

Master Guide

SAP NetWeaver™ ′04

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THE BEST-RUN BUSINESSES RUN SAP



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SAP Library document classification: PUBLIC

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Some components of this product are based on Java[™]. Any code change in these components may cause unpredictable and severe malfunctions and is therefore expressively prohibited, as is any decompilation of these components.

Any JavaTM Source Code delivered with this product is only to be used by SAP's Support Services and may not be modified or altered in any way.

Documentation on SAP Service Marketplace

You can find this documentation at service.sap.com/instguidesNW04



Typographic Conventions

Type Style	Represents
Example Text	Words or characters quoted from the screen. These include field names, screen titles, pushbuttons labels, menu names, menu paths, and menu options.
	Cross-references to other documentation.
Example text	Emphasized words or phrases in body text, graphic titles, and table titles.
EXAMPLE TEXT	Technical names of system objects. These include report names, program names, transaction codes, table names, and key concepts of a programming language when they are surrounded by body text, for example, SELECT and INCLUDE.
Example text	Output on the screen. This includes file and directory names and their paths, messages, names of variables and parameters, source text, and 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.
<example text=""></example>	Variable user entry. Angle brackets indicate that you replace these words and characters with appropriate entries to make entries in the system.
EXAMPLE TEXT	Keys on the keyboard, for example, F2 or ENTER.

Icons

lcon	Meaning
Δ	Caution
	Example
\mathbf{P}	Note
Ø	Recommendation
(U2)	Syntax

Additional icons are used in SAP Library documentation to help you identify different types of information at a glance. For more information, see Help on Help \rightarrow General Information Classes and Information Classes for Business Information Warehouse on the first page of any version of the <u>SAP Library [page</u> 16].



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 SAP NetWeaver[™].



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 definitions and glossary entries in English and German.

Target group:

Relevant for all target groups

□ Current version:

For example, available in SAP Library at <code>help.sap.com</code> \rightarrow Additional Information \rightarrow SAP Glossary

SAP Library

The SAP Library is a collection of function- and process-oriented documentation for SAP components.

- Target group:
 - Consultants



- System administrators
- Project teams for implementations or upgrades
- Current version:

See Accessing the SAP Library [page 16]

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 \rightarrow Customizing \rightarrow 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 like 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 <u>SAP Library [page 16]</u> at SAP NetWeaver \rightarrow Security \rightarrow SAP NetWeaver Security Guide

Implementation

Master Guide

The Master Guide is the starting point for implementing SAP NetWeaver[™]. It lists the required SAP components and third party applications that are required for each 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 on SAP Service Marketplace at service.sap.com/instguidesNW04

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 on SAP Service Marketplace at service.sap.com/instguidesNW04

Production Operation

Technical Operations Manual

The Technical Operations Manual is the starting point for operating SAP NetWeaver[™]. 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 more detailed documentation in the SAP Library.

- □ Target group:
 - System administrators
 - Technology consultants
 - Solution consultants
 - Project teams for implementations or upgrades
- Current version:

Located in the SAP Library [page 16]

Upgrade

Upgrade Master Guide

The Upgrade Master Guide is the starting point for upgrading the scenarios of SAP NetWeaver[™]. It provides scenario-specific descriptions of preparation, execution, and followup 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 earlier shipments of the Business Scenarios of an SAP solution.

- Target group:
 - Technology consultants



- Project teams for upgrades
- □ Current version:

Located on SAP Service Marketplace at service.sap.com/instguidesNW04

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 on SAP Service Marketplace at service.sap.com/instguidesNW04

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 on SAP Service Marketplace at service.sap.com/releasenotes
 - In the SAP menu of the SAP system under *Help* → *Release information* (only ABAP developments)
 - As part of the <u>SAP Library [page 16]</u>



History of Changes

The Master Guide is regularly updated on SAP Service Marketplace at service.sap.com/instguidesNW04.



Make sure you have the latest version of the Master Guide by checking SAP Service Marketplace immediately before starting the installation.

The following table provides an overview of the most important changes that were made in the latest versions:

Master Guide Version	Important Changes				
1.00 (March 31, 2004)	First released version				
1.05 (April 05, 2004)	The Support Package Guide – SAP NetWeaver Java Development Infrastructure and the Support Package Guide – J2EE Engine are now part of the Support Package Stack Guide – SAP NetWeaver '04.				
1.06 (April 08, 2004)	Minor changes				
1.07 (April 30, 2004)	Development with SAP NetWeaver Java Development Infrastructure [page 117] section added				
	Information about the technical system landscape in the <u>BI</u> <u>Information Broadcasting [page 64]</u> section added				
	<u>Software Components Overview [page 132]</u> section adapted				
	Further minor changes				
1.08 (August 05, 2004)	SAP Solution Manager section added				
	Supportability section added				
	 Order of the sections for the SAP NetWeaver technical scenarios changed (mainly in the <u>Technical Scenarios of</u> <u>SAP NetWeaver [page 58]</u> section) 				
	• SAP provides specially designed configuration templates for each SAP NetWeaver scenario that uses SAP Web AS Java. Information about the usage of the Template Configuration Tool to apply the appropriate configuration template added to the <i>Configuration</i> section of the corresponding SAP NetWeaver scenarios.				
	 The version of SAP BW Business Content Add-On BI_CONT changed from 3.5.1 to 3.5.2. 				
	The version of SAP R/3 Plug-In changed from 2003.1 to 2004.1.				
	 Interactive Forms Solution – powered by Adobe got renamed to Interactive Forms based on Adobe software. 				
	Further minor changes				



Master Guide Version	Important Changes					
1.09 (September 07, 2004)	 Information about Crystal Enterprise SAP Edition installation added to the <u>SAP Business Information Warehouse [page</u> 58] section. 					
	Further minor changes					
1.10 (September 21, 2004)	Changes in the Interactive Forms based on Adobe software [page 122] section					
1.11 (October 19, 2004)	 Information that SAP NetWeaver '04 Support Package Stack 09 or higher has to be applied added to the installation sequences 					
	Further minor changes					
1.50 (December 17,	New figures for technical system landscapes					
2004)	 The version of SAP BW Business Content Add-On BI_CONT changed from 3.5.2 to 3.5.3. 					
	Information about the Template Configuration Tool changed					
	New section <u>Identification of your SAP NetWeaver System</u> <u>Landscape [page 25]</u> added					
	Supportability section changed and renamed to <i>Monitoring</i> and Supportability					
	New section <u>Minimal System Landscapes [page 41]</u> added					
	New section <u>SAP NetWeaver Rapid Installer [page 52]</u> added					
	Components <i>Performance Assessment Workbench</i> (KW PAW) and <i>PAW Proctor and Player</i> removed					
	Development of Portal iViews Using SAP NetWeaver Visual <u>Composer [page 126]</u> section added					
	Further minor changes					
1.50 (December 17,	New figures for technical system landscapes					
2004)	 The version of SAP BW Business Content Add-On BI_CONT changed from 3.5.2 to 3.5.3. 					
	Information about the Template Configuration Tool changed					
	New section <u>Identification of your SAP NetWeaver System</u> <u>Landscape [page 25]</u> added					
	Supportability section changed and renamed to <i>Monitoring</i> and Supportability					
	New section <u>Minimal System Landscapes [page 41]</u> added					
	New section <u>SAP NetWeaver Rapid Installer [page 52]</u> added					
	Components <i>Performance Assessment Workbench</i> (KW PAW) and <i>PAW Proctor and Player</i> removed					
	Development of Portal iViews Using SAP NetWeaver Visual					



		Composer [page 126] section added
	•	Further minor changes
1.51 (January 19, 2005)	•	Changes in section <i>Development of Portal iViews</i> Using SAP NetWeaver Visual Composer
	•	Further minor changes
1.52 (March 09, 2005)	•	New section Development of Portal Content with PDK for .NET
	•	Changes in section <i>Development of Portal iViews Using</i> SAP NetWeaver Visual Composer on how to find iViews
	•	Changes in section <i>Implementation</i> Sequence for Minimal System Landscapes
	•	Changes in section SAP NetWeaver Rapid Installer.
	•	Further minor changes
1.53 (April 06,2005)	•	Changes in section SAP Exchange Infrastructure
	•	Changes in section Identification of your SAP NetWeaver System Landscape
	•	Section Monitoring and Supportability changed and renamed to Support Infrastructure and Central Administration and Monitoring of SAP NetWeaver
	•	Changes in section System Landscape Directory
1.54 (June 01, 2005)	•	Changes in section SAP NetWeaver Development Environment: Chapter on Component-Based Development of Java Applications has been deleted as the functionality is now integrated in scenario variant Development with the SAP NetWeaver Development Infrastructure.
	•	Changes in section <i>Development of Portal Content with PDK</i> for .NET.





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1 Introduction

This Master Guide provides you with a central starting point for the technical implementation and upgrade of SAP NetWeaver[™].

SAP NetWeaver is an open integration and application platform that integrates people, information and processes into one hub, across technologies and organizations, to reduce the total cost of ownership (TCO).

Structure of the Master Guide

This Master Guide consists of the following sections:

- Introduction [page 14] contains valuable information about using this documentation and related information (documentation and SAP Notes) important for the installation of SAP NetWeaver.
- SAP NetWeaver Overview [page 18] contains crucial information about whole SAP NetWeaver:
 - The installable software components that are required for each SAP NetWeaver scenario
 - The steps you have to perform to identify your SAP NetWeaver system landscape
 - Further information that is not scenario-specific and which is crucial for the implementation of SAP NetWeaver
- □ <u>Technical Scenarios of SAP NetWeaver [page 58]</u> contains the following information for every technical scenario of SAP NetWeaver:
 - An overview
 - Examples of how the different components interact, and what protocols and interfaces are used, including technical system landscape examples. Depending on the actual business processes that have to be implemented and other aspects (such as security or performance), the real infrastructure might be different.
 - Information about the installation sequence and subsequent steps
 - · References to related installation and configuration guides
 - References to the Upgrade Master Guide. This guide provides information about the overall upgrade sequences, references to related documentation, SAP Notes, and additional upgrade information for each scenario.
 - Information about mutual dependencies that affect two or more components within the scenario.
- □ <u>Software Components Overview [page 132]</u> contains a short description of every software component that is part of SAP NetWeaver 04.
- Depending on the specific technical scenarios to be implemented, many different installation and configuration guides are required during the scenario implementation process. In <u>References [page 138]</u>, you can find an overview of all required documentation referenced in this Master Guide.



Q

You can find the most current information about the technical implementation of SAP NetWeaver and the latest installation guides on SAP Service Marketplace at service.sap.com/instguidesNW04 \rightarrow Installation.

We strongly recommend that you use the documents available there. The guides are regularly updated.

1.1 Before You Start

1.1.1 SAP Notes

You **must** read the following SAP Notes **before** you read this Master Guide and implement SAP NetWeaver.

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



The SAP Notes related to SAP NetWeaver 04 are also listed on SAP Service Marketplace at service.sap.com/NW04doc \rightarrow SAP Notes.

SAP Note Number	Title	Description
668608	Master Guide SAP NetWeaver '04	This SAP Note is crucial for the implementation of SAP NetWeaver. It contains:
		Any information relating to the implementation of SAP NetWeaver that was not available when the Master Guide was published
		Corrections to this Master Guide
707730	Release Restrictions of SAP NetWeaver '04	Some restrictions apply to the production usage of SAP NetWeaver. These are documented in this SAP Note.

List of Important SAP Notes



1.1 Before You Start

1.1.2 More Information

The following list contains links to crucial information for implementing SAP NetWeaver on SAP Service Marketplace or in the SAP Library:

Content	Location on SAP Service Marketplace or in the SAP Library
The latest version of the installation and upgrade guides for SAP NetWeaver	service.sap.com/instguidesNW04
Information about supported platforms (operating systems, databases, browsers) for all SAP NetWeaver components	<pre>service.sap.com/platforms → Product Availability Matrix</pre>
Sizing of SAP NetWeaver	service.sap.com/quicksizer
Information about security	 SAP Security Guide: Located in the <u>SAP Library [page 16]</u> at SAP NetWeaver → Security → SAP NetWeaver Security Guide Network Integration Guides: service.sap.com/network
The latest version of the configuration guides for SAP NetWeaver	service.sap.com/ibc
Information about the technical operation of SAP NetWeaver	Technical Operations Manual: Located in the <u>SAP Library [page 16]</u> at SAP NetWeaver \rightarrow SAP NetWeaver Technical Operations Manual
Information about installing SAP NetWeaver Support Package Stacks.	Support Package Stack Guide – SAP NetWeaver '04: service.sap.com/instguidesNW04 → Operations

1.1.3 Accessing the SAP Library

For more information about SAP NetWeaver, access the SAP Library from any of the following:

□ SAP Help Portal at help.sap.com/nw04

Select the required language.



The SAP Help Portal contains the latest version of the SAP Library. Therefore, we recommend that you use this channel to access the SAP Library.



□ An **SAP system** if you have installed the online documentation:

Choose $Help \rightarrow SAP$ Library.

The browser starts.

D The help files on the online documentation CDs or DVDs

If you want to view the help files in HTMLHelp format from the online documentation CDs or DVDs, you need a PC running Microsoft Windows to install the HTMLHelp Viewer.





2 SAP NetWeaver Overview

The SAP NetWeaver technology platform is a comprehensive integration and application platform that helps reduce the total cost of ownership (TCO). It facilitates the integration and alignment of people, information, and business processes across organizational and technological boundaries. SAP NetWeaver easily integrates information and applications from virtually any source. It interoperates with and can be extended using the primary market technologies – Microsoft .NET, Sun's J2EE, and IBM WebSphere. SAP NetWeaver is the technical foundation for mySAP™ Business Suite and SAP[®] xApps[™] solutions and ensures maximum reliability, security, and scalability, so mission-critical business processes run smoothly. And by providing preconfigured business content, it helps reduce the need for custom integration and lowers TCO.

SAP NetWeaver consists of the following technical scenarios:

□ SAP Business Information Warehouse (SAP BW)

SAP Business Information Warehouse is a robust and scalable data warehouse. The reporting and analysis tools within SAP Business Information Warehouse offer a quick and easy way to gain access to the information you need.

Description Business Intelligence Information Broadcasting (BI Information Broadcasting)

Information broadcasting with SAP Business Information Warehouse (SAP BW) enables users to broadcast and schedule reports as needed. SAP Enterprise Portal serves as the single point of entry for the end user to access the complete business intelligence (BI) information portfolio.

□ SAP Enterprise Portal (SAP EP)



As one of the building blocks of SAP NetWeaver, SAP Enterprise Portal 6.0 on Web AS 6.40 provides key capabilities such as Portal Infrastructure, Knowledge Management and Collaboration, all based on open technology and standards, which make SAP NetWeaver a powerful integration and application platform.

SAP EP Integration adds business value because it enables seamless deployment of BI Applications.

□ SAP Exchange Infrastructure (SAP XI)

SAP XI Integration adds business value because SAP XI can be used as single point to channel information exchange between various systems.

□ SAP Mobile Infrastructure (SAP MI)

SAP MI is a technology solution for SAP NetWeaver on which mySAP Mobile Business applications are based. With SAP MI, however, you can also make applications mobile that are not SAP-based.

□ SAP Knowledge Warehouse (SAP KW)

SAP KW delivers the technical infrastructure you need to set up and manage your own enterprise-specific knowledge base in the areas of documentation, training, and manuals. For project teams and end users, SAP KW streamlines training and business processes,



helping you reduce your costs. In addition, the possibility to reuse, supplement and continually update SAP content offers great savings potential.

□ SAP NetWeaver Development Environment

SAP NetWeaver Development Environment is used to develop both ABAP and Java applications. It is based on the SAP NetWeaver component SAP Web Application Server (SAP Web AS).

□ SAP Master Data Management (SAP MDM)

For information about the alignment of SAP Master Data Management with SAP NetWeaver '04, see the relevant Master Guide available on SAP Service Marketplace at service.sap.com/instguidesnw04 \rightarrow Planning \rightarrow SAP MDM.

2.1 Installable Software Components Matrix

This section provides an overview of which technical scenario of SAP NetWeaver uses which installable components.



Note that there are software requirements for each component below that are not explicitly mentioned in this documentation. They are documented in the relevant installation guides.

All related implementation guides are listed in References [page 138].



For the latest component version and patch level requirements, see the Support Package Stack Guide – SAP NetWeaver '04.



Matrix of Technical Scenario and Installable Software Components (M = mandatory / O = optional / – = not required)

Installable Software Component	Technie	cal Scena	rio				
	SAP BW	Bl Information Broadcasting	SAP EP	SAP XI	SAP MI	SAP KW	SAP NetWeaver Development Environment
SAP Web AS Components	•			•	•	-	•
 SAP Web AS ABAP 6.40 including: BW Server 3.5 IGS 6.40 PI_BASIS 6.40 	М	Μ	_	M (Uni- code version re- quired)	М	М	O (man- datory for ABAP develop- ment)
 SAP Web AS Java 6.40 including: J2EE Engine SAP Java Connector (SAP JCo) SAP Java Tech Services 	0	М	М	M (Uni- code version re- quired)	М	М	O (man- datory for Java develop- ment)
SAP NetWeaver Java Development Infrastructure	_	_	_	_	_	_	O (man- datory for certain Java sce- narios)
SAP NetWeaver Developer Studio 2.0	_	_	_	_	_	_	O (man- datory for Java develop- ment)
Adobe document services	_	_	_	_	_	_	O (man- datory for Inter- active Forms based on Adobe software)



Installable Software Component	Technic	cal Scena	rio	•			
	SAP BW	Bl Information Broadcasting	SAP EP	SAP XI	SAP MI	SAP KW	SAP NetWeaver Development Environment
SAP NetWeaver Visual Composer	_	_	-	_	-	-	O (man- datory for Develop ment of Portal iViews Using SAP Net- Weaver Visual Com- poser)
Portal Add-In for Visual Studio 2003	_	_	_	_	_	_	O (man- datory for Develop ment of Portal Content with PDK for .NET)
Portal Runtime for Microsoft .NET	_	_	-	_	-	-	O (man- datory for Develop ment of Portal Content with PDK for .NET)
JavaNET Interoperability Framework	_	_	-	_	-	-	O (man- datory for Develop ment of Portal Content with PDK for .NET)



Installable Software Component	Technical Scenario						
	SAP BW	Bl Information Broadcasting	SAP EP	SAP XI	SAP MI	SAP KW	SAP NetWeaver Development Environment
SAP GUI 6.20 or 6.40	М	М	-	М	М	М	0
	(requires SAP BW Add-On)					(requires SAP KW Add-On with library htmlti dy.dll)	(man- datory for ABAP develop- ment)
SAP Internet Transaction Server (SAP ITS) 6.20	-	Ι	-	-	-	0	Ι
SAP Gateway 6.40	_	-	_	_	_	М	_
SAP XI Components							
SAP Exchange Infrastructure (SAP XI) 3.0 (comprises Integration Server, Integration Builder, Runtime Workbench and XI Adapter Engine) consisting of:	-	-	-	М	-	-	-
• XI Adapter Framework 3.0							
XI Adapter Framework Core 3.0							
XI Content SAP_BASIS 6.40							
XI Tools 3.0							
XI Adapter Engine consisting of:	-	-	-	0	-	_	_
XI Adapter Framework 3.0							
XI Adapter Framework Core 3.0							
XI Adapter Engine (J2SE) consisting of:	-	-	_	0	_	_	-
XI Connectivity SE 3.0							
SAP Partner Connectivity Kit (XI PCK) 3.0 consisting of:	_	_	-	0	-	-	-
XI Adapter Framework 3.0							
XI Adapter Framework Core 3.0							
• XI PCK 3.0							



Installable Software Component	Technical Scenario						
	SAP BW	Bl Information Broadcasting	SAP EP	SAP XI	SAP MI	SAP KW	SAP NetWeaver Development Environment
SAP BW Components							
SAP BW Business Content Add-On BI_CONT 3.5.3	М	М	Ι	-	-	-	Ι
SAP BW Java Components consisting of:	0	0	_	-	-	_	-
 SAP BI Universal Data Integration (BI UDI) 3.5 							
SAP BI Meta Model Repository (BI MMR) 3.5							
SAP BW Precalculation Service	0	0	_	_	_	_	_
SAP EP Components							
Portal Platform 6.0_640	Ι	М	М	_	_	0	_
Content Management and Collaboration 6.0_640	-	М	0	_		0	Ι
Search and Classification Components							
Search and Classification (TREX) 6.1	0	М	0	-	-	М	-
SAP MI Components							
SAP Mobile Infrastructure Client 2.5	-	_	-	_	М	_	_
SAP KW Components							
SAP KW Internet Knowledge Servlet (KW IKS) 1.00	_	_	_	_	_	М	—
SAP Content Server 6.30	-	-	-	-	-	М	-



The following figure shows all installable components of SAP NetWeaver '04:





2.2 Identification of your SAP NetWeaver System Landscape

2.2 Identification of your SAP NetWeaver System Landscape

Purpose

This section gives you a guideline of the required steps to identify your technical system landscape for SAP NetWeaver.

P

In this Master Guide, you will find aspects and information about most of these steps – nevertheless, for the actual mapping of technical components and SAP NetWeaver instances to physical hosts, no general guideline can be given, as this heavily relies on your requirements. Therefore, you should perform this task together with your hardware partner and your technical consultant.

The following figure shows how an overall system landscape of SAP NetWeaver could look like:





2.2 Identification of your SAP NetWeaver System Landscape

In this example, you have different landscapes for development, quality and production. Additionally, there are central components that you use normally for your overall system landscape, not only for your SAP NetWeaver landscape.

Prerequisites

- You have identified the SAP NetWeaver scenarios you want to implement. For more information about the SAP NetWeaver scenarios, see <u>SAP NetWeaver Overview [page</u> 18] and the Overview sections for each scenario in the <u>Technical Scenarios of SAP</u> <u>NetWeaver [page 58]</u> section.
- 2. You have mapped these technical scenarios to technical components. For more information, see the <u>Installable Software Components Matrix [page 19]</u>.

Process Flow

To identify your SAP NetWeaver system landscape:

1. You identify central components and the landscape aspects relevant for their implementation. For SAP NetWeaver, there are central components in the following areas:

Area	Description			
Support Infrastructure and Central Administration and Monitoring of SAP NetWeaver [page 28]	•	Support infrastructure provides SAP Support a safe access to your productive landscape for safe root cause analysis ensuring that SAP Support is not changing your landscape by default. The support infrastructure comprises:		
		- SAP Solution Manager		
		Used to implement, train, test, maintain, control change and manage incidents of your SAP NetWeaver landscape (open end to end application management). SAP Solution Manager 3.2 relies on SAP Web AS 6.20.		
		- Solution Manager Diagnostics		
		A Java application that is used to analyze the root cause of incidents in your landscape in an efficient and safe way. It relies on SAP Web AS Java 6.40 Support Package Stack 11 or higher		
		Since the current SAP Solution Manager 3.2 relies on SAP Web AS 6.20, you would need temporarily two non productive systems for the support infrastructure. Depending on your requirements, Solution Manager Diagnostics could also run on the central administration and monitoring system described below.		
	•	Central administration and monitoring efficiently supports daily tasks of customer administrators like monitoring, starting and stopping applications or instances, automation and configuration. It comprises amongst others:		
		- SAP NetWeaver Administrator		
		Brand new solution for monitoring and administering Java applications. It is first available with SAP Web AS Java 6.40 Support Package Stack 12.		
	1			



2.2 Identification of your SAP NetWeaver System Landscape

	- CCMS		
	Used for alert monitoring of Java and ABAP part, performance history and performance statistics. It is included in SAP Web AS ABAP		
	SAP recommends that you use a dedicated SAP Web AS ABAP+Java 6.40 in your system landscape for central administration and monitoring. The system should run on a host where no business processes are running. This SAP Web AS ABAP+Java 6.40 must have at least Support Package Stack 12 installed.		
System Landscape Directory [page 38]	• System Landscape Directory (SLD) is included in the installation of each SAP Web AS Java 6.40 or higher. To bring the SLD server into operation, you only have to configure and activate it.		
	 We recommend that you run SLD on the central administration and monitoring system. 		
User Management	If you want to use the ABAP user management to centrally manage your user data (for example, by using a Central User Administration – CUA – system), we recommend to realize this on the central administration and monitoring system as well. For more information about user management, see the <u>Integration of</u> <u>User Management in Your System Landscape [page 40]</u> section.		

- You consider the information given for your scenario in the <u>Technical Scenarios of SAP</u> <u>NetWeaver [page 58]</u> section to decide which optional components you require and to identify the number of required SAP NetWeaver instances.
- 3. You distribute the required technical components and SAP NetWeaver instances to physical servers.

This step heavily relies on your requirements. So, this Master Guide can only cover certain relevant aspects for this decision. For example, see our recommendation for <u>Minimal System Landscapes [page 41]</u> of SAP NetWeaver. Also consider the information given about <u>SAP NetWeaver Rapid Installer [page 52]</u>, <u>Basic System Variants of SAP Web AS [page 55]</u> and <u>SAP GUI [page 57]</u> during your planning.

But there are other relevant aspects that are not covered in this Master Guide, for example:

- <u>Security [page 57]</u> (for example, placing firewalls and distributing the technical components to servers in different security zones).
- High availability
- Sizing

Therefore, you should perform this step together with your hardware partner and your technical consultant.





Read the following section before the installation of any SAP NetWeaver scenario. The section contains important information about required components and fundamental aspects of installing and running your SAP NetWeaver system landscape.

2.3.1 Support Infrastructure and Central Administration and Monitoring of SAP NetWeaver

To run an SAP solution powered by SAP NetWeaver, you need the following infrastructure components:

- □ Support infrastructure consisting of:
 - SAP Solution Manager to implement, train, test, maintain, monitor, control change and manage incidents of your SAP solution landscape (open end to end application management)
 - Solution Manager Diagnostics (SMD) to analyze the root cause of incidents in your landscape in an efficient and safe way
- □ SAP NetWeaver Administration Tools to centrally monitor and administer your system landscape efficiently

Support Infrastructure for SAP NetWeaver

SAP Solution Manager and Solution Manager Diagnostics are the central hubs of SAP Support. Both hubs provide a safe access to your productive landscape ensuring that SAP Support is not changing your landscape by default.

SAP NetWeaver Administration Tools

SAP NetWeaver Administration Tools are for your daily administrative and monitoring tasks. The central administration component is the *SAP NetWeaver Administrator (NWA)*, which is currently used in combination with SAP Visual Administrator and special administration tools that act locally. In the future, all required administration functionality will be integrated into SAP NetWeaver Administrator.

Maintenance of System Landscape Data

Concerning the management of landscape data, we need to distinguish two cases:

- 1. If the landscape consists of ABAP components only, SAP Solution Manager can collect all required landscape information. There is no need to implement SLD in this case.
- 2. If there are non-ABAP components in the solution landscape, SLD is mandatory. The landscape data that is automatically gathered by SLD is replicated to SAP Solution Manager.

Λ

Be aware that a number of SAP components depend on the availability of SLD. Because of this dependency, you should handle SLD as a productive instance. For more information about using and configuring SLD, see the *Technical Infrastructure Guide – System Landscape Directory* available in SAP Service Marketplace at service.sap.com/instguidesnw04 \rightarrow *Planning*.

Support Infrastructure and Central Administration and Monitoring for SAP NetWeaver

The setup strongly depends on the components being used in your system landscape:

In case of a pure ABAP system landscape, customers have to use SAP Solution Manager 3.2 as the central monitoring and support platform. The optional use of an additional central monitoring system on basis of SAP NetWeaver '04 offers additional monitoring functionality (like transferring CCMS monitoring data to SAP Business Intelligence for powerful reporting). The use of SLD is not required.

The following figure shows an ABAP-only landscape with SAP Solution Manager:



- In case of productive use of Java (for example, if you are using SAP EP, SAP XI, Web Dynpro or SAP ESS/MSS as part of mySAP ERP 2004), besides SAP Solution Manager 3.2, the customer has to set up additional components for optimal monitoring, administration and support. SAP recommends that you set up Solution Manager Diagnostics as central hub for the support role and SAP NetWeaver Administrator as central hub for administrators. The customer can choose between the following setup options:
 - Solution Manager Diagnostics and SAP NetWeaver Administrator are activated in two different SAP NetWeaver systems. This combination offers optimal flexibility and functionality.

The following figure shows a corresponding landscape:





 Combined scenario: Solution Manager Diagnostics and SAP NetWeaver Administrator are both activated in one system. The following figure shows a corresponding landscape:







Δ

Be aware that Solution Manager Diagnostics and SAP NetWeaver Administrator impose conflicting requirements with respect to the availability of the environment:

- For Solution Manager Diagnostics, it is important that this tool can be provided with new software versions, functions and content without imposing a danger to the productive customer landscape.
- SAP NetWeaver Administrator is considered a central system that is required for functioning of the productive landscape. In addition to being the central place for administration and monitoring it contains central components that are vital for the production landscape, like SLD or the central scheduler.

This means, taking the decision for this combined scenario brings with it certain limitations that have to be taken into account carefully!

2.3.1.1 Support Infrastructure for SAP NetWeaver

A key requirement for efficient support of IT solutions is the ability to perform root cause analysis with speed and efficiency. For its ABAP applications, SAP has long had an infrastructure in place that efficiently supports SAP solutions. This helps ensure the high availability and smooth running of business processes. With Solution Manager Diagnostics, this knowledge has been extended to Java applications. If there are problems with the performance of iViews in SAP Enterprise Portal, or if homegrown Java applications cause instability, Solution Manager Diagnostics helps trace the cause to eradicate the problem rapidly. The following figure shows the overall infrastructure:





SAP Solution Manager

SAP provides you with SAP Solution Manager as the platform that supports the implementation and operation of SAP NetWeaver '04. You need to install at least one productive SAP Solution Manager in your whole system landscape. If you already have an SAP Solution Manager in place, you can use that one to manage the solution you build up with SAP NetWeaver as well. In this case, it is highly recommended that you update SAP Solution Manager to the latest version.

It is possible to install multiple SAP Solution Managers. Then, they should host separate business solutions.

If you want to reduce the risk of unavailability, you should not install SAP Solution Manager as central component. Instead, you could operate a two-system landscape with test and production environment of SAP Solution Manager (especially if time critical functions like Support Desk are used). If you also develop own content, a three-system landscape with development, test and production environment is recommended.

Торіс	Where to Find More Information
System infrastructure, scenarios, installation and configuration of SAP Solution Manager	Master Guide – SAP Solution Manager available on SAP Service Marketplace at service.sap.com/instguides \rightarrow SAP Components \rightarrow SAP Solution Manager \rightarrow Installation Guides
Benefits and usage scenarios	SAP Solution Manager – Learning Maps available on SAP Service Marketplace at service.sap.com/rkt-solman Or service.sap.com/solutionmanager
Additional information	SAP Service Marketplace at service.sap.com/solutionmanager

For more information about SAP Solution Manager, see the following table:

Solution Manager Diagnostics

Solution Manager Diagnostics provides *efficient* and *safe_*root cause analysis of incidents in customer solutions powered by SAP NetWeaver. It can help keep tabs on operating systems, databases, Java application activities, performance, and logs. It also supports the reporting of software and configuration changes that can lead to malfunctions and errors.

It is required to install one Solution Manager Diagnostics within your SAP NetWeaver solution landscape if you run applications based on SAP Web AS Java. Agents are responsible for delivering the data from all productive hosts within your SAP NetWeaver landscape to the Solution Manager Diagnostics system.



SAP Support performs root cause analysis on incoming incidents on Solution Manager Diagnostics. Not installing and configuring this support infrastructure results in dramatically reduced service level.

Solution Manager Diagnostics is based on SAP Web AS ABAP+Java 6.40 (dual stack), with minimum Support Package Stack 11. Solution Manager Diagnostics consists of a standard SAP Web AS that is afterwards enhanced by the deployment of a J2EE application. SAP recommends that you deploy Solution Manager Diagnostics to a non-productive SAP Web AS (non-productive in the sense that no business processes are running on that host).



Since the current SAP Solution Manager release 3.2 relies on SAP Web AS 6.20, you would need temporarily two non productive systems to support the implementation and operation of your SAP NetWeaver landscape. Solution Manager Diagnostics will be included in SAP Solution Manager 4.0, for which general availability is planned for the first quarter of 2006.

Solution Manager Diagnostics also contains two third party tools:

- WilyTech Introscope (Display, Server, and Agent part)
 For measuring performance as well as to troubleshoot problems of the J2EE Engine and applications running on it.
- □ Mercury Loadrunner (Load Generator)

Allows SAP Support to produce defined load on the SAP NetWeaver solution remotely. SAP GoingLive Check for SAP Enterprise Portal incorporates a remote load test, which optimizes three of a company's most important user scenarios.

SAP has signed a distribution agreement for these two third party tools. Since this is not an OEM agreement, the customer can only use these third party tools with an additional license agreement.



The necessary setup steps for Solution Manager Diagnostics and related components are described in detail in the *Supportability Setup Guide* – *Solution Manager Diagnostics* available in SAP Service Marketplace at service.sap.com/instguidesNW04 \rightarrow *Operations*. The Solution Manager Diagnostic system is only functional after these setup steps have been fully performed.

For more information about Solution Manager Diagnostics, see SAP Service Marketplace at service.sap.com/diagnostics and the FAQ list you find there.



The following figure shows Solution Manager Diagnostics:



SAP EarlyWatch Alert

SAP strongly recommends that you switch on SAP EarlyWatch Alert on all systems in your SAP NetWeaver landscape. SAP EarlyWatch Alert is designed to monitor SAP solutions and identify weaknesses at an early stage and has proven itself over a number of years. It has recently been made available for SAP Enterprise Portal and SAP Web AS Java. SAP EarlyWatch Alert automatically delivers data on the performance and availability of systems, enabling problems to be identified before they escalate into critical situations. It can also be used to establish whether performance-improvement measures work as intended. For more information, see **SAP Note 833365**.

Overview of Components

Component	To be installed on	How to get	Function
Solution Manager Diagnostics	Central administration and monitoring system, if no productive system	Included in SP Stack 11	Root cause analysis
Wily Introscope	Solution Manager Diagnostics host	Wily Introscope CD	Troubleshooting for SAP Support
Mercury Load Generator	Solution Manager Diagnostics host	Mercury Interactive	Load generation for SAP Support
CCMS	Central administration and monitoring system	Included in SAP Web AS ABAP	Alert monitoring of Java and ABAP part; Performance history; Performance statistics
SAP Solution Manager	Separate SAP system	Installation of SAP Solution Manager	Solution management
System Landscape Directory (SLD)	Central administration and monitoring system	Included in SAP Web AS Java	Central system and version information
SAP Agent Package	Each SAP NetWeaver component host	Support toolset CD	Data delivery into the central monitoring system
Wily Agent	Each SAP NetWeaver component host running Java	Wily Introscope CD	Troubleshooting for SAP Support

The following table gives an overview about the components currently to be installed for the support infrastructure:

Summary

- □ Solution Manager Diagnostics system is required for efficient and safe remote support. It requires SAP Web AS ABAP + Java 6.40 with at least Support Package Stack 11.
- Wily Introscope Server and Mercury Loadrunner (Load Generator) have to be installed on the Solution Manager Diagnostics system.



2.3.1.2 Central Administration and Monitoring of SAP NetWeaver

While the support infrastructure is focused on the support role, which guarantees remote accessibility and safe root cause analysis without any changes, the focus of the central administration and monitoring infrastructure is to efficiently support daily tasks of customer administrators like monitoring, starting and stopping applications or instances, automation and configuration.

This is currently safeguarded by several components. The most important ones are:

- SAP NetWeaver Administrator for central administration and monitoring
- □ System Landscape Directory (SLD) as a complete landscape directory
- □ Job scheduling capabilities of SAP NetWeaver for central job scheduling
- History and forecast analysis using CCMS together with the powerful reporting engine of SAP Business Intelligence.

The following figure shows a central administration and monitoring system:



Depending on your SAP NetWeaver landscape, these components take part of your productive business processes. SAP recommends that you centralize these components on a central administration and monitoring system. Of course, this system has to be ranked productive with respect to system backup, availability, security and so on. In this case, Solution Manager Diagnostics has to be installed on a separate system (see above).

SAP NetWeaver Administrator

SAP NetWeaver Administrator is a brand new solution for monitoring and administering Java applications. It is first available with SAP Web AS Java 6.40 Support Package Stack 12. SAP aims to integrate one by one all local acting administrating tools like SAP Visual Administrator, into SAP NetWeaver Administrator. Finally, only SAP NetWeaver Administrator has to be used for the complete administration. The first version shipped with SAP NetWeaver '04 Support Package Stack12 is function wise not complete yet and, therefore, can not replace the old tools in a complete way yet.



SAP NetWeaver Administrators key characteristics are:

- Differs monitoring and administration functionality in a new Web Dynpro UI
- Runs with zero footprints in a Web browser
- □ Fits perfect for both a single SAP NetWeaver and a SAP NetWeaver system landscape
- Joins ABAP and Java monitoring data in a single screen
- Combines overview information like component availability with detailed monitoring data
- □ Central log viewer included
- Offers standards-based (JMX) remote administration functionality like starting and stopping Java applications

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

Job Scheduling Capabilities of SAP NetWeaver

The new 'Job scheduling capabilities of SAP NetWeaver' extent the integration capabilities of SAP NetWeaver with powerful cross-component scheduling functionality. Thus, business process automation in ABAP can be triggered and monitored from a central point. Job scheduling of SAP NetWeaver will also cover business processes running on Java at the end of this year, and will be completely integrated into SAP NetWeaver in 2006.

Job scheduling capabilities of SAP NetWeaver has the following key characteristics:

- Central functionality actively reduces TCO
- Cross-component scheduling for ABAP and Java components
- Seamless integration into existing CCMS monitoring solutions by retrieving and reporting scheduling monitoring information
- □ A lot of up sell options for non-SAP available
- □ First delivery with SAP NetWeaver Support Package Stack 12

For more information, see SAP Service Marketplace at service.sap.com/job-scheduling.

System Management

For most customers, it is essential to analyze SAP NetWeaver with respect to service level agreements. In the past, this had been done by using expensive third party tools. Now, customers can centrally collect landscape-wide monitoring information and forward this information to SAP Business Intelligence for powerful history or forecast analysis. Results can be conveniently presented web based.

Moreover, with the next SAP NetWeaver release, landscape-wide most detailed statistics information is additionally forwarded to SAP Business Intelligence. This offers detailed drill-down opportunities in case of low system performance.

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

SAL


CCMS Agents

At backend site, the well known CCMS agents are used for data provisioning:

- On each client running an SAP Web AS Java (or ABAP+Java) 6.40, one SAPCCMSR agent must be registered per Java instance.
- On each client running an SAP Web AS ABAP (or ABAP+Java), one SAPCCM4x agent should be registered per ABAP instance.
- □ On clients running non-SAP-Web-AS components (for example, Search and Classification [TREX]), SAPCCMSR agent plus SAPOSCOL must be installed.

There is no need to touch the productive components directly. For more information about the CCMS agents, see SAP Service Marketplace at service.sap.com/~sapidb/011000358700003240702001E.

Overview of Components

The following table gives an overview about the components currently to be installed for the central administration and monitoring infrastructure:

Component	To be installed on	How to get	Function
SAP NetWeaver Administrator	Central administration and monitoring system	Included in SP Stack 12	Management and monitoring of Java part
CCMS	Central administration and monitoring system	Included in SAP Web AS ABAP	Alert monitoring of Java and ABAP part; performance history; performance statistics
System Landscape Directory (SLD)	Central administration and monitoring system	Included in SAP Web AS Java	Central system and version information
Job scheduling capabilities of SAP NetWeaver	Optionally to be installed on the central administration and monitoring system	Included in SP Stack 12	Cross-component scheduling
SAP Agent Package	Each SAP NetWeaver component host	Support toolset CD	Data delivery into the central monitoring system
Log Viewer Remote Server	Each SAP NetWeaver component host running Java or non- ABAP	Included in SAP Web AS Java, for non-ABAP installable from SAP Service Marketplace	Central log viewing



2.3.2 System Landscape Directory

Use

Today's system landscapes consist of multiple distributed software components with different platform dependencies, different interfaces, and different requirements placed on installation and change management. An overall concept is required that facilitates the implementation, upgrade, and maintenance of your system landscapes – including the SAP NetWeaver system landscape you are installing. This is where System Landscape Directory (SLD) comes into play.

SLD is the central directory of system landscape information relevant for the management of your software lifecycle. It contains a description of your system landscape (that is, installed software components that are currently installed) and a repository of software components that can theoretically be installed in your landscape (such as the software components available from SAP). Since this data gets updated automatically, SLD provides reliable and up-to-date system landscape information with as little effort for you as possible. In this way, SLD acts as a central information provider for SAP and third-party tools that use this data to deliver the services you need to keep your landscape up and running.

SLD is included in the installation of each SAP Web AS Java 6.40 or higher. To start running SLD, you only have to perform some quick and easy configuration actions.

Recommended Installation Scenario of SLD

As SLD is the central information provider for your whole system landscape, it is also required for your SAP NetWeaver system landscape.

For most SAP system landscapes, we recommend that you use only one SLD server.

The SLD server acts as a central information provider for the enterprise system landscape. Therefore, the most common installation scenario is that all systems inside a system landscape including all subnetworks share a single SLD server.

The following figure shows that two subnetworks in an enterprise system landscape that are geographically separated share the same SLD server for landscape information:





The advantages of using a single SLD server for the entire system landscape are:

- Consistent data
- **D** Easier administration and lower operating expense

Unlike this single SLD server installation, the installation of multiple SLD servers may be a good idea for certain SAP system landscapes. For example, if you want to install multiple SLD servers that are distributed over different geographic locations or an additional SLD server dedicated for a particular group of systems (such as a production landscape).

Also, special considerations may be required if you want to install SAP NetWeaver in a system landscape where you already use SAP Exchange Infrastructure 2.0, since this release contains a previous version of the SLD.

For more information, see the documentation *Post-Installation Guide – System Landscape Directory on SAP Web AS 6.40* and **SAP Note 764393**.

We recommend that you run SLD on a host that is highly available, as the information stored in SLD could be essential for applications running in your production landscape. For example, Web Dynpro applications require the RFC destinations that are stored in SLD for their operation. Also, SAP Exchange Infrastructure relies on information stored in the SLD. In contrast to the Web Dynpro applications, this information gets cached persistently, so that a downtime of SLD would only be critical during the first startup of SAP Exchange Infrastructure when SAP XI retrieves this information from SLD.



For SAP NetWeaver, we recommend that you operate SLD on the central administration and monitoring system in a dedicated and productive SAP Web AS ABAP+Java system.

Implementation Sequence of SLD for SAP NetWeaver

You can either:

□ Use an existing SLD.



For example, an SLD is available in your SAP system landscape if you already use SAP XI.

• Or perform the steps in the following table to install a new SLD:

Step	Action	Remarks and
	[Corresponding Documentation]	Subsequent Steps
1	Configure System Landscape Directory in the central administration and monitoring system (for more information, see the Monitoring and Supportability [page 28] section). [Post-Installation Guide – System Landscape Directory on SAP Web AS 6.40]	If you want to run SLD in a separate system, install an SAP Web AS Java 6.40 according to the Installation Guide – SAP Web Application Server Java on <operating system="">: <database>.</database></operating>
2	Download and install the most current SLD content - updated monthly - available in SAP Service Marketplace. For more information, see SAP Note 669669 .	/

2.3.3 Integration of User Management in Your System Landscape

In a system landscape containing a combination of ABAP and Java components, it makes sense to integrate your user management so that you can use the same user data across different systems and can administrate this data centrally. SAP NetWeaver provides both ABAP and Java-based user management solutions. The user management solution that you should use to administrate your user data depends on factors such as the type of systems that are running in your landscape and the number of users that you have.

For information about some options on how to integrate user management across a system landscape and for recommendations for when to use which option, see the <u>SAP Library [page</u> 16] at SAP NetWeaver \rightarrow Security \rightarrow SAP NetWeaver Security Guide \rightarrow User Administration and Authentication \rightarrow Integration of User Management in Your System Landscape.



2.3.4 Minimal System Landscapes

In a minimal system landscape, all required components get installed on as few systems as possible while retaining full operability of your system. We recommend that you use minimal system landscapes only for demonstration and test purposes.



While minimal system landscapes are easier to administrate, they also have certain drawbacks. For example, you are not able to separate components afterwards that you installed together in one system. As a result, you have to fall back on other methods for scalability (such as hardware solutions, clustering or the installation of additional dialog instances). Another drawback is that you have to patch and upgrade all components installed in a single system together. So, also aspects of the business logic you require could come into play, as certain components could not be available due to patching requirements of other components. So, plan your SAP NetWeaver landscape well in advance according to your current and possible future requirements.

2.3.4.1 Minimal System Landscape of Whole SAP NetWeaver

The following figure shows a minimal system landscape of whole SAP NetWeaver '04:







With the role of an Integration Server, SAP Exchange Infrastructure requires a dedicated SAP Web Application Server. This means that running applications in other clients of the same SAP Web AS is not supported. Therefore, you require at least two SAP systems to run all SAP NetWeaver components.

Although SAP XI requires a separate SAP system, you could still install SAP NetWeaver (that is, both systems) on a single host, but only for demonstration purposes.

⚠

This minimal system landscape is only supported as of SAP NetWeaver '04 SR1. For earlier releases of SAP NetWeaver '04, we do not support the installation of the SAP Enterprise Portal components (Portal Platform and Content Management and Collaboration) on SAP Web AS ABAP+Java systems, but only on standalone SAP Web AS Java systems.



2.3.4.2 Minimal System Landscapes for SAP NetWeaver Scenarios

The following figure shows a minimal system landscape of the SAP NetWeaver scenario <u>BI</u> <u>Information Broadcasting [page 64]</u>, where all required SAP NetWeaver components run in a single SAP system:



Δ

This minimal system landscape is only supported as of SAP NetWeaver '04 SR1. For earlier releases of SAP NetWeaver '04, we do not support the installation of the SAP Enterprise Portal components (Portal Platform and Content Management and Collaboration) on SAP Web AS ABAP+Java systems, but only on standalone SAP Web AS Java systems.



2.3.4.3 Implementation Sequence for Minimal System Landscapes

Installation

The following table contains the steps that you have to perform to install the minimal system landscape of whole SAP NetWeaver. If you only want to install a minimal landscape for a subset of SAP NetWeaver (for example, only for one SAP NetWeaver scenario), just skip the steps for components that you do not require (for more information about required components for your SAP NetWeaver scenario, see the <u>Installable Software Components</u> <u>Matrix [page 19]</u> section).

\mathbf{P}

For documentation referenced in the following table, see the <u>References [page</u> 138] section.

Δ

- Before starting an installation, make sure that you have prepared the installation hosts as described in the corresponding installation guide. For example, you must have checked or adapted the OS kernel parameters on UNIX. Otherwise, unpredictable complications may occur with the installed system.
- For the latest component version and patch level requirements, see the Support Package Stack Guide – SAP NetWeaver '04.

Step	Action		Remarks and
	[Corre	sponding Documentation]	Subsequent Steps
1	Installa	tion of an SAP Web AS ABAP+Java 6.40 system	/
	[Install <opera SAP V <datal< th=""><th>ation Guide – SAP Web Application Server ABAP on ating System>: <database> and Installation Guide – /eb Application Server Java on <operating system="">: base>]</operating></database></th><th></th></datal<></opera 	ation Guide – SAP Web Application Server ABAP on ating System>: <database> and Installation Guide – /eb Application Server Java on <operating system="">: base>]</operating></database>	
2	Option	al for SAP BW:	You do not have to
	Prepar	e an SAP system as data source:	prepare this SAP system for SAP BW Staging with
	1.	The SAP system can be either an OLTP – SAP R/3	external system as
		(3.11 – 4.6C) or SAP R/3 Enterprise (Extension Set	datasource.
		PI_BASIS Plug in.	For all other scenarios, you have to prepare this SAP
	2.	If you want to use SAP R/3 or SAP R/3 Enterprise as datasource, we recommend that SAP R/3 Plug-In 2004.1 (or higher) is installed on the OLTP.	system only if you want to use an OLTP system (such as SAP R/3 or SAP R/3
		For more information about installing SAP R/3 Plug-In 2004.1, see SAP Note 704564 (<i>R/3 plug-in:Pl 2004.1</i>	Enterprise backend) as data source.
		installation/delta upgrade) and SAP Service	Although SAP R/3 3.11 to

Steps to That You Perform For the Installation of System 1 (SAP NetWeaver Running BW, EP, KW, MI):

Step	Action	Remarks and
	[Corresponding Documentation]	Subsequent Steps
	Marketplace at service.sap.com/r3-plug-in SAP R/3 Plug-In 2003.1 is also technically compatible to SAP BW Business Content Add-On BI_CONT 3.5.3. However, it does not include all necessary extractors for this new BI Content version. If you do not intend to use the new parts of this content, you can also use SAP R/3 Plug-In 2003.1 instead of version 2004.1. For more information about installing SAP R/3 Plug-In 2003.1, see SAP Note 597635 (R/3 Plug- In: Installation/Delta Upgrade PI 2003.1). For more information about dependencies	4.6C or SAP R/3 Enterprise Extension Set 1.10 or higher can be used for the OLTP, we recommend that you use SAP R/3 Enterprise 4.70 Extension Set 2.00.
	With SAP BW Java Components (see below), you can get access to non-SAP data sources by using the corresponding JDBC driver.	
3	SAP BW:	/
	Configure the database of your SAP Web AS for SAP BW according to SAP Note 567745 .	
4	SAP BW: Install SAP BW Business Content Add-On BI_CONT 3.5.3 or higher on the SAP Web AS ABAP system according to SAP Notes 774933 and 153967 .	• After the installation of SAP BW, the system does not display the SAP Easy Access Menu automatically. For information about how to maintain the SAP Easy Access Menu for SAP BW manually, see SAP Note 725184.
		 After the installation of SAP BW as part of SAP NetWeaver '04 SR1, you have to adapt the authorization profile S_BI-WHM_RFC. For more information, see SAP Note 799789.





Step	Action	Remarks and
	[Corresponding Documentation]	Subsequent Steps
5	SAP BW:	/
	Install SAP BW Java Components on the SAP Web AS Java system. SAP BW Java Components consist of:	
	SAP BI Universal Data Integration 3.5	
	SAP BI Meta Model Repository 3.5	
	[Installation Guide – SAP Business Information Warehouse]	
6	SAP EP:	For earlier release than
	Installation of Portal Platform and Content Management and Collaboration	SAP NetWeaver '04 SR1, we do not support the installation of the SAP
	[Installation Guide – SAP Enterprise Portal]	Enterprise Portal components on an SAP Web AS ABAP+Java system. If you have an earlier release than SAP NetWeaver '04 SR1, you therefore have to install additionally an SAP Web AS Java system and deploy these components there.
7	SAP EP: Import of Business Packages	More information about how to find Business Packages, install and use them in a Portal environment is available at www.sdn.sap.com/sdn/ contentportfolio.sdn → Portal Content Portfolio→ Quick Link: New: Finding and Downloading Content: New Process.
8	Interactive Forms powered by Adobe Software:	/
	Installation of Adobe document services	
	[Installation Guide – Adobe Document Services]	
9	Installation of Search and Classification (TREX) 6.1	The usage of one Search and Classification (TREX) instance for multiple SAP NetWeaver scenarios (SAP BW, BI Information Broadcasting, SAP EP, and SAP KW) is only recommended for demonstration and test purposes.

Step	Action	Remarks and
	[Corresponding Documentation]	Subsequent Steps
	 All other scenarios: Perform the installation steps to set up an RFC connection. 	
	 Automatic language recognition: SAP EP: During Search and Classification (TREX) installation, select the languages you want Search and Classification (TREX) to recognize. Search and Classification (TREX) uses this information to perform the language recognition procedure, which is necessary for indexing documents. All other scenarios: Automatic language recognition is not required. You can adopt the default settings for document languages during the installation of Search and Classification (TREX). 	
	No Python extensions are required.	
	• After the installation of Search and Classification (TREX), you have to create a search server relation as described in the Installation Guide – Search and Classification (TREX).	
	After the installation of Search and Classification (TREX), you must run the report RSTIRIDX in your SAP Web AS system as stated in the <i>Installation Guide – SAP Web Application Server ABAP on <operating system="">: <database>.</database></operating></i>	
	[Installation Guide – Search and Classification (TREX)]	
10	SAP KW:	
	Installation Guide – SAP Content Server	
11	SAP KW:	SAP KW Internet
	Installation of SAP KW Internet Knowledge Servlet 1.00	Knowledge Servlet is not
	[Installation Guide – SAP Knowledge Warehouse]	Therefore, if you want to implement the minimal system landscape on UNIX; install this component on a separate Microsoft Windows host.
12	Installation of SAP GUI:	/
	On each client from which you want to access SAP BW functionality using SAP GUL install SAP GUL with SAP BW	





Step	Action	Remarks and
	[Corresponding Documentation]	Subsequent Steps
	Add-On 3.5. If you want to use SAP BW Business Explorer, you require SAP GUI 6.20 from the Presentation CD Compilation 6 or higher.	
	• On each client from which you want to access SAP KW functionality using SAP GUI, install SAP GUI with SAP KW Add-On. If you want to use Microsoft Office 2000 or Microsoft Office XP as editing tool (see below), register the dynamic link library htmltidy.dll on each SAP GUI client. For more information, see SAP Note 517439.	
	 On each client from which you want to create applications for Interactive Forms powered by Adobe Software with ABAP Workbench, install SAP GUI with Adobe LiveCycle Designer. 	
	[SAP Front End Installation Guide]	
13	Installation of SAP Mobile Infrastructure Client 2.5	/
	[Installation Guide – SAP Mobile Infrastructure]	
14	SAP KW:	/
	Installation of at least one of the following required editing tools:	
	Microsoft Office 2000 or Microsoft Office XP.	
	[See the Microsoft documentation]	
	XML editors supported by SAP KW:	
	 Epic Editor 4.3.1 from Arbortext, Inc. For more information, see www.arbortext.com 	
	 Authentic 2004 from Altova. This editor can be downloaded from: www.altova.com/download_authentic.html 	
15	Interactive Forms powered by Adobe Software:	
	Installation on all client PCs from which you want to work with interactive forms:	
	• Adobe Reader or Adobe Acrobat (version 6.0.2 or higher). Adobe Reader is available on the Adobe Web page at www.adobe.com/products/acrobat/readstep2.html.	
	Active Component Framework (ACF) for Web Dynpro [SAP Note 766191]	
16	SAP BW:	/
	Installation of Internet Explorer 5.5 (or higher) or Netscape 7.01 (or higher) on each host from which you want to display SAP BW Web Applications	
	[See your Microsoft documentation]	

Step	Action	Remarks and
	[Corresponding Documentation]	Subsequent Steps
17	SAP BW:	Only required if you are in
	Optional: Installation of Crystal Enterprise SAP Edition Version 10 (Crystal Enterprise [server component] and Crystal Reports [design tool])	need for additional capabilities for formatted reporting. For more information, see SAP
	[Crystal Enterprise SAP Edition Installation Guide and Crystal Reports Installation Guide]	Service Marketplace at service.sap.com/ businessobjects → FAQ.

Steps to That You Perform For the Installation of System 2 (SAP NetWeaver Running XI):

Step	Action	Remarks and
	[Corresponding Documentation]	Subsequent Steps
1	Installation of a Unicode SAP Web AS ABAP+Java 6.40 system [Installation Guide – SAP Web Application Server ABAP on <operating system="">: <database> and Installation Guide – SAP Web Application Server Java on <operating system="">: <database>]</database></operating></database></operating>	A separate Unicode SAP Web AS is a prerequisite for the core component SAP Exchange Infrastructure (Integration Server, Integration Builder, and XI Adapter Engine).
		You must prepare SAP Web AS as described in the documentation <i>Installation Guide – SAP</i> <i>Exchange Infrastructure</i> 3.0.
2	Installation of SAP GUI on each host from which you want to connect to SAP Web AS using an SAP GUI	1
	[SAP Front End Installation Guide]	
3	Installation of the component SAP Exchange Infrastructure 3.0 (Integration Server / Integration Builder / Runtime Workbench / XI Adapter Engine)	/
	[Installation Guide – SAP Exchange Infrastructure]	
4	Download and install the most current SLD content - updated weekly - available in SAP Service Marketplace at service.sap.com/swdc under Download \rightarrow Support Packages and Patches \rightarrow Entry by Application Group \rightarrow Additional Components \rightarrow SAP MASTER DATA FOR SLD.	/





Configuration

To configure the minimal system landscape, perform the steps listed in the following table:

Step	Action
1	SAP provides specially designed configuration templates for each SAP NetWeaver scenario that uses SAP Web AS Java. Use the Template Configuration Tool to apply the appropriate configuration template.
	Before using the Template Configuration Tool, you have to apply SAP NetWeaver '04 Support Package Stack 10 or higher.
	For more information, see:
	• SAP Note 739788 (SAP NetWeaver: Template-Based Configuration – Composite Note)
	 The <u>SAP Library [page 16]</u> under SAP NetWeaver → SAP NetWeaver Configuration → SAP Web Application Server → SAP Web Application Server (Java) → J2EE Engine Configuration → Template Configuration Tool.
2	System 1 (BI Information Broadcasting) only:
	For the configuration of BI Information Broadcasting, see the <u>SAP Library [page 16]</u> at SAP NetWeaver \rightarrow SAP NetWeaver Configuration \rightarrow SAP Business Information Warehouse (BW).
3	System 1 (BI Information Broadcasting) only:
	For security-related aspects of BI Information Broadcasting, also see the <u>SAP Library [page</u> 16] at SAP NetWeaver \rightarrow Security \rightarrow SAP NetWeaver Security Guide \rightarrow Security Guides for the SAP NetWeaver Products \rightarrow SAP Business Information Warehouse Security Guide \rightarrow Authorizations.
4	System 1 (SAP EP) only:
	Initial information about the configuration of SAP Enterprise Portal is included in the corresponding installation guides.
	More information is included in the Administration Guide in the <i>Initial Configuration Tasks</i> section. See the <u>SAP Library [page 16]</u> at SAP NetWeaver \rightarrow People Integration \rightarrow Portal \rightarrow Administration Guide.
	For earlier release than SAP NetWeaver '04 SR1, you have to configure SAP EP on an additionally installed third system than on system 1.
5	System 1 (SAP MI) only:
	See the "Configuration" section in the Installation Guide – SAP Mobile Infrastructure 2.5.
6	System 1 (SAP KW) only:
	The documentation <i>Configuration Guide – SAP KW Business Scenarios</i> describes how to setup the scenario manually in the corresponding systems. The guide is available on SAP Service Marketplace at service.sap.com/ibc.

2 SAP NetWeaver Overview

2.3 Solution-Wide Topics



Step	Action	
7	System 1 (Interactive Forms powered by Adobe Software) only:	
	Configure Adobe document services. For more information, see the Configuration Guide – Adobe Document Services.	
8	System 2 (SAP XI) only:	
	Configure SAP Exchange Infrastructure to integrate your existing system landscape.	
	How to proceed depends on the following implementation situations:	
	• You want to integrate a solution of mySAP Business Suite with an SAP Exchange Infrastructure scenario (such as mySAP SRM 2.0)	
	In this case, the Master Guide of the corresponding solution has cross-referred you to this guide. You must now proceed with the business scenario configuration guide of this solution. This guide provides further SAP Exchange Infrastructure configuration tasks.	
	[Business Scenario Configuration Guide – <mysap business="" solution="" suite="">]</mysap>	
	• You want to integrate your existing system landscape using the different communication options above. You must now proceed with the SAP Exchange Infrastructure configuration guide. This guide describes in detail how to configure the components to use the different scenarios.	
	[Configuration Guide – SAP Exchange Infrastructure]	

2.3.5 SAP NetWeaver Rapid Installer

What is the SAP NetWeaver Rapid Installer?

SAP NetWeaver Rapid Installer 2.0 is an installation and configuration wizard that reduces implementation of SAP Enterprise Portal along with other software components and designated SAP business packages from days to hours. SAP NetWeaver Rapid Installer enables you to lower the total cost of ownership (TCO) by reducing the time needed to install, deploy and configure SAP NetWeaver Enterprise Portal and business packages to a minimum of time.

SAP NetWeaver Rapid Installer also provides backend connectivity to systems for Enterprise Resource Planning (ERP), Business Warehouse (BW), Customer Relationship Management (CRM) and SAP Computing Center Management Systems (CCMS). It enables you to easily connect to these systems through a pre-configured portal with a minimum of interaction and configuration time.

SAP NetWeaver Rapid Installer installs a clearly defined set of business scenarios for mySAP ERP 2004 and mySAP CRM 4.0. Thus the SAP NetWeaver Rapid Installer allows an easy and rapid step into the world of SAP NetWeaver and SAP Enterprise Portal for mySAP ERP and mySAP CRM customers and also for customers who prefer to install SAP Enterprise Portal stand-alone without additional business packages.

Two versions of SAP NetWeaver Rapid Installer are available for SAP NetWeaver '04:

- □ SAP NetWeaver Rapid Installer version 2.0 is based on SAP NetWeaver '04 SR1.
- SAP NetWeaver Rapid Installer version 2.1 is based on SAP NetWeaver '04 Support Package Stack 10 (including SR1).



There is no upgrade possible between version 2.0 and version 2.1. Version 2.1 is a complete new installation.

You cannot use SAP NetWeaver Rapid Installer 2.0 or 2.1 to install components of earlier releases of SAP NetWeaver '04.

Both versions of SAP NetWeaver Rapid Installer comprise the following SAP NetWeaver components:

- Portal Platform
- □ Knowledge Management (including Search and Classification [TREX])
- Collaboration
- □ SAP Web AS Java 6.40

They also install the following software components:

- Business packages with Employee Self Service (ESS) and Manager Self Service (MSS) business scenarios (prerequisite: mySAP ERP 2004 is installed)
- □ SAP Self Service (XSS) 5.0 which is based on SAP NetWeaver 04 Java Stack and connects to the backend functions in the ERP system. For more information on SAP XSS, see SAP Service Marketplace at service.sap.com/erp-inst → mySAP ERP 2004.
- Business packages with business scenarios for mySAP CRM (prerequisite: mySAP CRM 4.0 and SAP BW 3.5 is installed)
- A System Landscape Directory (SLD) if you want SAP NetWeaver Rapid Installer to install a new SLD.
- CCMS agents to enable monitoring in the Portal

Product Information and Documentation

You can find detailed product information at **service.sap.com/nw-ri**. Read this information and check if SAP NetWeaver Rapid Installer 2.0 or 2.1 is a viable alternative for you to install SAP Enterprise Portal based on SAP NetWeaver '04.

Before installing the software, read the SAP NetWeaver Rapid Installer Installation Guide available for both versions and describing in detail the installation procedure, hardware and software requirements and pre-installation steps. You can find this document and additional information on the SAP NetWeaver Rapid Installer DVD (for both versions) in the folder *Documentation*.

DVD Order Process

Versions 2.0 and 2.1 of SAP NetWeaver Rapid Installer 2.0 can be ordered from the SAP Software Catalog.

To access the SAP Software Catalog, see SAP Service Marketplace at **service.sap.com/swdc**. In the detailed navigation area, choose Ordering SAP-Software. The SAP Software Catalog opens in a separate window. In the right-hand window, choose SAP NetWeaver \rightarrow SAP NetWeaver Rapid Installer 2.0 or SAP NetWeaver Rapid Installer 2.1.





Limitations

You can use the SAP NetWeaver Rapid Installer as a viable alternative for installing SAP Enterprise Portal (plus other software components).

Note the following limitations:

1. Platform availability

One of the following combinations of operating systems and databases are required for installation:

- Microsoft Windows Server 2000/2003 operating system with Microsoft SQL Server 2000 Enterprise Edition
- Microsoft Windows Server 2000/2003 operating system with Oracle 9.2.0.4 64-bit database
- □ Sun Solaris SPARC 8 or 9 operating system with Oracle 9.2.0.4 64-bit database
- 2. Installation Type: One node installation

SAP NetWeaver Rapid Installer supports a one node installation on the same server. An additional J2EE cluster environment can be set up by using the standard SAPinst installation tool.

3. Scalability and Sizing

SAP NetWeaver Rapid Installer installs an SAP Enterprise Portal which is optimized for a small number of business users (about 200 concurrent users). But you are not limited to this scenario: You can scale the system and add new hardware according to the standard portal sizing.



2.3.6 Basic System Variants of SAP Web AS

SAP Web AS 6.40 is a main component of SAP NetWeaver. It can be installed in different basic system variants: as *ABAP+Java system*, as *Java system*, as *ABAP system*, or as a combination of an ABAP system with a Java system:



- The installation documentation of SAP Web AS contains the information required to install each of the basic system variants of SAP Web AS.
- For information about the distribution of SAP system instances, see section Basic System Variants and Distribution of SAP System Instances of the Installation Guide – SAP Web Application Server <ABAP or Java> on <Operating System>: <Database>.
- □ SAP Web AS ABAP+Java system

With this variant, you can operate **both** the ABAP Engine and the J2EE Engine in **one** system (that is, one SAP system with one <SAPSID>).

Web AS ABAP	Web AS Java
ABAP Schema	

SAP Web AS ABAP+Java System

□ SAP Web AS ABAP system + SAP Web AS Java system

With this variant, you can also operate **both** the ABAP Engine and the J2EE Engine. But in contrast to an SAP Web AS ABAP+Java system, the two engines run separated in **two** systems (that is, two SAP systems, each with a different <SAPSID>).

Web AS ABAP	Web AS Java
Database ABAP Schema	Database Java Schema

SAP Web AS ABAP System + SAP Web AS Java System



Normally, the two SAP systems also use two separate databases. Nevertheless, if your database supports the installation of Multiple Components in one Database (MCOD), you also have the option to share one database for both systems.

Web AS	S ABAP			Web AS Java
		Data ABAP Schema	Java Schema	

SAP Web AS ABAP System + SAP Web AS Java System with MCOD

□ SAP Web AS ABAP system

This variant only consists of the ABAP Engine. There is **no** J2EE Engine.

Web AS ABAP	
ABAP Schema	

SAP Web AS ABAP System

□ SAP Web AS Java system

This variant only consists of the J2EE Engine, with auxiliary services. There is **no** ABAP Engine.



SAP Web AS Java System





2.3.7 SAP GUI

For more information about the SAP GUI Family, see SAP Service Marketplace at service.sap.com/sapgui.

SAP GUI is a universal client for accessing ABAP functions in SAP systems (such as SAP Web AS ABAP 6.40). The SAP GUI Family consists of:

□ SAP GUI for HTML

SAP GUI for HTML is based on the Internet Transaction Server (ITS). On the server side, ITS is already included in the SAP Web AS installation.

On the client side, only a suitable browser (such as Internet Explorer 4.01 or higher) is required.

□ SAP GUI for the Java environment (SAP GUI for Java)

SAP GUI for Java is a generic SAP GUI that covers a variety of platforms.

For more information about the installation of SAP GUI for Java, see the documentation SAP Front End Installation Guide.

□ SAP GUI for the Windows environment (SAP GUI for Windows)

SAP GUI for HTML and SAP GUI for Java do not have all the capabilities of SAP GUI for Windows. For example, certain SAP systems require SAP GUI for Windows.

For more information about the installation of SAP GUI for Windows, see the documentation *SAP Front End Installation Guide*.

2.3.8 Security

For more information about security in the context of SAP systems and SAP system landscapes, see the SAP Security Guide located in the <u>SAP Library [page 16]</u> at SAP NetWeaver \rightarrow Security \rightarrow SAP NetWeaver Security Guide.

In particular, pay attention to the following sections in the SAP Security Guide before you implement SAP NetWeaver:

- Technical System Landscape
- □ User Administration and Authentication
- Network and Transport Layer Security

If you want to implement more than one SAP NetWeaver scenario, also read the *Identity Management* section in the SAP Security Guide.

3.1 SAP Business Information Warehouse

3 Technical Scenarios of SAP NetWeaver

3.1 SAP Business Information Warehouse

For this technical scenario, the following topics are covered:

- Overview
- Technical system landscape
- Overview of the implementation sequence

3.1.1 Overview

3.1.1.1 General Information About SAP BW

SAP Business Information Warehouse (SAP BW) provides data warehousing functionality, a business intelligence platform, and a suite of business intelligence tools that enable businesses to attain these goals.

SAP BW allows you to analyze data from operative SAP applications as well as all other business applications and external data sources such as databases, online services and the Internet.

SAP BW enables Online Analytical Processing (OLAP), which processes information from large amounts of operative and historical data. OLAP technology enables multidimensional analyses from various business perspectives. The Business Information Warehouse Server for core areas and processes, preconfigured with Business Content, ensures that you can look at information within the entire enterprise.

The *Administrator Workbench* is the tool for controlling, monitoring, and maintaining all of the processes connected with data staging and processing in the SAP BW system. The term *Data Staging* includes all data retrieval processes.

The *Business Explorer* is the SAP BW component that provides flexible reporting and analysis tools for strategic analyses and decision-making support within a company. These tools include query, reporting and OLAP functions. With the Business Explorer, you can evaluate old and current data to varying degrees of detail and from different perspectives on the Web and also in Microsoft Excel. The Business Explorer gives a large spectrum of users access to the information in SAP BW using the Enterprise Portal, the Intranet (Web application design) or mobile technologies (mobile telephones with WAP or I-mode capabilities, and personal digital assistants). As analysis and presentation tool the Business Explorer is responsible for the whole *Reporting*.

As part of the SAP NetWeaver architecture, SAP BW draws from and utilizes the capabilities of the other components for business intelligence usage. The sum of the functionality of SAP BW and the contribution of other components of SAP NetWeaver form a platform that represents the next major step in the evolution of business intelligence.

SAE



3.1 SAP Business Information Warehouse

3.1.1.2 Scenario Description

Depending on what extra components you use and how you configure your SAP BW system, you can use SAP BW for different business purposes.

In general, there are *staging* and *reporting* scenarios. For the staging scenario, you can use SAP systems or external databases as data source. The reporting scenarios are based on the staging scenario with SAP systems as data source.

Staging scenarios

□ SAP BW staging with SAP systems as data source

You configure SAP BW with SAP R/3, SAP R/3 Enterprise or any other SAP system as data source, upload data into prepared InfoCubes, and create and use aggregates.



Exemplary sales data uploaded into SAP BW:

- Amount of customers and their value
- The relevant vendors and their delivery time
- Customer collections survey (payment period, credit memo, payment)
- SAP BW staging with external data sources on Oracle, Teradata and all databases that can be accessed with JDBC

Configure SAP BW with an external data source and upload data to SAP BW InfoCubes by using the Universal Data Connect Feature of SAP BI Universal Data Integration.

Reporting scenarios

□ Reporting with SAP BW Business Explorer and Precalculation

Use SAP BW Business Explorer with delivered Queries and save your results in Microsoft Excel Workbooks. To calculate the results in advance, use SAP BW Precalculation Service.

Reporting with SAP BW Web Applications and Precalculation

Use SAP BW Web Application Designer to create your Web applications. The HTML Precalculation speeds up the performance.

Reporting with SAP BW Web Service for xml/a

Configure your SAP BW system for SAP BW Web Service and create your own Reporting Application using the Web Service.

3.1.1.3 Process Chain

- 1. On your SAP R/3 or SAP R/3 Enterprise OLTP system, the SD data are generated and available in the Logistic Cockpit.
- From SAP BW, you start an initial upload to extract these data from the tables into SAP BW InfoCubes.
- 3. You analyze the data and store the results in SAP BW.

3 Technical Scenarios of SAP NetWeaver

3.1 SAP Business Information Warehouse

4. If you have added remarks to your analyzed data, you can search quickly for those remarks using Search and Classification (TREX).

3.1.2 Technical System Landscape

The following figure shows the technical system landscape of SAP BW:

Non-SAP Component Mandatory Component **SAP Business Information Warehouse Optional Component** BW Precalculation Service BI Conte BW Functionality SAP System R/3 Plug-In o PI_BASIS BW Java Components Clas (TREX) External Data Source Web AS ABAP Web AS Java Additional ABAP Stack Java Stack Components Java Schem

3.1.3 Implementation Sequence

This section lists the sequence of steps required to implement SAP BW.

3.1.3.1 Installation

To install SAP BW, perform the steps listed in the following table:

For documentation referenced in the following table, see the References [page 138] section.







3.1 SAP Business Information Warehouse

Δ

- Before starting an installation, make sure that you have prepared the installation hosts as described in the corresponding installation guide. For example, you must have checked or adapted the OS kernel parameters on UNIX. Otherwise, unpredictable complications may occur with the installed system.
- For the latest component version and patch level requirements, see the Support Package Stack Guide – SAP NetWeaver '04.

Step	Action		Remarks and	
	[Correspo	nding Documentation]	Subsequent Steps	
1	Optional: P 3. The (3. 1.1 Pl	Prepare an SAP system as data source: e SAP system can be either an OLTP – SAP R/3 1I – 4.6C) or SAP R/3 Enterprise (Extension Set 10 or higher) or any other SAP system with BASIS Plug in	You do not have to prepare this SAP system for SAP BW Staging with external system as datasource.	
	4. If y dat (or <i>ins</i> Ma	rou want to use SAP R/3 or SAP R/3 Enterprise as tasource, make sure that SAP R/3 Plug-In 2004.1 higher) is installed on the OLTP: the SAP Note 704564 (<i>R/3 plug-in:Pl 2004.1</i> tatallation/delta upgrade) and SAP Service arketplace at service.sap.com/r3-plug-in	For all other scenarios, you have to prepare this SAP system only if you want to use an OLTP system (such as SAP R/3 or SAP R/3 Enterprise backend) as data source.	
		With SAP BW Java Components (see below), you can get access to non-SAP data sources by using the corresponding JDBC driver.	Although SAP R/3 3.11 to 4.6C or SAP R/3 Enterprise Extension Set 1.10 or higher can be used for the OLTP, we recommend that you use SAP R/3 Enterprise 4.70 Extension Set 2.00.	
2	Installation	of SAP BW 3.5:	After the installation of	
	1. Ins BV	stall SAP Web AS ABAP 6.40, which includes SAP V 3.5, PI_BASIS 6.40 2004_1 and SAP IGS 6.40.	SAP BW, the system does not display the SAP Easy Access	
		[Installation Guide – SAP Web Application Server ABAP on <operating system="">: <database>]</database></operating>	Menu automatically. For information about how to maintain the SAP Easy Access	
		SAP BW Staging with external system as datasource only:	Menu for SAP BW manually, see SAP Note 725184.	
		 If you want to run ABAP and Java parts as one system in one database instance, install an SAP Web AS ABAP+Java system instead of SAP Web AS ABAP (also see the documentation Installation Guide – SAP Web Application Server Java on <operating System>: <database>).</database></operating 	After the installation of SAP BW as part of SAP NetWeaver '04 SR1, you have to adapt the authorization profile S_BI-WHM_RFC. For	
		 If you want to run the Java components in a separate system, install an SAP Web AS Java system additional to SAP Web AS 	more information, see SAP Note 799789.	





Step	Action	Remarks and
	[Corresponding Documentation]	Subsequent Steps
	ABAP (also see the documentation Installation Guide – SAP Web Application Server Java on <operating system="">: <database>).</database></operating>	
	 Configure the database of your SAP Web AS for SAP BW according to SAP Note 567745. 	
	 Install SAP BW Business Content Add-On BI_CONT 3.5.3 or higher on the SAP Web AS ABAP system according to SAP Notes 774933 and 153967. 	
	 Optional: For SAP BW Staging with external system as datasource, install SAP BW Java Components on the SAP Web AS Java system. SAP BW Java Components consist of: 	
	a. SAP BI Universal Data Integration 3.5	
	b. SAP BI Meta Model Repository 3.5	
	5. [Installation Guide – SAP Business Information Warehouse]	
3	 Optional: Installation of Search and Classification (TREX) 6.1 Use the following installation parameters for the Search and Classification (TREX) installation (for more information, see the documentation <i>Installation Guide – Search and Classification (TREX)</i>): Perform the installation steps to set up an RFC connection. Automatic language recognition is not required. You can adopt the default settings for document languages during the installation of Search and Classification (TREX). No Python extensions are required. After the installation of Search and Classification (TREX). No Python extensions are required. After the installation of Search and Classification (TREX). After the installation of Search and Classification (TREX). After the installation of Search and Classification (TREX). After the installation of Search and Classification (TREX), you must run the report RSTIRIDX in your SAP BW system as stated in the <i>Installation Guide – SAP Web Application Server ABAP on <operating <databases.<="" i="" systems:=""></operating></i> 	Optional for SAP BW Reporting with Business Explorer Analyzer and SAP BW Reporting with SAP BW Web Applications. For these scenarios, the component is required if documents and searching for documents are available. For all other scenarios, this component is not required.
	[Installation Guide – Search and Classification (TREX)]	





3.1 SAP Business Information Warehouse

Step	Action	Remarks and	
	[Corresponding Documentation]	Subsequent Steps	
4	Optional: Installation of SAP BW Precalculation Service 3.5	Only required for SAP BW	
	[Installation Guide – SAP Business Information Warehouse]	Explorer Analyzer.	
5	Installation of SAP GUI with SAP BW Add-On 3.5 on each host from which you want to connect to a SAP BW 3.5 server using an SAP GUI	If you want to use SAP BW Business Explorer, you require SAP GUI 6.20 from	
	[SAP Front End Installation Guide]	Compilation 6 or higher.	
6	Installation of Internet Explorer 5.5 (or higher) or Netscape 7.01 (or higher) on each host from which you want to display SAP BW Web Applications	/	
	[See your Microsoft documentation]		
7	Optional: Installation of Crystal Enterprise SAP Edition Version 10 (Crystal Enterprise [server component] and Crystal Reports [design tool])	Only required if you are in need for additional capabilities for formatted	
	[Crystal Enterprise SAP Edition Installation Guide and Crystal Reports Installation Guide]	reporting. For more information, see SAP Service Marketplace at service.sap.com/	
		businessobjects \rightarrow FAQ.	

3.1.3.2 Configuration

To configure SAP BW, perform the steps listed in the following table:

Action SAP provides specially designed configuration templates for each SAP NetWeaver scenario

that uses SAP Web AS Java. For SAP BW Staging with external system as datasource, use the Template Configuration Tool to apply the appropriate configuration template.

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Before using the Template Configuration Tool, you have to apply SAP NetWeaver '04 Support Package Stack 10 or higher.

For more information, see:

- SAP Note 739788 (SAP NetWeaver: Template-Based Configuration Composite Note)
- The SAP Library [page 16] under SAP NetWeaver \rightarrow SAP NetWeaver Configuration \rightarrow SAP Web Application Server \rightarrow SAP Web Application Server (Java) \rightarrow J2EE Engine Configuration \rightarrow Template Configuration Tool.

3.2 BI Information Broadcasting

3.2 BI Information Broadcasting

For Business Intelligence Information Broadcasting (BI Information Broadcasting), the following topics are covered:

- Overview
- Technical System Landscape
- Overview of the implementation sequence

3.2.1 Overview

BI Information Broadcasting allows the user to precalculate BEx Web applications, BEx queries and BEx Analyzer workbooks as required, or to distribute these in SAP Enterprise Portal 6.0 on Web AS 6.40 (SAP EP on Web AS 6.40) or by e-mail. Insights can therefore be shared and disseminated to support the decision-making processes. The BEx Portfolio represents the central point of entry for accessing Business Intelligence information in this respect. BI Information Broadcasting leverages Knowledge Management features such as subscription, feedback, discussion, collaboration, rating, and enterprise search.

Information broadcasting with SAP Business Information Warehouse (SAP BW) enables users to broadcast and schedule reports as needed. SAP Enterprise Portal serves as the single point of entry for the end user to access the complete business intelligence (BI) information portfolio.

BI Information Broadcasting includes the following features:

- BEx Broadcaster (including wizard) as a Web-based user interface
- BEx Broadcasting precalculation and distribution services as the infrastructure
- BEx Analyzer precalculation server for precalculating BEx Analyzer workbooks
- Business Intelligence Services for integrating with SAP Enterprise Portal and presenting BEx Portfolios
- BEx Portfolio (as part of SAP Enterprise Portal) containing precalculated documents and current documents in one overview

You can call the BEx Broadcaster from the BEx Web Application Designer, the BEx Query Designer and the BEx Analyzer. You can also call the Broadcasting wizard in the context menu of Web applications.

The following existing scenarios are also replaced by BI Information Broadcasting:

The precalculation of BEx Web applications for offline usage

It was previously possible to precalculate BEx Web applications with the Reporting Agent and download them with the BEx Download Scheduler. This function, which is still possible with SAP BW 3.5, supports the grouping of precalculated documents using scheduling packages in the Reporting Agent and the periodic scheduling of downloads in the Download Scheduler.

As of SAP BW 3.5, this scenario can be performed with BI Information Broadcasting. Precalculated BEx Web applications can be sent by e-mail and documents or directories can be downloaded from the BEx Portfolio using Knowledge Management services. BI Information Broadcasting makes the following functions available:

- Grouping precalculated documents in directories
- Receiving notification when precalculated documents are changed

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3.2 BI Information Broadcasting

- Sending of documents when changed
- BEx Web applications from the Web Application Designer were previously published in the Portal due to integration between SAP BW and SAP Enterprise Portal 5.0. Roles were migrated to the portal or iView files were imported.

As of SAP BW 3.5, BEx Web applications can be created as iViews directly in SAP Enterprise Portal 6.0 on Web AS 6.40 by using the BEx Web Application Designer or the BEx Query Designer. It is no longer necessary to migrate or import iView files explicitly.

3.2.2 Technical System Landscape

The following figure shows the technical system landscape of BI Information Broadcasting:

SAP GUI with BW Extensions	Front End	Key Supported Basic System Variants: • SAP Web AS ABAP+Java • SAP Web AS Java + SAP Web AS ABAP Non-SAP Component
	BL Information Broadcasting	Mandatory Component
		Optional Component
BI Content	BW Precalculation Service	
BW Functionality	Portal Platform	
XI Functionality	BW Java Components Classification	
All Functionality		
KW Functionality		
Web AS ABAP	Web AS Java	
ABAP Stack	Additional Java Stack Components	
A	Database Java Schema	

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For earlier releases than SAP NetWeaver '04 SR1, we do not support the installation of the SAP Enterprise Portal components (Portal Platform and Content Management and Collaboration) on SAP Web AS ABAP+Java systems, but only on standalone SAP Web AS Java systems.





This section lists the sequence of steps required to implement BI Information Broadcasting.

3.2.3.1 Installation

To install BI Information Broadcasting, perform the steps listed in the following table:

Step	Action	Remarks and	
	[Corresponding Documentation]	Subsequent Steps	
1	Installation of the technical scenario SAP Business Information Warehouse (see <u>SAP Business Information</u> <u>Warehouse [page 58]</u> \rightarrow <i>Implementation Sequence</i>)	For the precalculation and distribution of workbooks, make sure that you also install SAP BW Precalculation Service.	
2	Installation of the technical scenario SAP Enterprise Portal (see <u>SAP Enterprise Portal [page 67]</u> \rightarrow Implementation Sequence)	1	

3.2.3.2 Configuration

To configure BI Information Broadcasting, perform the steps listed in the following table:

Step	Action		
1	SAP provides specially designed configuration templates for each SAP NetWeaver scenario that uses SAP Web AS Java. Use the Template Configuration Tool to apply the appropriate configuration template.		
	Before using the Template Configuration Tool, you have to apply SAP NetWeaver '04 Support Package Stack 10 or higher.		
	For more information, see:		
	SAP Note 739788 (SAP NetWeaver: Template-Based Configuration – Composite Note)		
	 The <u>SAP Library [page 16]</u> under SAP NetWeaver → SAP NetWeaver Configuration → SAP Web Application Server → SAP Web Application Server (Java) → J2EE Engine Configuration → Template Configuration Tool. 		
2	For the configuration of BI Information Broadcasting, see the <u>SAP Library [page 16]</u> at SAP NetWeaver \rightarrow SAP NetWeaver Configuration \rightarrow SAP Business Information Warehouse (BW).		
3	For security-related aspects of BI Information Broadcasting, also see the <u>SAP Library</u> [page 16] at SAP NetWeaver \rightarrow Security \rightarrow SAP NetWeaver Security Guide \rightarrow Security Guides for the SAP NetWeaver Products \rightarrow SAP Business Information Warehouse Security Guide \rightarrow Authorizations.		

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3.3 SAP Enterprise Portal

For this technical scenario, the following topics are covered:

- Overview
- Technical system landscape
- Diverview of the implementation sequence

3.3.1 Overview

SAP Enterprise Portal consists of:

- □ The Portal Platform
- □ The Knowledge Management platform, whose major functional areas are:
 - Content Management
 - Search and Classification (TREX)
- Collaboration
- □ Predefined content and tools for creating content

With SAP Enterprise Portal, you receive the portal, Knowledge Management, and Collaboration. With the Portal Platform, you get the tools to build portals for your target users, while the Knowledge Management platform makes it possible to provide access to documents and multimedia objects that are stored in an organization's distributed document repositories. Collaboration enables virtual teams to work together in synchronous and asynchronous ways, directly within SAP Enterprise Portal.

You can customize the portal for the various users by creating targeted interfaces for the various roles. Dedicated interfaces help the users to complete both their general tasks, as well as those specific to their professional roles. To speed up the process of customizing the portal for each user, SAP provides predefined content that has been packaged, tested, and certified by SAP. This content is bundled in *business packages*. In addition to the business packages, SAP provides a number of tools that customers can use to enhance and customize content, including tools for end users, for content administrators, for business users with no coding experience, and for professional programmers.

The Portal Platform

The Portal Platform includes those components necessary to build a portal, including:

- iView technology, for creating and administering iViews. Customers can either use iViews delivered by SAP or create their own iViews, either by programming them or by using the portal content creation tools.
- Unification technology, includes services for resolving relations between business objects of back-end systems
- User Role Management, for creating user roles that provide preconfigured, targeted portal pages for the user

The Knowledge Management Platform

The Knowledge Management platform provides access to an organization's unstructured information (documents). The information may reside in various repositories that can be connected to the portal by means of components called repository managers. Some



repository managers are delivered by SAP; other repository managers can be developed based on open APIs. The functions of the KM platform can be exposed to the documents in all connected repositories, given that the respective repository manager allows it. The major functional areas of KM are:

- Content Management, which supports the entire lifecycle of documents, including the authoring, storage, management, and display of documents. It also manages the connection between document repositories and the portal and provides collaborative functions such as feedback, rating, subscription, etc.
- Search and Classification (TREX), which processes search queries on free-text or attributes, and provides automatic classification in taxonomies and text mining. Search and Classification (TREX) is also used in other building blocks of SAP NetWeaver such as SAP Business Intelligence.

Collaboration

Collaboration closes the communication gap between users, or teams of users, by providing real-time collaboration (such as application sharing, chat, instant messaging) and asynchronous collaboration capabilities (such as tasks, calendaring, discussions). Collaboration Rooms offer a virtual work environment for teams or communities. These Collaboration Rooms can be populated with predefined content and services that may already be available within SAP Enterprise Portal. As a flexible integration framework for groupware (such as Microsoft Exchange, Lotus Notes) and synchronous collaboration applications (such as WebEx), it lets customers reuse and integrate existing assets.

Predefined Content and Content Tools

Predefined content and tools for creating and managing content complete the portal offering by helping to speed up the portal implementation and support its maintenance and continued improvement. The content is bundled in business packages, and tools for creation and support are as follows:

- Business packages based on SAP solutions that provide content for over 100 roles
- Business packages based on industry-specific queries for inclusion in customer content scenarios
- Business packages based on third-party vendor solutions, to leverage existing investments
- Personalization tools for end users
- A comprehensive environment for content managers for creating, managing, and deploying content
- A visual modeling tool for allowing business users to create content based on SAP R/3 transactions, without the need to write code
- A portal development kit to support professional Java and .NET programmers

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3.3.2 Technical System Landscape

The following figure shows the technical system landscape of SAP Enterprise Portal:

Web	Front End			Key Supported Basic System Variants: • SAP Web AS Java • SAP Web AS ABAP+Java Non-SAP Component Mandatory Component
S	AP Enterprise Portal Content Management and Collaboration Portal Platform Web AS Java Java Stack	Search and Classification (TREX) Additional Components	tory only if Con ement and rration is used	Itent
Data	Java Schema			



For earlier releases than SAP NetWeaver '04 SR1, we do not support the installation of the SAP Enterprise Portal components (Portal Platform and Content Management and Collaboration) on SAP Web AS ABAP+Java systems, but only on standalone SAP Web AS Java systems.

3.3.3 Implementation Sequence

This section lists the sequence of steps required to implement SAP Enterprise Portal.



3.3.3.1 Installation

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- For SAP NetWeaver '04 SR1, also consider to use <u>SAP NetWeaver Rapid</u> <u>Installer [page 52]</u> to install SAP Enterprise Portal.
- For documentation referenced in the following table, see the <u>References</u> [page 138] section.

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- Before starting an installation, make sure that you have prepared the installation hosts as described in the corresponding installation guide. For example, you must have checked or adapted the OS kernel parameters on UNIX. Otherwise, unpredictable complications may occur with the installed system.
- For the latest component version and patch level requirements, see the Support Package Stack Guide – SAP NetWeaver '04.

This section lists the sequence of installation steps that you have to perform in order to obtain all of the SAP Enterprise Portal components, on one or more hosts.

Step	Action	Remarks and Subsequent Steps	
	[Corresponding Documentation]		
1	Installation of the SAP Web AS Java 6.40 system, Portal Platform, and, optionally, Content Management and Collaboration	As of SAP NetWeaver '04 SR1, you could optionally also install the SAP Enterprise Portal components on an	
	[Installation Guide – SAP Enterprise Portal]	SAP Web AS ABAP+Java.	
2	Optional: Installation of Search and Classification (TREX) 6.1	Install Search and Classification (TREX) only, if you installed Content Management and Collaboration.	
	Use the following installation parameters for the Search and Classification (TREX) installation (for more information, see the documentation <i>Installation Guide</i> – <i>Search and Classification (TREX)</i>):		
	• Perform the installation steps to set up an HTTP connection.		
	 During Search and Classification (TREX) installation, select the languages you want Search and Classification (TREX) to recognize. Search and Classification (TREX) uses this information to perform the language recognition procedure, which is necessary for indexing 		



	documents.	
	 No Python extensions are required. 	
	[Installation Guide – Search and Classification (TREX)]	
3	Import of Business Packages	More information about how to find Business Packages, install and use them in a Portal environment is available at www.sdn.sap.com/sdn/content portfolio.sdn → Portal Content Portfolio→ Quick Link: New: Finding and Downloading Content: New Process.
4	Optional: To configure a portal cluster, add dialog instances and/or server nodes using Java tools. To add Portal Platform nodes, use the following topics:	Configure a cluster to increase portal performance and ensure availability
	 Adding/Deleting a Server Process – to add or remove a server process in a machine where a dispatcher is already installed. 	If you want to install the J2EE Engine in a cluster on several physical machines, make sure that:
	• Adding a Dialog Instance – to add a dispatcher and a server on a dedicated host.	 The time on the different machines is synchronized;
	Find both topics in the <u>SAP Library [page 16]</u> at SAP NetWeaver \rightarrow SAP NetWeaver Technical Operations Manual \rightarrow Management of the SAP	• The language locale settings are equal on all machines.
	Web Application Server (Java) → Management of the SAP Web Application Server (Java). This step can be performed after step 1 at any stage.	The different locale settings will result in severe database inconsistencies because when the deployed applications store information in the database, they expect one and the same locale settings on all cluster nodes.
		Both time and locale differences lead to reduced supportability of the system, as the mapping between the events on the different machines is not obvious, and this will increase the resolution time for any problems that may occur.
5	Optional: Move the Application Sharing Server to a dedicated host. [<i>Installation Guide – SAP Enterprise Portal</i>]	If you installed Collaboration in a production environment, we recommend that you install the Application Sharing Server for Collaboration on a dedicated host, for better performance.



3.3.3.2 Configuration

To configure SAP Enterprise Portal, perform the steps listed in the following table:

Step	Action
1	SAP provides specially designed configuration templates for each SAP NetWeaver scenario that uses SAP Web AS Java. Use the Template Configuration Tool to apply the appropriate configuration template.
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	Before using the Template Configuration Tool, you have to apply SAP NetWeaver '04 Support Package Stack 10 or higher.
	For more information, see:
	SAP Note 739788 (SAP NetWeaver: Template-Based Configuration – Composite Note)
	 The <u>SAP Library [page 16]</u> under SAP NetWeaver → SAP NetWeaver Configuration → SAP Web Application Server → SAP Web Application Server (Java) → J2EE Engine Configuration → Template Configuration Tool.
2	Initial information about the configuration of SAP Enterprise Portal is included in the corresponding installation guides.
	More information is included in the Administration Guide in the Initial Configuration Tasks section. See the <u>SAP Library [page 16]</u> at SAP NetWeaver \rightarrow People Integration \rightarrow Portal \rightarrow Administration Guide.


3.4 SAP Exchange Infrastructure

For this technical scenario, the following topics are covered:

- Overview
- Technical system landscape
- Diverview of the implementation sequence

3.4.1 Overview

SAP Exchange Infrastructure (SAP XI) is the technical solution for integrating heterogeneous software components of your system landscape or integrating the business systems of your business partners.

Theoretically, you can integrate all kind of business systems by using SAP XI components Integration Server, Integration Builder, and Adapter Environment.

In addition, business partners can connect to your business systems by using SAP Partner Connectivity Kit.

3.4.1.1 Communication Options

SAP Exchange Infrastructure provides multiple communication options that take into account the capability of involved business systems to exchange content amongst them. Business systems are determined by the existing system landscape that you want to integrate, taking into account both SAP business systems and non-SAP business systems.

The following parameters are defined to determine a communication option:

1. Type of business system

Since the communication occurs using the XML messaging service of the Integration Engine, the capability of sending or receiving XML messages is crucial for involved business systems.

- 2. Type of messaging concept (middleware technology) to be used for exchanging content Different messaging concepts are used, such as:
 - Intermediate Documents (IDocs)
 - Remote Function Call (RFC)
 - Files from / to file system or FTP server
 - Java Messaging Service (JMS)
 - JDBC Data Access
 - SOAP
 - RNIF
 - Plain HTTP
 - Mail
 - SAP BC protocol
 - Marketplace Access
 - Proxy-based messaging.

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Based on the required connectivity, the following table shows the main options that can be identified:

For a detailed description of these main options, see the <u>SAP Library [page 16]</u> under SAP NetWeaver \rightarrow Process Integration \rightarrow SAP Exchange Infrastructure \rightarrow Overview \rightarrow Connectivity.

Option	Name	Description
A	Integration of business systems using the IDoc adapter	A business system is connected to the Integration Server using the IDoc adapter, which exchanges IDocs with the business system.
В	Integration of business systems using the plain HTTP adapter	A third-party business system is connected to the Integration Server using the Plain HTTP adapter, which exchanges XML messages using plain HTTP with the business system.
С	Integration of business systems using the RFC adapter	A business system is connected to an Integration Engine using the RFC adapter, which exchanges data with the business system using the RFC protocol.
D	Integration of business systems using the File adapter	A third-party (or legacy) system is connected to an Integration Engine using the file adapter, which exchanges files with the third-party system. When reading a file from the third-party file system or FTP server, the file adapter sends this file as it is to the Integration Engine, or, in the case of csv-type file content, can optionally transform this file into an XML message for further processing by the Integration Engine.
E	Integration of business systems using the JMS adapter	A third-party or legacy system is connected to an Integration Engine using a JMS provider (such as MQSeries or SonicMQ) and the JMS adapter, which exchanges JMS messages with the JMS messaging system. When receiving a JMS message from the JMS provider, the JMS adapter feeds the message for further processing to the Integration Engine. It is assumed that the received JMS message is already an XML message. Csv-type message content may be transformed to XML before sending it to the Integration Engine.
F	Integration of business systems using the JDBC adapter	A third-party or legacy system (or simply a database) is connected to an Integration Engine using the JDBC adapter, which accesses database content using JDBC. When reading database content, the JDBC adapter creates an XML message from this data and sends it to the Integration Engine for further processing. Database content can be inserted, manipulated, or queried using a predefined XML format specifying SQL syntax or stored procedure usage.
G	Integration of remote clients or providers of Web services using the SOAP Adapter	A remote client or provider of Web Services is connected to the Integration Server using the SOAP adapter, which exchanges SOAP messages with the remote client or provider.
Н	Integration with a marketplace using the Marketplace adapter	A Marketplace environment is connected to the Integration Server using the Marketplace adapter, which exchanges messages with the Marketplace environment.





Option	Name	Description
I	Integration with a business partner using RNIF adapter	A RosettaNet-compliant system is connected to the Integration Server using the RNIF 2.0 adapter for message exchange.
J	Integration with a business partner using Mail adapter	A mail server is connected to the Integration Server using the Mail adapter, which exchanges messages with the mail server.
К	Integration with a business partner using SAP BC adapter	A SAP Business Connector is connected to the Integration Server using the SAP BC adapter, which exchanges messages with the SAP Business Connector using the SAP Business Connector protocol.
L	Integration of business systems using Java Proxies	A business system based on SAP Web AS 6.20 or higher is connected to the Integration Server using executable Java proxies, which are able to communicate using XML messages and HTTP.
М	Integration of business systems using ABAP Proxies	A business system based on SAP Web AS 6.20 or higher is connected to the Integration Server using executable ABAP proxies, which are able to communicate using XML messages and HTTP.
N	Integration of business partners using SAP XI 3.0	An SAP XI 3.0 Integration Server of a business partner is connected to the SAP XI 3.0 Integration Server of another business partner using the XI 3.0 message protocol for sending and receiving messages.
0	Integration of business partners using SAP XI 2.0	A business system environment of a business partner is connected to the SAP XI 3.0 Integration Server using the XI 2.0 message protocol.
Р	Integration of SAP Exchange Infrastructure 2.0 components	An SAP XI 2.0 business system environment is connected to the SAP XI 3.0 Integration Server using the XI 2.0 message protocol.
Q	Integration of small business partners using SAP Partner Connectivity Kit	A business system environment of a small business partner is connected to the Integration Server using SAP Partner Connectivity Kit, which exchanges messages with the business system landscape of the small business partner.

3.4.2 Technical System Landscape

To realize the communication options described above, the following specific SAP Exchange Infrastructure components are needed:

Component	Use Case	Comprised Functional Components	
SAP Exchange Infrastructure	Communication options A – P running on an SAP Web AS ABAP+Java system 6.40	Integration Server, Integration Builder, Runtime Workbench, XI Adapter Engine The following SAP XI components are included in the SAP Web AS 6.40 installation: IDoc Adapter Plain Http Adapter	
XI Adapter Engine	Communication options C – L, if running on a separate SAP Web AS Java system is required	File Adapter, JMS Adapter, JDBC Adapter, SOAP Adapter, Marketplace Adapter, RNIF Adapter, RFC Adapter, Mail adapter, SAP BC adapter, Java Proxy Server, Java Proxy Runtime	
XI Adapter Engine (J2SE)	Communication options D – G, if running in a non-SAP Java environment is required	File Adapter, JMS Adapter, JDBC Adapter, SOAP Adapter, SOAP Adapter, RFC Adapter, Mail Adapter, SAP BC Adapter	
SAP Partner Connectivity Kit	Communication option O	File Adapter, JMS Adapter, JDBC Adapter	

The following figure shows the underlying technical system landscape of SAP XI:

With the role of an Integration Server, SAP Exchange Infrastructure requires a dedicated SAP Web Application Server. This means that running applications in other clients of the same SAP Web AS is not supported.

- Also see the documentation *Technical Infrastructure Guide SAP* Exchange Infrastructure available on SAP Service Marketplace at service.sap.com/instguidesnw04 → Planning.
- SAP Partner Connectivity Kit is not included in this figure.

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3.4.2.1 Special Considerations for the Adapter Environment

There are the following installation options for the adapter environment:

- **XI Adapter Engine** that is to be installed on a SAP Web AS Java 6.40 system
 - Central installation on the SAP Exchange Infrastructure host
 - Non-central installation on a separate host
- □ XI Adapter Engine (J2SE) that can be installed in a non-SAP Java environment.

In general, the XI Adapter Engine – in any of the described installation options – should be used. It is the strategic adapter engine of SAP and is therefore continuously improved.

The XI Adapter Engine (J2SE), including the contained adapters, is only supported for compatibility reasons and is not developed any further. It should therefore only be used in cases where it's inevitable.

XI Adapter Engine versus XI Adapter Engine (J2SE)

Both options contain the following adapters:

File Adapter / JMS Adapter / JDBC Adapter / SOAP Adapter



(The J2SE based adapters offer only the functionality available in XI 2.0 and are not developed any further).

In addition, the XI Adapter Engine also offers the following adapters:

Marketplace Adapter, RNIF Adapter, RFC Adapter, Mail Adapter, SAP BC Adapter, Java Proxy Server and Runtime.

The **XI Adapter Engine (J2SE)** is designed to run its adapters in a non-SAP Java environment and should only be used if this is a precondition in your environment.

The following table describes the advantages and disadvantages of using adapters in the different flavors XI Adapter Engine or XI Adapter Engine (J2SE):

Installation Option	Advantages	Disadvantages
XI Adapter Engine	Provides complete integration into the SAP XI environment:	More resources needed for installing the SAP Web AS Java
	 Central Monitoring available (including message monitoring, integration in XI-Alertframework and CCMS integration for error reporting from the XI Adapter Engine) 	6.40 system
	Central Configuration available	
	 Broad range of adapters available, not only from SAP as well as but also from 3rd party adapter vendors 	
	Higher Security (many adapters support secure protocols)	
	Central Software Change Management	
	Strategic adapter engine which is continuously improved	
XI Adapter Engine (J2SE)	 Supports non-SAP Java environment 	Hosts only a subset of the adapter functionality
	Less resources needed when running in a Java environment	Its adapters don't offer secure protocols
	only	No handling of certificates supported
		No central Software Change Management
		Only kept for compatibility reasons, but not developed any further



XI Adapter Engine versus SAP Exchange Infrastructure

XI Adapter Engine is also installed automatically with the SAP Exchange Infrastructure installation, but one of its components needs to be installed on the business systems in addition, others could be installed under certain circumstances on the business systems, too. The following applies:

- □ Using the Java Proxy environment (server or runtime environment) always requires installing XI Adapter Engine separately on an SAP Web AS Java system.
- You can use the already installed adapters (File / JMS / JDBC / SOAP / Marketplace / RNIF / RFC / Mail / SAP BC) on the SAP Exchange Infrastructure server if required.
- Under certain circumstances, it may be more suitable for you to run one or more required adapters on the business system(s) or SAP Web AS Java. (See the table below for advantages or disadvantages). Only in this case you need to install XI Adapter Engine separately (it is just an option, not mandatory).

Here are some considerations that may help you to decide when to install the adapters on the business systems:

Installation Host	Advantages	Disadvantages	
Adapter on the SAP Exchange Infrastructure host (automatically installed)	 No additional installation procedure required Suitable for development or test scenarios 	 Data source (file, database, JMS provider) must be accessible using NFS, TCP ports and so on (may be only available in 	
	 Hosts a broad range of adapters 	homogeneous LAN environments)	
	Supports central configuration of adapters in Integration Directory	 Possible performance bottleneck due to high RAM needs. For example, the system needs four times the amount of the maximum message size as RAM. 	
Adapter on SAP Web AS Java [XI Adapter Engine]	 Better performance Only HTTP(S) connection required between adapter and Integration server. Suitable for a more heterogeneous system landscape with mixed operating systems and authorization concepts, or for distributed WAN environments with firewalls etc. 	Additional installation procedure for J2EE Engine and Adapter	
	 Hosts a broad range of adapters 		
	Supports central configuration of adapters in the Integration Directory		

Adapter on the business system [XI Adapter Engine (J2SE)]	Installation possible on platforms which are not released for SAP Web AS	 Additional installation procedure No integration with central adapter configuration in the
	 Less hardware requirements 	Integration Directory
	Only HTTP connection required between adapter and Integration server. Suitable for a more heterogeneous system landscape with mixed operating systems and authorization concepts, or for distributed WAN environments with firewalls.	 No integration with the SAP XI Message Monitoring, XI- Alertframework and CCMS for error reporting
		Hosts only a subset of the adapter functionality
		Its adapters do not offer secure protocols
		 No handling of certificates supported
		 No central Software Change Management
		 Only kept for compatibility reasons, but not developed any further

3.4.3 Implementation Sequence

This section lists the sequence of steps required to implement SAP Exchange Infrastructure.

3.4.3.1 Installation





- Before starting an installation, make sure that you have prepared the installation hosts as described in the corresponding installation guide. For example, you must have checked or adapted the OS kernel parameters on UNIX. Otherwise, unpredictable complications may occur with the installed system.
- For the latest component version and patch level requirements, see the Support Package Stack Guide – SAP NetWeaver '04.





Implementation Sequence for SAP Exchange Infrastructure

The following table lists the implementation steps to realize at least one of the communication options A - P.

Step	Action	Remarks and
	[Corresponding Documentation]	Subsequent Steps
1	Installation of a Unicode SAP Web AS ABAP+Java 6.40 system [Installation Guide – SAP Web Application Server ABAP on <operating system="">: <database> and Installation Guide – SAP Web Application Server Java on <operating system="">: <database>]</database></operating></database></operating>	A separate Unicode SAP Web AS is a prerequisite for the core component SAP Exchange Infrastructure (Integration Server, Integration Builder, and XI Adapter Engine) that realizes the communication options A – P. You must prepare SAP Web AS as described in the documentation Installation Guide – SAP Exchange Infrastructure 3.0.
2	Installation of SAP GUI on each host from which you want to connect to SAP Web AS using an SAP GUI	/
	[SAP Front End Installation Guide]	
3	Installation of the component SAP Exchange Infrastructure 3.0 (Integration Server / Integration Builder / Runtime Workbench / XI Adapter Engine)	/
	[Installation Guide – SAP Exchange Infrastructure]	
4	Optional: Installation of a Unicode SAP Web AS Java 6.40 system [Installation Guide – SAP Web Application Server Java on	Perform these steps only, if you need to install the XI Adapter Engine (for using one of the communication
	Optional: Installation of VI Adaptor Engine	options D -F) on a
	Unstallation Guide - SAP Exchange Infrastructure	500 aiais 351 vol.
5	Optional: Installation of XI Adapter Engine (I2SE)	Perform this step only if
5	[Installation Guide – SAP Exchange Infrastructure]	you want to use one of the communication options D – G in a non-SAP Java environment.
6	Download and install the most current SLD content - updated weekly - available in SAP Service Marketplace at service.sap.com/swdc under Download \rightarrow Support Packages and Patches \rightarrow Entry by Application Group \rightarrow Additional Components \rightarrow SAP MASTER DATA FOR SLD.	/



Implementation Sequence for SAP Partner Connectivity Kit

The following table lists the implementation steps if you want your business partner to connect to your existing SAP Exchange Infrastructure environment (communication option O).

Step	Action	Remarks and
	[Corresponding Documentation]	Subsequent Steps
1	Make sure that SAP Exchange Infrastructure is installed in your SAP landscape.	/
2	Installation of a Unicode SAP Web AS Java 6.40 system on the business partner system landscape	The Unicode SAP Web AS Java system is a
	[Installation Guide – SAP Web Application Server Java on <operating system="">: <database>]</database></operating>	Partner Connectivity Kit.
		You must prepare the SAP Web AS Java system as described in the documentation <i>Installation</i> <i>Guide – SAP Exchange</i> <i>Infrastructure 3.0.</i>
3	Installation of SAP Partner Connectivity Kit on the business partner system landscape	/
	[Installation Guide – SAP Partner Connectivity Kit]	

3.4.3.2 Configuration

To configure SAP Exchange Infrastructure, perform the steps listed in the following table:

Step	Action
	[Corresponding Documentation]
1	SAP provides specially designed configuration templates for each SAP NetWeaver scenario that uses SAP Web AS Java. Use the Template Configuration Tool to apply the appropriate configuration template.
	Before using the Template Configuration Tool, you have to apply SAP NetWeaver '04 Support Package Stack 10 or higher.
	For more information, see:
	 SAP Note 739788 (SAP NetWeaver: Template-Based Configuration – Composite Note)
	 The <u>SAP Library [page 16]</u> under SAP NetWeaver → SAP NetWeaver Configuration → SAP Web Application Server → SAP Web Application Server (Java) → J2EE Engine Configuration → Template Configuration Tool.



2	Configure SAP Exchange Infrastructure to integrate your existing system landscape.
	How to proceed depends on the following implementation situations:
	• You want to integrate a solution of mySAP Business Suite with an SAP Exchange Infrastructure scenario (such as mySAP SRM 2.0)
	In this case, the Master Guide of the corresponding solution has cross-referred you to this guide. You must now proceed with the business scenario configuration guide of this solution. This guide provides further SAP Exchange Infrastructure configuration tasks.
	[Business Scenario Configuration Guide – <mysap business="" solution="" suite="">]</mysap>
	• You want to integrate your existing system landscape using the different communication options above. You must now proceed with the SAP Exchange Infrastructure configuration guide. This guide describes in detail how to configure the components to use the different scenarios.
	[Configuration Guide – SAP Exchange Infrastructure]





For this technical scenario, the following topics are covered:

- Overview
- Technical system landscape
- Diverview of the implementation sequence

3.5.1 Overview

SAP Mobile Infrastructure (SAP MI) is a technical scenario on which SAP Solutions for Mobile Business are based. With SAP MI, however, you can also make applications mobile that are not SAP-based.

The SAP MI Client Component is installed locally on mobile devices and is equipped with a Web server, a database layer and its own business logic. Staff working remotely can therefore work offline and does not have to wait for a network connection to complete timecritical business applications. SAP MI offers tools for synchronization and data replication that make the data of the mobile device consistent with that of the backend system.

SAP MI also supports the Abstract Window Toolkit (AWT) platform. AWT is part of the Java Foundation Classes (JFC) and provides Java developers with a framework and routines for graphic user interfaces.

3.5.2 Technical System Landscape



The following figure shows the technical system landscape of SAP MI:

SAD



3.5 SAP Mobile Infrastructure

The following sections describe the technical components of SAP MI:

SAP MI Client

SAP MI Client provides a mobile application with the following services:

□ UI programming models

The standard programming model for mobile applications is *Java Server Pages* (JSP) and *Abstract Window Toolkit* (AWT). However, the SAP ME 1.0 programming model *microITS* is still supported.

Framework services

The framework services are provided to the mobile applications as Java APIs. The most important APIs are used for:

• Data synchronization

During synchronization, SAP MI Client codes the data using a 128-bit RDS (RSA Data Security) method and compresses the data.

- o Data persistence
- o Reading and writing replicated data
- Connecting peripheral devices (native drivers)
- Tracing and XML parsing

SAP MI Server

SAP MI Server contains the following components:

SAP MI J2EE Server

SAP MI J2EE Server is an integral part of SAP Web AS Java. It is responsible for:

o Installing SAP MI Client

If a mobile device logs on initially to SAP MI J2EE Server, it determines which parts are required by SAP MI Client and installs them on the mobile device. The local device drivers that are needed on the platform are also installed.

o Administration of the mobile device

The system administrator keeps an overview of the mobile devices in the field and can make various client settings (such as modem, class path, state of the battery) and certain server settings (such as load balancing, handling of synchronization errors) centrally.

SAP MI ABAP Server

SAP MI ABAP Server is an integral part of SAP Web AS ABAP. It is responsible for:

- o Queuing and acknowledgement of synchronized data containers
- o Calling the application logic

The application logic can be called synchronously or asynchronously, depending on the application.

3.5 SAP Mobile Infrastructure

o Data replication

Data replication defines data packages for individual mobile devices (data allocation), computes the data to be newly replicated on the device (delta comparison), finds and solves conflicts between the mobile device and the server application (conflict management) and provides a number of monitoring tools.

o Deployment of the mobile applications to the mobile devices

Mobile applications are automatically deployed to a mobile device when the mobile device is synchronized. This process is controlled centrally by the Deployment Console. It permits the system administrator to assign application versions based on users or roles and thus gives an overview of the mobile devices, error logs and so on, in the field.

Backend

The backend of a mobile application consists of customizing and repository objects. Both types of objects are transported using the standard mechanisms of the SAP Change & Transport System.

3.5.3 Implementation Sequence

This section lists the sequence of steps required to implement SAP MI.

3.5.3.1 Installation

To install SAP MI, perform the steps listed in the following table:

For documentation referenced in the following table, see the <u>References [page</u> 138] section.

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- Before starting an installation, make sure that you have prepared the installation hosts as described in the corresponding installation guide. For example, you must have checked or adapted the OS kernel parameters on UNIX. Otherwise, unpredictable complications may occur with the installed system.
- For the latest component version and patch level requirements, see the Support Package Stack Guide – SAP NetWeaver '04.



3.5 SAP Mobile Infrastructure

Step	Action	Remarks and
	[Corresponding Documentation]	Subsequent Steps
1	Installation of an SAP Web AS ABAP+Java 6.40 system	/
	[Installation Guide – SAP Web Application Server ABAP on <operating system="">: <database> and Installation Guide – SAP Web Application Server Java on <operating system="">: <database>]</database></operating></database></operating>	
2	Installation of SAP GUI on each host from which you want to connect to SAP Web AS using an SAP GUI	/
	[SAP Front End Installation Guide]	
3	Installation of SAP Mobile Infrastructure Client 2.5	/
	[Installation Guide – SAP Mobile Infrastructure]	

3.5.3.2 Configuration

To configure SAP Mobile Infrastructure, perform the steps listed in the following table:

Step	Action	
1	SAP provides specially designed configuration templates for each SAP NetWeaver scenario that uses SAP Web AS Java. Use the Template Configuration Tool to apply the appropriate configuration template.	
	Before using the Template Configuration Tool, you have to apply SAP NetWeaver '04 Support Package Stack 10 or higher.	
	For more information, see:	
	 SAP Note 739788 (SAP NetWeaver: Template-Based Configuration – Composite Note) 	
	 The <u>SAP Library [page 16]</u> under SAP NetWeaver → SAP NetWeaver Configuration → SAP Web Application Server → SAP Web Application Server (Java) → J2EE Engine Configuration → Template Configuration Tool. 	
2	See the "Configuration" section in the Installation Guide – SAP Mobile Infrastructure.	



SAP Knowledge Warehouse (SAP KW) can be used for the following purposes:

Documentation (DOC)

/!\

- □ Training (TRAIN)
- Quality Management Manuals (QMM)

To receive the initial shipment of documentation content (including quality manual – included in license) and/or training content (which needs to be licensed separately), go to the SAP Software Shop on SAP Service Marketplace at service.sap.com/softwarecatalog \rightarrow SAP Knowledge Warehouse, and register for the first content shipment.

If, in addition, you wish to receive the regular SAP content updates for SAP KW, the SAP Software Shop is also the location to subscribe to them. Subscription ensures that the updates are shipped to you automatically.

3.6.1 Overview

SAP KW delivers the technical infrastructure you need to set up and manage your own enterprise-specific knowledge base in the areas of documentation, training, and manuals. For project teams and end users, SAP KW streamlines training and business processes, helping you reduce your costs. In addition, the possibility to reuse, supplement, and continually update SAP content offers great savings potential.

SAP KW provides an information repository for companies of all sizes – including global multilingual companies – with facilities to model structures according to their corporate and market structure.

Use SAP KW to create and adjust documentation, manuals and training materials of varying media. Tailor the materials to your specific business processes using the editors and office products your employees know.

If you wish, SAP can deliver SAP KW with current SAP materials so that you can immediately begin training your project team and end users and edit the corresponding documentation.

SAP KW is shipped with the following content created specifically for SAP solutions:

□ Standard delivery:

Documentation (context-sensitive online application help)

Quality management manual template - EN ISO 9000 ff. and 14000 compliant

Optional package:

Training materials (includes course materials and instructor guides)

The scenarios offered through SAP KW benefit from key functions of the solution. SAP KW is designed to:

- Provide a user-friendly authoring environment for authors creating different types of materials
- Allow for maximum reuse of content stored in the system

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- Deliver workflow-based translation functions for multilingual environments
- Generate output formats in a purpose- and target-group-oriented, flexible fashion
- D Provide an infrastructure for distributing the respective materials to end users

The scenarios Documentation and Training focus on the traditional knowledge transfer topics of the creation and management of documentation and classroom training materials.

The Quality Management Manual scenario supports you in creating, managing and distributing a quality management manual according to the requirements of the ISO 9000 ff. and 14000 standards.

3.6.2 Technical System Landscape

Front End Key Supported Basic System Variants: SAP Web AS ABAP+Java SAP Web AS Java + SAP Web AS ABAP SAP GUI with KW Exten Non-SAP Component **Mandatory Component** SAP Knowledge Warehouse **Optional Component** KW Portal Integration Servlet SAP Enterprise Portal Content Server SAP Gateway **KW IKS** SAP ITS 6.20 Search and with services prop and kwedit2 Classification (TREX) Web Server **KW** Functionality Web AS ABAP Web AS Java Additional ABAP Stack Java Stack **Components**

The following figure shows the technical system landscape of SAP KW:



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SAP Gateway is required if you use Search and Classification (TREX) within your scenario.

It is also required if you run SAP Content Server on a separate host. In this case, SAP Gateway is used for the import of content updates and for the creation of separate transports.

If you do not use Search and Classification (TREX) and have installed SAP Content Server on the SAP Web AS host, you do not need to install SAP Gateway.

For test and demo purposes only, the SAP KW component shown in the figure above (that is, SAP Web AS, SAP Gateway, the Web server, and SAP Content Server) can be installed on one host.



For performance, scalability, high availability, and security reasons, we strongly recommend that you do not use this installation on one host as your production landscape.

For this single-host installation of SAP KW, you must provide a sufficiently sized server. For information about sizing, see SAP Service Marketplace at service.sap.com/sizing.

3.6.3 Implementation Sequence

This section lists the sequence of steps required to implement SAP KW.

3.6.3.1 Installation

To install SAP KW, perform the steps listed in the following table:



For documentation referenced in the following table, see the <u>References [page</u> 138] section.



- Before starting an installation, make sure that you have prepared the installation hosts as described in the corresponding installation guide. For example, you must have checked or adapted the OS kernel parameters on UNIX. Otherwise, unpredictable complications may occur with the installed system.
- For the latest component version and patch level requirements, see the Support Package Stack Guide – SAP NetWeaver '04.



Step	Action	Remarks and Subsequent Steps	
	[Corresponding Documentation]		
1	Installation of SAP Web AS 6.40:	/	
	 If you want to run SAP Web AS ABAP and SAP Web AS Java on different hosts: 		
	a. Install the SAP Web AS ABAP system on the first host. [Installation Guide – SAP Web Application Server ABAP on <operating system="">: <database>]</database></operating>		
	 Install the SAP Web AS Java system on the second host. [Installation Guide – SAP Web Application Server Java 		
	on <operating system="">: <database>]</database></operating>		
	 Otherwise, install an SAP Web AS ABAP+Java system. [Installation Guide – SAP Web Application Server ABAP on <operating system="">: <database> and Installation Guide – SAP Web Application Server Java on <operating System>: <database>]</database></operating </database></operating> 		
2	Installation of SAP KW Internet Knowledge Servlet 1.00	/	
	[Installation Guide – SAP Knowledge Warehouse]		
3	Installation of SAP Content Server 6.30	/	
	[Installation Guide – SAP Content Server]		
4	Installation of SAP Gateway 6.40	If you do not use Search	
	[Installation Guide – SAP Web Application Server ABAP on <operating system="">: <database>]</database></operating>	(TREX) and have installed SAP Content Server on the SAP Web AS host, you do not need to install SAP Gateway.	
5	Installation of Search and Classification (TREX) 6.1	/	
	\mathbf{P}		
	Use the following installation parameters for the Search and Classification (TREX) installation (for more information, see the documentation <i>Installation Guide – Search and Classification (TREX)</i>):		
	 Perform the installation steps to set up an RFC connection. 		
	 Automatic language recognition is not required. You can adopt the default settings for document languages during the installation of Search and Classification (TREX). 		
	No Python extensions are required.		
1			

Step	Action	I	Remarks and
	[Corre	sponding Documentation]	Subsequent Steps
		Classification (TREX), you have to create a search server relation as described in the <i>Installation Guide – Search and Classification (TREX)</i> .	
		\mathbf{P}	
		After the installation of Search and Classification (TREX), you must run the report RSTIRIDX in your SAP Web AS system as stated in the <i>Installation Guide – SAP Web Application Server ABAP on <operating system="">: <database>.</database></operating></i>	
	[Installa	ation Guide – Search and Classification (TREX)]	
6	Option: 6.20.	al: Installation of SAP Internet Transaction Server	We recommend that you install SAP ITS to display
	a.	Install SAP ITS 6.20.	properties from a Web
		[Installation Guide – SAP@Web 6.20 Compilation 4 available on the Server Components CD/DVD]	
	b.	Applying ITS services kwedit2 and kwprop.	
		[See SAP Note 659713 , available on SAP Service Marketplace at service.sap.com/notes]	
7	Installa	tion of SAP GUI with SAP KW Add-On:	1
	a.	Installation of SAP GUI.	
		[SAP Front End Installation Guide]	
	b.	If you want to use Microsoft Office 2000 or Microsoft Office XP as editing tool (see below), register the dynamic link library htmltidy.dll on each SAP GUI client.	
		[See SAP Note 517439 , available on SAP Service Marketplace at service.sap.com/notes]	
8	Installa tools:	tion of at least one of the following required editing	1
	• Mie	crosoft Office 2000 or Microsoft Office XP.	
	[Se	e the Microsoft documentation]	
	• XN	IL editors supported by SAP KW:	
		 Epic Editor 4.3.1 from Arbortext, Inc. For more information, see www.arbortext.com 	
		 Authentic 2004 from Altova. This editor can be downloaded from: www.altova.com/download_authentic.html 	





3.6.3.2 Configuration

To configure SAP Knowledge Warehouse, perform the steps listed in the following table:

Step	Action		
1	SAP provides specially designed configuration templates for each SAP NetWeaver scenario that uses SAP Web AS Java. Use the Template Configuration Tool to apply the appropriate configuration template.		
	Δ		
	Before using the Template Configuration Tool, you have to apply SAP NetWeaver '04 Support Package Stack 10 or higher.		
	For more information, see:		
	• SAP Note 739788 (SAP NetWeaver: Template-Based Configuration – Composite Note)		
	 The <u>SAP Library [page 16]</u> under SAP NetWeaver → SAP NetWeaver Configuration → SAP Web Application Server → SAP Web Application Server (Java) → J2EE Engine Configuration → Template Configuration Tool. 		
2	The documentation <i>Configuration Guide – SAP KW Business Scenarios</i> describes how to setup the scenario manually in the corresponding systems. The guide is available on SAP Service Marketplace at service.sap.com/ibc.		



Overview

SAP NetWeaver offers a comprehensive development environment for Web applications written in ABAP or Java.

SAP Web AS is the technical infrastructure for ABAP and Java development and execution. SAP Web AS consists of the following main parts:



Since you do not always require both SAP Web AS ABAP and SAP Web AS Java, you can install different basic system variants of SAP Web AS. For more information, see the <u>Basic System Variants of SAP Web AS [page 55]</u> section.

- SAP Web AS ABAP (includes the ABAP Engine as a runtime environment for ABAP applications)
- SAP Web AS Java (includes the J2EE Engine as a runtime environment for Java applications)

ABAP-based applications are developed with *ABAP Workbench*, which is an integral part of SAP Web AS. Therefore, if you install an SAP Web AS, it can serve both as development environment and runtime environment. For more information, see the <u>Development of ABAP</u> <u>Applications [page 96]</u> section.

Java-based applications are developed with SAP NetWeaver Developer Studio. Since SAP NetWeaver Developer Studio is installed on the developer's PC, applications need to be deployed to SAP Web AS Java, which serves as the runtime environment. For more information, see the <u>Development of Java Applications [page 100]</u> section.

If you develop large Java projects, SAP NetWeaver offers central services for team development such as source code control based on repository access, maintenance of central configuration data and build services:

- If you simply want to save versions of your sources, a central source repository is sufficient. If this is the case, see the <u>Team-Oriented Development of Java Applications</u> [page 112] section.
- However, if you plan to take full advantage of the development infrastructure of SAP, see the <u>Development with SAP NetWeaver Java Development Infrastructure [page 117]</u> section.

Development Scenarios of SAP NetWeaver

To summarize, SAP NetWeaver Development Environment consists of the following subscenarios:

- Development of ABAP applications
- Development of Java applications
- Team-oriented development of Java applications
- Development with SAP NetWeaver Java Development Infrastructure

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- Interactive Forms based on Adobe software
- Development of Portal iViews Using SAP NetWeaver Visual Composer
- Development of Portal Content with PDK for .NET

For each of these subscenarios, the following topics are covered:

- Overview
- Technical system landscape
- Overview of the implementation sequence



3.7.1 Development of ABAP Applications

3.7.1.1 Overview

The ABAP server of SAP NetWeaver has the familiar three-tier architecture with a database, application layer, and presentation layer. Applications run within the application layer of the ABAP server. They communicate with the database management system of the central relational database (RDBMS) and – if you perform classical development of ABAP applications – with the graphical user interface (SAP GUI) at presentation level.

Besides the classical development of ABAP applications, you can also use SAP Web AS to develop Web applications with the Business Server Pages programming model. In this case, SAP GUI is replaced by a Web browser at presentation level.

The ABAP server includes the Change and Transport System (CTS), which supports the work of large development teams and provides a complete software lifecycle management environment.

By providing the development and runtime environment of a classical SAP system, the ABAP server can be used to develop ABAP-based applications for multiple scenarios:

- Standalone ABAP applications running on SAP NetWeaver using the ABAP development environment and runtime environment. The application handles its own data, while the user interface is either based on the traditional SAP GUI or has a Web front end based on Business Server Pages (BSP).
- ABAP applications running on a new SAP NetWeaver installation acting as an integration hub between other SAP and non-SAP systems.
 Typically, the applications share the users from other systems (common user management using LDAP) and communicate with the existing systems using RFC, Web Services, or other channels (such as ALE or IDocs).
- □ Business Server Pages application as a front end for an existing SAP back-end system that does not support the BSP model (such as SAP R/3 up to 4.6C).
- New ABAP back-end applications that provide functions used by a Java-based Web front end (JSPs or Web Dynpro Java) running in the SAP Web AS Java system.

For more information about:

- □ The classical development of ABAP applications, see the <u>SAP Library [page 16]</u> under SAP NetWeaver → Application Platform (SAP Web Application Server) → ABAP Technology → ABAP Programming and Runtime Environment (BC-ABA) → ABAP Programming (BC-ABA).
- □ The development of Web applications with Business Server Pages, see the <u>SAP Library</u> [page 16] under SAP NetWeaver → Application Platform (SAP Web Application Server) → ABAP Technology → UI Technology → Web UI Technology → Business Server Pages.
- The development of ABAP back-end functions for a Java-based Web front end, see the sections about ABAP programming in the SAP Library mentioned above and also the corresponding information about Java and Web Dynpro programming in the <u>Development of Java Applications [page 100]</u> section.



3.7.1.2 Technical System Landscape

For developing ABAP applications, only SAP GUI is required at the developer's workplace. No additional development tool is necessary. Objects are developed centrally with ABAP Development Workbench used by the SAP GUI. Also, when you develop Web applications with Business Server Pages you do this completely in the ABAP Development Workbench. Since SAP Web AS contains the Internet Communication Manager (ICM) that supports the HTTP (and HTTPS) protocol, no additional Web server is required to test and run the Web applications.

At least one SAP Web AS is required for development work.

However, we recommend that you have a dedicated system landscape with separate development, testing and production systems that are connected by the Transport Management System (TMS). You develop objects in the development system. They are then transported using the TMS into the test system for consolidation and later into the production system. This follows the recommendation of a system landscape for SAP software installations where the SAP business software is modified at the customer site.

Depending on the required size of the systems, you can install the database and multiple application server instances for each SAP Web AS on different hosts, thus providing a scalable infrastructure for very large development teams.

The following figure shows the underlying technical system landscape for the development of ABAP applications:





3.7.1.3 Implementation Sequence

This section lists the sequence of steps required to implement the scenario.

Installation

The environment for ABAP development consists of at least SAP Web AS and SAP GUI at the developers' workplaces. No other development tools are required at the workplaces or on the server side.

Depending on the size of the systems, the database and multiple application server instances can be installed on separate hosts.

To install the environment for the development of ABAP applications, perform the steps listed in the following table:

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For documentation referenced in the following table, see the <u>References [page</u> 138] section.

Λ

- Before starting an installation, make sure that you have prepared the installation hosts as described in the corresponding installation guide. For example, you must have checked or adapted the OS kernel parameters on UNIX. Otherwise, unpredictable complications may occur with the installed system.
- For the latest component version and patch level requirements, see the Support Package Stack Guide – SAP NetWeaver '04.

Step	Action	Remarks and	
	[Corresponding Documentation]	Subsequent Steps	
1	Install an SAP Web AS 6.40 system.	/	
	 If you also require a runtime environment for Java applications, install an SAP Web AS ABAP+Java system. [Installation Guide – SAP Web Application Server ABAP on <operating system="">: <database> and Installation Guide – SAP Web Application Server Java on <operating System>: <database>]</database></operating </database></operating> 		
	 If you only require a runtime environment for ABAP applications, install an SAP Web AS ABAP system. [Installation Guide – SAP Web Application Server ABAP on <operating system="">: <database>]</database></operating> 		
2	Install SAP GUI on the host of every developer, to enable them to access ABAP Workbench.	/	
	[SAP Front End Installation Guide]		



Step	Action [Corresponding Documentation]	Remarks and Subsequent Steps
3	Optional: If you want to develop Web applications, make sure that the corresponding prerequisites are met (for example, corresponding Web browsers must be installed on the development hosts).	1
	For more information, see the <u>SAP Library [page 16]</u> under SAP NetWeaver \rightarrow Application Platform (SAP Web Application Server) \rightarrow ABAP Technology \rightarrow UI Technology \rightarrow Web UI Technology \rightarrow Business Server Pages \rightarrow BSP Tutorials \rightarrow Getting Started with Business Server Pages \rightarrow Prerequisites for Creating Web Applications.	

Configuration

To configure the environment for the development of ABAP applications, perform the steps listed in the following table:

Action

SAP provides specially designed configuration templates for each SAP NetWeaver scenario that uses SAP Web AS Java. If you use SAP Web AS Java, use the Template Configuration Tool to apply the appropriate configuration template.

Before using the Template Configuration Tool, you have to apply SAP NetWeaver '04 Support Package Stack 10 or higher.

For more information, see:

7

- SAP Note 739788 (SAP NetWeaver: Template-Based Configuration Composite Note)
- The <u>SAP Library [page 16]</u> under SAP NetWeaver → SAP NetWeaver Configuration → SAP Web Application Server → SAP Web Application Server (Java) → J2EE Engine Configuration → Template Configuration Tool.



3.7.2 Development of Java Applications

This section gives you an overview of the corresponding technical system landscapes and implementation sequences for the following typical Web Applications and Web Services:

- □ J2EE (JSP/Servlet and Enterprise Java Beans (EJB))
- Web Dynpro
- Using SAP JCo to access ABAP
- Development and integration of a Web Service

3.7.2.1 Overview

This section describes some typical examples of Java development with SAP NetWeaver Developer Workplace.

SAP NetWeaver Developer Workplace consists of SAP NetWeaver Developer Studio and an SAP Web AS Java system installation and is mainly used for local development and testing. SAP Web AS is mainly used for central testing, deployment and execution.

The J2EE Engine is an integral component of SAP Web AS Java. It not only implements the J2EE standard – its functions stretch far beyond the standard.

For example, the following Web Applications and Web Service can be developed, tested, deployed and run:

- □ J2EE 1.3 Applications
 - JSP/Servlet Servlets and JavaServer Pages can be used to develop the Web user interface of a J2EE application.
 - Enterprise Java Beans (EJB)

Session Beans, Entity Beans and Message-Driven Beans are server-side components that encapsulate the business logic of an application. EJBs always execute within an EJB container that provides EJBs with system services. These services include transaction management, persistence, pooling, clustering, and other infrastructure services.

Use the *J2EE perspective* in SAP NetWeaver Developer Studio to create easily Servlets, JSPs, EJB beans, and other Java classes in a project. All the archives (WAR, JAR, and EAR) with the required deployment descriptors can be generated and directly deployed to the SAP Web AS Java system in the J2EE perspective.

The J2EE Engine of a central SAP Web AS ABAP+Java system is used for central deployment and execution. To do this, the Software Deployment Manager (SDM) must be configured to deploy to the J2EE Engine of the central SAP Web AS Java.

The following figure shows the technical system landscape for the development of J2EE applications:





Web Dynpro Applications

Web Dynpro is a browser-based, device-independent technology that provides a runtime environment and a development environment for professional business Web applications. Web Dynpro delivers a declarative meta-model to minimize the need for writing programming code. From this abstract definition, Web Dynpro generates code to create a ready-to-run Web application.

You do not need to install any additional software to use the standard browser version of Web Dynpro. Each UI function is delivered with the usual SAP NetWeaver installation process.

Web Dynpro is based on the Model View Controller concept. As an application interface to the back end, the model can connect to an Enterprise JavaBean (EJB), or to a Web Service. You can also reuse external UML models, such as the .XMLI (XML Metadata Interchange), which is easily imported using a wizard.

If you want to reuse existing business functionality for Business APIs (BAPIs), create a special Web Dynpro model type and automatically generate Java proxies from existing BAPIs. The underlying technology which is used for the call is Adaptive Remote Function Call (Adaptive RFC). Adaptive RFC is a special, new type of SAP's sophisticated Remote Function Call (RFC). Adaptive RFC is a technology that enables the Web Dynpro application to be run without any runtime errors, even if a BAPI structure has been modified in the SAP back-end system from which the Web Dynpro application uses the business functionality.

You can integrate your Web Dynpro applications into SAP Enterprise Portal 6.0 on Web AS 6.40 using the predefined Web Dynpro iView wizard. Web Dynpro supports portal eventing which allows Web Dynpro applications to communicate with any portal content.



To enable this, the System Landscape Directory (SLD) has to be configured. There is a special tool which allows you to enable the SLD for your Web Dynpro applications. For example, within the Web Dynpro Content Administrator, you have to establish the SAP JCo connection before you can access the back-end data that is part of a BAPI. Within the Web Dynpro application, you create the SAP JCo client using the API of the server platform.



Overview of Web Dynpro

The Web Dynpro Perspective of SAP NetWeaver Developer Studio is the entry point to the Web Dynpro design time toolset. First, you create a local Web Dynpro project, or a Web Dynpro Development Component. Next, you can create the specific Web Dynpro Components, define them, and implement the source code. For each development phase, there are efficient wizards and graphical tools that support you: the Navigation Modeler for application design and implementation; the View Designer for implementing the layout of the User Interface; and the Data Modeler for data flow definitions, among others. You can even define local data types and structures from within the Web Dynpro perspective, directly deploy them, and use them for your current Web Dynpro application.

For central deployment and execution, the J2EE Engine of a central SAP Web AS ABAP+Java system can be used. You can easily deploy and run the Web Dynpro application from within SAP NetWeaver Developer Studio without having to switch to any other environment.

For information about the security of Web Dynpro applications, see the SAP Security Guide located in the <u>SAP Library [page 16]</u> at SAP NetWeaver \rightarrow Security \rightarrow SAP NetWeaver Security Guide.



□ Using SAP JCo to access ABAP

SAP JCo is a middleware component that enables the development of SAP-compatible components and applications in Java. SAP JCo supports communication with the SAP server in both directions: *inbound calls* (Java calls ABAP) and *outbound calls* (ABAP calls Java). In this way, SAP JCo realizes communication between the ABAP and the Java environments that can be used in SAP Web AS.

To access an ABAP function module or BAPI from Java, a set of proxy classes is required. In SAP NetWeaver Developer Studio, you can easily create these proxy classes by selecting the ABAP function module or BAPI in the target system. As part of an Enterprise Application project (EAR file), this application can be directly deployed to the J2EE Engine of SAP Web AS Java in the J2EE Perspective.

For central deployment, the SDM must be configured to deploy to the central SAP Web AS. Then, you can deploy the Enterprise Application project to the central SAP Web AS in the J2EE Perspective. Ensure that the actual system information (for example, the integrated SAP Web AS ABAP) is used for the SAP JCo connection.

The following figure shows the technical system landscape for development when using SAP JCo to access ABAP:





Development and integration of a Web Service

SAP Web AS allows companies to extend their solutions by providing and integrating Web services. SAP NetWeaver Developer Studio provides an environment for publishing, discovering, and accessing Web services. It allows SAP Web AS to act both as a *server* and as a *client* for Web services.

Web Service development

Within SAP Web AS, the inside-out approach is used to develop the functions that can be made available as a Web service. For EJBs, a Web service interface has to be created that is visible to the Web service consumer. This interface provides an abstraction layer and, consequently, independence from the specific implementation. As part of an Enterprise Application project (EAR file), this Web service can be directly deployed to the J2EE Engine of SAP Web AS Java in the J2EE Perspective.

Optionally, the Web Service can be published to a *Universal Description, Discovery and Integration* (UDDI) server using the UDDI client. After that, other Web Service consumers can retrieve the Web Service.

Web Service integration

Based on a valid Web Service Definition Language (WSDL) file, the Web Service Proxy Generator generates a platform-specific proxy. It is very easy to develop a Web Service client based on standardized WSDL descriptions. Using the WSDL file as input, a Web Service Client Proxy is generated. The proxy allows the application developer to focus on business functionality, while technical aspects, like creating a valid *Simple Object Access Protocol* (SOAP) message, are automatically done by the proxy implementation. As part of an Enterprise Application project (represented by an Enterprise Archive file or EAR file), this Web service can be directly deployed to the J2EE Engine of SAP Web AS Java in the J2EE Perspective.

For central deployment, the SDM must be configured to deploy to the central SAP Web AS. Then you can deploy the project that contains the Web Service client to the J2EE Engine of the central SAP Web AS Java in the J2EE Perspective. The Web Service client will then be running and is available on the central server.

Portal Development Kit (PDK)

The PDK provides tools, templates, documentation and examples for Portal application development.

The *Enterprise Portal Plug-In* of SAP NetWeaver Developer Studio allows you to create a Portal application project yourself or by using templates that contain the structure for a Portal application. The Portal application is deployed directly into a Portal and can be launched and tested immediately.

The *Enterprise Portal Plug-In* of SAP NetWeaver Developer Studio also supports the development of Portal services and can transform Web services, based on a valid WSDL file, into a Portal service.

BI Java SDK

With the BI Java SDK, you can build analytical applications that access, manipulate, and display both multidimensional (Online Analytical Processing – OLAP) and tabular (relational) data. It consists of a Java application programming interface (API) in Java class libraries, documentation, and examples. The applications you create can access, manipulate, and display OLAP and relational data from diverse data sources.





The BI Java SDK provides an object-oriented framework in which you can do the following:

- Connect to a variety of data sources
- Access master data and meta data
- Create and execute complex queries
- Render and access query result sets

A driver-based architecture supports access to different data formats using a variety of protocols, for example:

- JDBC (Java Database Connectivity)
- OLE DB for OLAP
- SAP Query
- XMLA (XML for Analysis)
- □ Mobile Development Kit (MDK)

With the Mobile Development Kit (MDK), SAP MI offers an open programming model with a wide range of JavaServer Pages (JSP) library for developing mobile applications.

The MDK offers an integrated and comprehensive set of documentation and tools that enables you to quickly do the following:

- Understand the development concept for SAP MI-based applications
- Set up their development environment
- Start programming your first SAP MI example programs
- Find short, precise, and helpful answers to all implementation-specific questions

3.7.2.2 Technical System Landscape

Your environment for the development of Java applications will most likely be a mix of local development and testing, and central testing, deployment, and execution. This section gives you information about the technical system landscape for local and mixed/centralized environments.

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For a short description of the most important components, see the <u>Software</u> <u>Components Overview [page 132]</u> section.

Technical System Landscape of a Local Environment

SAP NetWeaver Developer Workplace consists of an SAP Web AS Java system and SAP NetWeaver Developer Studio. Each part of SAP NetWeaver Developer Workplace can be installed optionally. This results in the following installation options:

1. A combined installation of SAP NetWeaver Developer Studio and the SAP Web AS Java system for a developer on his or her PC. This option provides a complete development and test environment for each developer on the front end as shown in the following figure:





2. A standalone installation of SAP NetWeaver Developer Studio for each developer PC (front end) and a standalone central test SAP Web AS Java system. This option provides each developer with a single development environment and a common test environment for multiple developers. For instance, this option can be used for a larger developer group working on separate development projects.

Developers	Key Supported Basic System Variant: • SAP Web AS Java
Web Browser Developer Studio	Non-SAP Component Mandatory Component Optional Component
Central Test System for Development of Java Applications Image: Central Test System for Development of Java Applications Image: Central Test System for Development of Java Applications Image: Central Test System for Development of Java Applications Image: Central Test System for Development of Java Applications Image: Central Test System for Development of Java Applications Image: Central Test System for Development of Java Applications Image: Central Test System for Development of Java Applications Image: Central Test System for Development of Java Stack	
Java Schema	



Technical System Landscape of a Mixed/Centralized Environment

For this scenario, one or more installations of SAP NetWeaver Developer Workplace (for developing and testing Java applications) and SAP Web AS Java (for running the Java applications) are required:

- SAP NetWeaver Developer Workplace consists of SAP NetWeaver Developer Studio and SAP Web AS Java.
- For this scenario, SAP Web AS can be installed as *Java system* or as *ABAP+Java system*. For more information, see the <u>SAP NetWeaver Development Environment [page</u> 94] section.

Example of a Technical System Landscape for this Scenario

The following figure shows an example of a landscape with:

- □ A central SAP Web AS Java system for running the Java applications
- Multiple SAP NetWeaver Developer Workplace installations on front-end-side for developing and testing Java applications



Central Runtime System for Development of Java Applications





Configuration of the Central SAP Web AS System

Depending on the installation and on production requirements, the J2EE Engine of the central SAP Web AS Java system has to be configured with the *Config Tool*. This tool configures the J2EE Engine cluster elements using a GUI or text-only interface. It is XML-based and enables third-party visualizations to be integrated as part of a more complicated configuration system.

3.7.2.3 Implementation Sequence

This section lists the sequence of steps required to implement the scenario.

Installation

Your environment for the development of Java applications will most likely be a mix of local development and testing and central testing, deployment and execution. In this section, installation sequences for local and for mixed/centralized environments are given.

Installation Sequence for a Local Environment

For this scenario, you install SAP NetWeaver Developer Workplace as a Single Developer Workplace or alternatively multiple Developer Studios and a common SAP Web AS Java system:

- Single Developer Workplace: You install an SAP NetWeaver Developer Studio for one developer and an SAP Web AS Java system. You can install the Developer Workplace either on a common PC or separately on multiple PCs.
- Multiple Developer Studios and a Common SAP Web AS Java System: You install an SAP NetWeaver Developer Studio for each developer on a PC and an SAP Web AS Java system as a common test environment.

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- Before starting an installation, make sure that you have prepared the installation hosts as described in the corresponding installation guide. For example, you must have checked or adapted the OS kernel parameters on UNIX. Otherwise, unpredictable complications may occur with the installed system.
- For the latest component version and patch level requirements, see the Support Package Stack Guide – SAP NetWeaver '04.


Steps for the Installation of a Single Developer Workplace

Step	Action	Remarks and Subsequent Steps	
	[Corresponding Documentation]		
1	 Installation of SAP NetWeaver Developer Workplace consisting of: SAP NetWeaver Developer Studio SAP Web AS Java [Installation Guide – SAP NetWeaver Developer Workplace] 	If you want to install SAP NetWeaver Developer Studio and the SAP Web AS Java system separately, deselect the installation of SAP NetWeaver Developer Studio during this installation step. (For the installation of SAP NetWeaver Developer Studio, see step 2.)	
2	Optional: Installation of a standalone SAP NetWeaver Developer Studio [<i>Installation Guide – SAP NetWeaver Developer Studio</i>]	For each SAP NetWeaver Developer Studio you install, make sure that the Java applications are deployed on the J2EE Engine of SAP NetWeaver Developer Workplace by configuring this in the SDM of SAP NetWeaver Developer Studio.	

Steps for the Installation of Multiple Developer Studios and a Common SAP Web AS Java System

Step	Action	Remarks and Subsequent Steps	
	[Corresponding Documentation]		
1	Installation of the SAP Web AS Java 6.40 system [<i>Installation Guide</i> – SAP Web Application Server Java on <operating system="">: <database>]</database></operating>	To improve performance, multiple Java instances can be installed in a cluster.	
2	Installation of a standalone SAP NetWeaver Developer Studio [Installation Guide – SAP NetWeaver Developer Studio]	For each SAP NetWeaver Developer Studio you install, make sure that the Java applications are deployed on the J2EE Engine of SAP NetWeaver Developer Workplace by configuring this in the SDM of SAP NetWeaver Developer Studio.	

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3.7 SAP NetWeaver Development Environment

Installation Sequence for a Mixed/Centralized Environment

- Before starting an installation, make sure that you have prepared the installation hosts as described in the corresponding installation guide. For example, you must have checked or adapted the OS kernel parameters on UNIX. Otherwise, unpredictable complications may occur with the installed system.
- For the latest component version and patch level requirements, see the Support Package Stack Guide – SAP NetWeaver '04.

Steps for the Installation of a Mixed/Centralized Environment

Step	Action	Remarks and Subsequent		
	[Corresponding Documentation]	Steps		
1	Installation of SAP Web AS 6.40:	To improve performance, you can		
	 SAP Web AS Java system. [Installation Guide – SAP Web Application Server Java on <operating system="">: <database>]</database></operating> 	install multiple SAP Web AS with multiple J2EE Engines in a cluster (multiple-node cluster).		
	 If your Java applications also use the ABAP Engine, install an SAP Web AS ABAP+Java system. [Installation Guide – SAP Web Application Server ABAP on <operating system="">: <database> and Installation Guide – SAP Web Application Server Java on <operating System>: <database>]</database></operating </database></operating> 	• Depending on the applications you want to run, further installation steps may be required in your runtime system. For example, if you developed applications with the Portal Development Kit (PDK), the installation of the Portal Platform may be required.		
2	Installation of SAP NetWeaver Developer Workplace consisting of:	/		
	SAP NetWeaver Developer Studio			
	SAP Web AS Java			
	[Installation Guide – SAP NetWeaver Developer Workplace]			
3	Optional: Installation of additional SAP NetWeaver Developer Studios	For each SAP NetWeaver Developer Studio you install,		
	[Installation Guide – SAP NetWeaver Developer Studio]	make sure that the Java applications are deployed on the J2EE Engine of SAP NetWeaver Developer Workplace by configuring this in the SDM of SAP NetWeaver Developer Studio.		



Configuration

To configure the environment for the development of Java applications, perform the steps listed in the following table:

Action

SAP provides specially designed configuration templates for each SAP NetWeaver scenario that uses SAP Web AS Java. Use the Template Configuration Tool to apply the appropriate configuration template.



Before using the Template Configuration Tool, you have to apply SAP NetWeaver '04 Support Package Stack 10 or higher.

For more information, see:

- SAP Note 739788 (SAP NetWeaver: Template-Based Configuration Composite Note)
- The <u>SAP Library [page 16]</u> under SAP NetWeaver → SAP NetWeaver Configuration → SAP Web Application Server → SAP Web Application Server (Java) → J2EE Engine Configuration → Template Configuration Tool.



3.7.3 Team-Oriented Development of Java Applications

3.7.3.1 Overview

This section describes the team-oriented development process. Developers use SAP NetWeaver Developer Studio for local developments; a central Design Time Repository (DTR) is used to store source code and control versions.

Development

Developers have their own local developer workplace, which consists of an SAP NetWeaver Developer Studio and, optionally, a local SAP Web AS Java.

Source code is developed in SAP NetWeaver Developer Studio. The DTR is used to share source code among team members. The DTR structures source code as files and folders, controls versions and enables concurrent work on resources within development teams.

SAP NetWeaver Developer Studio is installed with build tools and libraries required for compilation and assembly of applications. This means that applications are compiled and assembled locally within SAP NetWeaver Developer Studio.

Developers can test their work on the locally installed SAP Web AS Java. The deployment of applications can be triggered from within SAP NetWeaver Developer Studio.

Quality Management

The quality manager maintains different states of source code in the DTR by creating distinct workspaces (similar to "code lines" or "branches" in other version control systems). A command line tool assists in central builds and a central test environment enables consistent tests.

Software Change Management

For the production use of applications, a system landscape consisting of workspaces and SAP Web AS Java systems with different roles such as *development, consolidation, test* and *production* has to be defined. In addition, a software change management process has to be established. The DTR offers a complete set of tools for transporting source code.



3.7.3.2 Technical System Landscape

The following figure shows the underlying technical system landscape of the team-oriented development of Java applications:



We recommend that you install SAP NetWeaver Java Development Infrastructure (we will use NWDI as abbreviation in this documentation from now on) in a separate SAP Web AS Java system. This way, you will be able to run NWDI always on the latest version of SAP Web AS Java without having to consider the version requirements of other applications running on this SAP Web AS Java as well. By running NWDI always on the highest required version of SAP Web AS Java, you will be able to use this NWDI for the development of different applications that run on different versions of SAP Web AS Java.

Also make sure that the NWDI host is sized accordingly. Otherwise, we recommend that you install the SAP Web AS Java system on which NWDI runs on a separate host.



3.7.3.3 Implementation Sequence

This section lists the sequence of steps required to implement the scenario.

Installation

To install the environment for a team-oriented development of Java applications, perform the steps listed in the following table:

For documentation referenced in the following table, see the <u>References [page</u> 138] section.

Λ

- Before starting an installation, make sure that you have prepared the installation hosts as described in the corresponding installation guide. For example, you must have checked or adapted the OS kernel parameters on UNIX. Otherwise, unpredictable complications may occur with the installed system.
- For the latest component version and patch level requirements, see the Support Package Stack Guide – SAP NetWeaver '04.

Step	Action	Remarks and Subsequent Steps	
	[Corresponding Documentation]		
1	Installation of SAP Web AS Java 6.40 for SAP NetWeaver Java Development Infrastructure [<i>Installation Guide – SAP Web Application Server Java on</i> <i><operating system="">: <database></database></operating></i>]	We recommend that you install SAP NetWeaver Java Development Infrastructure in a separate SAP Web AS Java system on a host that is sized accordingly or on a separate host.	
	On this SAP Web AS, deploy SAP NetWeaver Java Development Infrastructure . [Installation Guide – SAP NetWeaver Java Development Infrastructure]	SAP NetWeaver Java Development Infrastructure includes the Design Time Repository (DTR).	
2	 For each developer, installation of SAP NetWeaver Developer Workplace consisting of: SAP NetWeaver Developer Studio SAP Web AS Java [Installation Guide – SAP NetWeaver Developer Workplace] 	SAP NetWeaver Developer Workplace includes a local SAP Web AS Java. If a developer does not need this optional local SAP Web AS Java, SAP NetWeaver Developer Studio can be installed instead (see <i>Installation</i> <i>Guide</i> – <i>SAP NetWeaver</i> <i>Developer Studio</i>).	



Step	Action	Remarks and		
	[Corresponding Documentation]	Subsequent Steps		
3	Optional: Installation of an SAP NetWeaver Developer Studio for central build and deployment on the central testing server.	1		
	[Installation Guide – SAP NetWeaver Developer Studio]			
4	 Optional: Installation of SAP Web AS 6.40 for central testing: If your Java applications only use J2EE Engine, install an SAP Web AS Java system. [Installation Guide – SAP Web Application Server Java on <operating system="">: <database>]</database></operating> If your Java applications also use the ABAP Engine, install an SAP Web AS ABAP+Java system. [Installation Guide – SAP Web Application Server ABAP on <operating system="">: <database> and Installation Guide – SAP Web Application Server Java on <operating system="">: <database> and Installation Guide – SAP Web Application Server Java on <operating system="">: <database> and Installation Guide – SAP Web Application Server Java on <operating system="">: <database>]</database></operating></database></operating></database></operating></database></operating> 	 Optionally, you can use an existing SAP Web AS 6.40 (such as the one installed in step 1) for the central test server. In this case, no additional SAP Web AS is required. Depending on the applications you want to run, further installation steps may be required in your central test system. For example, if you developed applications with the Portal Development Kit (PDK), the installation of the Portal Platform may be required. 		



Configuration

To configure the environment for a team-oriented development of Java applications, perform the steps listed in the following table:

Step	Action	
	[Corresponding Documentation]	
1	SAP provides specially designed configuration templates for each SAP NetWeaver scenario that uses SAP Web AS Java. Use the Template Configuration Tool to apply the appropriate configuration template.	
	Before using the Template Configuration Tool, you have to apply SAP NetWeaver '04 Support Package Stack 10 or higher.	
	For more information, see:	
	 SAP Note 739788 (SAP NetWeaver: Template-Based Configuration – Composite Note) 	
	 The <u>SAP Library [page 16]</u> under SAP NetWeaver → SAP NetWeaver Configuration → SAP Web Application Server → SAP Web Application Server (Java) → J2EE Engine Configuration → Template Configuration Tool 	
2	Configure the DTR:	
	Configure the DTR service.	
	Configure the user management system.	
	Create DTR users and permissions.	
	Create workspaces.	
	[See the <u>SAP Library [page 16]</u> under SAP NetWeaver \rightarrow Application Platform (SAP Web Application Server) \rightarrow Java Technology in SAP Web Application Server \rightarrow Administration Manual \rightarrow Administration of SAP NetWeaver Java Development Infrastructure \rightarrow Administration of the Design Time Repository Server]	
3	Configure DTR client definitions for all instances of SAP NetWeaver Developer Studio.	
	[See the <u>SAP Library [page 16]</u> under SAP NetWeaver \rightarrow Application Platform (SAP Web Application Server) \rightarrow Java Technology in SAP Web Application Server \rightarrow Development Manual \rightarrow Working with the SAP NetWeaver Java Development Infrastructure \rightarrow Working with the DTR \rightarrow Clients for the DTR Server]	
4	We recommend that you implement a manual or an automated process for change management.	
	[See the <u>SAP Library [page 16]</u> under SAP NetWeaver \rightarrow Application Platform (SAP Web Application Server) \rightarrow Java Technology in SAP Web Application Server \rightarrow Development Manual \rightarrow Working with the SAP NetWeaver Java Development Infrastructure \rightarrow Scenario 1: Team-Oriented Development \rightarrow Software Change Management Guide]	



3.7.4 Development with SAP NetWeaver Java Development Infrastructure

3.7.4.1 Overview

Development with SAP NetWeaver Java Development Infrastructure is based on teamoriented. The customer develops business applications for the SAP NetWeaver technology platform using the full-featured SAP NetWeaver Java Development Infrastructure.

In this infrastructure, developers work in a team, source code is shared in the *Design Time Repository* (DTR), the software is organized in components, and development configurations are used to define the developer's view of the development infrastructure.

In contrast to the team-oriented development described above, the central component build is no longer based on command line tools and individual make scripts; instead it utilizes the *Component Build Service* (CBS) that is part of SAP NetWeaver Java Development Infrastructure. The CBS builds components and their dependents on demand and provides ready-to-use libraries and deployable files for developers and runtime systems.

Furthermore, the software change management process now is automated. The *Change Management Service* (CMS) is used to transport software, including source code and libraries, through the landscape. Finally, CMS supports automated deployment of executables on central test servers and in production systems.

When you develop with the full SAP NetWeaver Java Development Infrastructure, configurations become essential for the whole process. Configurations define the developer's view of the landscape of SAP NetWeaver Java Development Infrastructure. The configuration does the following:

- □ Identifies components, sources, libraries, and services relevant for the developer.
- □ Configures the build service.
- Defines the overall development process for a specific piece of software.

When a development project is started, the landscape administrator first uses the CMS to define a new track. A track is a separate production line for a certain release of a software component. A track consists of two logical systems that are connected by change propagation. The first system is used for development, the second system is used for testing. Each logical system is described by a development configuration and consists of DTR workspaces, a separate CBS build environment (buildspace), and a J2EE Engine. CMS automatically creates the necessary workspaces and buildspaces and, finally, adds the development configuration to an inventory in System Landscape Directory (SLD).

A developer imports a development configuration into SAP NetWeaver Developer Studio. SAP NetWeaver Developer Studio offers a list of available development configurations that is retrieved from System Landscape Directory.

The developer then starts to make changes to the inactive state of the software. This state is represented by a particular workspace in the DTR. SAP NetWeaver Developer Studio automatically retrieves libraries of components that are required to compile the software from the build server. The Name Service is used to guarantee unique naming of certain critical resources like components and database tables.

After the changes have been checked in and tested successfully, the developer activates these changes. Sending a build request from SAP NetWeaver Developer Studio to the CBS triggers activation. The CBS then tries to build the changed components. If the build succeeds, the changes are integrated into another workspace that contains the active state of the software. After this process, the active workspace always contains sources that have been successfully built by the CBS.



In the same way, new archives created by the build server can be automatically deployed to the J2EE Engine that is assigned to the logical system, for testing. If the tests are successful, the developer releases the changes for transport.

The processes of CMS release requests by adding the changes to the import queue of the consolidation system of the track. At a certain point in time (for example, every evening, every week, or every hour), a member of the system administration team uses the CMS Web user interface to import the queued changes into the consolidation system. During this step, the changed sources are integrated into the DTR workspace of the consolidation system and the build server compiles the changed components. After being imported successfully into the consolidation system, the archives created by the build server are assembled into a new version of the software, which is queued for deployment to the J2EE Engine that acts as the test system.

After deployment and successful tests, a member of the quality management team approves the new software version for production use. Finally, the new version can be deployed in a production system.

3.7.4.2 Technical System Landscape

We recommend that you install SAP NetWeaver Java Development Infrastructure (abbreviated with NWDI in this documentation) in a separate SAP Web AS Java system. This way, you will be able to run NWDI always on the latest version of SAP Web AS Java without having to consider the version requirements of other applications running on this SAP Web AS Java as well. By running NWDI always on the highest required version of SAP Web AS Java, you will be able to use this NWDI for the development of different applications that run on different versions of SAP Web AS Java.

To prevent that the possible load generated by builds of development projects impairs other applications that run on the NWDI host as well, also make sure that this host is sized accordingly. Otherwise, we recommend that you install the SAP Web AS Java system on which NWDI runs on a separate host.

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Although you can install Design Time Repository (DTR), Component Build Service (CBS), Change Management Service (CMS) on one SAP Web AS Java, it could – according to your requirements – also make sense to install DTR, CBS and CMS (optionally with the Name Service, if you do not want to configure it in the central System Landscape Directory) on three SAP Web AS Java systems on different hosts.

The following figure shows the underlying technical system landscape for the development of Java applications with SAP NetWeaver Java Development Infrastructure:





3.7.4.3 Implementation Sequence

This section lists the sequence of steps required to implement the scenario.

Installation

To install the environment for the development of Java applications with SAP NetWeaver Java Development Infrastructure, perform the steps listed in the following table:



For documentation referenced in the following table, see the <u>References [page</u> 138] section.



- Before starting an installation, make sure that you have prepared the installation hosts as described in the corresponding installation guide. For example, you must have checked or adapted the OS kernel parameters on UNIX. Otherwise, unpredictable complications may occur with the installed system.
- For the latest component version and patch level requirements, see the Support Package Stack Guide – SAP NetWeaver '04.



Step	Action	Remarks and Subsequent
	[Corresponding Documentation]	Steps
1	Make sure that you have a <u>System Landscape Directory [page</u> 38].	1
2	Installation of SAP Web AS Java 6.40 for SAP NetWeaver Java Development Infrastructure [<i>Installation Guide – SAP Web Application Server Java on</i> <i><operating system="">: <database></database></operating></i>]	We recommend that you install SAP NetWeaver Java Development Infrastructure in a separate SAP Web AS Java system on a host that is sized accordingly or on a separate host.
	On this SAP Web AS, deploy SAP NetWeaver Java Development Infrastructure . [Installation Guide – SAP NetWeaver Java Development	SAP NetWeaver Java Development Infrastructure includes CBS, CMS and DTR.
	Intrastructure]	• Since the DTR contains all your source code, make sure that you realize an adequate security and backup concept for the DTR host.
3	For every developer, installation of SAP NetWeaver Developer Workplace consisting of:	1
	SAP NetWeaver Developer Studio	
	SAP Web AS Java	
	[Installation Guide – SAP NetWeaver Developer Workplace]	
4	Installation of SAP Web AS 6.40 as a runtime environment:	Depending on the applications
	 If your Java applications only use the J2EE Engine, install an SAP Web AS Java system. [Installation Guide – SAP Web Application Server Java on <operating system="">: <database>]</database></operating> 	you want to run, further installation steps may be required in your runtime system. For example, if you developed applications with
	• If your Java applications also use the ABAP Engine, install an SAP Web AS ABAP+Java system. [Installation Guide – SAP Web Application Server ABAP on <operating system="">: <database> and Installation Guide – SAP Web Application Server Java on <operating System>: <database>]</database></operating </database></operating>	the Portal Development Kit (PDK), the installation of the Portal Platform may be required.



Configuration

To configure the environment for the development of Java applications with SAP NetWeaver Java Development Infrastructure, perform the steps listed in the following table:

Step	Action		
	[Corresponding Documentation]		
1	SAP provides specially designed configuration templates for each SAP NetWeaver scenario that uses SAP Web AS Java. Use the Template Configuration Tool to apply the appropriate configuration template.		
	Before using the Template Configuration Tool, you have to apply SAP NetWeaver '04 Support Package Stack 10 or higher.		
	For more information, see:		
	SAP Note 739788 (SAP NetWeaver: Template-Based Configuration – Composite Note)		
	 The <u>SAP Library [page 16]</u> under SAP NetWeaver → SAP NetWeaver Configuration → SAP Web Application Server → SAP Web Application Server (Java) → J2EE Engine Configuration → Template Configuration Tool. 		
2	Configure the Name Service in your System Landscape Directory (SLD).		
	[Post-Installation Guide – System Landscape Directory on SAP Web AS]		
3	Configure SAP NetWeaver Java Development Infrastructure. For more information, see the <i>Installation Guide – SAP NetWeaver Java Development Infrastructure</i> .		



3.7.5 Interactive Forms based on Adobe software

3.7.5.1 Overview

In their daily operations, companies of any size depend heavily on the use of formalized documents reflecting their individual corporate identity and containing crucial business information from live systems.

To support customers in their tasks of creating reusable form templates for their business processes and filling the forms with current data, SAP joined in a partnership with Adobe aimed at automating and streamlining forms-based communications. The result of this partnership are the Interactive Forms based on Adobe software.

The focus of the new technology are interactive PDF-based forms that can be created in SAP systems thanks to the integration of Adobe technology into Web Dynpro and SAP NetWeaver Developer Studio.

With the integration of Adobe PDF technology into its solutions, SAP will be able to further extend its offerings of end-to-end business solutions by:

- D Providing for the first time the capabilities of Adobe's interactive PDF-based forms.
- □ Integrating PDF documents into business processes that are driven by SAP applications.
- Offering its customers enhanced printing capabilities, in particular for interactive Web applications.

SAP and Adobe have combined their development efforts and expertise to provide their customers with new collaborative business solutions.

Business processes that use forms to communicate, such as processes in human resources or the public sector, will provide visually accurate representations of forms on the desktop.

With the Interactive Forms based on Adobe software, users can:

- □ Process forms online with a connection to the system and offline on a local computer.
- Capture a form's appearance and data in one object.
- Fill in forms with specific data from SAP applications and transmit them securely to their intended recipients.
- Automatically check documents for consistency.
- □ Activate additional functions, such as inserting comments or digital signatures.
- Transmit completed forms back to the SAP application, updating the business data automatically.
- Create templates for interactive forms that include logos or images.

By integrating the above-mentioned Adobe software into ABAP Workbench, SAP will continue providing state-of-the-art tools for high-volume printing as well as e-mailing, faxing, or archiving forms.

Protecting Customer Investment

Customers currently using Smart Forms or Adobe Output Pak for mySAP.com for their formsbased processes will be provided with a clear migration path to the new SAP solution. Existing SAPscript and Smart Forms solutions will continue to be supported in the future. The strategic SAP/Adobe alliance protects investments made in current solutions.



3.7.5.2 Technical System Landscape

The following figure shows the technical system landscape for the development of Interactive Forms applications:

	Front End	-	Key
			Supported Basic System Variants: • SAP Web AS Java • SAP Web AS ABAP+Java
SAP GUI Web I	Browser Developer Workplace		Non-SAP Component
			Mandatory Component
Interactive Fe	orms based on Adobe	Software	Optional Component
BW/ Functionality			
XI Functionality			
All Functionality			
KW Functionality	Adobe document services		
Web AS ABAP	Web AS Java		
ABAP Stack	Java Stack	Additional Components	
Databo ABAP Schema	Java Schema		

For the development, you can use Web Dynpro with SAP NetWeaver Developer Studio and optionally the ABAP Workbench.

3.7.5.3 Implementation Sequence

This section lists the sequence of steps required to implement this scenario.

Installation

To install the environment for the development of Interactive Forms applications, perform the steps listed in the following table:



For documentation referenced in the following table, see the <u>References [page</u> 138] section.



- Before starting an installation, make sure that you have prepared the installation hosts as described in the corresponding installation guide. For example, you must have checked or adapted the OS kernel parameters on UNIX. Otherwise, unpredictable complications may occur with the installed system.
- For the latest component version and patch level requirements, see the Support Package Stack Guide – SAP NetWeaver '04.

Step	Action	Remarks and
	[Corresponding Documentation]	Subsequent Steps
1	Depending on your requirements, install SAP Web AS:	/
	 If you want to use only Web Dynpro and SAP NetWeaver Developer Studio to create applications, install an SAP Web AS Java system. [Installation Guide – SAP Web Application Server Java on <operating system="">: <database>]</database></operating> 	
	 If you also want to use ABAP Workbench to create applications, install an SAP Web AS ABAP+Java system. [Installation Guide – SAP Web Application Server ABAP on <operating system="">: <database> and Installation Guide – SAP Web Application Server Java on <operating System>: <database>]</database></operating </database></operating> 	
2	Optional: Installation of SAP GUI with Adobe LiveCycle Designer on each host from which you want to create applications with ABAP Workbench. [<i>SAP Front End Installation Guide</i>]	This component is only required if you installed an SAP Web AS ABAP+Java system. You need it to create applications with
		ABAP Workbench.
3	Optional: Installation of SAP NetWeaver Developer Studio with Adobe LiveCycle Designer on each host from which you want to create applications with Web Dynpro and SAP NetWeaver Developer Studio.	This component is required to create applications with Web Dynpro and SAP NetWeaver Developer Studio.
4	Installation of Adobe document services	/
	[Installation Guide – Adobe Document Services]	,
5	Installation on all client PCs:	/
	• Adobe Reader or Adobe Acrobat (version 6.0.2 or higher). Adobe Reader is available on the Adobe Web page at www.adobe.com/products/acrobat/readstep2.html.	
	Active Component Framework (ACF) for Web Dynpro [SAP Note 766191]	

SAP



Configuration

To configure the environment for the development of Interactive Forms applications, perform the steps listed in the following table:

Step	Action		
1	SAP provides specially designed configuration templates for each SAP NetWeaver scenario that uses SAP Web AS Java. Use the Template Configuration Tool to apply the appropriate configuration template.		
	Δ		
	Before using the Template Configuration Tool, you have to apply SAP NetWeaver '04 Support Package Stack 10 or higher.		
	For more information, see:		
	 SAP Note 739788 (SAP NetWeaver: Template-Based Configuration – Composite Note) 		
	 The <u>SAP Library [page 16]</u> under SAP NetWeaver → SAP NetWeaver Configuration → SAP Web Application Server → SAP Web Application Server (Java) → J2EE Engine Configuration → Template Configuration Tool. 		
2	Configure Adobe document services . For more information, see the Configuration Guide – Adobe Document Services.		



3.7.6 Development of Portal iViews Using SAP NetWeaver Visual Composer

3.7.6.1 Overview

Both content developers and design experts can use SAP NetWeaver Visual Composer to create content for SAP Enterprise Portal 6.0 and NetWeaver '04. Visual Composer provides a graphical user interface with simple-to-use tools for creating portal iViews that process data from back-end applications. Visual Composer operates on top of the portal, utilizing its connector-framework interfaces to allow content developers to access a range of different data sources, including SAP and third-party enterprise systems. Being a fully Web-based application, business consultants can interact with business users (content experts) to build or customize pages and iViews as needed, accessing the software from any machine.

Designers and developers use the Visual Composer Storyboard – the actual client interface – to design models that include a hierarchy of pages and their required iViews. All aspects of the iViews can be constructed, including:

The data service layer

In order to import RFCs, BAPIs, queries and other data sources, users connect via SAP Enterprise Portal to back-end applications defined in the portal system landscape. These data services are the basic elements of the iViews being created.

□ The user interface (UI) logic

The UI logic defines what UI components are presented to the user at runtime, how the user may interact with the components, and what the underlying data queries are. They include different interactors – form and table views, charts and HTML views – and various operators (such as Top, Sort, Aggregate). The user drags-and-drops icons representing these elements onto the model workspace and then connects them to the data service to define the logic of the iView at runtime. As the user constructs the UI logic, Visual Composer writes the underlying code.

□ The UI layout

The model layout defines all the visual aspects of the iView. Storyboard provides WYSIWYG tools for customizing the iView layout, so that the user can define the size, color and behavior of each UI element at runtime.

The model built with Visual Composer is automatically coded in the proprietary Generic Modeling Language (GML). When the model is complete, the Visual Composer compiler converts the GML code into a format supported by the portal.

3.7.6.2 Technical System Landscape

Visual Composer provides access, through the portal connectivity framework, to a range of function modules residing in SAP and third-party back-end systems.

A Visual Composer installation is comprised of the following components:

- Visual Composer Server, made up of the following: Web Server (IIS), Storage Layer (MS SQL), Visual Composer Storyboard (accessed from the Visual Composer client)
- Visual Composer Addons to SAP Enterprise Portal (connect Visual Composer to the portal)







The Visual Composer compiler generates packages that can be deployed to any portal using the standard deploy procedure. Once deployed, the pages and iViews created by Visual Composer can retrieve data from the portal run-time connectivity framework and display this information just like any other hand-coded portal pages and iViews.

3.7.6.3 Implementation Sequence

This section lists the sequence of steps required to implement the scenario.

Installation

To install the environment for the development of portal iViews using Visual Composer, perform the steps listed in the following table:

All references in the following table refer to the *Installation Guide* – SAP NetWeaver Visual Composer available in SAP Service Marketplace at service.sap.com/NW04installation \rightarrow SAP VC.



Step	Action	Remarks and	
	[Corresponding Documentation]	Subsequent Steps	
1	If you are working with SAP Enterprise Portal 6.0 SP2 Patch 4, install Visual Composer Addons on the portal server machine. For more information, see section 2.1 of the <i>Installation Guide</i> – <i>SAP NetWeaver Visual Composer</i> .	Later portal versions already include the Visual Composer Addons.	
	If you are working with SAP NetWeaver '04 and you want to use Visual Composer to create content for BI, install the required Addon files on the portal server, install and configure the BI connector(s) and then create the required BI systems in the portal. For more information, see section 2.2 of the <i>Installation Guide – SAP NetWeaver Visual Composer</i> .		
2	Install SAP NetWeaver Visual Composer Server on the portal server or on a different machine. For more information, see section 3.4 of the <i>Installation Guide – SAP NetWeaver Visual Composer</i> .	/	
3	Check that you have installed all the prerequisite hardware and software on your client machine (from which you access Visual Composer Server). For more information, see section 4 of the Installation Guide – SAP NetWeaver Visual Composer.	1	

3.7.7 Development of Portal Content with PDK for .NET

3.7.7.1 Overview

The Portal Development Kit for Microsoft .NET (PDK for .NET) is a set of tools that enables Microsoft Visual Studio .NET developers to build portal components for the SAP Enterprise Portal. Organizations that have existing investments in Microsoft .NET technology can leverage their developers' skills and take advantage of the SAP NetWeaver technology. .NET portal components draw on the strengths of the .NET Framework and ASP.NET, as well as SAP Enterprise Portal services. PDK for .NET supports both .NET languages: C# and VB.NET.

The PDK for .NET package is comprised of the following components:

Dertal Add-in for Visual Studio 2003 (development environment)

An extension of Microsoft Visual Studio 2003 that allows .NET developers to build, deploy and debug portal components for SAP Enterprise Portal.

Dertal Runtime for Microsoft .NET (run-time environment)

A service used to process .NET portal components at runtime.

□ Java -.NET Interoperability (portal services)

A mechanism that enables API calls between the Java stack and .NET stack. It allows invoking Java-based portal services from .NET code, and permits SAP Enterprise Portal to pass requests to the Portal Runtime for .NET.





Portal Add-in for Visual Studio 2003 and Portal Runtime for Microsoft .NET run on the Windows platform, while Java -.NET Interoperability Framework runs on the same platform as the portal.

In applications that require a connection to SAP backend systems, SAP .NET Connector can be optionally used with PDK for .NET. It is a complementary Visual Studio Add-in component that enables .NET portal components to access the complete library of SAP business objects.

3.7.7.2 Technical System Landscape

The following figure shows the underlying technical system landscape for the development of portal content with PDK for .NET:

Front End		Key Supported Basic System Variants: • SAP Web AS Java • SAP Web AS ABAP+Java Non-SAP Component
Development of Portal Content with PDK for .NET		Optional Component
Java NET Interoperability Portal Platform Portal Platform Web AS Java ABAP Stack	L	
Database Java Schema		

3.7.7.3 Implementation Sequence

This section lists the sequence of steps required to implement the scenario.

Installation

To install the environment for the development of portal components with PDK for .NET, perform the steps listed in the following table:



\wp

All references in the following table refer to the *Installation, Upgrade and* Configuration Guide – PDK for .NET available on SAP Service Marketplace at service.sap.com/instguidesNW04 \rightarrow Installation \rightarrow Dev Env \rightarrow Installation Guide – PDK for .NET.

Step	Action	Remarks and	
	[Corresponding Documentation]	Subsequent Steps	
1	Select the suitable deployment configuration for your planned installation.	/	
	[Installation, Upgrade and Configuration Guide – PDK for .NET]		
2	Install the Portal Add-in for Visual Studio 2003 component on your development host.	/	
	[Installation, Upgrade and Configuration Guide – PDK for .NET]		
3	Install the Portal Runtime for Microsoft .NET on your preferred host, according to your deployment configuration.	1	
	[Installation, Upgrade and Configuration Guide – PDK for .NET]		
4	Install the JavaNET interoperability components on your portal host.	/	
	[Installation, Upgrade and Configuration Guide – PDK for .NET]		
5	Install the SAP .NET Connector 2.0 component on your development host.	This is optional.	
	For more information and installation, see SAP Service Marketplace at service.sap.com/connectors \rightarrow SAP .NET Connector \rightarrow SAP .NET Connector Download Page		

Configuration

To configure the runtime environment for processing of .NET portal components, perform the steps listed in the *Installation, Upgrade and Configuration Guide – PDK for .NET*.

3.7.7.4 Documentation

- Detailed documentation on the portal content development enabled by PDK for .NET is available in the Developer's Guide. It is installed together with Portal Add-in, and integrated with the Microsoft Visual Studio 2003 on-line help.
- Installation and configuration instructions are available in PDF format in *Installation*, Upgrade and Configuration Guide – PDK for .NET on SAP Service Marketplace at service.sap.com/instguidesNW04 → Installation → Dev Env → Installation Guide – PDK for .NET (Release 1.0 Patch 3). Administration and security documentation in PDF format is available at the same location.
- D Administration and security documentation is available on SAP Help Portal at



- help.sap.com/nw04 → SAP NetWeaver'04 (English) → SAP NetWeaver → SAP NetWeaver Technical Operations Manual → Administration of PDK for .NET
- help.sap.com/nw04 → SAP NetWeaver'04 (English) → SAP NetWeaver → Security → SAP NetWeaver Security Guide → Security Aspects in Development → Security Aspects of PDK for .NET
- □ All documentation is also available on SDN at sdn.sap.com \rightarrow SAP NetWeaver Platform \rightarrow .NET Interoperability \rightarrow Help

For the most up-to-date information, see **SAP Note 800842** (*Central Note for PDK for MS .NET*).



4 Software Components Overview

This section provides additional information about the most important software components of SAP NetWeaver 04.



- Only a subset of these components is required for the installation of a specific scenario. For a scenario-specific overview of components, see the *Overview* section of the corresponding scenario.
- The components in this section are listed alphabetically.

Collaboration

Collaboration closes the communication gap between users, or teams of users, by providing real-time collaboration (such as application sharing, chat, instant messaging) and asynchronous collaboration capabilities (such as tasks, calendaring, discussions). Collaboration Rooms offer a virtual work environment for teams or communities. These Collaboration Rooms can be populated with predefined content and services that may already be available within SAP Enterprise Portal. As a flexible integration framework for groupware (such as Microsoft Exchange, Lotus Notes) and synchronous collaboration applications (such as WebEx), it lets customers reuse and integrate existing assets.

Knowledge Management

The Knowledge Management platform provides access to an organization's unstructured information (documents). The information may reside in various repositories that can be connected to the portal by means of components called repository managers. Some repository managers are delivered by SAP; other repository managers can be developed based on open APIs. The functions of the KM platform can be exposed to the documents in all connected repositories, given that the respective repository manager allows it. The major functional areas of KM are:

- Content Management, which supports the entire lifecycle of documents, including the authoring, storage, management, and display of documents. It also manages the connection between document repositories and the portal and provides collaborative functions such as feedback, rating, subscription, etc.
- Search and Classification (TREX), which processes search queries on free-text or attributes, and provides automatic classification in taxonomies and text mining. Search and Classification (TREX) is also used in other building blocks of SAP NetWeaver such as SAP Business Information Warehouse.

SAP Business Information Warehouse

The reporting, analysis, and interpretation of business data is of central importance to a company in guaranteeing its competitive edge, optimizing processes, and enabling it to react quickly and in line with the market. As a core component of SAP NetWeaver, SAP Business Information Warehouse (SAP BW) provides data warehousing functionality, a business



intelligence platform, and a suite of business intelligence tools (BW Business Explorer) that enable businesses to attain these goals. Relevant business information can be integrated, transformed, and consolidated in SAP BW with the toolset provided. SAP BW facilitates the reporting, analysis, and interpretation of this information, as well as its distribution. Businesses are able to make well-founded decisions and determine target-orientated activities on the basis of this analysis. With the comprehensive predefined information models delivered for different roles in a business (BI Content), SAP BW increases the usability of analysis functions and facilitates a quick and cost-effective implementation.

Data warehousing in SAP BW represents the integration, transformation, consolidation, cleanup and storage of data. It also incorporates the extraction of data for analysis and interpretation. The data warehousing process includes data modeling, data extraction, and administration of the data warehouse management processes.

The business intelligence platform serves as the technological infrastructure to support information access and comprehensive analytics. It provides various analytical technologies and functions. These include the OLAP processor, Business Planning and Simulation, and special analysis processes such as Data Mining, and the Reporting Agent.

The SAP BW business intelligence suite, the Business Explorer, provides flexible reporting and analysis tools for strategic analyses, operational reporting, and decision-making support within a business. These tools include query, reporting, and analysis functions. Users can evaluate old and current data in varying degrees of detail and from different perspectives – on the Web and also in Microsoft Excel. The Business Explorer allows a broad spectrum of users access to information in SAP BW using SAP Enterprise Portal, the Intranet (Web application design) or mobile technologies (mobile telephones with WAP or I-mode capabilities, and personal digital assistants).

SAP Enterprise Portal

SAP Enterprise Portal provides a role-based, secure and Web-based interface to any kind of information, application and services. To run the portal, you need a standard browser on the desktop; no additional software components are required.

As part of SAP Enterprise Portal, the Portal Infrastructure provides a secure access to any kind of structured data coming from any kind of business applications, such as SAP, non-SAP, data warehouses, or databases.

As a key technology of the Portal Infrastructure, iViews allow an access for reading purposes or for carrying out an operation, such as submitting a form for supplies. A set of portal services is provided to enable iViews to interact with each other such as portal navigation (for example, Dynamic Navigation or the patented Drag&Relate technology), portal eventing, or WorkProtect mode.

Portal roles structure and deliver targeted content to each end user. Thanks to the role-based user interface, a company can structure its business processes and deliver business content according to the needs of certain user groups. Besides the role concept, Portal Infrastructure provides additional personalization features such as iView, page or layout personalization.

To create and develop portal content, SAP provides a set of tools targeted to different user groups ranging from business experts to developers.

Before creating or developing iViews, customers should first check the Portal Content Portfolio, where thousands of iViews, bundled as business packages, are available for download. Business packages contain pre-assembled, role-based content for completing business tasks.



SAP Exchange Infrastructure

Based on a native Web infrastructure that leverages open standards, SAP Exchange Infrastructure (SAP XI) makes it possible to manage the broad diversity of highly heterogeneous components from a multitude of vendors and running in various technology environments. The integration capabilities capture shared business semantics and act as a mediator between the services and their technical realizations. It includes technical functions, such as queuing, mapping, and routing. It also establishes an infrastructure for business process management and high-performance execution within and across organizational boundaries.

Process integration based on SAP XI removes the problems of direct connections by extracting shared collaboration knowledge. These shared business semantics ease the integration of both external and internal components. Instead of directly coding point-to-point interfaces for each new component, the exchange infrastructure allows instant plug-in of new components once for each component. This provides the future flexibility needed in today's fast-changing business world, and it reduces integration costs compared to the direct connection approach.

SAP Knowledge Warehouse

SAP Knowledge Warehouse (SAP KW) delivers the technical infrastructure you need to set up and manage your own enterprise-specific knowledge base in the areas of documentation, training, and manuals. For project teams and end users, SAP KW streamlines training and business processes, helping you reduce your costs. In addition, the possibility to reuse, supplement, and continually update SAP content offers great savings potential.

SAP KW provides an information repository for companies of all sizes – including global multilingual companies – with facilities to model structures according to their corporate and market structure.

Use SAP KW to adjust and create documentation, manuals and training materials of varying media. Tailor the materials to your specific business processes using the editors and office products your employees know.

If you wish, SAP can deliver SAP KW with current SAP materials so that you can immediately begin training your project team and end users and edit the corresponding documentation.

SAP KW is shipped with the following content created specifically for SAP solutions:

□ Standard delivery:

Documentation (context-sensitive online application help)

Quality management manual template - EN ISO 9000 and 14000 compliant

Optional package:

Training materials (includes course materials and instructor guides)

SAP Mobile Infrastructure

SAP Mobile Infrastructure provides the technical foundation and run-time environment for mobile solutions that allow workers to process mission-critical information whenever and wherever required. SAP Mobile Infrastructure helps companies implement flexible business strategies and innovative business processes based on their existing enterprise solutions. A



technical component of the SAP NetWeaver platform, SAP Mobile Infrastructure serves as the universal platform for enterprise mobility and powers SAP solutions for mobile business.

SAP NetWeaver Developer Studio

SAP NetWeaver Developer Studio introduces SAP's own environment for developing Javabased, multilayered business applications. The new development environment is based on Eclipse, an open source product, whose open plug-in architecture provides a suitable platform for incorporating specific functions.

As a single point of entry, SAP NetWeaver Developer Studio supports the development of Web Dynpro and Java applications. Application developers do not need to switch between different development environments for the presentation and business logic. Instead, they can develop, build, deploy, and execute applications centrally from SAP NetWeaver Developer Studio. The Software Deployment Manager (SDM) is called from SAP NetWeaver Developer Studio to deploy the application directly to the J2EE Engine.

SAP NetWeaver Java Development Infrastructure

SAP NetWeaver Java Development Infrastructure enhances the concept of an IDE with server-side services. These services provide development teams with a consistent development environment and also support software developers through the whole lifecycle of a product:

- Design Time Repository (DTR): Source code management with versioning. Distributed development of software in teams. Transport and replication of source code.
- Component Build Service (CBS): Central build functions based on the component model. The component model enhances the visibility concept of Java and is a new way to structure applications.
- □ Change Management Service (CMS): Central administration of the Java development landscape and of transports through the whole software lifecycle.
- Software Deployment Manager (SDM): Manual and automatic deployment of archives in central runtime systems.
- □ System Landscape Directory (SLD): Information about the system landscape.
- □ Name Service: Central check instance for the uniqueness of names.
- □ Java Dictionary: Supports the global definition of tables and data types.
- **SAP** Java Test Tools: Predefined static tests and runtime tests for Java development.

SAP NetWeaver Java Development Infrastructure is fully integrated within SAP NetWeaver Development Studio.

SAP NetWeaver Visual Composer

SAP NetWeaver Visual Composer is a powerful design tool that facilitates the creation of SAP Enterprise Portal 6.0 content using a graphical user interface, rather than manually writing code. It provides simple-to-use tools for creating portal iViews that process data from



back-end systems. SAP NetWeaver Visual Composer was designed to enable content developers to create model-driven portal content by dragging-and-dropping the appropriate model components onto the workspace and to establish appropriate connections between each component.

Models created from SAP NetWeaver Visual Composer Storyboard (client) can include a hierarchy of pages and their required iViews. They can be automatically compiled as business packages and deployed directly to any select SAP Enterprise Portal. Once deployed, the pages and iViews created by SAP NetWeaver Visual Composer retrieve and display data just like any other hand-coded portal pages and iViews.

SAP User Management Engine

The User Management Engine (UME) provides a centralized user management for all Java applications and can be configured to work with user management data from multiple data sources. It is seamlessly integrated in the J2EE Engine of SAP Web AS Java as its default user store and can be administrated using the administration tools of SAP Web AS Java.

UME adds business value by enabling you to leverage your existing system infrastructure by accessing user-related data on an existing corporate directory, an SAP Web AS ABAP system, a database or any combination of these. In addition it reduces administrative overhead by allowing you to perform centralized user administration.

SAP Web Application Server

Use

SAP Web Application Server (SAP Web AS) is the application platform of SAP NetWeaver and with this of the mySAP Business Suite. It provides the technological foundation for all other SAP components.

For SAP Web AS, different basic system variants exist. It can be installed as *ABAP+Java system*, as *ABAP system* or as *Java system*. The difference between these system variants is that you can either operate **both** the ABAP stack and the Java stack, only the ABAP stack or only the Java stack in your SAP Web AS.

Until SAP R/3 4.6D, SAP Web Application Server was named SAP Basis.

Since SAP Web AS contains the ABAP stack, the Java stack or both stacks, it provides a runtime environment for ABAP and/or Java applications.

SAP Web AS includes a platform for quickly developing and deploying dynamic and collaborative Web applications or other thin-client applications (WAP, PDA, and so on) and includes all proven SAP programming models and technologies. With SAP Web AS, SAP natively supports open Internet standards, including such protocols as HTTP, HTTPS, and SMTP, as well as Internet document standards like HTML and XML.

Open integration capabilities provide access to existing SAP and non-SAP applications. All integration facilities supported by SAP are available with SAP Web AS. The Java Connector or the .NET Connector give ABAP applications access to Java or .NET components and vice versa. In addition, the Internet Communication Framework (ICF) of SAP Web AS enables ABAP-written programs to process and distribute HTTP requests directly. As a consequence, SAP Web AS can serve both as an HTTP server and client. It serves as an HTTP server for bringing applications to the user through a Web browser either directly or using a standard



Web server. It serves as an HTTP client to access other Web applications for collecting information and data. To complete Web connectivity, SAP Web AS provides full support for sending and receiving e-mails using SMTP.

Building Blocks

SAP Web AS 6.40 consists of the following main building blocks:

- Central instance
- □ Central service instance

The central services instance forms the basis of communication and synchronization for the Java cluster.

Database instance

SAP Web AS Java has a separate database schema. As a result, a database instance is also a mandatory installation component for the installation of an SAP Web AS Java system.

For the installation of an SAP Web AS ABAP+Java system, both the ABAP and the Java schema get installed in the same database.



Exception:

If your SAP system is running on Informix, a separate MaxDB or IBM DB2 UDB for UNIX and Windows is required for the Java database schema.

Dialog instances, if required

Dialog instances are SAP instances that include only:

- Dispatcher, IGS, and CCMS agents
- SAP Web AS ABAP+Java system and SAP Web AS Java system: Java server processes
- SAP Web AS ABAP+Java system and SAP Web AS ABAP system: gateway and certain ABAP work processes (dialog, batch, spool, or update)

Dialog instances are installed on application servers.

The dialog instances of SAP Web AS Java systems are called Java dialog instances.

SAP GUI

See separate component description above.

Search and Classification (TREX)

The information retrieval system Search and Classification (TREX)provides various software applications with a wide spectrum of intelligent search, retrieval, and classification functions. You can use Search and Classification (TREX) to search extensive electronic collections of text documents flexibly, and to structure document collections in a way that gives a clear overview of what is available. The Search and Classification (TREX) text-mining functions allow interesting and relevant information to be extracted from text documents for the user.

In principle, Search and Classification (TREX) can process, search, and classify any file format that can be rendered as text.



5 References

In this section, you can find a list of referenced guides for SAP NetWeaver 04.

 If no other information is given below, the guides are available on SAP Service Marketplace at

service.sap.com/instguidesNW04 \rightarrow *Installation*.

• For the Ramp-Up of SAP NetWeaver, no SAP NetWeaver Documentation CD is available. Therefore, the guides are only available on SAP Service Marketplace.

Solution-Wide Guides

- □ Support Package Stack Guide SAP NetWeaver '04
- □ Upgrade Master Guide SAP NetWeaver '04
- □ Master Guide SAP Solution Manager available on SAP Service Marketplace at service.sap.com/instguides → SAP Components → SAP Solution Manager → Installation Guides
- □ Supportability Setup Guide SAP NetWeaver '04

Guides for SAP BW

- Installation Guide SAP Web Application Server ABAP on <Operating System>:
 <Database>
- Installation Guide SAP Web Application Server Java on <Operating System>:
 <Database>
- SAP Front End Installation Guide / SAP-Frontend-Installationsleitfaden
- □ Installation Guide SAP Business Information Warehouse
- □ Installation Guide Search and Classification (TREX)
- □ Installation Guides for Crystal Enterprise SAP Edition, available on SAP Service Marketplace at service.sap.com/businessobjects → Documentation & Installation Guide → Crystal Enterprise Version 10:
 - Crystal Enterprise SAP Edition Installation Guide
 - Crystal Reports Installation Guide

Guides for BI Information Broadcasting

- □ Planning Guides, available on SAP Service Marketplace at service.sap.com/instguidesNW04 → *Planning*:
 - Technical Infrastructure of SAP Enterprise Portal 6.0 SP3
- □ Installation Guides, available on SAP Service Marketplace at service.sap.com/instguidesNW04 → Installation:



- Installation Guide SAP Web Application Server ABAP on <Operating System>:
 <Database>
- Installation Guide SAP Web Application Server Java on <Operating System>: <Database>
- SAP Front End Installation Guide / SAP-Frontend-Installationsleitfaden
- Installation Guide SAP Business Information Warehouse
- Installation Guide SAP Enterprise Portal
- Installation Guide Search and Classification (TREX)
- Configuration Guides:
 - BI Information Broadcasting: See the <u>SAP Library [page 16]</u> at SAP NetWeaver → SAP NetWeaver Configuration → SAP Business Information Warehouse (BW)
 - Portal Security Guide and SAP Business Information Warehouse Security Guide: See the <u>SAP Library [page 16]</u> at SAP NetWeaver → Security → SAP NetWeaver Security Guide → Security Guides for the SAP NetWeaver Products
 - Portal Platform Administration Guide: See the <u>SAP Library [page 16]</u> at SAP NetWeaver → People Integration → Portal → Administration Guide

Guides for SAP EP

- □ Planning Guides, available on SAP Service Marketplace at service.sap.com/instguidesNW04 → *Planning*:
 - Technical Infrastructure of SAP Enterprise Portal 6.0 SP3
- □ Installation Guides, available on SAP Service Marketplace at service.sap.com/instguidesNW04 → Installation:
 - Installation Guide SAP Web Application Server Java on <Operating System>:
 <Database>
 - Installation Guide SAP Enterprise Portal
 - Installation Guide Search and Classification (TREX)
 - Installation, Upgrade and Configuration Guide PDK for .NET
- Configuration Guides, available in the <u>SAP Library [page 16]</u> at:
 - Portal Security Guide: Choose SAP NetWeaver → Security → SAP NetWeaver Security Guide → Security Guides for the SAP NetWeaver Products → Portal Security Guide
 - Portal Platform Administration Guide: Choose SAP NetWeaver → People Integration
 → Portal → Administration Guide

Guides for SAP XI

- □ Technical Infrastructure Guide SAP Exchange Infrastructure available on SAP Service Marketplace at service.sap.com/instguidesnw04 → Planning
- Installation Guide SAP Web Application Server ABAP on <Operating System>:
 <Database>

5 References



3.7 SAP NetWeaver Development Environment

- Installation Guide SAP Web Application Server Java on <Operating System>:
 <Database>
- SAP Front End Installation Guide / SAP-Frontend-Installationsleitfaden
- □ Installation Guide SAP Exchange Infrastructure
- □ Installation Guide SAP Partner Connectivity Kit
- Configuration Guide SAP Exchange Infrastructure available on SAP Service Marketplace at service.sap.com/ibc

Guides for SAP MI

- Installation Guide SAP Web Application Server ABAP on <Operating System>:
 <Database>
- Installation Guide SAP Web Application Server Java on <Operating System>:
 <Database>
- SAP Front End Installation Guide / SAP-Frontend-Installationsleitfaden
- □ Installation Guide SAP Mobile Infrastructure

Guides for SAP KW

- Installation Guide SAP Web Application Server ABAP on <Operating System>:
 <Database>
- Installation Guide SAP Web Application Server Java on <Operating System>:
 <Database>
- SAP Front End Installation Guide / SAP-Frontend-Installationsleitfaden
- □ Installation Guide SAP Knowledge Warehouse
- □ Installation Guide SAP Content Server
- □ Installation Guide Search and Classification (TREX)
- □ Installation Guide SAP@Web available on the Server Components CD/DVD
- Configuration Guide SAP KW Business Scenarios available on SAP Service Marketplace at service.sap.com/ibc

Guides for SAP NetWeaver Development Environment

- Installation Guide SAP Web Application Server ABAP on <Operating System>:
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- Installation Guide SAP Web Application Server Java on <Operating System>:
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- SAP Front End Installation Guide / SAP-Frontend-Installationsleitfaden
- Dest-Installation Guide System Landscape Directory
- □ Installation Guide SAP NetWeaver Java Development Infrastructure
- Installation Guide SAP NetWeaver Developer Studio
- □ Installation Guide SAP NetWeaver Developer Workplace
- Installation Guide Adobe Document Services



- Configuration Guide Adobe Document Services
- □ Installation Guide SAP NetWeaver Visual Composer