

SAP NetWeaver 7.4 incl. SR1

Document History



Caution

Before you start the implementation, make sure you have the latest version of this document that is available on the SAP Service Marketplace at service.sap.com/instguides.

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

Table 1

Version	Date	Description
1.8	2014-07-28	Minor changes and updates regarding Process Integration Landscape and SAP Notes for BI Content
1.7	2013-12-20	Information about SAP NW BW updated
1.6	2013-11-20	<ul style="list-style-type: none">Chapter 2.2.2: Information about Dual Stack deployments revised.Chapter 3.3: Information about configuring SAP NW Process Integration revised.
1.5	2013-09-13	Minor changes with regard to NW 7.4 SR1
1.4	2013-07-23	Minor corrections
1.3	2013-07-15	Content revised for SAP NetWeaver 7.4 SP03
1.2	2013-06-10	SAP Note 1868764 with regard to Process Orchestration added
1.1	2013-05-15	Minor corrections in the installation procedure for SAP NW BW systems
1.0	2013-05-10	First version

Content

1	Getting Started	5
1.1	About this Document	5
1.2	Glossary	5
1.3	SAP NetWeaver Use Cases	8
1.4	Business View of the Use Cases	10
1.5	Mapping of Use Cases to Installable Software Units	11
1.6	Enhancement Packages	14
	Enhancement Package Concept	14
	Key Facts About Enhancement Packages	16
2	Planning SAP NetWeaver 7.4	18
2.1	Major Planning Steps and Related Documentation	18
2.2	Planning the Use Cases and their System Landscapes	19
	Building Composite Applications	20
	Building Integration Scenarios	25
	Data Warehousing	32
	Mobilizing Business Processes	34
	Integrating and Self-Servicing Content with SAP NetWeaver Portal	35
	SAP Knowledge Warehouse	36
	Custom Application Development (ABAP)	37
3	Implementing SAP NetWeaver 7.4	41
3.1	Installation Procedure	41
3.2	Installation Tool	47
3.3	Configuration of Systems and Follow-Up Activities	47
3.4	System Copy and Migration	48
A	Appendix	50
A.1	Additional Information for Implementing SAP NetWeaver	50
A.2	Description of Software Units	51
	Systems with Usage Types	51
	Optional Standalone Units	63
	Standalone Engines	65
	Clients	66
A.3	Compatibility Usage Types	69



1 Getting Started

1.1 About this Document

This Master Guide is the central starting point for the technical implementation of SAP NetWeaver 7.4 including Support Release 1 (SR1). It provides you with information about the use cases as well as the installable software units, and refers you to the detailed documentation (such as the Installation Guides).

Caution

The *Master Guide* is regularly updated on SAP Service Marketplace. Make sure that you have the latest version by checking SAP Service Marketplace at ► service.sap.com/installnw74 ► immediately before starting the installation.

Note

If you install SAP NetWeaver 7.4 with Support Release 1, you install automatically the previously available support packages 1 to 5 at once, and your system goes immediately to 7.4 SP5 without needing to implement the intervening SPs separately.

Constraints

The scenarios that are presented here serve as examples of how you can use SAP software in your company. The scenarios are intended only as models and do not necessarily run the way they are described here in your customer-specific system landscape. Check your requirements and systems to determine whether these scenarios can be used productively at your site. Furthermore, we recommend that you test these scenarios thoroughly in your test systems to ensure that they are complete and free of errors before going live.

1.2 Glossary

Short overview of some technical terms as well as SAP NetWeaver key terms:

Table 2

Term	Explanation
Client	Clients are additional installable programs or tools. They reside either on local front-end PCs accessed by users or on back-end systems where they act as client programs within an SAP NetWeaver system landscape.
Functional Unit	A configured and activated unit of SAP NetWeaver that provides a set of functions, allowing the implementation and execution of activities such as process steps within IT scenarios. It is nestable and can be grouped into larger functional units. Examples include transport

Term	Explanation
	management system, system landscape directory, adapter framework, and business process engine.
Landscape Pattern	Defines if a technical system is used by one or several product systems to calculate update and upgrade methods. The landscape pattern can be defined as “hub” system (if used by several product systems) or as “sidecar” system (if used by one product system).
LMDB	<p>Landscape Management Database</p> <p>Central storage and editor for system information in SAP Solution Manager, supplied by a central SLD. In the LMDB, you manage technical information (such as technical systems and hosts) and logical information (such as product systems and technical scenarios). This data is the basis for other applications, like monitoring and alerting, diagnostics, maintenance transactions, and SAP Support Portal.</p> <p>As of SAP Solution Manager 7.1, the LMDB replaces the previous information storage SMSY.</p>
Logical Component	Group of technical systems that provide a concrete business function by installed product instances and by different roles (such as development, test or production system).
Maintenance Optimizer (MOpz)	Application within SAP Solution Manager that guides you through planning and downloading stack XML files for enhancement packages, support packages, and additional update packages. These files can be used as input files for the installation by update tools like Software Update Manager.
Product	<p>An SAP offering in the SAP price list that performs business tasks.</p> <p>The complete product model is shipped as SAP Software Catalog. The availability of products is published in the Product Availability Matrix (PAM). The product model defines the product structure with its product instances, software components, version, and technical dependencies between product and its components. Products typically have a name starting with 'SAP...' and are characterized by a version period and a maintenance cycle. A product can be installed on one or more technical systems. All technical systems that are involved form the product system.</p> <p>Examples for products are SAP ERP, SAP NetWeaver, and SAP Solution Manager.</p>
Product Instance	<p>Part of a product version that bundles one or more software components.</p> <p>A product instance is part of only one product version. It must be installed and updated as a whole on a single technical system. (ABAP-Java dual-stacks are considered one technical system.) Patches can still be installed for individual software components. A product instance can contain other product instances. It can be re-used across products.</p> <p>Examples for product instances are SAP ECC Server and SAP NetWeaver AS ABAP.</p>
Product System	A group of technical systems on which a product version is installed. Product system descriptions are used to maintain and plan products in the system landscape.
Product Version	<p>A release of an SAP product.</p> <p>It bundles product instances and the included software component versions that are available at a particular time for a specific scope of functionality. Like products, product versions are shipped in the SAP Software Catalog. They are the basis for the compatibility of closely coupled systems and the maintenance of product systems.</p> <p>An example is SAP ERP 6.0, which is a product version of the product SAP ERP.</p>

Term	Explanation
Optional Standalone Units	Optional standalone units are additional software units that you install separately. They are based on Application Server Java (AS Java) and provide specific (server) functions in combination with one or more SAP systems.
SLD	<p>System Landscape Directory</p> <p>Central provider of information on technical systems, for consumers in the system landscape and for external consumers. The SLD gets its information mainly from SLD data suppliers, which are installed on the technical systems, and from the SAP software catalog.</p> <p>With the SLD, you collect and edit system data that is required for system landscape management. This information can be used by other consumers, such as SAP NetWeaver Process Integration, WebDynpro for Java, and SAP Solution Manager.</p>
SMSY	The SAP S olution M anager S ystem Landscape collects information about the SAP systems in the landscape. (SMSY is the name of the transaction in SAP Solution Manager.) As of SAP Solution Manager 7.1, the new information storage LMDB replaces SMSY.
Software Component	<p>Delivery and product unit of an SAP software product</p> <p>A software component comprises a set of packages that are delivered in a single unit. You always assign repository objects to a software component by assigning the package containing these objects. This makes it possible to move repository objects from one software component to another during a release upgrade. A software component is released in successive releases with new functions. You can import patches into each software component separately.</p>
Software Provisioning Manager	A tool that performs software provisioning processes such as installation, uninstallation, system copy, or system transformation. The Software Provisioning Manager is delivered with the Software Logistics Toolset.
Stack configuration file	The stack configuration file is created by the Maintenance Optimizer and is system-specific. Depending on the software components that are installed in a system, the Maintenance Optimizer calculates the required software components that have to be updated to reach a certain target configuration.
Standalone Engine	Standalone engines of SAP NetWeaver are additional installable software units. They do not work as full-blown systems of SAP NetWeaver, but as standalone engines that provide a specific (server) function in combination with one or more SAP NetWeaver systems. Standalone engines are not part of a usage type. They do not run on AS ABAP or AS Java.
SUM	<p>Software Update Manager</p> <p>A software logistics tool that controls different kinds of implementation processes, such as upgrading SAP systems, installing enhancement packages, or applying Support Package stacks.</p>
Support Release	Release offered after the beginning of the unrestricted shipment phase if required and that contains a collection of all previously available support packages.
Target system	The SAP system on which you are going to install the enhancement package.
Technical Usage	Grouping of software components and contents of SAP enhancement packages that need to be installed together so that a particular business function can be activated.

Term	Explanation
Technical System	<p>Describes a part of a product's software that is installed on one or several physical or virtual hosts.</p> <p>A technical system is installed and administered as a whole. It is identified by a system ID (SID) or extended SID, a host, and an installation number. There are different technical system types, for example Application Server (AS) ABAP, AS Java, or TREX. Technical systems are central elements when it comes to software component deployment and operational activities, such as monitoring and alerting.</p>
Update	<p>Activities to maintain or enhance a system, such as installing enhancement packages, installing add-ons, or applying Support Package stacks or Support Packages.</p> <p>Note: The tool for system maintenance tasks is the Software Update Manager (SUM). In the SUM guide, the term "Update" is used as collective term for all the tasks that can be performed using this tool (such as performing release upgrades, installing enhancement packages, or updating a system with Support Package Stacks).</p>
Upgrade	<p>The switch from an older software version to a new version. Typically, both the server component of a system landscape and other components are upgraded. Several different technical upgrade procedures are used to upgrade the server component, such as the Repository Switch upgrade or the System Switch upgrade.</p>
Usage Type	<p>An installed and correspondingly configured part of an SAP NetWeaver system that provides key capabilities for a system landscape. It specifies the intended purpose of a system, and it is the result of the configuration of the underlying installed software units and the configuration of the underlying functional units.</p> <p>Examples include business intelligence, process integration, and enterprise portal.</p>
Use Case	<p>A definition of use from the end users' perspective for accomplishing a specific goal within a system. Use cases represent the main capabilities of the system to fulfill specific requirements.</p>

1.3 SAP NetWeaver Use Cases

The use cases illustrate how you can use your SAP NetWeaver implementation. The main use cases of SAP NetWeaver and their corresponding key areas of SAP NetWeaver are as follows:

Table 3

Use Case	Corresponding Key Area of SAP NetWeaver
Building Composite Applications	SAP NetWeaver Composition Environment
Data Warehousing	SAP NetWeaver Business Warehouse
Building Integration Scenarios	SAP NetWeaver Process Integration
Integrating and Self Servicing Content with SAP NetWeaver Portal	SAP NetWeaver Portal
Mobilizing Business Processes	SAP NetWeaver Mobile

Use Case	Corresponding Key Area of SAP NetWeaver
Custom Application Development (ABAP)	(All areas that allow ABAP development on the Application Server ABAP)

Constraints

As of SAP enhancement package 1 for NetWeaver 7.3, SAP NetWeaver Mobile is only available as add-on to SAP NetWeaver. For more information see SAP Note [1645275](#).

More Information

You can get all information about the key areas with regard to SAP NetWeaver 7.4 in the SAP Help Portal and in the SAP Community Network (SCN):

- **SAP Help Portal**

SAP Help Portal bundles access to SAP product documentation and also related information, such as SAP Notes, product availability information, as well as community content.

For SAP NetWeaver 7.4, you access the Help Portal using the address ► help.sap.com/nw74 ►.

1. Choose ► [Application Help](#) ► [<key area>](#) ► for instructions for using the application.
2. Choose ► [Application Help](#) ► [Function-Oriented View](#) ► [<key area>](#) ► for a component-based reference of all functions and tasks that can be performed with the product.

- **SAP Community Network (SCN)**

The SCN is organized into more than 300 “spaces”, which support small, self-contained communities. These communities are typically focused around a topic, an SAP product, or an industry. Each space contains a complete set of social networking tools including a discussion forum, a blogging area, and an area where you can publish and collaborate on documents.

As a logged-on member, you can go to any space in the SCN landscape but it's likely that you will be interested in visiting and following a particular set of spaces that reflect your particular range of interests and where members who share your interests are likely to hang out.

SCN spaces are where you get the latest news from SAP and the community, where you interact with your peers, where you earn points for your contributions, and where you establish reputation as being expert on certain topics

You access the SCN using the address ► scn.sap.com ►.

1. To learn more about SAP NetWeaver, choose:
 - ► [Products](#) ► [tab “Technology”](#) ► [Application Foundation/Integration](#) ► [SAP NetWeaver](#) ► [SAP NetWeaver](#) ► or
 - ► [Lines of Business](#) ► [Information Technology](#) ► [SAP NetWeaver](#) ►
 - ► scn.sap.com/community/netweaver ►
2. Moreover, the SAP Community Network provides you with detailed information regarding the SAP NetWeaver use cases:

Table 4

For the use case	choose in the SCN Community:
Integrating and Self Servicing Content with SAP NetWeaver Portal	▶ <i>Products</i> ▶ <i>tab "Technology"</i> ▶ <i>Application Foundation/Integration</i> ▶ <i>SAP NetWeaver</i> ▶ <i>Team Productivity</i> ▶ <i>SAP NetWeaver Portal</i> ▶ or choose scn.sap.com/community/netweaver-portal
Data Warehousing	▶ <i>Products</i> ▶ <i>tab "Technology"</i> ▶ <i>Application Foundation/Integration</i> ▶ <i>SAP NetWeaver</i> ▶ <i>Information Management</i> ▶ <i>SAP NetWeaver Business Warehouse</i> ▶ or choose scn.sap.com/community/data-warehousing/netweaver-bw
Building Composite Applications	▶ <i>Products</i> ▶ <i>tab "Technology"</i> ▶ <i>Application Foundation/Integration</i> ▶ <i>SAP NetWeaver</i> ▶ <i>Process Orchestration</i> ▶ <i>Business Process Management and Composition</i> ▶ or choose scn.sap.com/community/bpm
Custom Application Development	▶ <i>Products</i> ▶ <i>tab "Technology"</i> ▶ <i>Application Foundation/Integration</i> ▶ <i>Custom Development</i> ▶ <i>ABAP Development</i> ▶ <i>ABAP Development</i> ▶ or choose scn.sap.com/community/abap
Mobilizing Business Processes	▶ <i>Products</i> ▶ <i>tab "Technology"</i> ▶ <i>Enterprise Mobility</i> ▶ <i>SAP NetWeaver Mobile</i> ▶ or choose scn.sap.com/community/mobile/netweaver
Building Integration Scenarios	▶ <i>Products</i> ▶ <i>tab "Technology"</i> ▶ <i>Application Foundation/Integration</i> ▶ <i>SAP NetWeaver</i> ▶ <i>Process Integration</i> ▶ <i>Process Integration</i> ▶ or choose scn.sap.com/community/process-orchestration

1.4 Business View of the Use Cases

For implementation and configuration purposes, the SAP NetWeaver use cases are structured according to the business view of SAP's Software Portfolio. This portfolio is structured using elements such as

- Solutions
- Solution Editions
- Key Capabilities / Scenario Groups
- Scenarios / Processes

Various tools, services and processes use the business view of the SAP Software Portfolio, among them the Scenario & Process Component List in the SAP Service Marketplace (▶ service.sap.com/scl ▶) or the Business Process Repository for the SAP Solution Manager.

The following table displays the structured business view of the use cases in the SAP Solution Manager:

Table 5

Use Case	Corresponds to Business Scenario Group/Key Capability	Includes the Scenarios/Processes
Building Composite Applications	Building Composite Applications	<ul style="list-style-type: none"> • Business Rules Management • Java Development and SOA Infrastructure • Process Composition
Data Warehousing	Enterprise Data Warehousing	<ul style="list-style-type: none"> • Data Modelling • Define Data Flow • Metadata Management • Performance Optimization • Scheduling and Monitoring
Building Integration Scenarios	Building Integration Scenarios	Building Integration Scenarios
	Building integration-centric processes	Building integration-centric processes using the single-SID PI and BPM solution
Integrating and Self Servicing Content with SAP NetWeaver Portal	Integrating and Self Servicing Content with SAP NetWeaver	<ul style="list-style-type: none"> • Building Communities with Wikis & Forums • Content Management Scenarios with Knowledge Management • Managing and mashing up portal pages with Web Page Composer • Portal Landscape Interoperability and Openness • Unified Access to Applications and Processes
Mobilizing Business Processes	Mobilizing Business Processes	<ul style="list-style-type: none"> • Developing Mobile Applications for Occasional Connection • Enabling Mobile Applications for Occasional Connection*
Custom Application Development (ABAP)	Custom Application Development (ABAP)	Custom Application Development (ABAP)
—	Application Lifecycle Management	Application Lifecycle Management

1.5 Mapping of Use Cases to Installable Software Units

To give you a quick overview of SAP NetWeaver 7.4, the table below shows the mapping between use cases and required SAP NetWeaver software units.

For details about the software units, see section [Description of Software Units \[page 51\]](#).

Table 6

Use Case	Usage Types (Functional Units)	Standalone Engines	Optional Standalone Units	Clients
Building Composite Applications: [page 20] <i>Business Rules Management and Process Composition</i>	<ul style="list-style-type: none"> AS Java Adobe Document Services (optional) Business Process Management and Business Rule Management Composite Application Framework Composition Environment Platform NW Product Description DI [optional] 			<ul style="list-style-type: none"> SAP NetWeaver Developer Studio Visual Composer Adobe LiveCycle Designer (Optional) Web Browser
Building Composite Applications: [page 20] <i>Java Development and SOA Infrastructure</i>	<ul style="list-style-type: none"> AS Java NW Product Description DI [optional] Enterprise Services Repository 			<ul style="list-style-type: none"> SAP NetWeaver Developer Studio Web Browser
Data Warehousing [page 32]	<ul style="list-style-type: none"> AS ABAP BW ABAP AS Java NW Product Description [optional] AS Java Extensions [optional] BI Java [optional] EP Core – Application Portal [optional] Enterprise Portal [optional] 	Search and Classification (TREX)		<ul style="list-style-type: none"> SAP GUI with Business Explorer (BI Add-On) SAP BusinessObjects Analysis, Edition for Microsoft Office* [optional] SAP BusinessObjects Crystal Reports* [optional] SAP BusinessObjects Dashboards [optional] SAP BusinessObjects Web

Use Case	Usage Types (Functional Units)	Standalone Engines	Optional Standalone Units	Clients
				Intelligence* [optional] <ul style="list-style-type: none"> SAP BusinessObjects Design Studio* [optional]
Building Integration Scenarios [page 26]	<ul style="list-style-type: none"> Application Server Java NW Product Description AS Java Extensions Application Server ABAP Process Integration Enterprise Services Repository Process Integration Adapter Engine 	<ul style="list-style-type: none"> Adapter Engine (Java SE) [optional] 	<ul style="list-style-type: none"> Advanced Adapter Engine [optional] Advanced Adapter Engine Extended 	
Integrating and Self Servicing Content with SAP NetWeaver Portal [page 35]	<ul style="list-style-type: none"> AS Java NW Product Description AS Java Extensions EP Core – Application Portal EP Portal Add-on (for <i>Building Communities with Wikis and Forums</i> only) 			
Mobilizing Business Processes: [page 34] <i>Developing Mobile Applications for Occasional Connectivity</i>	<ul style="list-style-type: none"> AS ABAP Mobile Application Server Java DI EP Core – Application Portal [optional] 			<ul style="list-style-type: none"> SAP GUI SAP NetWeaver Developer Studio Mobile Client
Mobilizing Business Processes: [page 34] <i>Enabling Mobile Applications for Occasional Connectivity</i>	<ul style="list-style-type: none"> AS ABAP Mobile Application Server Java DI EP Core – Application Portal [optional] 			<ul style="list-style-type: none"> SAP GUI SAP NetWeaver Developer Studio Mobile Client

Use Case	Usage Types (Functional Units)	Standalone Engines	Optional Standalone Units	Clients
Custom Application Development [page 37]	<ul style="list-style-type: none"> AS ABAP 			<ul style="list-style-type: none"> SAP GUI ABAP Development Tools (Eclipse)
SAP Knowledge Warehouse [page 36]	<ul style="list-style-type: none"> AS ABAP AS Java 	<ul style="list-style-type: none"> Search and Classification (TREX) Content Server 		<ul style="list-style-type: none"> Web Browser SAP GUI (KW Add-on included)

*Note that SAP BusinessObjects products require separate licenses.

1.6 Enhancement Packages

1.6.1 Enhancement Package Concept

We have adapted our major release strategy to better fit your adoption cycle. To ensure that you benefit from new developments and innovations while minimizing the impact on your core operational systems, SAP uses enhancement packages to speed up the delivery of new functions.

With SAP enhancement packages, you can install and activate new functions depending on your business needs without having to perform a system upgrade.

You can selectively implement the new functions and activate the software upon business demand. As a result, you can isolate the impact of software updates and make new functions available faster due to shortened test cycles.

Implementation

There are three different scenarios to implement an enhancement package:

- Installation of an enhancement package on an existing SAP system
- New installation of an SAP system including an enhancement package
- Upgrade of an SAP system including an enhancement package

Maintenance

SAP enhancement packages have Support Packages of their own that are equivalent to the Support Package versions of the underlying SAP system. We highly recommend installing the enhancement package in combination with the latest available Support Package stack. This approach reduces installation, modification adjustment, and testing effort. Using this strategy, you can install SAP enhancement packages as a normal maintenance activity together with Support Package stacks.

An enhancement package requires a specific Support Package stack level in the source release SAP system.

Note

If the SAP system is on a lower Support Package stack level, all relevant Support Package stacks for the enhancement package installation are **automatically included** into the download queue by the Maintenance Optimizer, as well as the latest available Support Packages for the enhancement package.

For a better understanding of the general concepts and principles of updating a system, see the *Maintenance Planning Guide* at ► service.sap.com/mopz ► *section "How-To's and Guides"* ►

Tools

The enhancement package installation requires the following tools:

1. SAP Solution Manager

Note

Use of SAP Solution Manager is **mandatory**.

Tool versions:

You require at least one of the following versions of SAP Solution Manager.

- SAP Solution Manager 7.0 EHP1, SP23 or higher
- SAP Solution Manager 7.1, SP01 or higher

SAP Solution Manager 7.0 EHP1, SP23 supports all update and maintenance processes (for example, transaction `SMSY` or Maintenance Optimizer). There is no need to upgrade to SAP Solution Manager 7.1.

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

System Landscape Maintenance with SAP Solution Manager:

Make sure that you have correctly defined and maintained your system landscape in SAP Solution Manager:

- SAP Solution Manager 7.0: Use the SAP Solution Manager System Landscape (transaction `SMSY`) for the complete system description.
- SAP Solution Manager 7.1 SP01 to SP04, use the Landscape Management Database (transaction `LMDB`) to maintain technical system information. For logical product system information, use transaction `SMSY`.
- SAP Solution Manager 7.1 SP05 and higher, use the Landscape Management Database (transaction `LMDB`) for the complete system description. (The transaction `SMSY` is no longer required.)

For more information about the Landscape Management Database (LMDB), see ► help.sap.com/solutionmanager71 ► *Application Help* ► *SAP Library SAP Solution Manager 7.1 <SP version>* ► *SAP Solution Manager Operations* ► *Managing System Landscape Information* ►.

Landscape Verification with SAP Solution Manager:

To verify and correct your system landscape, SAP highly recommends that you use the verification functions of the SAP Solution Manager:

Recommendation

Before installing the enhancement package, we recommend that you run a landscape verification to check your landscape setup and your system descriptions, and to correct data if necessary.

- SAP Solution Manager 7.0 to 7.1 SP04: Use Landscape Verification 1.0 for SAP Solution Manager. This add-on allows you to identify and correct issues in your SAP Solution Manager landscape (transaction `SMSY`) before they cause problems, for example during a system update. Examples for errors are a

missing connection to the System Landscape Directory or the wrong assignment of products to technical systems. For each type of error, a generic description for the solution is provided.

- SAP Solution Manager 7.1 SP05 or higher: Use the landscape verification function that is embedded into the product system editor of the Landscape Management Database (LMDB). It replaces the previous Landscape Verification tool.

For more information about the landscape verification, see the SAP Community Network at scn.sap.com/docs/DOC-8793.

2. Installation or upgrade tools (depending on your scenario)

- SAP Solution Manager Maintenance Optimizer (MOpz)

The *SAP Solution Manager Maintenance Optimizer (MOpz)* (accessible from the *Change Management* work center) supports the download of a consistent queue that includes all necessary Support Packages and enhancement packages. In addition, SAP Solution Manager calculates a valid import queue for the selected SAP system and generates the enhancement package stack configuration file that you require for the installation.

- Software Provisioning Manager 1.0

For the new installation of an SAP system including an enhancement package you use the standard installation tool *software provisioning manager 1.0*.

- Software Update Manager (SUM)

To install an enhancement package on an existing SAP system, as well as for the upgrade of an SAP system to a higher release including an enhancement package, you use the *Software Update Manager (SUM)*.

1.6.2 Key Facts About Enhancement Packages

The following list summarizes important facts about the enhancement package concept and recommended approaches:

- Install only selected parts of the enhancement package. The selection is driven by the functional need from a business point of view.
- You cannot mix the installation of different enhancement package versions in your ABAP-based SAP system. You can have just one enhancement package version in the SAP system. This means, if you have already updated technical usages to a previous EHP you need to apply the current EHP to those components as well.
- SAP enhancement packages are cumulative, meaning that each new enhancement package includes new innovations of its own as well as all innovations delivered with prior packages.
- We recommend installing the latest available enhancement package version.
- Install enhancement packages and Support Packages in one single step (this includes the preconditioned Support Packages).
- SAP enhancement packages have Support Packages of their own that are equivalent to the Support Package versions of the underlying SAP system.
- SAP enhancement packages have the same maintenance period as the underlying core application.
- The installation of an enhancement package is irreversible.
- As long as you do not activate a business function, the installation of an enhancement package has no impact on existing business processes or user interfaces.

You can only activate business functions in ABAP-based systems, not in Java-based SAP systems.

-
- The activation of most business functions and extension sets is irreversible. Only a small number of business functions is reversible.

Test the installation process and activation of new functions in advance on a sandbox system. Ensure that you evaluate the runtime and the SAP system behavior, its dependencies and impacts. Make sure that your SAP system is free of errors before going live.

2 Planning SAP NetWeaver 7.4

The general sequence for the implementation of an SAP NetWeaver system is as follows:

1. You plan the implementation (such as scope, hardware and software requirements, release restrictions).
2. You plan the system landscape for the use cases.
3. You install the components of your SAP NetWeaver system.
4. You configure your systems.

In the following, you find information about the planning steps for SAP NetWeaver 7.4.

- [Major Planning Steps and Related Documentation \[page 18\]](#)
- [Planning the Uses Cases and their System Landscapes \[page 19\]](#)

2.1 Major Planning Steps and Related Documentation

During an implementation project, you have to take into account many aspects and to take various decisions. The major planning steps of this process are outlined below.

Table 7

Step	Step Description	Further Information
Scope and Requirements	You determine the scope of your SAP NetWeaver implementation.	For more information, see SAP NetWeaver Use Cases [page 8] .
Installable Software Units	You determine which installable software units (that is, systems with usage types, standalone engines, optional standalone units and clients) are required for the use cases.	For more information, see the Mapping of Use Cases to Installable Software Units [page 11] section. For details about the software units, see Description of Software Units [page 51] .
Landscape Planning	You determine the system landscape and consider the landscape-relevant aspects concerning your required use case.	See Planning the Uses Cases and their System Landscapes [page 19] .
Hardware & Software Prerequisites	Use the <i>Product Availability Matrix</i> (PAM) to check which platforms (operating systems, databases, browsers) are supported for your SAP NetWeaver components.	service.sap.com/pam
	Check which hardware sizing is required for your SAP NetWeaver release.	service.sap.com/sizing
Release Restrictions	Check SAP Notes for any release restrictions.	<ul style="list-style-type: none">• Regarding SAP NetWeaver 7.4, see SAP Note 1730102.

Step	Step Description	Further Information
Solution Manager Prerequisites	<p>You need at least SAP Solution Manager 7.0 with support package level 23.</p> <p>Make sure that your SAP Solution Manager system has the required support package level and content.</p> <p>Check if you need to do an update or upgrade of your SAP Solution Manager application or content.</p> <p>After an upgrade or update to the latest SAP Solution Manager release, you need to do follow-up actions described in the section <i>Software Change Management</i> of the <i>Solution Operations Guide</i>.</p>	<ul style="list-style-type: none"> • See SAP Note 631042 for information about the Release strategy for Implementation Content (ST-ICO). • See SAP Note 781448 for information about Support Package levels of Solution Manager installations and upgrades. • The Solution Operations Guide for SAP Solution Manager is available at: ▶ service.sap.com/instguides ▶ Installation & Upgrade Guides ▶ SAP Components ▶ SAP Solution Manager ▶ <Release> ▶ Operations ▶

2.2 Planning the Use Cases and their System Landscapes

In the following, you get information about the system landscapes for the different SAP NetWeaver uses cases

- [Building Composite Applications \[page 20\]](#)
- [Building Integration Scenarios \[page 25\]](#)
- [Data Warehousing \[page 32\]](#)
- [Mobilizing Business Processes \[page 34\]](#)
- [Integrating and Self-Servicing Content with SAP NetWeaver Portal \[page 35\]](#)
- [SAP Knowledge Warehouse \[page 36\]](#)
- [Custom Application Development \(ABAP\) \[page 37\]](#)

For some uses cases, you get some additional planning information.

➔ Recommendation

- For more details and aspects regarding the System Landscape Design and Infrastructure, we refer you to the information about *Landscape Design and Infrastructure* that you can access from the document *Technical Enablement - Application Lifecycle Management* in the Software Community Network (SCN). Choose [▶ scn.sap.com/docs/DOC-23404 ▶ Landscape Design and Infrastructure ▶](#).
- See also the information about *Preparing the System Landscape Directory (SLD)* in the SAP NW74 Library, available at [▶ help.sap.com/nw74 ▶ System Administration and Maintenance Information ▶ Technical Operations for SAP NetWeaver ▶ Section: Administration of SAP NetWeaver systems and components ▶ Technical Operations for SAP NetWeaver Development Infrastructure \(DI\) ▶ Development Infrastructure \(DI\) ▶ Configuring the Development Infrastructure ▶ Preparing the System Landscape Directory \(SLD\) ▶](#).
- Furthermore, see the information about *Managing System Landscape Information* in the Help Library for the Solution Manager.
Choose [▶ help.sap.com/solutionmanager71 ▶ Application Help ▶ SAP Library ▶ SAP Solution Manager Operations ▶ Managing System Landscape Information ▶](#).

2.2.1 Building Composite Applications

SAP NetWeaver Composition Environment provides design time and runtime infrastructures for developing, running, and managing composite applications that comply with SAP Enterprise Service-Oriented Architecture (enterprise SOA) technologies. Composite applications use this service-oriented architecture to fill the gaps that standard solutions cannot cover.

With Process Orchestration, you can combine the process modeling, operation, and monitoring capabilities of SAP NetWeaver Business Process Management (BPM) with the integration capabilities of SAP NetWeaver Process Integration (Advanced Adapter Engine Extended (AEX) installation option). For more information, see [Process Orchestration \[page 30\]](#).

2.2.1.1 System Landscape

In order to plan the system landscape for SAP NetWeaver Composition Environment (SAP NetWeaver CE) you should start by answering the following questions:

- Which back-end systems are required?

The answer to this question depends on the functions and data you would like to use to build your composite applications, and whether you want to continue using existing software, such as the software lifecycle management functions of your back-end system.

- Which central usage types of SAP NetWeaver can be shared when using SAP NetWeaver CE in combination with SAP NetWeaver Portal or in combination with SAP NetWeaver Process Integration (SAP NetWeaver PI)?

The following graphic gives an overview of SAP NetWeaver CE in a system landscape using SAP NetWeaver Process Integration, SAP NetWeaver Portals, and already existing back-end systems:

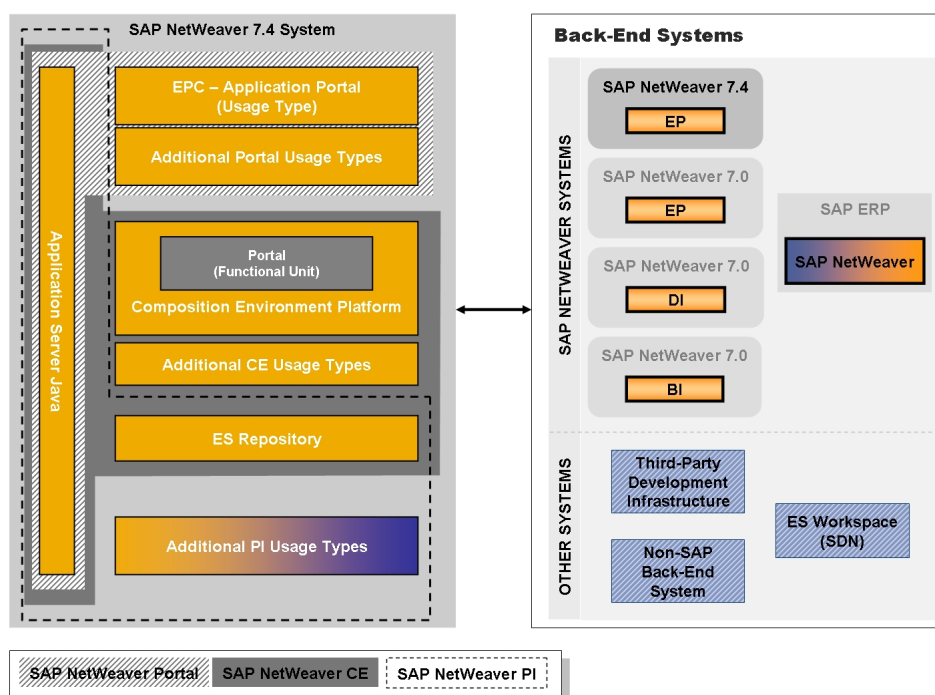


Figure 1: SAP NetWeaver CE Combined with Other Use Cases and Back-End Systems

The following sections give recommendations for possible shared usages or installation requirements in your system landscape, for example, with respect to the following options shown in the graphic above:

- Enterprise Services Repository can both be used for SAP NetWeaver CE and SAP NetWeaver PI. See section *Working with Enterprise Services Repository* below for more details.
- The Composition Environment Platform contains the functional unit *Portal* that offers – apart from minor exceptions – the same functionality as usage type *EP Core – Application Portal* for SAP NetWeaver Portal. See section *Working with SAP NetWeaver Portal* below for more details.

Connecting to Back-End Systems

You can integrate and use a back-end system in the following scenarios:

- You access data residing on a back-end system.

You can reuse existing data in the composite applications. For example, if you want to use data residing in an SAP ERP system, you can use the SOA capabilities (in SAP ERP 6.0 systems based on SAP NetWeaver 7.0 Support Package Stack 9 or higher) or you can connect using Remote Function Calls (RFC) to older systems using the Java Connector (JCo) that is offered as a part of SAP NetWeaver AS Java.

- You use enterprise services on SAP or non-SAP back-end systems.

You can leverage the SOA capabilities of SAP NetWeaver by consuming services provided by an SAP back-end system such as SAP ERP 6.0 (on SAP NetWeaver 7.0 SPS9 or higher), or the ES Workplace that you can access using the SAP Community Network (SDN) at scn.sap.com/community/soa. Note that you can use the ES Workplace in this context only to try some features out, it is not intended for productive use.

In addition, you can consume services from a third-party back-end system using the standard-based web service capabilities of the stack. The SAP NetWeaver AS Java installation includes a Services Registry that enables you to browse the registered service definitions.

Working with Enterprise Services Repository

As a prerequisite for using Enterprise Services Repository (ES Repository), the System Landscape Directory is needed where products and software components are maintained. You can create your own products and software component versions in the System Landscape Directory. Before the start of development, you need to import the required software component versions from the System Landscape Directory into the ES Repository.

i Note

Note that the following JAVA archives are installed among other software components as part of Enterprise Services Repository:

- `ChartDirector.jar`
- `jide.jar`

We recommend using Enterprise Services Repository on the same AS Java where you use the Services Registry for building composite applications.

If you use SAP NetWeaver systems for building composite applications and for building integration scenarios (using SAP NetWeaver PI), we strongly recommend maintaining all your design objects in one ES Repository.

SAP NetWeaver PI is tightly coupled with ES Repository and requires configuration to connect to a given ES Repository. By default, PI connects to the default ESR delivered with SAP NetWeaver PI, while you can use any ES Repository for building composite applications. We recommend using the latest version of ESR in the landscape.

More information at: help.sap.com/nw74 > *Application Help* > *SAP NetWeaver Composition Environment* > *Administrator's Guide* > *Configuring Composition Environment* > *Configuring Additional Components* > *Configuring Enterprise Services Repository* > *Configuring a Central ES Repository in a CE and PI Landscape*.

Working with SAP NetWeaver Portal

Integrating Applications into SAP NetWeaver Portal

Once you create and run your applications on the SAP NetWeaver CE system, you can use standard portal capabilities for integrating Java applications into iViews.

- For back-end connectivity to SAP transaction and BEx Web iViews, use the portal system landscape overview.
- To enable back-end connectivity for other application types, such as composite views and processes, use Remote Function Calls (RFCs) and Web services, which are configured in SAP NetWeaver Administrator.

For more information, see ► help.sap.com/nw74 ► *Application Help* ► *SAP NetWeaver Composition Environment* ► *Administrator's Guide* ► *Administering Composition Environment* ► *Additional Administration Tasks* ► *Integrating Content into the SAP NetWeaver Portal CE* ►.

Running Composite Applications in SAP NetWeaver Portal

Once you have integrated your composite applications into SAP NetWeaver Portal, the following scenarios have to be distinguished:

- Running composite applications in a portal when **developing and testing** them in your landscape.
- Allowing business users to **access composite applications in a productive environment**.

Depending on the scenario, either usage type Composition Environment Platform (CEP) is sufficient or a local Portal installation (usage types *EPC – Applications Portal* (EPC) and optionally *Enterprise Portal* (EP)), or a remote SAP NetWeaver Portal installation is required. In the following table, the terms local and remote are to be understood from the viewpoint of an SAP NetWeaver 7.4 installation:

Table 8

	Developing and Testing	Accessing Composite Applications in Productive Environments	
Product	SAP NetWeaver 7.4	<ul style="list-style-type: none">• SAP NetWeaver 7.0• SAP NetWeaver 7.0 including enhancement package 1 or 2• SAP NetWeaver 7.3• SAP enhancement package 1 for NetWeaver 7.3• or SAP NetWeaver 7.4	3rd Party Solution
Required Usage Type	CEP*	EPC* (EP**)	—
Type of Access	Local	Local (SAP NetWeaver 7.4) and remote (SAP NetWeaver 7.0, SAP NetWeaver 7.0 including enhancement package 1 or 2, SAP NetWeaver 7.3, SAP enhancement package 1 for NetWeaver 7.3, and SAP NetWeaver 7.4)	Remote

	Developing and Testing	Accessing Composite Applications in Productive Environments	
Additional Information	Note that the portal installed with usage type Composition Environment Platform can function as a producer portal only; consumer capabilities are therefore not supported.	<p>You can enable the runtime access of composite applications from a remote</p> <ul style="list-style-type: none"> • SAP NetWeaver 7.0 • SAP NetWeaver 7.0 including enhancement package 1 or 2 • SAP NetWeaver 7.3 • SAP enhancement package 1 for NetWeaver 7.3 • or SAP NetWeaver 7.4 <p>portal, either by using the SAP NetWeaver Portal iView Wizard, or by setting up a federated portal network.</p>	—

* The installation of usage type EPC allows you – in addition to the functions provided by usage type Composition Environment Platform – to enable the runtime access of composite applications in the portal on the local system using GPAL and the iView wizards.

** Usage Type EP requires usage type EPC and extends the portal to a full Enterprise Portal. For more information, see section [System Landscape Aspects for Integrating and Self-Servicing Content with SAP NetWeaver Portal](#) [page 35].

For more information about enabling runtime access from a remote SAP NetWeaver 7.0, SAP NetWeaver 7.3; SAP enhancement package 1 for NetWeaver 7.3, or SAP NetWeaver 7.4 portal, see ► help.sap.com/nw74 ► *Application Help* ► *SAP NetWeaver Composition Environment* ► *Administrator's Guide* ► *Administering Composition Environment* ► *Additional Administration Tasks* ► *Running CE Applications in Remote Portals (Optional)* ►.

2.2.1.2 Further Aspects for Your Installation Planning

Overview

The following graphic shows the software units that are used for *Building Composite Applications*:

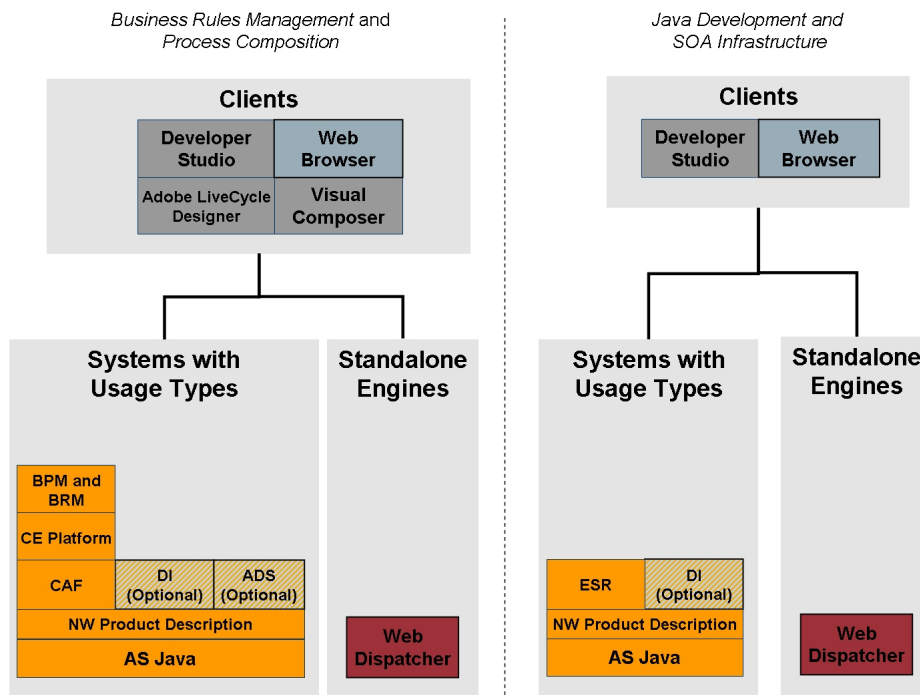


Figure 2: Software Units for Building Composite Applications

When setting up the system landscape, you need to consider the development environment for each developer and the overall system landscape for developing, testing, and running composite applications.

We recommend using a combination of development system, test system, and production system with a central AS Java to develop, consolidate, test, and run your application productively. This system landscape is also the preferred option for developing a composite application in a team of developers.

In order to describe this scenario, the following sections focus on the AS Java and the Developer Studio, because the installation is tailored to these main software units. Of course, additional usage types or clients need to be installed in addition depending on your scenario.

For information about supported operating systems and databases, see the Product Availability Matrix for SAP NetWeaver 7.4 available at service.sap.com/pam.

Planning Your Installation of SAP NetWeaver Development, Test, and Production Systems for Composite Applications

When using SAP NetWeaver for development of composite applications aimed for productive use, we strongly recommend setting up a system landscape consisting of the following systems:

- **Development System and Test System**

Use these systems for development and quality assurance.

- **Production System**

Use this system to run your applications separately from your development and test landscape.

The system landscape supports consolidating and testing individual development and, as a consequence, is strongly recommended for team development projects.

The following graphic provides an overview of the recommended system landscape:

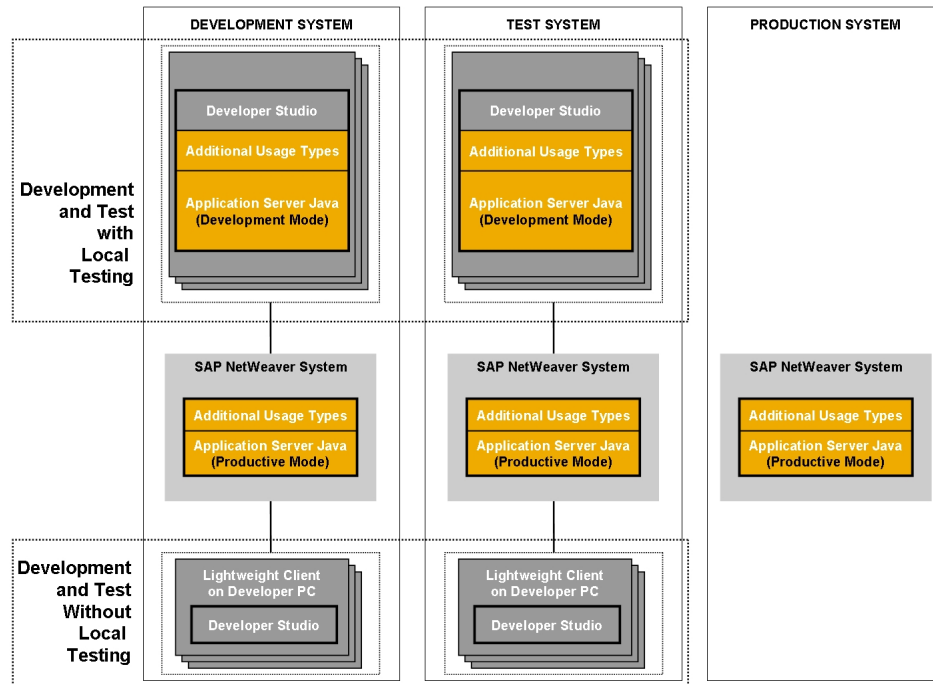


Figure 3: Recommended SAP NetWeaver system landscape

With respect to the installation of the development environment, you install a *AS Java centrally* and *Developer Studio* instances on each developer host. This option requires fewer hardware resources per developer host. In this landscape scenario you can set up an AS Java in development mode centrally and connect to it from the other hosts in the landscape using the Developer Studio.

In a production system landscape, you have to install a central 64-bit SAP NetWeaver Application Server Java in productive mode for running composite applications to address additional runtime requirements such as clustering and higher default memory settings. We strongly recommend installing a central 64-bit server in productive mode for both the test system landscape and the development system landscape as well.

SAP NetWeaver Application Server Java 7.4 SP03 or higher based on SAP HANA

As of SAP NetWeaver 7.4 SP03, the SAP HANA database supports Application Server Java and further usage types that are dependent on AS Java.

For more information in terms of the implementation of SAP NetWeaver Application Server Java 7.4 based on SAP HANA database, see the *End-to-End Implementation Roadmap for SAP NetWeaver AS Java based on SAP HANA*. This guide is available on the Service Marketplace at service.sap.com/installnw74 > *Planning*.

2.2.2 Building Integration Scenarios

You can either install SAP NetWeaver Process Integration (PI) as a standard installation (dual-stack system) or the Advanced Adapter Engine Extended (AEX), which is based on AS Java only. Both options are described in [System Landscape for Building Integration Scenarios \[page 26\]](#).

Furthermore, you have the possibility to install the [Process Integration and Orchestration Package \[page 30\]](#).

Caution

SAP NetWeaver discontinues Dual Stack deployments

SAP NetWeaver discontinues Dual Stack deployments as of release 7.4. No update or update of optional dual-stack SAP NetWeaver systems is supported to SAP NetWeaver 7.4 and higher (and already as of SAP NetWeaver 7.0 with SAP enhancement package 1, you can no longer install optional dual-stack application systems). Also for earlier releases than SAP NetWeaver 7.4, SAP recommends to avoid optional dual-stack deployments where possible.

The only exception to this rule is SAP NetWeaver Process Integration on a traditional database system, which still requires a dual-stack implementation. However, note that a single-stack SAP NetWeaver Process Integration Java (Advanced Adapter Engine Extended) exists that offers 95% of the features of classical dual-stack implementations.

Therefore, you should investigate if a Java-only implementation of SAP NetWeaver PI is a feasible approach for your use cases. Due to the harmonized process orchestration stack (SAP NetWeaver PI and SAP NetWeaver BPM running on the same Java instance), many of the ccBPM features in SAP NetWeaver PI can be expressed using SAP NetWeaver BPM capabilities instead.

For more information, see the SAP Community Network at: ► scn.sap.com/docs/DOC-33703 ►.

SAP Business Suite

The same applies for the SAP Business Suite: SAP Business Suite 7i2011, which is based on SAP NetWeaver 7.0 including Enhancement Package 3, is the last SAP Business Suite release with dual-stack support. No upgrade or update of dual-stack SAP Business Suite systems is supported to higher releases – for more information, see SAP Note [1816819](#). Already as of SAP Business Suite 7, you can no longer install dual-stack application systems.

Note

SAP NetWeaver Application Server Java 7.4 SP03 or higher based on SAP HANA

As of SAP NetWeaver 7.4 SP03, the SAP HANA database supports Application Server Java and further usage types that are dependent on AS Java.

For more information in terms of the implementation of SAP NetWeaver Application Server Java 7.4 based on SAP HANA database, see the *End-to-End Implementation Roadmap for SAP NetWeaver AS Java based on SAP HANA*. This guide is available on the Service Marketplace at ► service.sap.com/installnw74 ► *Planning* ►.

2.2.2.1 System Landscapes for PI and AEX

The PI standard installation (dual-stack) offers the complete functional range, whereas the functional range of AEX is restricted, but has the advantage of a lower TCO.

The following figures depict both options:

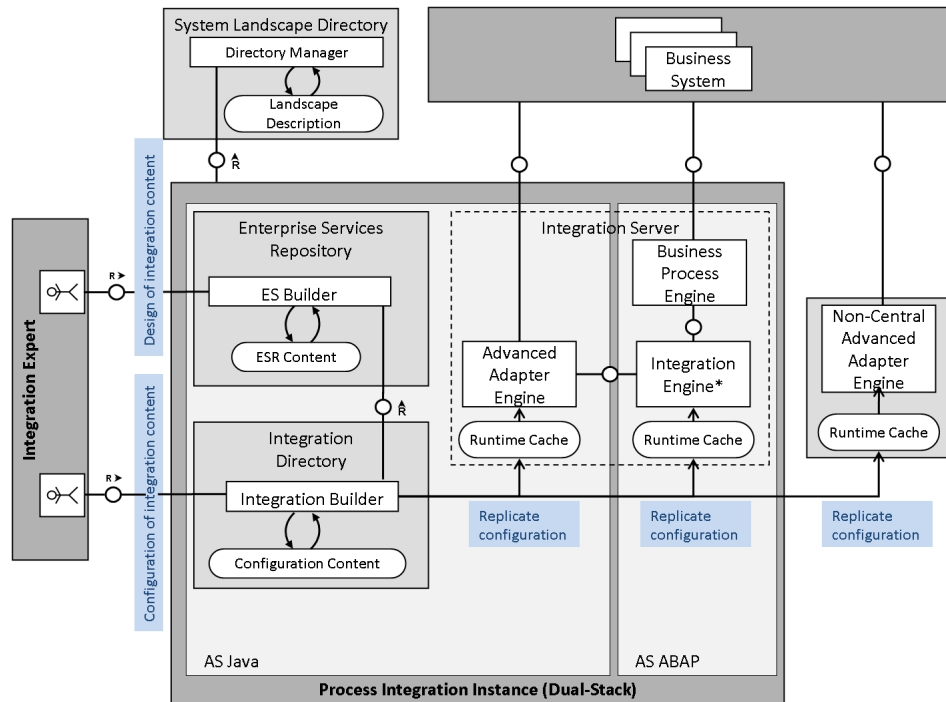


Figure 4: System Landscape for Building Integration Scenarios with PI Standard Installation

i Note

When you choose the *Process Integration* installation option in the installation tool, all dependent usage types are selected and installed automatically.

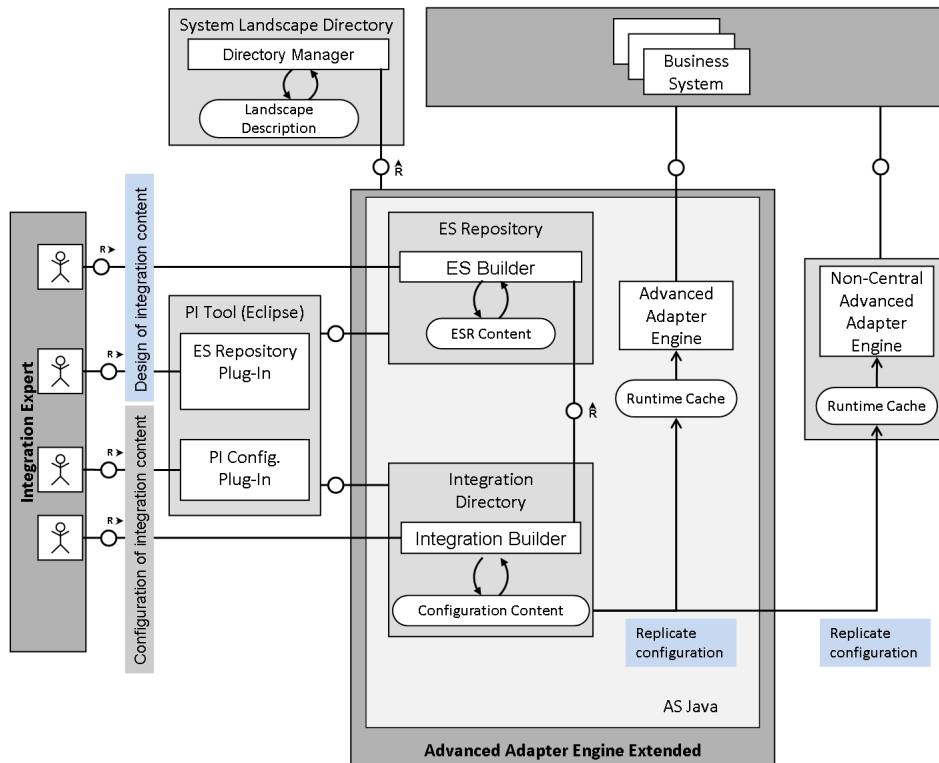


Figure 5: System Landscape for Building Integration Scenarios with Advanced Adapter Engine Extended

When you plan your system landscape for building integration scenarios, consider the following aspects:

- It is mandatory to have a dedicated **PI** system. This applies to development, quality, and production landscapes.

For PI, it is a prerequisite that no other system in your system landscape has a higher release than the PI system. For exceptions to this rule, see SAP Note [1043047](#). For example, SAP XI 3.0 is compatible with SAP NetWeaver 6.40 and 7.0 application systems since the same XI protocol is used. Apart from these exceptions, if you want to upgrade or install an application in your system landscape, you first have to make sure that the PI system is on the same release level. If required, you have to upgrade the PI system first to the new or a higher release.

⚠ Caution

Although it should be technically possible to run an application system with a higher release than your PI system in your system landscape, this is not supported by SAP (apart from the exceptions listed in SAP Note [1043047](#)). Therefore, you run such a landscape at your own risk.

- You can use the Advanced Adapter Engine that is part of your **PI** system as a central Advanced Adapter Engine. You can optionally deploy additional non-central Advanced Adapter Engines.

Adapter Engine (Java SE) can be installed in a non-SAP Java environment. However, it only hosts a subset of the adapter functionality, is only supported for compatibility reasons, and should be used only if this is a precondition in your environment. The following table shows the characteristics of the central Advanced Adapter Engine, the non-central Advanced Adapter Engine, and the Adapter Engine (Java SE) as an overview:

Table 9

Installation Option	Characteristics
Central Advanced Adapter Engine on the PI host	<ul style="list-style-type: none"> • 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 only be available in homogeneous LAN environments). • Possible performance bottleneck due to high RAM needs. The system needs three times the amount of the maximum message size as RAM, for example.
Non-central Advanced Adapter Engine	<ul style="list-style-type: none"> • Provides complete integration into the PI environment: <ul style="list-style-type: none"> ◦ Central Monitoring available ◦ Central Configuration available • More resources needed for installing the SAP NetWeaver Java system
Adapter Engine (Java SE)	<ul style="list-style-type: none"> • Installation possible on non-released SAP NetWeaver platforms • Only HTTP connection required between adapter engine and Integration Server. Suitable for a more heterogeneous system landscape with mixed operating systems and authorization concepts, or for distributed WAN environments with firewalls, and so on. • Fewer resources needed when running in a Java environment only • Additional installation procedure required for JDK and the adapter itself • Poorer integration with the SAP NetWeaver Process Integration environment due to lack of central configuration and monitoring services

- You can install an **Advanced Adapter Engine Extended (AEX)**. This provides tools for designing and configuring integration content (Enterprise Services Repository, Integration Directory and System Landscape Directory), as well as the Advanced Adapter Engine as a runtime engine. This installation option is based on AS Java only and you can use it without a standard Process Integration system. You can optionally deploy additional non-central Advanced Adapter Engines.

Note

Regarding the deployment of any other usage type besides Business Process Management (BPM) on an existing Advanced Adapter Engine Extended (AEX), see SAP Note [1868764](#).

The following table compares the Advanced Adapter Engine Extended to an SAP NetWeaver Process Integration standard installation:

Table 10

Installation Option	Advantage	Disadvantage
Advanced Adapter Engine Extended	<ul style="list-style-type: none"> • Easy to install and to maintain (Java only) • Fewer resources needed 	<ul style="list-style-type: none"> • Connectivity options restricted to adapters of AAE • Integration processes not available • Only process integration scenarios available as ESR modeling option
SAP NetWeaver Process Integration	<ul style="list-style-type: none"> • Complete functional range of SAP NetWeaver Process Integration 	<ul style="list-style-type: none"> • More memory and data storage required • More cost-intensive

i Note

User Management

- If you deploy non-central Advanced Adapter Engines with **Advanced Adapter Engine Extended (AEX)**, use the **Local User Management** (UME Configuration "Java Database") on the non-central Advanced Adapter Engines. At runtime the non-central Advanced Adapter Engines work independently of the AEX.
- If you deploy non-central Advanced Adapter Engines with **PI**, use the **ABAP User Management** on the **PI** system.

- The AS ABAP system acts as an application and service provider. For Java Web Services, you also require AS Java. In addition, you require SAP NetWeaver Developer Studio on the client side as a development environment.

The Web service client can be either an SAP or a non-SAP application. For example, an AS ABAP system or a Web browser could act as an application or service consumer.

More Information

See the Help Portal at:

- help.sap.com/nw74 > *Application Help* > *SAP NetWeaver Process Integration* > for more information about the concepts and capabilities of SAP NetWeaver Process Integration (PI).
- help.sap.com/nw74 > *Application Help* > *Function-Oriented View* > *Process Integration* > *Configuring Process Integration After Installation* > for more information about the deployment and the configuration.

2.2.2.2 Process Orchestration

Process Orchestration provides a tool infrastructure to model and design business processes – from the overall process flow and the sequence of activities up to the interfaces and data types that are needed to integrate SAP systems and external systems. It combines the integration capabilities of SAP NetWeaver Process Integration (Advanced Adapter Engine Extended (AEX) installation option) with the process modeling, operation, and

monitoring capabilities of SAP NetWeaver Business Process Management (BPM). Like AEX, Process Orchestration is based on AS Java only.

Integration

The package is based on the following components:

- Components of the Advanced Adapter Engine Extended (AEX), in particular:
 - Enterprise Services Repository

Enables you to design integration content like service interfaces and mappings, for example.
 - Integration Directory

Configuration tool that allows an integration expert to configure integration content, in particular: One the one hand, to specify the business communication between business systems and Process Orchestration and, on the other hand, to specify the connectivity between the BPM process and the Process Integration runtime.
 - Advanced Adapter Engine

Process Integration runtime component that allows you to process XML messages.
- Business Process Management and Business Rules Management engines

Allows an integration expert to model business processes and to execute and monitor the business processes (BPM-based applications) at runtime.

The involved components are illustrated in the figure below.

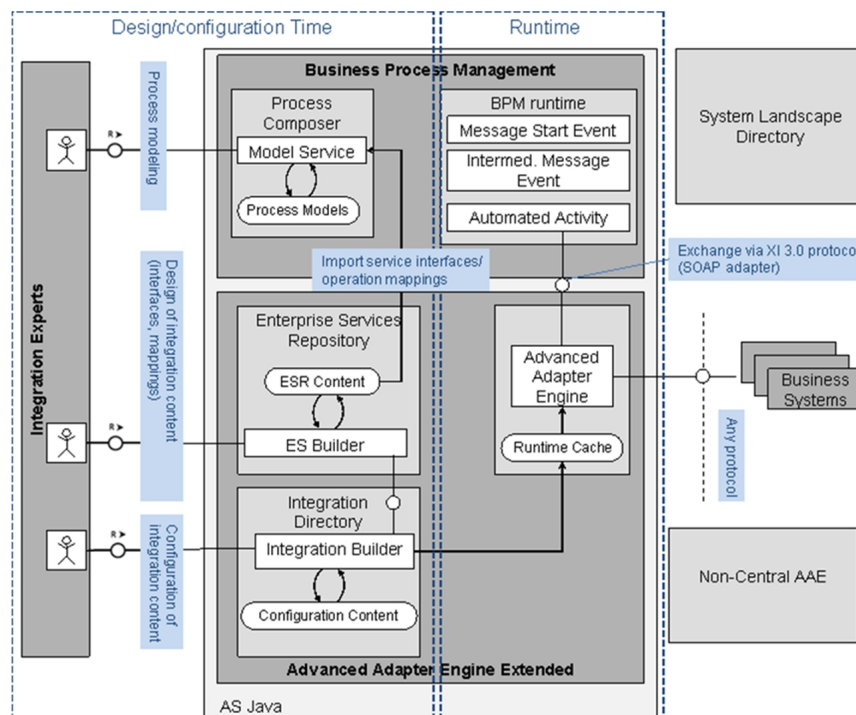


Figure 6: Components of Process Orchestration

i Note

You can obtain Process Orchestration by installation or by adding the corresponding usage types to an existing SAP NetWeaver system. For latter, both are supported, deployment of BPM on an existing AEX system and deployment of an AEX on an existing BPM system.



Regarding the deployment of additional usage types besides BPM and AEX, see SAP Note [1868764](#). You can deploy non-central Advanced Adapter Engines with Process Orchestration.

Constraints

- Process Orchestration runs on one system. The deployment on more than one system is not supported.
- Process Orchestration can be installed in a cluster. Every node would have an AEX and a BPM instance running

More Information

See the Help Portal at:

- [help.sap.com/nw74](#) > *Application Help* > *Function-Oriented View* > *Process Orchestration*  for more information about the concepts and capabilities of SAP NetWeaver Process Integration (PI).
- [help.sap.com/nw74](#) > *Application Help* > *Function-Oriented View* > *Process Integration* > *Configuring Process Integration After Installation* > *Configuring Process Orchestration (PI-CP)*  for more information about the deployment and the configuration.

2.2.3 Data Warehousing

The following figure shows the software units that are used for data warehousing.

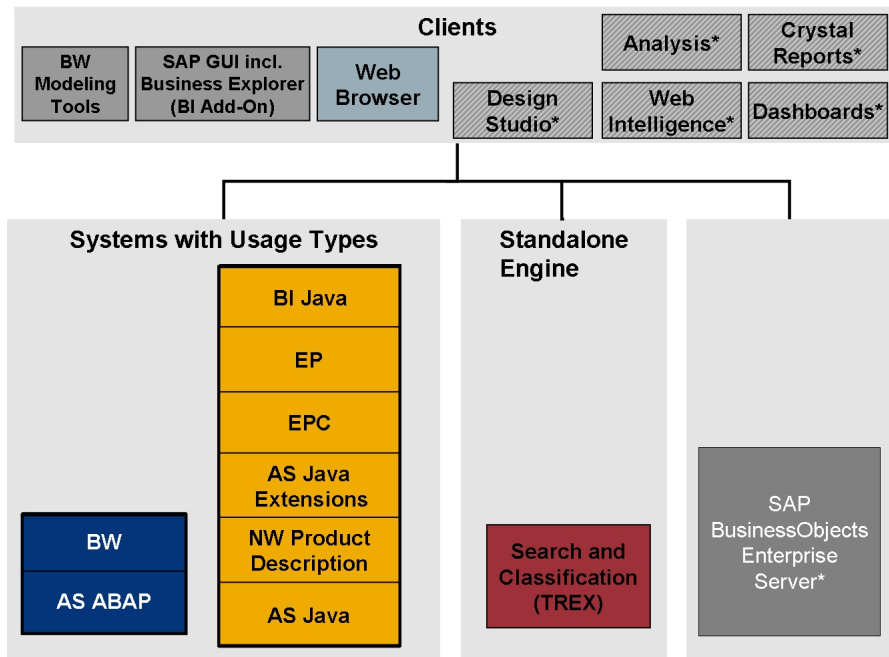


Figure 7: Data Warehousing

* Note that SAP BusinessObjects products require separate licenses.

- You need BI Java and the Java-based usage types for specific capabilities only, which are the following:
 - SAP Business Explorer

You need BI Java, EP Core – Application Portal, and Enterprise Portal for SAP Business Explorer (BEx) tools and runtime, for example, BEx Web, Information Broadcasting, and Portal Integration.
 - BW Administration Cockpit

You need BI Java, EP Core – Application Portal, and Enterprise Portal if you want to use the BW Administration Cockpit. The BW Administration Cockpit is part of a business package that is installed in the SAP NetWeaver Portal.
 - Wizard-based Configuration of SAP NetWeaver BW (ABAP)

You need AS Java if you want to use the wizard-based configuration for basic configuration settings for SAP NetWeaver BW (ABAP).
 - UD Connect

You need AS Java if you want to use UD Connect.
 - With SAP NetWeaver BW, powered by SAP HANA database, SAP offers the SAP HANA database being the in-memory deployment option for the Data Warehousing use case: For BW in SAP NetWeaver 7.4 SPS 05, SAP HANA SPS 07 as of revision 70 can be used as database platform. For information on implementation considerations and implementation sequence, see the End-to-End Implementation Roadmap for SAP NetWeaver BW, powered by SAP HANA on service.sap.com/installnw74 ► [Planning](#) ►, and see SAP Note [1600929](#) as well as SAP Note [1949273](#).
 - The Modeling Tools for SAP BW, powered by SAP HANA (BW Modeling Tools) represent a new modeling IDE (Integrated Development Environment) build on top of the Eclipse platform. Its main objective is to support BW model developers in today's increasingly complex BI environments by offering state-of-the-art modeling tools. These tools include integration with SAP HANA modeling and the consumption of HANA elements in BW Open ODS Views or CompositeProviders with powerful UI (user interface) capabilities.

- For more information, see
 - SAP Community Network: ► scn.sap.com/community/data-warehousing ►
 - Help Portal: ► help.sap.com/nw74 ► *Application Help* ► *SAP NetWeaver Business Warehouse* ►
 - Help Portal: ► help.sap.com/nw74 ► *Application Help* ► *Function-Oriented View* ► *Business Warehouse* ►

i Note

SAP Strategic Enterprise Management

If you have the SEM-BW add-on installed in your source release, read the following information in the SAP Community Network: ► scn.sap.com/docs/DOC-30452 ►.

2.2.4 Mobilizing Business Processes

i Note

SAP NetWeaver Mobile is only available as add-on to SAP NetWeaver as of SAP enhancement package 1 for NetWeaver 7.3 and higher. For more information, see SAP Note [1645275](https://support.sap.com/en/notes/1645275).

The following figure shows the system landscape for Mobilizing Business Processes.

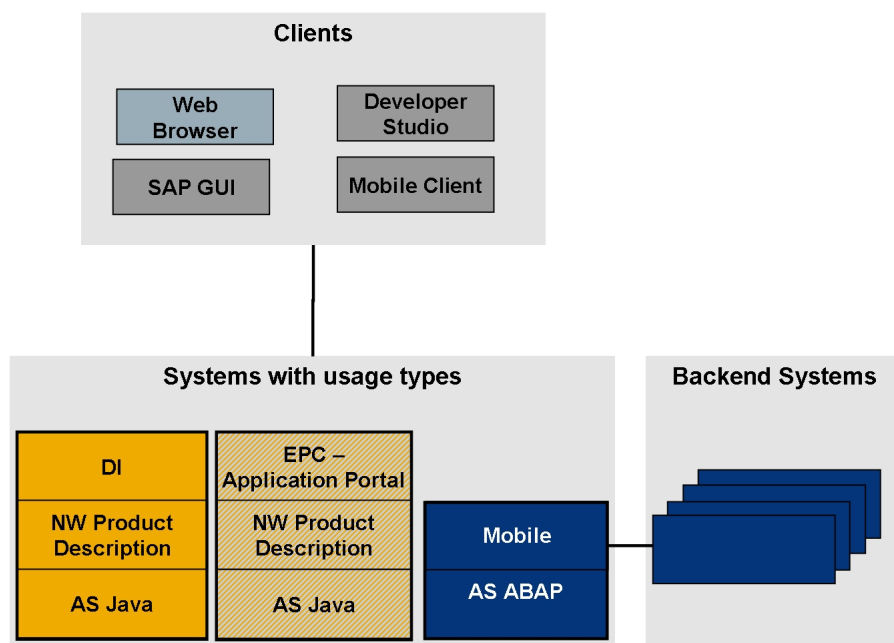


Figure 8: Enabling Mobile Applications for Occasional Connectivity/Developing Mobile Applications for Occasional Connectivity

- The SAP NetWeaver Developer Studio and an SAP NetWeaver system with usage type DI are only required for developing mobile applications.

Usage type DI is required if multiple developers work with Mobile Web Dynpro Offline. Instead of using SAP NetWeaver Development Infrastructure, you can also use a non-SAP development infrastructure. For more information, see the SAP Library at ► help.sap.com/nw74 ► *Application Help* ► *Function-Oriented View* ►

[Solution Life Cycle Management](#) > [Using the Development and Production Infrastructure](#) > [Development Infrastructure](#) > [Concepts](#) > [Development Using Optional Development Infrastructure](#) >

- Optionally you can use SAP NetWeaver Portal for accessing the Mobile functions.
- If you have installed SAP NetWeaver Portal (system with usage type EPC) in your landscape, you can use it for managing your SAP NetWeaver Mobile landscape, for example for the administration of clients and back-end systems and for synchronization. Alternatively, you can use the Data Orchestration Engine administrator only, which is part of usage type Mobile.
- You can integrate any SAP or non-SAP system as a back-end system.

More Information

For more information, see the Help Portal at

- help.sap.com/nw74 > [Application Help](#) > [SAP NetWeaver Mobile](#) >
- help.sap.com/nw74 > [Application Help](#) > [Function-Oriented View](#) > [Mobile](#) >

2.2.5 Integrating and Self-Servicing Content with SAP NetWeaver Portal

SAP NetWeaver Portal (usage types EPC and EP) provides the core capabilities required to deliver enterprise content to internal and external users in a uniform and consistent manner, on traditional desktops as well as on mobile devices. SAP NetWeaver Portal, with its role-based access and a modern web front-end, offers a single point of access to the organization's structured and unstructured content. Such content includes SAP and non-SAP information sources, enterprise applications, information repositories, databases and services, regardless of organizational or technical boundaries.

Usage type EPC is a prerequisite for using the portal add-on capabilities provided by usage type EP. EPC alone provides a leaner portal installation and implementation where full enterprise portal capabilities are not required.

The following figure shows the software units that are used for Integrating and Self-Servicing Content with SAP NetWeaver Portal.

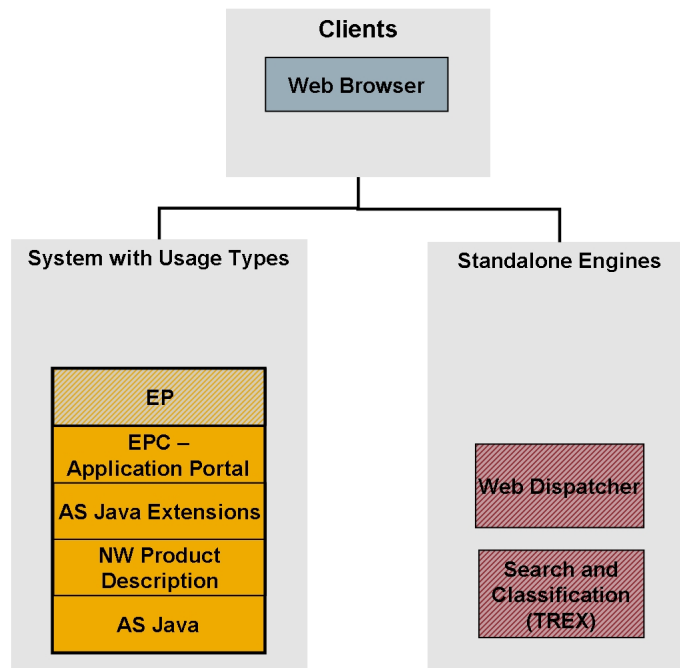


Figure 9: Integrating and Self-Servicing Content with SAP NetWeaver Portal

i Note

SAP NetWeaver Application Server Java 7.4 SP03 or higher based on SAP HANA

As of SAP NetWeaver 7.4 SP03, the SAP HANA database supports Application Server Java and further usage types that are dependent on AS Java.

For more information in terms of the implementation of SAP NetWeaver Application Server Java 7.4 based on SAP HANA database, see the *End-to-End Implementation Roadmap for SAP NetWeaver AS Java based on SAP HANA*. This guide is available on the Service Marketplace at ► service.sap.com/installnw74 ► *Planning* ►.

More Information

For more information about Integrating and Self-Servicing Content with SAP NetWeaver Portal, see the Help Portal at

- ► help.sap.com/nw74 ► *Application Help* ► *SAP NetWeaver Portal* ►
- ► help.sap.com/nw74 ► *Application Help* ► *Function-Oriented View* ► *Enterprise Portal* ►

2.2.6 SAP Knowledge Warehouse

SAP Knowledge Warehouse (SAP KW) is a solution within SAP NetWeaver that delivers the 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 Knowledge Warehouse streamlines training and business processes, helping to reduce costs. In addition, the ability to reuse, supplement, and continually update SAP content offers a 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.

The following figure shows the software units that are used for SAP Knowledge Warehouse.

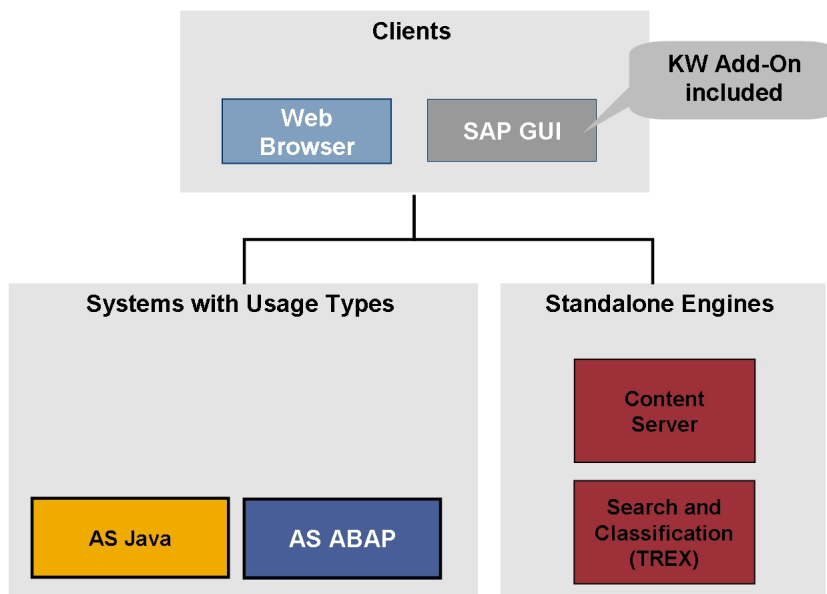


Figure 10: SAP Knowledge Warehouse

i Note

- As of SAP NetWeaver 7.0, SAP Knowledge Warehouse (SAP KW) is an integral part of SAP NetWeaver Application Server. For more information, see the SAP Note [1406422](#).

2.2.7 Custom Application Development (ABAP)

The Application Server ABAP provides the ABAP foundation of SAP NetWeaver. AS ABAP provides a complete development and runtime environment for ABAP-based applications. It is optimized for the development of highly scalable business applications.

SAP delivers a vast number of standard Business applications such as the SAP Business Suite and Industry solutions, on the ABAP platform, meeting the standard enterprise business requirements. However, there are always certain processes and scenarios in an enterprise, which are customer-specific. These specific processes and scenarios enable customers to differentiate their business and further leverage their competitive advantage. To meet these customer-specific needs the Application Server ABAP development and runtime environment offers extensive tools and services for the development of ABAP based applications. In addition to the comprehensive development tools support, the Application Server ABAP also offers capabilities for process & memory administration, multi-user management, database connections and more.

An end to end lifecycle management support equips customers with services & tools, for example for system landscape management, configuration, transport management, offering support at every stage of the application lifecycle, from prototype to go-live and thereafter.

Application Server ABAP 7.4 offers various new enhancements for the Custom Application Development (ABAP) use case. These new enhancements can be broadly categorized into two main areas:

- **Core ABAP enhancements**

for example for enhancements in the ABAP programming language, Eclipse-based ABAP development environment and tools.

- **SAP HANA based developments**

to take advantage of SAP HANA specific features from ABAP such as: *New ABAP Profiler* to detect code optimization potential for SAP HANA, *Enhanced ABAP List Viewer (ALV) for SAP HANA*.

The ABAP development and runtime environment makes it possible to develop complex business applications without having to worry explicitly about technical details such as process or memory administration, multi-user capability, database connections, or similar issues. These are provided in the basic services of the Application Server ABAP or are integrated directly in the ABAP runtime. The application development is similarly independent of the underlying platform. The application server decouples the application coding completely from the operating system and database that are used. Using ABAP, you can run custom development projects to create and enhance business functions in the backend, and you can develop applications using various SAP UI technologies such as SAP UI5 or Floor Plan Manager (FPM), and Web Dynpro ABAP applications to meet different scenario requirements.

The preferred SAP NetWeaver version for custom application development in ABAP is SAP NetWeaver 7.0 as part of the SAP Business Suite. SAP Business Suite is based on SAP NetWeaver 7.0 and the features of AS ABAP included in SAP Business Suite i2013 and SAP NetWeaver 7.4 have been aligned to a great extent.

With SAP enhancement package 1 for NetWeaver 7.3, the stack consolidation brought the advantage that the features with regard to AS ABAP included in the SAP Business Suite 7i2011 and SAP enhancement package 1 for NetWeaver 7.3 are the same because both are build on AS ABAP 7.31.

Although you can use SAP NetWeaver 7.0 for custom application development that is not based on SAP HANA, we recommend to use SAP NetWeaver 7.4. For SAP HANA-based custom application development, SAP NetWeaver 7.4 is the minimum release.

The ABAP programming language and the ABAP runtime environment for SAP NetWeaver release 7.40 are based on releases 7.0, EhP3 and 7.3, EhP1, respectively.

The Application Server ABAP 7.4 brings with it several innovations and enhancements. The main area of innovation focus has been on enabling the Application Server ABAP to harness the power of SAP HANA database for OLAP- and OLTP-based application scenarios. Application Server ABAP 7.4 further on, remains compatible with traditional relational databases.

The new core ABAP enhancements focus on providing a rich ABAP developer experience

As shown in the figure below, the system landscape provides additional components for the Custom Application Development scenario:

- SAP HANA database
- ABAP Development Tools for SAP NetWeaver

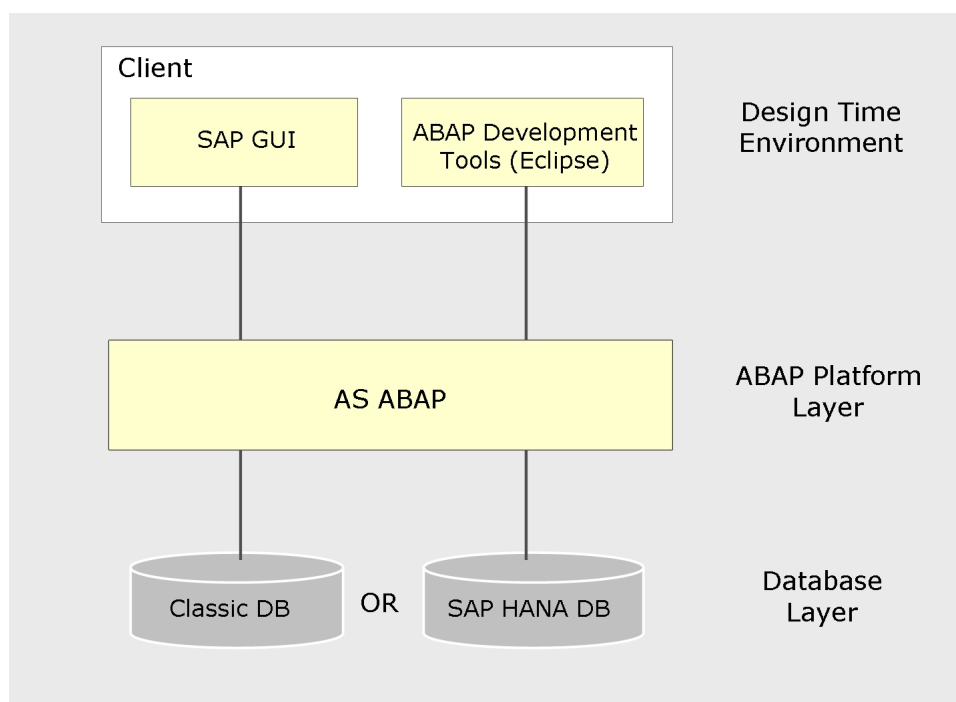


Figure 11: Software layers and components that are used in the Custom Application Development scenario

So that optimum benefit can be achieved from running productive Business Suite systems on SAP HANA DB, the AS ABAP provides support for the migration to SAP HANA DB. A combination of new ABAP code scans as well as monitoring and analysis tools enables the developer to find ABAP SQL code that has potential for performance improvement (ABAP for HANA performance optimization).

With ABAP Development Tools for SAP NetWeaver, a new development environment - as an addition to the ABAP Workbench (SAP GUI) - is at the disposal of the ABAP developer in the classic *Custom Application Development* scenario. It is based on the open platform Eclipse and targets a significant increase in development productivity in all phases of ABAP-based software projects. It combines the strengths of the close integration of development, test, and quality-assurance tools with the application server AS ABAP; this includes the stable and proven ABAP Lifecycle Management process - with the advantages of a comfortable and lightweight Eclipse UI and a standardized user interaction process.

ABAP Development Tools play a central role in the integration of the SAP HANA repository contents within the ABAP platform layer. So that native access to models from the SAP HANA repository is possible from within ABAP, appropriate proxies can be generated as development objects and handled in the same way as other ABAP repository objects.

More Information

For more information regarding Custom Application Development (ABAP), see the Help Portal at:

- ▶ help.sap.com/nw74 > *Application Help* > *Function-Oriented View* > *Application Server* > *Application Server ABAP* > *Application Development on AS ABAP* ▶
- ▶ scn.sap.com/community/netweaver-as ▶

In terms of the implementation of SAP NetWeaver Application Server ABAP 7.4 based on SAP HANA, see the *End-to-End Implementation Roadmap for SAP NetWeaver AS ABAP*. This guide is available on the Service Marketplace at ▶ service.sap.com/installnw74 > *Planning* ▶



3 Implementing SAP NetWeaver 7.4

The general sequence for the implementation of an SAP NetWeaver system is as follows:

1. You plan the implementation (such as scope, hardware and software requirements, release restrictions).
2. You plan the system landscape for the use cases.
3. You install the components of your SAP NetWeaver system.
4. You configure your systems.

In the following, you find information about the implementation steps for SAP 7.4.

- [Installation Procedure \[page 41\]](#)
- [Installation Tool \[page 47\]](#)
- [Configuration of Systems and Follow-Up Activities \[page 47\]](#)
- [System Copy and Migration \[page 48\]](#)

3.1 Installation Procedure

The installation procedure is divided into the following sections:

1. Preparation
2. Installation of required SAP NetWeaver systems
3. Installation of optional standalone units
4. Installation of standalone engines
5. Installation of clients

i Note

Support Release 1

If you install SAP NetWeaver 7.4 with Support Release 1, you install automatically the previously available support packages 1 to 5 at once, and your system goes immediately to 7.4 SP5 without needing to implement the intervening SPs separately.

Procedure

i Note

Documentation:

Unless stated otherwise, the documentation is available under service.sap.com/installnw74.

1. You prepare the installation procedure.







Table 11

Tasks	Documentation
<p>You identify the DVDs and archives required for the installation of the required software units.</p>	<p>You normally obtain the installation media as part of the installation package from SAP. However, you can also download installation media from the SAP Software Distribution Center on the SAP Service Marketplace at service.sap.com/swdc.</p> <div> <p>i Note</p> <p>Since the material numbers of the corresponding DVDs, CDs, and archives may change when new updates become necessary, we recommend that you visit the SAP Software Distribution Center to make sure that you always use the most recent version of the indicated data carriers.</p> <p>For more information, see the section <i>Preparing the Installation Media</i> in the Installation guide <i>Installing SAP Systems Based on SAP NetWeaver 7.1 and Higher - Using Software Provisioning Manager 1.0</i>.</p> </div>
<p>Data Warehousing use case only:</p> <p>Optional: You prepare an SAP system as a data source:</p> <ol style="list-style-type: none"> 1. The SAP system can be either an OLTP – SAP R/3 system (3.1I – 4.6C) or SAP R/3 Enterprise system (Extension Set 1.10 or higher) or any other SAP system with PI_BASIS Plug-In. 2. If you want to use SAP R/3 or SAP R/3 Enterprise as a data source, make sure that SAP R/3 Plug-In 2004.1 is installed on the OLTP system: See SAP Note 704564 (R/3 plug-in:PI 2004.1 installation/delta upgrade) and SAP Service Marketplace at service.sap.com/r3-plug-in <div> <p>i Note</p> <p>New and extended interfaces for integrating SAP R/3, SAP R/3 Enterprise, and SAP ERP Central Component (SAP ECC) are no longer delivered with their own add-on (SAP R/3 Plug-In). As of SAP ECC 6.0, they are directly included in SAP ECC. Therefore, this step is not required for SAP ECC 6.0 or higher.</p> </div> <ol style="list-style-type: none"> 3. If you want to install SAP NetWeaver BW on the SAP HANA database, ensure that your certified hardware partner has pre-installed the SAP HANA SPS 07 revision 70 (or higher) software on a separate server than the BW system. For more information, see service.sap.com/hana. 	

2. You install the required SAP NetWeaver systems.

Table 12

Tasks	Documentation
<p>You install SAP NetWeaver systems with the required usage types.</p> <div> <p>i Note</p> <p>There is no installation option for usage types BW ABAP and Mobile in the installation tool <code>software provisioning manager 1.0</code>.</p> </div> <ul style="list-style-type: none"> To set up a BW system, install a system with usage type AS ABAP and afterwards install SAP NetWeaver 7.4 BI Content Add-On 7.47 SP 05 (or higher) or SAP NetWeaver 7.4 BI Content Extensions Add-On 7.47 SP 05 (or higher) on top of this system. Alternatively, there is SAP Netweaver 7.4 BI Content 7.57 or SAP Netweaver 7.4 BI Content Extensions Add-On 7.57 available for SAP NetWeaver 7.4 SPS 05 and higher. This version of BI Content Add-On will be used for providing additional data flows that make use of the new BW features delivered only from SAP NetWeaver 7.4 SPS 05 and higher. If you use the already existing BI Content Add-on 7.47 then the limitation is that you would not receive the data flows based on Netweaver 7.4 SPS05 (and higher) features; it also means that the already existing BI Content Add-on 7.47 would not support the new BW features valid only for SAP Netweaver 7.4 SPS 05 and higher. Considering the above limitation we recommend that you upgrade to BI Content Add-on 7.57. Note for SAP NetWeaver BW on SAP HANA database: The SAP HANA database SPS 07 revision 70 (or higher) has to be pre-installed by certified hardware partners before the installation of SAP NetWeaver. The installation accesses the SAP HANA database remotely to perform the necessary database-specific installation steps. Note that only a standard installation and a distributed installation with a separate database server is supported. Other applications must not be installed on the database server apart from the pre-installed SAP HANA database and additional applications that it requires. This is because other applications may have a negative affect on performance. This also includes parts of the distributed central instance (for example, an application server must not be installed on the DB server). For more information, see SAP Note 1600929 	<ul style="list-style-type: none"> Installation Guide <i>Installing SAP Systems Based on SAP NetWeaver 7.1 and Higher - Using Software Provisioning Manager 1.0</i> There are specific installation guides for all supported combinations of technologies (ABAP, Java, or ABAP and Java), databases, and operating systems. See the following notes in addition: <ul style="list-style-type: none"> SAP NetWeaver BW: <ul style="list-style-type: none"> SAP Note 153967: (BI Content Release Strategy) SAP Note 1000822: (Overview: SAP Notes for the add-ons BI_CONT and BI_CONT_XT) SAP Note 1678780: (Installation or upgrade BI_CONT/BI_CONT_XT 707/737/747) SAP NetWeaver BW: SAP Note 1943931 (Installation/Upgrade für das ABAP-Add-On BI_CONT 757 / BI_CONT_XT 757). SAP NetWeaver BW: SAP Note 1808103 (BI Cont 737/747 SP04 and higher: Information on Add-On SPs) SAP NetWeaver BW: SAP Note 1853775 (Errors when using BI Content 7.47 SP04 on SAP BW 7.40 SP02) SAP NetWeaver Mobile: <ul style="list-style-type: none"> SAP Note 1645275 (Installation of SAP EHP1 for SAP NetWeaver Mobile) <p>If you want to use</p> <ul style="list-style-type: none"> SAP NetWeaver AS ABAP SAP NetWeaver AS Java SAP NetWeaver Business Warehouse <p>based on the SAP HANA database, see also the appropriate <i>End-To-End Implementation Roadmap</i> which is also available on the Service Marketplace at ► service.sap.com/installnw74 ► Planning ►.</p>

Tasks	Documentation
<p>In addition to the SAP NetWeaver Support Package Stack, we recommend to apply the SAP Notes mentioned in SAP Note 1949273 for the respective Support Package Stack.</p> <ul style="list-style-type: none"> To set up a Mobile system, install a system with usage type AS ABAP and configure it for Mobile. 	
<p>SAP Kernel Update</p> <p>Make sure that you apply the latest kernel as described in the Installation Guide.</p>	<ul style="list-style-type: none"> Installation Guide <i>Installing SAP Systems Based on SAP NetWeaver 7.1 and Higher - Using Software Provisioning Manager 1.0</i> <p>There are specific installation guides for all supported combinations of technologies (ABAP, Java, or ABAP and Java), databases, and operating systems.</p>
<p>Support Package Stack Update</p> <p>We recommend that you always apply the latest Support Package Stack.</p>	<p>You can apply Support Package Stacks on top of SAP NetWeaver 7.4 and higher by using the Software Update Manager tool. See the <i>Update Guide – Update of SAP Systems Using Software Update Manager 1.0 <SPxx></i>.</p> <p>The guide and more information are available at service.sap.com//maintenancenw74 .</p> <div> <p>i Note</p> <p>If you install SAP NetWeaver 7.4 with Support Release 1, you install automatically the previously available support packages 1 to 5 at once, and your system goes immediately to 7.4 SP5 without needing to implement the intervening SPs separately</p> </div>
<p>Process Integration:</p> <p>After an installation of SAP NetWeaver Process Integration, you carry out the <i>configuration wizard-assisted basic configuration</i> in order to configure at least the connection to the System Landscape Directory (SLD) before you perform the support package installation step.</p> <p>Further Configuration Wizard-assisted basic configuration steps can be performed after the Solution Manager Configuration and the Support Package Installation.</p>	<p>Configuration documentation on SAP Help Portal at:</p> <p>help.sap.com/nw74  <i>Application Help</i>  <i>Function-Oriented View</i>  <i>Process Integration</i>  <i>Configuring Process Integration After Installation</i> </p>
<p>You install the SAP Library in your system.</p>	<p>Installation Guide <i>Installing SAP Library for SAP NetWeaver Based Systems - Using Software Provisioning Manager 1.0</i></p>

3. You install optional standalone units.

Table 13

Tasks	Documentation
<p>You can find the following software units in the installation tool software provisioning manager 1.0 under <i>Optional Standalone Units</i>:</p>	<p>Installation Guide <i>Installing SAP Systems Based on SAP NetWeaver 7.1 and Higher - Using Software Provisioning Manager 1.0</i></p>

Tasks	Documentation
<ul style="list-style-type: none"> Advanced Adapter Engine (PI-AF) Advanced Adapter Engine Extended (PI-AEX) Process Orchestration (PI-CP) 	<p>There are specific installation guides for all supported combinations of technologies (ABAP, Java, or ABAP and Java), databases, and operating systems.</p> <p>There are specific installation guides for all supported combinations of technologies (ABAP, Java, or ABAP and Java), databases and operating systems available at: ▶ service.sap.com/installnw74 ▶ <i>Installation — SAP NetWeaver Systems</i> ▶ <i>Installing Systems Based on NW 7.1 or Higher-SW Prov.Mgr.1.0</i> ▶</p> <p>You can find additional configuration information on SAP Help Portal at: ▶ help.sap.com/nw74 ▶ <i>Application Help</i> ▶ <i>Function-Oriented View</i> ▶ <i>Process Integration</i> ▶ <i>Configuring Process Integration After Installation</i> ▶. Choose:</p> <ul style="list-style-type: none"> ▶ <i>Configuring Process Integration (PI) Dual-Stack</i> ▶ <i>Basic Configuration for SAP NetWeaver Process Integration (PI)</i> ▶ <i>Configuring the Non-Central Advanced Adapter Engine (PI-AF)</i> ▶ ▶ <i>Configuring Advanced Adapter Engine Extended (PI-AEX)</i> ▶ <i>Basic Configuration for SAP NetWeaver PI Advanced Adapter Engine Extended</i> ▶ <i>Configuring the Non-Central Advanced Adapter Engine (PI-AF) for AEX</i> ▶ ▶ <i>Configuring Process Orchestration (PI-CP)</i> ▶
<p>RTC Application Sharing Server</p> <p>If you plan to install usage type EP for real-time collaboration capabilities (instant messaging and application sharing), refer to SAP Note 1038125. For production use of RTC application sharing, we recommend installing an additional usage type EP on a dedicated server as a standalone unit.</p>	

4. You install the standalone engines.

Table 14

Tasks	Documentation
Web Dispatcher	<i>Installing Web Dispatcher for SAP Systems Based on SAP NetWeaver 7.1 and higher using Software Provisioning Manager 1.0</i>
Standalone Gateway	<i>Installing Gateway for SAP Systems Based on SAP NetWeaver 7.1 and higher using Software Provisioning Manager 1.0</i>
liveCache	<i>Installing SAP liveCache Using Software Provisioning Manager 1.0: <Operating System></i>
Search and Classification (TREX)	<p>SAP NetWeaver Search and Classification (TREX):</p> <ul style="list-style-type: none"> <i>Installation Guide – SAP NetWeaver Standalone Engine Search and Classification (TREX) 7.1 Single Host</i>

Tasks	Documentation
	<ul style="list-style-type: none"> Installation Guide – SAP NetWeaver Standalone Engine Search and Classification (TREX) 7.1 Multiple Hosts
Content Server	Installation Guide – SAP Content Server 6.40 available at: ▶ service.sap.com/installnw70 ▶ Installation – Standalone Engines ▶
Adapter Engine Java SE	SAP Help Portal at ▶ help.sap.com/nw74 ▶ Application Help ▶ Function-Oriented View ▶ Process Integration ▶ Adapter-Engine (Java SE) ▶ Installation ▶

5. You install the clients.

Table 15

Tasks	Documentation
SAP GUI for Windows	SAP Front End Installation Guide
Business Explorer	
During the installation of SAP GUI, you can choose to install the BI Add-On for the SAP Business Explorer. Note that SAP GUI for HTML and SAP GUI for Java do not have all the capabilities of SAP GUI for Windows. BEx Query Designer, BEx Analyzer and UIs with network controls are not supported with SAP GUI for HTML and SAP GUI for Java.	
Adobe LiveCycle Designer	
BW Modeling Tools	Installation guide BW Modeling Tools
SAP NetWeaver Business Client	SAP Help Portal at ▶ help.sap.com/nw74 ▶ System Administration and Maintenance Information ▶ Technical Operations for SAP NetWeaver ▶ Technical Operations for SAP NetWeaver Business Client ▶
Mobile Client	SAP Help Portal at ▶ help.sap.com/nw74 ▶ Application Help ▶ Function-Oriented View ▶ Mobile ▶ Configuring SAP NetWeaver Mobile ▶ Installing Mobile-Specific Software Units ▶
SAP Enterprise Services Explorer Tool for Microsoft .NET	For a detailed description of functions and features, see ▶ scn.sap.com/docs/DOC-17627 ▶.
SAP BusinessObjects clients (Crystal Reports, Dashboards, Analysis, Web Intelligence)	See the installation guides at: ▶ service.sap.com/bosap-instguides ▶ SAP Business Intelligence ▶

3.2 Installation Tool

For the new installation of an SAP system including an enhancement package you use the standard installation tool `software provisioning manager 1.0`. The software provisioning manager performs software provisioning processes such as installation, uninstallation, system copy, or system transformation.

Software provisioning manager is the successor of the product- and release-specific delivery of provisioning tools, such as `SAPinst`. Before you perform an installation or system copy, we recommend that you always download the latest version of the software provisioning manager, which is part of the Software Logistics Toolset (SL Toolset for short). This way, you automatically get the latest `SAPinst` version including latest fixes in the tool and supported processes.

For more information about software provisioning manager as well as products and releases supported by it, see SAP Note [1680045](#).

See also the information in the SAP Community Network at [▶ `scn.sap.com/docs/DOC-30430` ▶](#) and on the SAP Service Marketplace at [▶ `service.sap.com/sltoolset` ▶ *Software Logistics Toolset 1.0* ▶ *System Provisioning* ▶](#).

3.3 Configuration of Systems and Follow-Up Activities

Before you can start working with your SAP NetWeaver installation, you have to adapt it to your needs.

Configuration

The SAP Solution Manager contains descriptions of all configuration tasks, and leads you to automated configuration procedures, where available.

1. To be able to use SAP Solution Manager for configuring your systems, you have to import the latest available Support Package for the SAP Solution Manager Implementation Content (add-on ST-ICO). For more information, see SAP Note [631042](#) (*Release strategy for Implementation Content (ST-ICO)*).

SAP Solution Manager Implementation Content is available on SAP Service Marketplace at [▶ `service.sap.com/swdc` ▶ *Installations & Upgrades* ▶ *Browse Our Download Catalog* ▶ *SAP Technology Components* ▶ *SAP Solution Manager* ▶ *<Release>* ▶ *Content* ▶ *ST-ICO* ▶](#).

2. To access the configuration tasks, you create a project and a project structure in SAP Solution Manager. In the configuration phase, you select configuration structures with pre-delivered SAP content for your project. You can either access the configuration task in the configuration structure or create a printable configuration guide.

For more information, see:

- SAP Library at [▶ `http://help.sap.com` ▶ *Application Lifecycle Management* ▶ *SAP Solution Manager* ▶ *<release>* ▶ *Application Help* ▶ *SAP Library* ▶ *Solution Implementation* ▶ *Implementation/Upgrade Work Center* ▶ *Configuration* ▶](#)
- [▶ `service.sap.com/alm` ▶ *Solution Documentation and Implementation* ▶](#)
- [▶ `service.sap.com/solutionmanager` ▶ *Media Library* ▶ *How-To Documents* ▶ *How to Create a Configuration Guide using SAP Solution Manager* ▶](#)
- SAP Library at [▶ `http://help.sap.com` ▶ *Application Lifecycle Management* ▶ *SAP Solution Manager* ▶ *<release>* ▶ *Application Help* ▶ *SAP Library* ▶ *Solution Implementation* ▶ *Implementation/Upgrade Work Center* ▶ *Configuration* ▶ *Create Configuration Guide* ▶](#)

Some configuration activities are automated, that is they are performed using automation tools such as the configuration wizard. The automation tools support you in performing technical configuration tasks in an

automated way and thus accelerate and simplify the setup of your systems after installing. For more information, see the [Automation Tools](#) node in the configuration structure. In case of ABAP systems, you can use executable configuration files (IMG activities).

i Note

Accessing Use Case information in SAP Solution Manager

You can use the business process repository browser (BPR browser) in SAP Solution Manager at [▶ implementationcontent.sap.com/bpr ▶](#) to instantly access information about the SAP NetWeaver 7.4 use cases you want to implement::

- Choose [▶ Business Process Repository ▶ Solutions/Applications ▶ SAP NetWeaver ▶](#) to centrally access all SAP NetWeaver 7.4 use cases.
- Choose [▶ Business Process Repository ▶ Solutions/Applications ▶ SAP Technology ▶ -> End-To-End Use Cases ▶](#) to access end-to-end implementation information about Application Life-Cycle Management and Enterprise Data Warehousing.

Process Integration

Instead of creating your configuration guides with the SAP Solution Manager, you can also find the configuration information in the SAP Help Portal. Access the SAP NetWeaver 7.4 Library at: [▶ help.sap.com/nw74 ▶ Application Help ▶ Function-Oriented View ▶ Process Integration ▶ Configuring Process Integration After Installation ▶](#).

1. For configuring the Process Integration (PI) Dual Stack, choose [▶ Configuring Process Integration \(PI\) Dual Stack ▶ Basic Configuration for SAP NetWeaver Process Integration \(PI\) ▶](#).
 - For configuring the Non-Central Advanced Adapter Engine (PI-AF) for PI Dual-Stack, choose [▶ Configuring the Non-Central Advanced Adapter Engine \(PI-AF\) ▶](#).
2. For configuring the Advanced Adapter Engine Extended (PI-AEX), choose [▶ Configuring Advanced Adapter Engine Extended \(PI-AEX\) ▶ Basic Configuration for SAP NetWeaver PI Advanced Adapter Engine Extended ▶](#).
 - For configuring the Advanced Adapter Engine Extended (PI-AF) for AEX, choose [▶ Configuring the Non-Central Advanced Adapter Engine \(PI-AF\) for AEX ▶](#).
3. For configuring the Process Orchestration (PI-CP), choose [▶ Configuring Process Orchestration \(PI-CP\) ▶](#).

3.4 System Copy and Migration

At several stages in the lifecycle of your SAP solution, you will face the requirement to perform a system copy or a migration. For example, SAP recommends that you perform a system copy to create test, demo and training systems. Also, if you need to change your operating system and/or database, you have to perform a migration of your SAP system.

For this, SAP is offering system copy and migration services that enable you to create consistent copies of your SAP systems, flexibly adapted to your needs - be it an SAP system distributed to several hosts, a high-availability system or a system on a rather exotic operating system/database combination.

More Information

- For an introduction into system copy and migration, see scn.sap.com/docs/DOC-8324 in the SAP Community Network.
- System copy guides are available on SAP Service Marketplace at ► service.sap.com/installnw74 ►.
- Alternatively, you can copy your system with a completely automated end-to-end framework available with the *SAP NetWeaver Landscape Virtualization Management 2.0, enterprise edition*. For more information, see the SAP Help Portal at ► help.sap.com/nwlvms ►.

A Appendix

A.1 Additional Information for Implementing SAP NetWeaver

The following table contains links to information available on SAP Service Marketplace or in the SAP Library which is relevant for implementing SAP NetWeaver:

Table 16

Content	Location on SAP Service Marketplace or in SAP Library
The latest version of the installation and upgrade guides for SAP NetWeaver 7.4	► service.sap.com/instguidesnw74 ►
System Copy Guides	► service.sap.com/installnw74 ►
Information about security	SAP Security Guide: See the SAP Library at ► help.sap.com/nw74 ► <i>Security Information</i> ► <i>Security Guide</i> ►.
Information about the technical operation of SAP NetWeaver	<i>Technical Operations Manual</i> : See the SAP Library at ► help.sap.com/nw74 ► <i>System Administration and Maintenance Information</i> ► <i>Technical Operations for SAP NetWeaver</i> ►.
Information about SAP NetWeaver Support Package Stacks	► service.sap.com/sp-stacks ► <i>SP Stack Information</i> ►
Information about SAP NetWeaver Capabilities	<ul style="list-style-type: none">► scn.sap.com/community/netweaver ►► scn.sap.com/docs/DOC-8287 ►► help.sap.com/nw74 ► <i>Application Help</i> ►
SAP Solution Manager Guides	All SAP Solution Manager related guides, such as <ul style="list-style-type: none">• Master Guide• Configuration Guide• Security Guide Master Guide• Upgrade Guide• Solutions Operations Guide are available at: ► service.sap.com/instguides ► <i>Installation & Upgrade Guides</i> ► <i>SAP Components</i> ► <i>SAP Solution Manager</i> ► <i><Release></i> ►
Information about Maintenance Planning	<i>Maintenance Planning Guide</i> : See SAP Service Marketplace at ► service.sap.com/mopz ► <i>section "How To's and Guides"</i> ►

A.2 Description of Software Units

The following sections provide more details about usage types, standalone engines, optional standalone units and clients of SAP NetWeaver.



Caution

Note that it is not possible to uninstall additional usage types and that this is also not supported by SAP.



Note

The Composite Voice (CE-VOICE) usage type is removed with SAP NetWeaver 7.4. For more information, see help.sap.com/nw74 > *Application Help* > *Function-Oriented View* > *Composition Environment* > *Compatibility and Removed Usage Types*.

A.2.1 Systems with Usage Types

Installation Options for SAP NetWeaver Systems With Usage Types

The standard SAP installation tool `software provisioning manager 1.0` offers the following options for installing SAP NetWeaver systems with usage types:

- **Application Server ABAP**
This installation option installs an Application Server ABAP which is the basis for usage type BW ABAP and Mobile.
- **Process Integration**
This installation option installs an ABAP+Java dual stack systems with usage type Process Integration and all dependent usage types.
- **Application Server Java**
This installation option leads you to a selection screen where you can select those usage types that you want to install in addition to Application Server Java and NW Product Description which are preselected.
The following figure gives an overview of all available Java usage types and their dependencies:

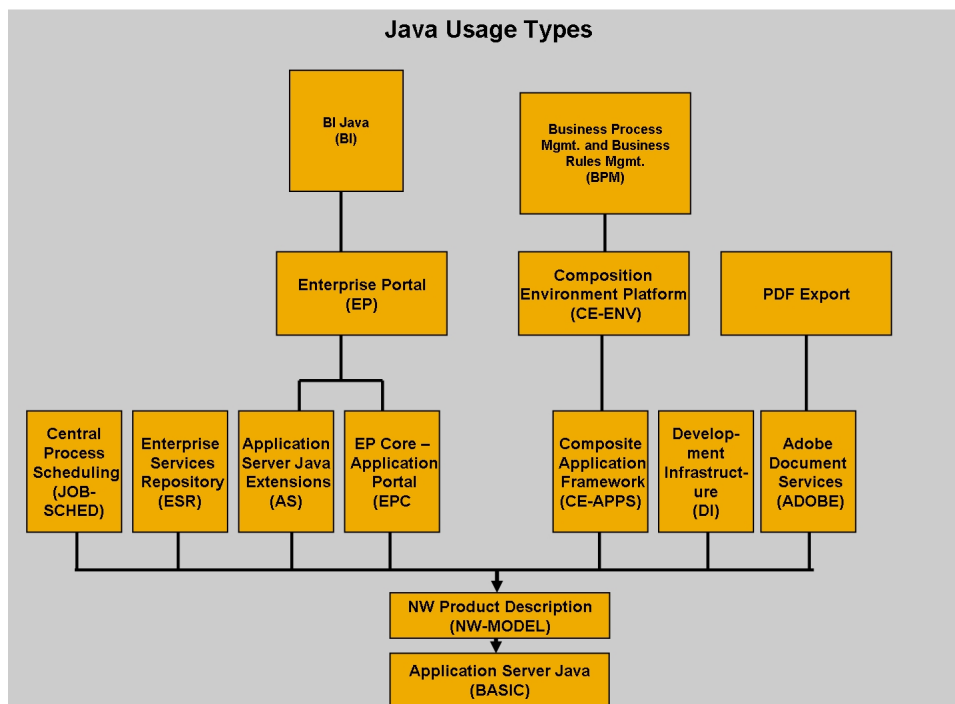


Figure 12: Java Usage Types

For more information and installation instructions, see the SUM guide for Java: *Update Guide – Updating SAP Systems Using Software Update Manager*, for: *Java*, section *Installing Additional Usage Types (Technical Usages) in an Existing SAP System*.

Apart from the usage types described here, there are some discontinued usage types that you can still install for compatibility reasons. For more information, see [Compatibility Usage Types \[page 69\]](#).

Adobe Document Services (ADS)

Adobe Document Services is a set of runtime services that provide a range of form and document creation and manipulation functions such as:

- Converting XML form templates (created using Adobe LiveCycle Designer) to PDF and various print formats
- Setting Adobe Reader rights to enable users to fill in and annotate forms, save and print them locally, and include digital signatures for authentication using the free Adobe Reader software
- Extracting data from SAP applications into Interactive Forms and transferring form data back into SAP applications using XML

Dependencies

Adobe document services depends on Application Server Java.

Functional Units

Adobe Document Services comprises the identically named functional unit.

Application Server ABAP (AS ABAP)

AS ABAP serves as a development platform for the ABAP environment. SAP Business Suite is based on SAP NetWeaver 7.0 and the features of AS ABAP included in SAP Business Suite 7i2010 and SAP NetWeaver 7.3 have been aligned to a great extent. Although AS ABAP is fully supported as a development platform in SAP NetWeaver 7.3, we recommend using the enhancement packages for SAP NetWeaver 7.0 for ABAP development. For

information about the enhancement package availability, see SAP Service Marketplace at service.sap.com/releasestrategy.

Application Server Java (BASIC)

AS Java is used to provide the Java foundation of SAP NetWeaver using the Java Engine, a Java EE-compliant application server for running enterprise applications. In addition to the pure Java EE standard technologies, the Java Engine implements complementary technologies such as Web Dynpro or Web Services.

Dependencies

AS Java can be combined optionally with other Java-based usage types in one system.

Functional Units

Application Server Java comprises the following functional units:

Table 17

Functional Unit	Description
CM Services (Change Management Services)	CM Services help you to manage your Java development. They provide services for creating development configurations, for importing and exporting, and for the deployment to runtime systems. CM Services enable you to set up team development with centrally managed development configurations. It also supports the automated deployment of build results on to central runtime system. The import and export service enables you to import and export Software Component Archives (SCAs) of a development configuration. When a transport system is needed, a development configuration can be integrated into the Change and Transport System (CTS+). To use CM Services, usage type DI is required.
Java Data Archiving	Java Data Archiving provides APIs to allow Java applications to connect to the XML Data Archiving Service for data archiving solutions. Java archiving is required for Java applications with a large volume of retention-relevant data.
Java Foundation	This is the Java foundation of SAP NetWeaver. Among its capabilities is the JEE Engine, a J2EE-compliant application server for running enterprise applications. In addition to the pure JEE standard technologies, the JEE Engine implements complementary technologies, such as Web Dynpro or Web Services, that are targeted at supporting large-scale, real-business application development projects.
Services Registry	The Services Registry is a registry for Web services. Located centrally within an SOA landscape, it contains entries for all services and service definitions in that landscape. The registered services are classified using semantic-rich classification systems to enable the browsing of services by classification.
System Landscape Directory	The System Landscape Directory (SLD) of SAP NetWeaver serves as a central information repository for your system

Functional Unit	Description
	landscape. A system landscape consists of hardware and software components that depend on each other with regard to installation, software updates, and demands on interfaces. The information in the SLD is used by various SAP tools.
XML Data Archiving Service	The XML Data Archiving Service (XML DAS) enables data to be stored using the WebDAV Storage Interface for the ILM Solution from SAP as certified in the interface BC-ILM. It allows both XML-sensitive storage used for JAVA Archiving or XML Archiving (see corresponding Functional units) and ILM aware archiving used in SAP NetWeaver ILM.

Application Server Java Extensions (AS)

AS Java Extensions enable you to create development components in SAP-specific technologies on top of JEE, for example, for service composition. In addition, you can enrich standard JEE technologies (such as Enterprise JavaBeans, Web services, and enterprise applications) with additional SAP-specific capabilities, such as service group configuration.

Dependencies

AS Java Extensions require AS Java and NW Product Description as a prerequisite in the same system.

Functional Units

AS Java Extensions do not comprise a functional unit.

BI Java (BI)

BI Java provides the Java runtime for several BW capabilities.


Dependencies

BI Java requires AS Java, NW Product Description, Java Extensions, EP Core – Application Portal, and Enterprise Portal in the same system. Usually, scenarios running on usage type BI Java also require usage type BW ABAP. While installing BI Java, the required usage types are installed automatically. After configuring BI Java, you do not need to perform further steps in AS Java, Java Extensions, EP Core – Application Portal, and Enterprise Portal.

Functional Units

BI Java comprises the identically named functional unit.

Note

Note that ABAP+Java dual stack systems are not supported with SAP HANA database. For more information see the *End-to-End Implementation Roadmap for SAP NetWeaver BW, powered by SAP HANA* on service.sap.com/instguidesnw74 > *Planning* .

Business Process Management and Business Rules Management

Business Process Management supports the process collaboration and creation of new innovative business processes based on standardized core processes. SAP NetWeaver Business Process Management enables collaborative composition of executable business processes based on a process model. Clearly defined business rules can be incorporated into processes from the outset. The tight integration with Business Rules Management enables business users with no coding skills to create and modify rules using decision tables.

With Business Rules Management you can author, execute, and manage business rules. The following key features are offered by Business Rules Management:

- Inference-based rule engine implementing RETE algorithm
- Support of different rules formats (declarative rules, decision table and flow rules)
- Rules Manager: a Web Dynpro Java based rules maintenance tool for business users
- Versioning and tracking changes of business rules
- Out-of-the-box Web service generation for rule sets
- Rules testing in the rules composer (NWDS)
- Public API for rules execution
- Tighter integration with Business Process Management

Dependencies

Business Process Management and Business Rule Management requires AS Java, NW Product Description, Composition Environment Platform and Composite Application Framework in the same system.

Functional Units

Business Process Management and Business Rule Management comprise the following functional units:

Table 18

Functional Unit	Description
Process Server	Contains the function for Business Process Management
Rules Server	Contains the functions for Business Rules Management

Business Warehouse ABAP (BW ABAP)

Business Warehouse provides the infrastructure for the following functions:

- Data warehousing
- Various analytical technologies and functions
- Business planning functions
- Web-based and Excel-based reporting, analysis, and planning
- Information broadcasting to distribute BEx applications via various channels either as precalculated documents with past data, or as links with live data
- Open analysis interfaces that make available various interfaces for connecting front-end tools of third-party providers

Dependencies

BW requires AS ABAP as a prerequisite in the same system.

i Note

For usage type BW, there is no installation option in the `software provisioning manager 1.0`. Instead, you have to install AS ABAP with `software provisioning manager 1.0` and then SAP NetWeaver 7.4 BI Content Add-On 7.47 SP05 (or higher) or SAP NetWeaver 7.4 BI Content Extensions Add-On 7.47 SP05 or higher.

Alternatively, there is SAP Netweaver 7.4 BI Content 7.57 or SAP Netweaver 7.4 BI Content Extensions Add-On 7.57 available for SAP NetWeaver 7.4 SPS 05 and higher. This version of BI Content Add-On will be used for providing additional data flows that make use of the new BW features delivered **only** from SAP NetWeaver 7.4 SPS 05 and higher. If you use the already existing BI Content Add-on 7.47 then the limitation is that you would **not** receive the data flows based on Netweaver 7.4 SPS05 (and higher) features; it also means that the already

existing BI Content Add-on 7.47 would not support the new BW features valid only for SAP Netweaver 7.4 SPS 05 and higher. Considering the above limitation we recommend that you upgrade to BI Content Add-on 7.57.

i Note

Note for SAP NetWeaver BW on SAP HANA database:

The SAP HANA database SPS 07 revision 70 (or higher) has to be pre-installed by certified hardware partners before the installation of SAP NetWeaver. The installation accesses the SAP HANA database remotely to perform the necessary database-specific installation steps.

Note that only a standard installation and a distributed installation with a separate database server is supported. Other applications must not be installed on the database server apart from the pre-installed SAP HANA database and additional applications that it requires. This is because other applications may have a negative affect on performance. This also includes parts of the distributed central instance (for example, an application server must not be installed on the DB server).

For more information, see SAP Note [1600929](#).

Central Process Scheduling by Redwood (JOB-SCHED)

SAP Central Process Scheduling adds powerful cross-component scheduling functionality to the integration capabilities of SAP NetWeaver. SAP Central Process Scheduling has the following key characteristics:

- **Centrality**
There is only one central instance of this scheduler which takes control over all background processes in the entire landscape and allows for cross system scheduling.
- **Event-Driven Scheduling**
Dependencies between background processes can be defined not only time based but also event based.
- **Real-Time Execution**
All information about jobs is stored centrally and transferred to the remote systems immediately before job submission.

For more information, see SAP Developer Network at scn.sap.com/community/cps-by-redwood.

Dependencies

SAP Central Process Scheduling requires Application Server Java and NW Product Description in the same system.

Functional Units

SAP Central Process Scheduling comprises the functional unit Integrated Central Process Scheduling by Redwood.

Composite Application Framework (CE-APPS)

The Composite Application Framework is an abstraction layer that is used to develop all the components required for the service and object layer of a composite application. These components are:

- Business Objects (Entity Services)
- Business Logic (Application Services)
- Connectivity to external services (Web Services and BAPI/RFC, local and remote persistency)
- Service Provisioning

The Composite Application Framework also provides a comprehensive toolbox that includes the following features:

- A programming model
- Metadata
- Authorization concepts
- Modeling of relationships between business objects
- Integration into lifecycle management using SAP NetWeaver Development Infrastructure

This environment, which is based on a service-oriented architecture (SOA), enables developers to build applications that leverage the whole SAP NetWeaver technology platform without the need to use low-level APIs. This way, developers can focus on implementing the business logic of a composite application. The Service Composer, a graphical modeling tool, provides service simplification and composition. This greatly eliminates the need to write code for simplification and data mapping.

Dependencies

Composite Application Framework requires Application Server Java and NW Product Description in the same system.

Functional Units

Composite Application Framework comprises the functional unit Composite Application Framework Runtime providing the above-mentioned features.

Composition Environment Platform (CE-ENV)

The Composition Environment Platform provides a toolset and runtime for efficiently developing, running, and managing composite applications based on SOA principles. It builds upon proven technologies that have been enhanced and integrated to provide greater functionality and flexibility. The Composition Environment Platform offers you the following capabilities:

- User interface (UI) development: SAP NetWeaver Web Dynpro and SAP NetWeaver Visual Composer
Web Dynpro and Visual Composer are SAP's standard UI technologies based on the Model View Controller (MVC) for developing user interfaces. Web Dynpro Java or Visual Composer applications are developed within the SAP NetWeaver Developer Studio using a model-driven approach that minimizes manual UI coding and uses visual tools to design and reuse components.
- Business Logic
The Composite Application Framework enables Java business object modeling.
- Service Simplification and Composition
A graphical modeling capability simplifies and adapts Complex Services for easy consumption in Composition Environment. This greatly eliminates the need to write code for simplification and data mapping.

Dependencies

Composition Environment Platform requires Application Server Java, NW Product Description, and Composite Application Framework in the same system.

Functional Units

Composition Environment Platform comprises the following functional units:

Table 19

Functional Unit	Description
Composition Environment Platform	Composition Environment Platform is the foundation for building and running composite applications.

Functional Unit	Description
ECM integration core	Enterprise Content Management (ECM) Integration Core facilitates the provision and consumption of Enterprise Content Management services using standardized interfaces. Therefore, it enables business applications to consume core ECM services provided by SAP as well as extended ECM services provided by partners and third-party vendors leveraging their ECM product offering. Besides the core runtime components, this functional unit contains the service provider interface (SPI) for exposing ECM services as well as the application programming interface (API) for making use of these services.
ECM Integration Services	ECM Integration Services offer additional services on top of ECM Integration Core functional. These supplementary services such as the server for World Wide Web Distributed Authoring and Versioning (WebDAV) can be leveraged by applications on top of the already exposed ECM services of the connected service providers.
Visual Composer	Visual Composer is a model-driven development tool used to create UI screens and Portal content using a drag-and-drop graphical environment, without the need to write code. Using Visual Composer you can create standalone applications such as form views and dashboards or UI screens, such as Web Dynpro screens. Visual Composer also provides Portal Content Modeling capabilities for generating roles, pages, iViews and other content for the SAP NetWeaver Portal.
Portal	Provides basic SAP NetWeaver Portal capabilities excluding the Web Page Composer capabilities, the data statistics tools of Portal Activity Reports, and the Activity Data Collector.
Universal Worklist	Offers users unified and centralized access to their work and relevant information from within the portal. It collects tasks and notifications from multiple provider systems – Business Workflow, Collaboration Task, Alert Framework, and KM Recent Notifications – and displays them in a single list.

Development Infrastructure (DI)

Development Infrastructure provides an infrastructure for developing Java-based applications on the SAP NetWeaver platform and enables versioning of source code, build and lifecycle management of these applications. DI takes care of all parts of the development process :

1. Version control system for central management of source code: The Design Time Repository (DTR) is a distributed version control system used in SAP NetWeaver Development Infrastructure to manage source code in development and lifecycle management processes.
2. Central build and archive management: The Component Build Service (CBS), gives developers access to the latest archive versions in a central archive storage and a central build triggered by developers or central lifecycle management processes.

3. Central landscape and transport management: CM Services enables you to set up team development with centrally managed development configurations. It also supports the automated deployment of build results on a central runtime system. The import and export service allow you to import and export Software Component Archives (SCAs) of a development configuration. If a transport system is needed, a development configuration can be integrated into the enhanced Change and Transport System (CTS+).

You can also use the Change Management Service (CMS), which gives administrators a central service to set up development landscapes for all development tasks and manage all transport processes for these tasks in the same UI. However, note that CMS is planned to be replaced by the CM Services in future releases. Therefore, we recommend using CM Services.

Dependencies

- DI requires AS Java and NW Product Description as a prerequisite in the same system. Optionally, it can be combined with other usage types in one system. However, depending on the size of the development project and the number of active developers, DI should use a dedicated system. For further details, see [SAP Note 737368](#).

You can run the development infrastructure on an AS Java separately from the rest of your runtime systems in the system landscape for improved scalability.

If you use a development infrastructure, you have to install the Developer Studio feature [SAP NetWeaver Developer Studio Development Infrastructure Client](#).

Functional Units

DI comprises the functional unit SAP NetWeaver Development Infrastructure providing the above-mentioned functions.

Enterprise Portal (EP)

Enterprise Portal (EP) provides users with a single, uniform point of access to the applications, services, and information they need for their daily work. Moreover, the Portal offers business users the features to easily create and manage portal pages and generate their own content using the following capabilities:

- KM and Web Content Capabilities

EP provides basic document management capabilities and content services within SAP NetWeaver Portal (KM). KM provides the basic capabilities that customers need to run their scenarios, as well as an extension framework for custom implementations.

These KM capabilities are also integrated into the Web Page Composer environment to enable flexible Web content management scenarios, bringing relevant information from user-generated content and business applications together in the portal.

- Portal Add-On with Forums and Wiki Capabilities

On top of EP, you can install the portal add-on including the forums and the wiki application.

The forums application provides a comprehensive range of discussion features, which are particularly suitable for community scenarios. Forums typically focus on a specific purpose such as support or human resources or they might offer customers a place to trade product tips and solutions. Intuitive user interfaces make it easy for users to ask questions, share information, post announcements to the community, escalate questions to experts, and to receive updates on posted comments. Users can create draft versions of their postings, exchange private e-mails with other forum users, and vote in polls.

Wikis provide a framework to easily share and contribute knowledge and information in an intuitive way within the company. They give employees, customers, suppliers, and partners a framework to collaborative writing, and help save time by making ideas available, sharing knowledge, and managing related information.

Dependencies

EP requires EPC, AS Java, NW Product Description, and Java Extensions as a prerequisite in the same system. Optionally, it can be combined with other usage types in one system.

Functional Units

Enterprise Portal comprises the following functional units:

Table 20

Functional Unit	Description
Knowledge Management	Enables portal users to distribute, access, and manage unstructured information within an organization in a heterogeneous repository landscape. Capabilities include collaborative document authoring and publishing, version management, search and navigation with taxonomies, automated classification and subscription, and more.
Collaboration	Brings users, information, and applications together to ensure successful cooperation and interaction in the portal. These tools include collaboration rooms, instant messaging, e-mail, and calendar integration.

Enterprise Services Repository (ESR)

The Enterprise Services Repository (ES Repository) provides a central place where enterprise service definitions are modeled, stored, and maintained. It supports SAP's concept of building services based on the process component modeling methodology. The ES Repository offers the following features:

- Support of governed definitions of SOA assets (such as services and data types).
- Support of widely adopted open standards including Web Services and UDDI.

The ES Repository supports SAP-defined Global Data Types based on the Core Component Technical Specification standards (stack) (CCTS standards (stack)).

- Basis for enabling easy access to enterprise services - described with rich business classifications - when developing composite applications and business processes.

Dependencies

Enterprise Services Repository requires Application Server Java in the same system.

Functional Units

Enterprise Services Repository comprises the identically named functional unit providing the above mentioned capabilities.

EP Core – Application Portal (EPC)

EP Core – Application Portal (EPC) provides the basic portal capabilities for SAP NetWeaver. It provides a uniform entry point to content and applications in a consistent, role-based manner. It offers a single point of access through a Web front end to SAP and non-SAP information sources, enterprise applications, information repositories, databases and services across organizational and technical boundaries – all integrated into a single user experience. EPC alone provides a leaner portal installation and implementation where the full enterprise portal capabilities (such as knowledge management tools) are not needed.

The EPC usage type contains the following capabilities that will help you manage your content and processes:

- The core portal capabilities include various tools and service for managing portal content, users, and connections to connected systems such as Single-Sign-On, tools for application integration, roles and permissions, changing the portal look and feel with the new Ajax Framework, and lifecycle management (transport).

- Integration of several SAP NetWeaver Portals and third-party portals into one harmonized SAP NetWeaver Portal acting as the single point of access to all the business related applications and services in the organization.
- Web Page Composer (WPC): this is an integral part of EPC providing powerful capabilities for business users to easily create and manage enriched portal pages. Web Page Composer supports professionals creating interactive portal pages.

Dependencies

EPC requires AS Java and NW Product Description as a prerequisite in the same system.

Functional Units

EP Core – Application Portal comprises the following functional units:

Table 21

Functional Unit	Description
Portal	Provides basic SAP NetWeaver Portal capabilities
Universal Worklist	Provides the Universal Worklist Capabilities

Mobile

Usage type Mobile is used to enable field personnel to participate in a business process in an “occasionally connected” mode. Occasionally connected means that a direct connection (using WLAN or GPRS) between the mobile device and back end is only established at certain times – at synchronization points, when the Mobile Server (that is, the system with usage type Mobile) and Mobile Client exchange data in order to keep the server and client updated. This enables the user to perform process tasks completely independently from the back-end system, which is extremely helpful if a steady connection cannot be guaranteed or might be too expensive. To realize this usage type, an intelligent application needs to run on each device containing a user interface, business logic, and data handling. Mobile includes the Data Orchestration Engine (DOE), an ABAP-based message-oriented middleware. The Data Orchestration Engine consists of the following:

- A design time tool for defining data objects and the distribution of data.
- A runtime to replicate, synchronize and distribute data between the components of the system landscape. This includes, for example, messaging, filling queues, and sending data to the back end.

Dependencies

Mobile is not an installable software unit. As of SAP enhancement package 1 for NetWeaver 7.3, SAP NetWeaver Mobile is available as add-on. To set up a Mobile system, you install and configure AS ABAP. On top of the AS ABAP system, you install and configure the SAP NetWeaver Mobile add-on separately.

NW Product Description (NW-MODEL)

NW Product Description contains metadata for SAP NetWeaver, for example, about comprised software components and their interdependencies. NW Product Description is always included when you install a Java usage type.

PDF Export

With PDF Export, you can create print versions of lists that are displayed using ALV for Web Dynpro for ABAP (SAP List Viewer) and ALV for Web Dynpro for Java.

Dependencies

PDF Export depends on Adobe Document Services, Application Server Java and NW Product Description.

Process Integration (PI)

PI consists of core components that model, design, automate, and integrate processes in one or more application systems. For the integration of internal and cross-company processes, PI is used to incorporate all the functions of what was formerly known as Exchange Infrastructure (XI). In addition, PI contains core components for cross-component Business Process Management (ccBPM) for application-embedded and application-unbounded processes.

Dependencies

PI requires AS ABAP, AS Java, NW Product Description, AS Java Extensions, PI Adapter Engine, and Enterprise Services Repository as a prerequisite in the same system.

For installing PI, it is mandatory to have a dedicated PI system. This applies to development, quality, and production landscapes. It is a prerequisite that no other system in your system landscape has a higher release and enhancement package level than the PI system. If you want to upgrade or install an application in your system landscape, you first have to make sure that the current release and enhancement package level of the PI system is on the same level - if required, you have to upgrade the PI system first to the new or a higher release. In a dedicated PI system, this can be accomplished with a minimum of downtime. Also, the PI system would not be affected by the downtime of other usage types running in the same system.

Functional Units

Process Integration comprises the functional unit SAP NetWeaver Process Integration.

Restrictions for Systems with Multiple Usage Types

- If you have one system with multiple usage types, be aware that we do not provide standard tools for separating these usage types and distribute them to multiple systems at a later stage. For example, if you have a system with usage types A and B, you are not able to migrate it with SAP standard tools into two systems, one with usage type A only and the other with usage type B only.

In addition, we do not provide standard tools for merging multiple systems with different usage types into one system with multiple usage types at a later stage. The only exception is the dual-stack split procedure that offers to split an optional dual-stack system into two separate systems: one based on AS ABAP, the other one based on AS Java. For more information about the dual-stack split, see ► scn.sap.com/docs/DOC-25162 ►.

If you want to perform these tasks, you require specific project support.

The following figure shows that SAP standard system copy and migration tools do not support you in separating or merging systems with usage types:

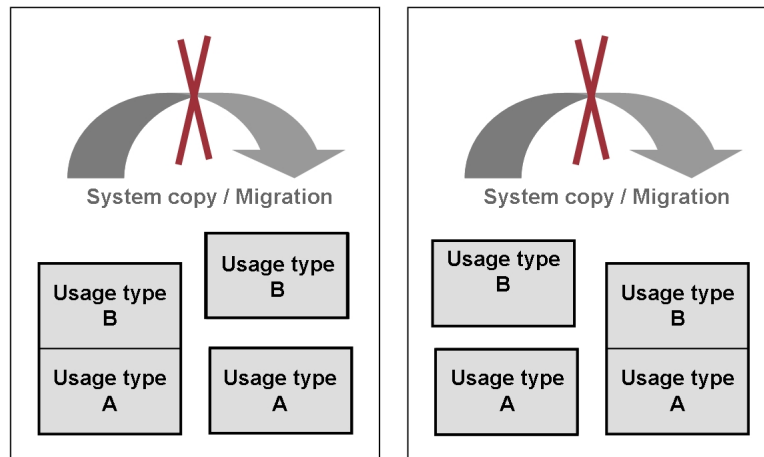


Figure 13: Separating or merging systems with usage types are not supported with SAP standard system copy and migration tools

- Although you can use one system for multiple usage types, client restrictions apply to usage type BW ABAP. For BW ABAP, you should reserve a dedicated client for reporting purposes. In this client, activate the SAP NetWeaver BI Content Add-On as required.

A.2.2 Optional Standalone Units

Advanced Adapter Engine (PI Adapter Engine)

You use the Advanced Adapter Engine to connect to SAP systems (RFC adapter, IDoc Adapter, and ABAP proxies) and external systems. You use the various adapters in PI Adapter Engine to convert XML- and HTTP-based messages to the specific protocol and format required by these systems, and the other way around.

You can use the following adapters:

- RFC Adapter
- SAP Business Connector Adapter
- File/FTP Adapter
- JDBC Adapter
- JMS Adapter
- SOAP Adapter
- Marketplace Adapter
- Mail Adapter
- RNIF Adapter
- CDIX Adapter
- IDoc Adapter (Advanced Adapter Engine) (adapter type IDOC_AAE)
- HTTP Adapter (Advanced Adapter Engine) (adapter type HTTP_AAE)

You can use the Advanced Adapter Engine which is included in the PI system as a central adapter engine. Optionally, for performance reasons, you can install a non-central Advanced Adapter Engine on a separate host.

Dependencies

The Advanced Adapter Engine requires AS Java, NW Product Description, and AS Java Extensions as a prerequisite in the same system. These usage types are automatically installed when you install the Advanced Adapter Engine.

Functional Units

The Advanced Adapter Engine comprises the functional unit Advanced Adapter Engine.

Advanced Adapter Engine Extended

The installation option Advanced Adapter Engine Extended (AEX) consists of core components to model, design, automate, and integrate processes in one or more application systems. The Advanced Adapter Engine Extended provides the following capabilities:

- Connectivity capabilities of the Advanced Adapter Engine (AAE)
- Design and configuration tools to set up scenarios that are based on the AAE. In particular, for design and configuration you can use the ES Repository and the Integration Directory. The Integration Directory installed with AEX contains a subset of configuration options required for the configuration of message processing by the AAE, basically the integrated configuration.
- Mediation capabilities of AAE

You can use the following adapters:

- RFC Adapter
- SAP Business Connector Adapter
- File/FTP Adapter
- JDBC Adapter
- JMS Adapter
- SOAP Adapter
- Marketplace Adapter
- Mail Adapter
- RNIF Adapter
- CDIX Adapter
- IDoc Adapter (Advanced Adapter Engine) (adapter type IDOC_AAE)
- HTTP Adapter (Advanced Adapter Engine) (adapter type HTTP_AAE)

Dependencies

Advanced Adapter Engine Extended requires AS Java, NW Product Description AS Java Extensions, PI Adapter Engine, and Enterprise Services Repository as a prerequisite in the same system.

These usage types are automatically installed when you choose the installation option [Advanced Adapter Engine Extended](#).

Functional Units

Advanced Adapter Engine Extended comprises the identically named functional unit.

Process Integration (PI)

PI consists of core components that model, design, automate, and integrate processes in one or more application systems. For the integration of internal and cross-company processes, PI is used to incorporate all the functions of what was formerly known as Exchange Infrastructure (XI). In addition, PI contains core components for cross-component Business Process Management (ccBPM) for application-embedded and application-unbounded processes.

Dependencies

PI requires AS ABAP, AS Java, NW Product Description, AS Java Extensions, PI Adapter Engine, and Enterprise Services Repository as a prerequisite in the same system.

For installing PI, it is mandatory to have a dedicated PI system. This applies to development, quality, and production landscapes. It is a prerequisite that no other system in your system landscape has a higher release and enhancement package level than the PI system. If you want to upgrade or install an application in your system landscape, you first have to make sure that the current release and enhancement package level of the PI system is on the same level - if required, you have to upgrade the PI system first to the new or a higher release. In a dedicated PI system, this can be accomplished with a minimum of downtime. Also, the PI system would not be affected by the downtime of other usage types running in the same system.

Functional Units

Process Integration comprises the functional unit SAP NetWeaver Process Integration.

A.2.3 Standalone Engines

For SAP NetWeaver, the following standalone engines are available:

Adapter Engine Java SE

Adapter Engine (Java SE) is a separate software unit. You can use it only if you have SAP NetWeaver systems with usage type PI in your system landscape. It has to be installed manually. You use the Adapter Engine (Java SE) to connect to external systems. Using the various adapters in the Adapter Engine (Java SE), XML and HTTP-based messages can be converted to the specific protocol and format required by such systems, and the other way around. The Adapter Engine (Java SE) only provides some of these adapters as a standalone version with restricted functions for operating systems that do not support SAP NetWeaver PI, but that have at least a Java Runtime Environment 5.0. Therefore, you should use the Adapter Engine (Java SE) only if the platform prerequisites do not allow you to use the Advanced Adapter Engine.

Content Server

Content Server is a separate server instance that is used to store documents or other types of content related to SAP applications. The accompanying cache server can cache content if your company operates in several locations. This reduces load on the wide area network when working with documents.

Gateway

SAP NetWeaver Gateway facilitates easier provisioning and consumption of business logic and content of SAP back-end systems for mobile and web applications. It aims to reduce the complexity and the skill set required to access SAP data, thereby removing deployment barriers. Simple interfaces also help to shorten development times.

SAP NetWeaver Gateway enables people-centric applications to consume SAP Business Suite data through popular platforms and devices (such as the iPad and Blackberry) in an easy and standards-based manner. It is a framework that connects business users to SAP systems using consumer technologies, groupware, and mobile devices and is based on open standards (such as the Atom Publishing Protocol and OData) that offer simple services based on the REST principle.

Depending on your development requirements and where you want to develop SAP NetWeaver Gateway content, you can install SAP NetWeaver in either an SAP Business Suite back-end system (embedded deployment) or in an SAP NetWeaver Gateway hub system (central hub deployment).

For more information, see SAP Help Library at ► help.sap.com/nwgateway ►

liveCache

liveCache is a database engine for managing complex objects in scenarios where large volumes of data must be permanently available and modifiable.

Search and Classification (TRES)

SAP NetWeaver Search and Classification (TRES) offers an integrated set of services. TRES services include search and retrieval in large document collections, text mining, automatic document classification, and search and aggregation over structured data in SAP applications. TRES can handle text from documents in numerous formats, including Microsoft Office and Adobe formats (PDF), and more than 30 languages. TRES search options, such as exact, Boolean, fuzzy, or linguistic search, and classification options such as query-based or example-based classification, offer great power and flexibility to end users.

The BW accelerator is based on TRES technology. You need an installation based on 64-bit architecture for the BW accelerator. The hardware partners provide this variant already preconfigured as the BW accelerator box. Note that a TRES installation configured for searching in metadata and documents based on 32-bit architecture cannot be used for the BW accelerator. Accordingly, a BW accelerator box also cannot be used for searching in metadata and documents. In order to be able to use the search function and the BW accelerator, you need separate installations.

Web Dispatcher

The Web Dispatcher lies between the Internet and your SAP system. It is the entry point for HTTP(s) requests into your system, which consists of one or more SAP NetWeaver application servers. As a software Web switch, the Web dispatcher can reject connections or accept them. When it accepts a connection, it balances the load to ensure even distribution across the servers.

You can use the Web dispatcher in ABAP/Java systems and in pure Java systems, as well as in pure ABAP systems.

It is also beneficial to use the Web Dispatcher if you do not need security functions (entry point in the demilitarized zone (DMZ), SSL, URL filtering), but you simply want to balance the load between multiple SAP NetWeaver Application Server instances.

Since Web Dispatcher is optional for every SAP system, it is not contained in the system landscapes of the use cases in this documentation.

For more information, see the SAP Library at ► help.sap.com/nw74 ► *Application Help* ► *SAP Function-Oriented View* ► *Application Server* ► *Application Server Infrastructure* ► *SAP Web Dispatcher* ►.

A.2.4 Clients

With SAP NetWeaver, you can use the front-end clients and tools described below:

Adobe LiveCycle Designer

Adobe LiveCycle Designer enables the creation of forms that combine high-fidelity presentation with XML data handling. The easy-to-use graphical interface of Adobe LiveCycle Designer enables users to quickly design forms, maintain form templates, define a form's business logic, make changes, and preview forms before they are deployed as Adobe PDF files.

SAP NetWeaver Business Client

The SAP NetWeaver Business Client (NWBC) is a high fidelity desktop client that allows users to display their assigned roles and to launch applications. SAP NetWeaver Business Client offers a unified environment for and a single point of entry to SAP business applications and technologies. NWBC is ideal for displaying business applications such as classical SAP GUI UIs, Web Dynpro UIs, BSP pages, and other content using its multiple rendering engines. NWBC provides role-based access to applications either via the portal or directly using PFCG roles. In addition to the basic capabilities detailed above, the SAP NetWeaver Business Client makes use of its tight desktop integration to provide additional benefits such as desktop search functionality. In the newest SAP NetWeaver Business Client version you will find the improved user interface (UI) based on the SAP Signature design. This UI offers in part an expert-based interactive paradigm and a superior look and feel matching the expectations of today's users aiming to maximize their daily activities.

The SAP NetWeaver Business Client is one of the main components of the User Interface Add-On for SAP NetWeaver. For more information, see the SAP Help Portal at ► help.sap.com/nw-uiaddon ► *Application Help* 📖.

Business Explorer (BI Add-On)

Business Explorer provides flexible reporting and analysis tools for strategic analyses and decision-making support within a company. These tools include query, reporting, and analysis functions. As an employee with access authorization, you can evaluate past or current data on various levels of detail and from different perspectives, not only on the Web but also in Microsoft Excel.

You can use Business Explorer Information Broadcasting to distribute Business Intelligence content by e-mail either as precalculated documents with historical data, or as links with live data. You can also publish it to the SAP NetWeaver Portal.

Additionally to Business Explorer you may want to consider using tools from the SAP BusinessObjects Analysis family, such as Analysis, edition for Microsoft Office. The SAP BusinessObjects Analysis clients are specifically designed for the needs of BW users. Note that SAP BusinessObjects products require separate licenses.

SAP GUI

SAP offers three different client applications for accessing ABAP applications in SAP systems (such as SAP NetWeaver systems with usage type AS ABAP). This SAP GUI family consists of:

- SAP GUI for HTML

SAP GUI for HTML is based on the SAP integrated Internet Transaction Server (ITS) which is included in the installation of SAP NetWeaver systems as of SAP NetWeaver 7.0. On the client side, only a suitable browser and a virtual machine are required. For information about supported browser versions, see the Product Availability Matrix on SAP Service Marketplace at service.sap.com/pam.

- 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 *Installation Guide – SAP Front End*.

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

SAP GUI for Windows is SAP's universal client for accessing all SAP applications built on ABAP technology. It is available on the Microsoft Windows platform only and offers the broadest feature set of all members of the SAP GUI family.

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

SAP GUI also includes optional add-ons, such as the Business Explorer (BI add-on) and KW add-on, which might be required to use certain SAP NetWeaver capabilities.

i Note

Data warehousing: SAP GUI for HTML and SAP GUI for Java do not have all the capabilities of SAP GUI for Windows. BEx Query Designer, BEx Analyzer and UIs with network controls are not supported with SAP GUI for HTML and SAP GUI for Java.

The following SAP GUI versions are supported with SAP NetWeaver 7.4:

- SAP GUI for Windows 7.30 (or higher)
- SAP GUI for Java 7.30 (or higher)
- SAP integrated ITS

For more information about the SAP GUI family, see SAP Community Network at scn.sap.com/community/gui.

Mobile Client

Mobile Client is installed locally on mobile devices, and is equipped with a Web server, a database layer, and a framework for the mobile applications. Staff working remotely can therefore work offline and do not have to wait for a network connection to complete time-critical business applications. Usage type Mobile offers tools for synchronization and data replication that make the data of the mobile device consistent with that of the back-end system.

Modeling Tools for SAP BW powered by SAP HANA

The Modeling Tools for SAP BW powered by SAP HANA (BW Modeling Tools) represents a new modeling IDE (Integrated Development Environment) build on top of the Eclipse platform.

Its main objective is to support BW model developers in today's increasingly complex BI environments by offering state-of-the-art modeling tools. These tools include integration with SAP HANA modeling and the consumption of HANA elements in BW Open ODS Views or CompositeProviders with powerful UI (user interface) capabilities.

SAP NetWeaver Developer Studio

The SAP NetWeaver Developer Studio (NWDS) is SAP's Integrated Development Environment (IDE) for Java and is based on the open-source tools framework Eclipse 3.5. With the SAP NetWeaver Developer Studio, you can develop Java EE 5 applications from scratch using the built-in support for new technologies such as EJB 3.0 and JSF 1.2.

i Note

NWDS 7.3 EHP1 as development environment for NetWeaver 7.4

Since SAP NetWeaver Developer Studio 7.4 is not available, you can use the SAP NetWeaver Developer Studio of the latest Support Package of SAP enhancement package 1 for NetWeaver 7.3 as development environment for SAP NetWeaver 7.4. For more information, see SAP Note [1791485](http://support.sap.com/1791485).

SAP Enterprise Services Explorer Tool for Microsoft .NET

As part of its service-oriented architecture (SOA) offering, SAP provides a set of consumer tools that allow the discovery and consumption of enterprise services from various development environments, such as NetWeaver Developer Studio, Visual Composer, and Microsoft Visual Studio. SAP Enterprise Services Explorer tool for Microsoft .NET (ES Explorer for .NET) is an add-on for Microsoft Visual Studio 2005 and Microsoft Visual Studio 2008 that helps to leverage SOA by enabling .NET developers to discover SAP enterprise services and consume them in their applications, as well as publish their own custom services. It is an important element of SAP – Microsoft interoperability.

To download the tool, access documentation and other resources, see scn.sap.com/community/interoperability/microsoft-net.

For the most up-to-date information about ES Explorer for .NET, see SAP note [1259258](#).

A.3 Compatibility Usage Types

Compatibility usage types are usage types that have been discontinued and are therefore not part of the standard SAP NetWeaver installation. If you upgrade from a previous release, these usage types will of course still exist in your systems if they have been present in the source release system.

There might be reasons for which you want to install these usage types. You can do this using the Software Update Manager. Note that you can install these usage types only on existing SAP NetWeaver 7.4 Java systems with at least usage type AS Java.

For more information and installation instructions, see the SUM guide for Java: *Update Guide – Updating SAP Systems Using Software Update Manager, for: Java*, section *Installing Additional Usage Types (Technical Usages) in an Existing SAP System*.

Demo Applications

Demo Applications illustrate the usage of SAP NetWeaver Composition Environment for previous releases.

Guided Procedures

Guided Procedures is a framework for modeling and managing workflows using simple and user-friendly tools. Guided Procedures enables access to multiple backend systems, consistently combining different types of services and applications into processes. In addition, Guided Procedures supports collaboration, ad-hoc items, and offline task management using interactive forms. It provides role-based access to tools and resources and guidance through the workflows at runtime, thereby helping end users to easily identify and complete their tasks.

Dependencies

Guided Procedures require Application Server Java, Composition Application Framework, Composition Environment Platform as a prerequisite in the same system.

Functional Units

Guided Procedures comprise the identically named functional unit providing the above mentioned capabilities.

NWDS Update Site

You use the NWDS update site when you develop composite applications using several Developer Studio installations. An update site contains all features for the Developer Studio. You can initiate a check for updates or additional features in the Developer Studio and install them when available. The update site capability mirrors the SAP Developer Studio update site on SAP Service Marketplace for an improved update performance. It does not run on a multi-node cluster.

The NWDS update site has been replaced by an Eclipse-based solution.

Dependencies

NWDS update site requires Application Server Java as a prerequisite in the same system.

Typographic Conventions

Table 22

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



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