACLE_HOME>\network\admin` on MSCS node A to the same directory on MSCS node B.
2. Start the *Oracle Fail Safe Manager* with *Start* ® *Programs* ® *Oracle - <Failsafe_Home_Name>* ® *Oracle Fail Safe Manager*.
3. In the tree on the left, expand *<Node_A>* ® *Standalone Resources* and then select the database `<DBSID>.world`.
4. Choose *Resources* ® *Add to Group*.
5. On the dialog box *Add Resource to Group − Resources:*
   For *Resource Type*, select *Oracle Database*.

For *Group name*, select *Oracle<DBSID>*.

6. On the dialog box *Add Resource to Group − Database Identity*, enter the following:

Service Name	`<DBSID>.world`
Instance Name	`<DBSID>`
Database Name	`<DBSID>`
Parameter File	`<DRIVE>:\<ORACLE_HOME>\database\init<DBSID>_OFS.ora`

7. When you have made all entries, choose *Next*.

8. On the dialog box *Confirm Add Database to Group* choose *Yes*.

9. For each node a pop-up appears: *The Oracle Net Listener uses a host name in the host address parameter. It must be converted to use an IP address.*

    Choose *Yes* to convert to an IP address.

10. Copy `tnsnames.ora` to `\\<sapglobalhost>\sapmnt\<SAPSID>\SYS\profile\oracle`.

3.5.11 Configuring MSCS Cluster Node B

To configure the second node in the cluster, you have to run the MSCS configuration option for node B offered by the SAPinst tool. When you run this option it:

- Creates users and groups
- Copies tools to the `SAPCluster` directory
- Sets the system and user environment
- Enters required port numbers in the Windows services file
- Creates the `SAPService` and `SAPOsCol` Services

⚠ Caution

   When you *reboot during the conversion to MSCS* [page 165], resources fail over to the second node. Therefore, after each reboot, you have to return the system to the state it had before the reboot.

Prerequisites

- You are logged on to **node B** as domain administrator or as a local user with domain administration rights. For more information, see *Performing ad Domain Installation without being a Domain Administrator* [page 38].
- You have already configured *MSCS Cluster Node A* [page 170]. Node A is the primary cluster node.

Procedure

1. *Run SAPinst* [page 48] and choose *MSCS Cluster Node B*.

    💡 Note

       If SAPinst prompts you to log off from your system, log off and log on again.

2. Run SAPinst and choose *<Your SAP System>* ® *System with Usage Types | Software Units* ® *<Database>* ® *High Availability System* ® *<Usage Type>* ® *MSCS Cluster Node B.*

> **Note**
>
> If SAPinst prompts you to log off from your system, log off and log on again.

3. Enter the required parameter values.

> **Note**
>
> Make sure that you choose instance type *ABAP + Java SCS Instances (ABAP+Java)*.

> **Note**
>
> For more information about the input parameters, position the cursor on the field of the respective parameter and press the `F1` key in SAPinst.

When you have entered all required entries, SAPinst begins processing and converts the SAP instances on node B for operation in MSCS.

4. When SAPinst has finished, start the SAP cluster group `SAP <SAPSID>` as follows:
   a) Open the *Cluster Administrator* with *Start* ® *Programs* ® *Administration Tools* ® *Cluster Administrator*.
   b) Select the SAP cluster group and bring it online.

3.5.12 Installing the Central Instance

The following describes how to install the central instance for MSCS.
    You have the following options to install the central instance:

■ You install the central instance on an MSCS node.
    In this case, bring the SAP cluster group online on this node, and make sure that the central instance number is different from the SCS instance number.
■ You install the central instance on a host outside of MSCS.
    In this case, you have to install the database client software on this host.

Procedure

1. *Run SAPinst* [page 48] and choose *<Your SAP System>* ® *System with Usage Types | Software Units* ® *<Database>* ® *High Availability System* ® *<Usage Type>* ® *Central Instance*.
2. If you are asked to log off, choose *OK* and log on again.
    Re-choose *<Your SAP System>* ® *System with Usage Types | Software Units* ® *<Database>* ® *High Availability System* ® *<Usage Type>* ® *Central Instance*.
    Select *Run a new installation* and choose *OK*.
3. Follow the instructions in the SAPinst dialogs and enter the required parameter values.

> ⚠ Caution
>
> ■ If you install the central instance on an MSCS node, make sure that on the screen *SAP System*
>   *> General Parameters* for the:
>   ● *Profile Directory*, you use the UNC path of the virtual SCS host name, for example:
>   `\\<SAPGLOBALHOST>\sapmnt\<SAPSID>\SYS\profile`.
>   ● *Installation Drive*, you choose the local disk where you want to install the central instance. Do **not**
>   enter the shared disk for the SCS instance.

> 💡 Note
>
> For more information about the input parameters, position the cursor on the field of the respective
> parameter and press the `F1` key in SAPinst.

4. Check that the central instance is running.

3.5.13 Installing the Dialog Instance

You have to install at least one dialog instance for MSCS.
   You have the following options to install the dialog instance:

■ You install the dialog instance on an MSCS node.
   In this case, bring the SAP cluster group online on this node, and make sure that the dialog instance
   number is different from the SCS instance number.
■ You install the dialog instance on a host outside of MSCS.
   In this case, you have to install the database client software on this host.

Procedure

1. *Run SAPinst* [page <u>48</u>] and choose *<Your SAP System>* ® *System with Usage Types | Software Units* ® *<Database>* ®
   High Availability System ® *<Usage Type>* ® *Dialog Instance*

2. If you are asked to log off, choose *OK* and log on again.
   Re-choose *<Your SAP System>* ® *System with Usage Types | Software Units* ® *<Database>* ® *High Availability*
   System ® *<Usage Type>* ® *Dialog Instance*.
   Select *Run a new installation* and choose *OK*.

3. Follow the instructions in the SAPinst dialogs and enter the required parameter values.

> ⚠ Caution
>
> ■ If you install the dialog instance on an MSCS node, make sure that on the screen *SAP System*
>   *> General Parameters* for the:
>   ● *Profile Directory*, you use the UNC path of the virtual SCS host name, for example:
>   `\\<SAPGLOBALHOST>\sapmnt\<SAPSID>\SYS\profile`.
>   ● *Installation Drive*, you choose the local disk where you want to install the dialog instance. Do **not**
>   enter the shared disk for the SCS instance.

> **Note**
>
> For more information about the input parameters, position the cursor on the field of the respective parameter and press the `F1` key in SAPinst.

4. If required, install additional dialog instances outside of MSCS.

> **⚠ Caution**
>
> Make sure that on the screen *SAP System > General Parameters* for the *Profile Directory*, you use the UNC path of the virtual SCS host name, for example:
>
> `\\<SAPGLOBALHOST>\sapmnt\<SAPSID>\SYS\profile`.

3.6 Follow-Up Activities

This section describes how to complete and check the installation of the SAP MSCS system.

Prerequisites

■ You have completed the installation steps explained in previous sections of this documentation.
■ You *have installed at least one SAP front end* [page 42].

Process Flow

1. You *start and stop the SAP system in an MSCS configuration* [page 177].
2. If required, you perform the *Follow-Up Activities* as described in *Chapter 2: Standard Installation* of this document.

3.6.1 Starting and Stopping the SAP System in an MSCS Configuration

The following describes how to start or stop the SAP system in an MSCS configuration with the:

■ SAP MMC
■ Cluster Administrator

> **Note**
>
> You also use the *Cluster Administrator* for all other administrative tasks like moving instances from one node to another.

Procedure

■ To start or stop your SAP system with the **SAP MMC**, see *Starting and Stopping the SAP System* [page 62].
■ To start or stop your SAP system with the **Cluster Administrator** do the following:
    1. Start the *Cluster Administrator* by choosing *Start ® Programs ® Administrative Tools ® Cluster Administrator*.
    2. To start or stop all instances belonging to the SAP cluster group, right-click the SAP cluster group *SAP <SAPSID>* and choose *Bring online* or *Take offline*.
    3. To start or stop a single instance of the SAP cluster group, right-click the instance *SAP <SAPSID> <instance_no> Instance* and choose *Bring online* or *Take offline*.
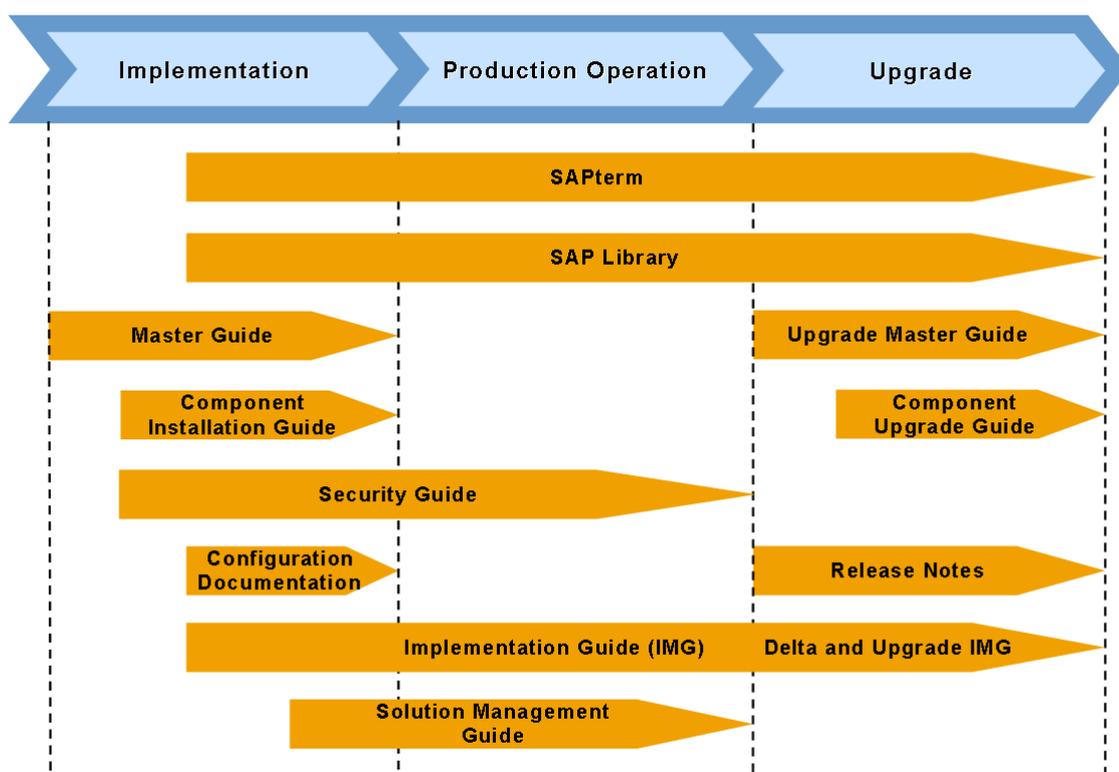
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A Reference

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 a: 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 Service Marketplace at `service.sap.com/sapterm`

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` (also available as documentation CD)
  - Located in the SAP Service Marketplace at `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`

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`

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`

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`

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`

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`

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`

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`
  - In the SAP menu of the SAP system under *Help* ® *Release Notes* (only ABAP developments)

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