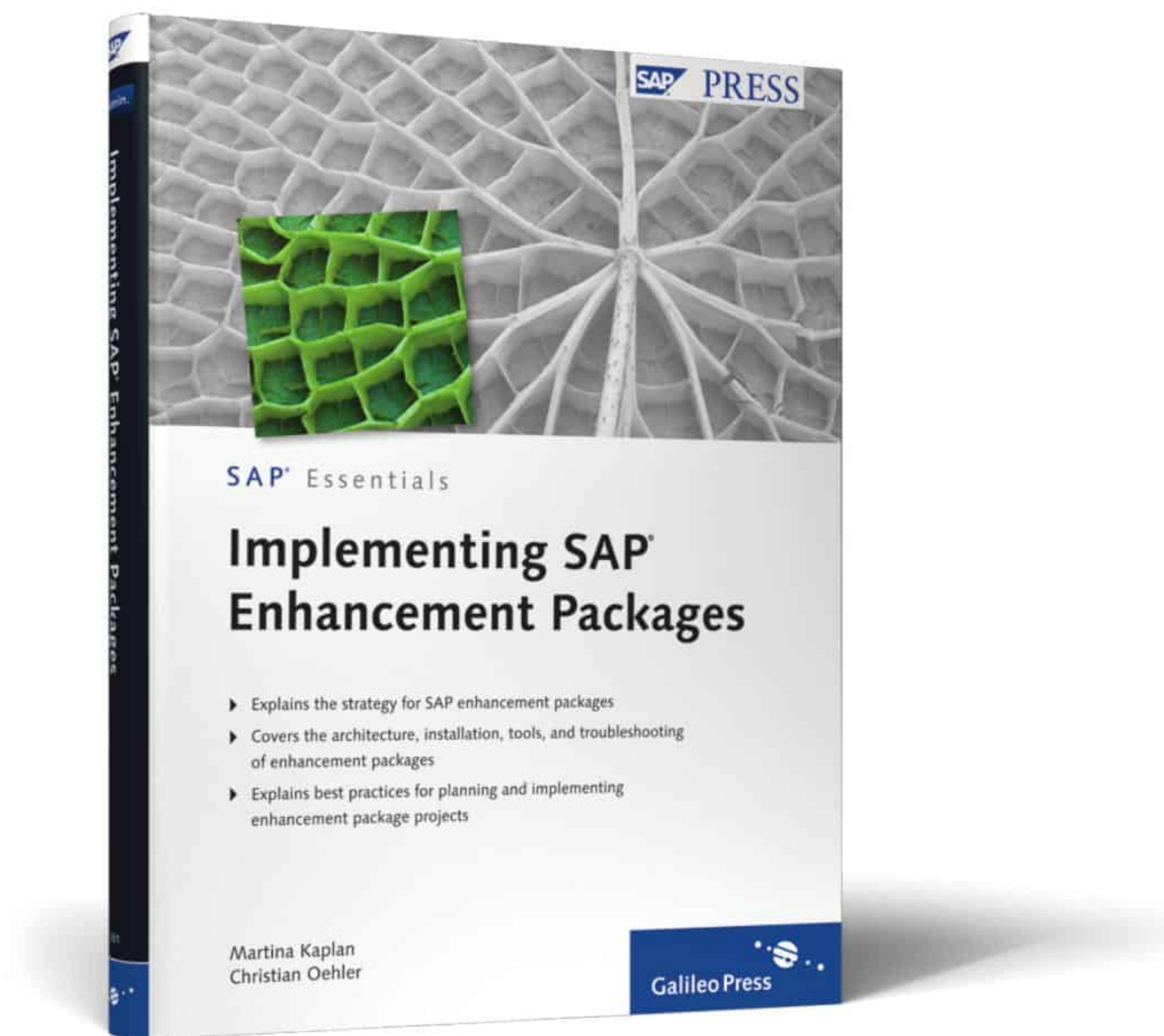


Martina Kaplan and Christian Oehler

Implementing SAP® Enhancement Packages



Galileo Press 

Bonn • Boston

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Having the right tools is the foundation for working successfully. This chapter describes the central tools of an enhancement package implementation and how to best use them.

4 Implementation Tools and Service Offers

With enhancement packages, SAP has created a new delivery model that lets customers flexibly implement new functions with little effort. The technical provisioning of SAP enhancement packages is divided into two steps: First, you select and download the enhancement package subcomponents via the Maintenance Optimizer; second, you complete the technical installation of these packages in the SAP ERP system.

This chapter first explains the role of SAP Solution Manager in the installation process. In a step-by-step description, you'll learn which settings are required and how to download enhancement packages via a maintenance process. Then we'll look at the new installation tool, SAP EHP Installer. In addition to the structure of the tool, you'll also learn about the technical installation process and get a detailed description of the installation phases. Finally, this chapter provides you with an overview of the additional utilities and service offers that support you in installing enhancement packages.

4.1 SAP Solution Manager in Enhancement Package Implementation Projects

SAP Solution Manager is an integrative platform that centrally supports the lifecycle of a business solution — from conceptual design, to configuration, to live operation. For project leads, end users, and administrators, it provides central access to tools, methods, and preconfigured content, which you can use for the evaluation, implementation, and live operation of your system landscape.

The concept of *work centers*, which is available as of SAP Solution Manager 7.0 SP15, helps you manage your system landscape with a uniform navigation and quick access to information, both of which facilitate your daily work. Figure 4.1

shows an overview of the work centers of SAP Solution Manager, embedded into the Application Lifecycle Management methodology.

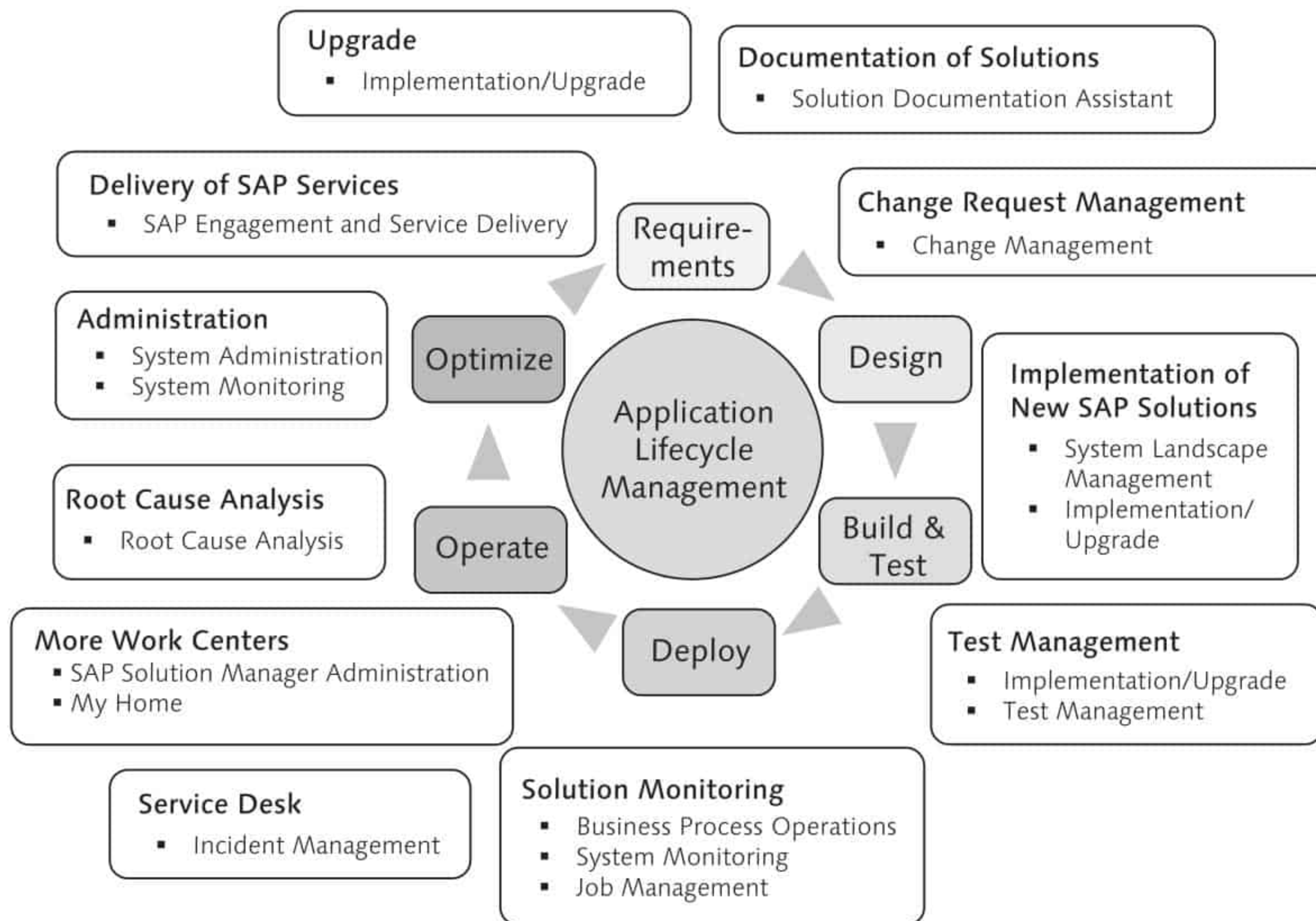


Figure 4.1 Work Centers of SAP Solution Manager

4.1.1 SAP Solution Manager Work Centers

The work center in SAP Solution Manager provides a central access point for managing and administrating your SAP solutions. The work centers are based on *Web Dynpro* technology and, compared to previous user interfaces, provide central and role-based access to the various work areas.

Each role grants access to a particular work center, which you can assign to a user depending on the range of tasks. Among others, the following work centers are available in SAP Solution Manager:

- ▶ System Landscape Management
- ▶ Change Management
- ▶ System Monitoring
- ▶ Test Management

Figure 4.1 provides a complete list of work centers. You start a work center in SAP Solution Manager using Transaction SOLMAN_WORKCENTER. This work center is divided into three navigation levels:

- ▶ The *navigation bar*, which lets you access the work centers via tabs
- ▶ A context-related *navigation area*, which grants access to views, typical tasks, and links within a work center
- ▶ The *content area*, which displays task-specific information and functions, depending on the view selected

Figure 4.2 shows the initial screen of the SYSTEM LANDSCAPE MANAGEMENT work center with the corresponding navigation levels.

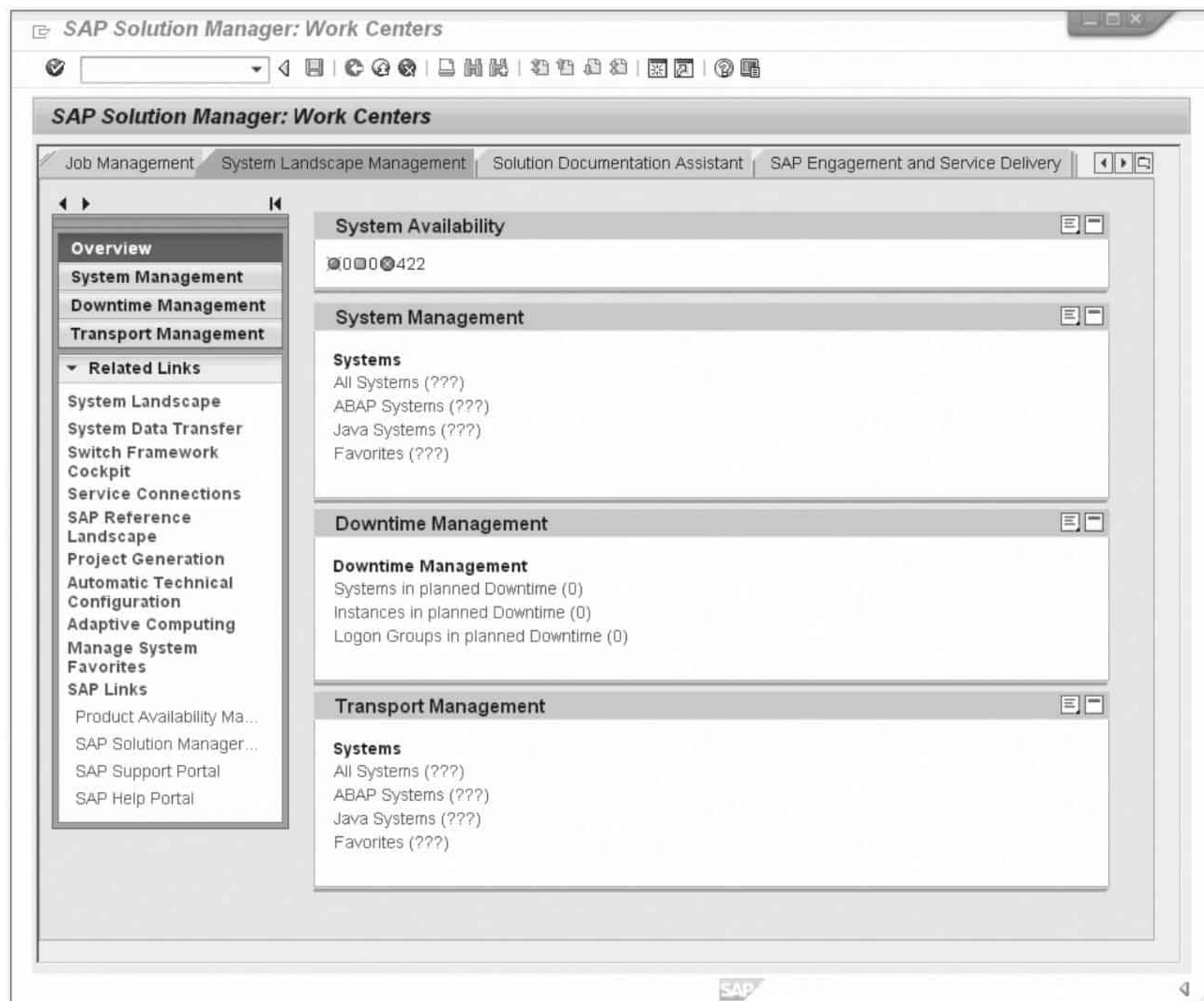


Figure 4.2 System Landscape Management Work Center

When implementing an enhancement package, you use the `SYSTEM LANDSCAPE MANAGEMENT` and `CHANGE MANAGEMENT` work centers. Sections 4.2, System Landscape in SAP Solution Manager, and 4.3, Maintenance Optimizer in SAP Solution Manager, examine the use of these work centers and guide you through the navigation with step-by-step instructions.

4.1.2 Prerequisites and Recommendations

This section introduces the prerequisites and recommendations that are relevant to enhancement package implementation projects:

- ▶ The use of SAP Solution Manager is a prerequisite for implementing an enhancement package implementation.
- ▶ Install the latest support package stack for SAP Solution Manager prior to implementing the enhancement package.
- ▶ Use the `CHANGE MANAGEMENT` and `SYSTEM LANDSCAPE MANAGEMENT` work centers in SAP Solution Manager, which you can start via Transaction `SOLMAN_WORKCENTER`.
- ▶ If necessary, define new SAP systems and system components using the System Landscape Directory (SLD).
- ▶ Start the technical preparations in SAP Solution Manager at an early stage.

4.1.3 Key Terminology

In addition to technical and project-organizational challenges, an enhancement package implementation project also has specific terminology. This section describes a selection of critical terms that are frequently used on the following pages.

- ▶ **Software product**

A product is a unit delivered by SAP and visible to the customer. A product is characterized by the following properties:

- ▶ It consists of smaller modules.
- ▶ In general, its overall purpose is to solve business tasks.

Examples of products are SAP ERP and SAP NetWeaver.

► **Software product version**

A product version is a particular release of a product whose components can be installed. Each product version has a clearly defined maintenance period.

There are complete product versions (for example, SAP ERP 6.0) and add-on product versions, which require existing product versions for installation (for example, enhancement package 4 for SAP ERP 6.0).

► **Product instance**

A product instance (or main instance) is part of a product version and is made up of several technically dependent software component versions. Product instances constitute the smallest installable unit that is installed and operated with a separate System ID (SID).

Examples of product instances include the SAP ECC Server, SAP NetWeaver Portal, SAP Self-Services (XSS), and SAP NetWeaver Business Warehouse (BW).

► **Technical usage**

A technical usage is a logical grouping unit that comprises interdependent product instances. In SAP enhancement packages for ERP, business functions are mapped to technical usages. They consist of one or more (ABAP-based or Java-based) product instances. Technical usages can only be installed on *existing* product instances.

Examples of technical usages are Central Applications, Human Capital Management, Financial Services, and Retail.

► **Software component**

A software component is a set of software objects that can be delivered together. Usually, there are multiple versions of software components. The individual software components are provided separately with support packages. Chapter 2, Section 2.2.2, Software Components of Enhancement Package 4 for SAP ERP, gives an overview of all of the software components that are delivered with enhancement package 4.

Examples of software components include SAP_BASIS, SAP_APPL, SAP-HR, EA-APPL, and EA-RETAIL.

► **Software component version**

A software component version is a unique version of a software component. Software component versions are part of a product instance, which, in turn, is part of a product version. A software component version is the smallest unit that can be delivered and maintained by SAP. Examples of software component

versions are SAP_BASIS 700, SAP_APPL 600, SAP_APPL 604, SAP-HR 604, and EA-RETAIL 600.

► **SAP EHP Installer**

SAP EHP Installer is the installation tool for enhancement packages. In SAP documentations, it is sometimes referred to as *EHPi* or *SAPehpi*. You can download the tool from the SAP Service Marketplace at <http://service.sap.com/swdc> • DOWNLOAD • ENTRY BY APPLICATION GROUP • ADDITIONAL COMPONENTS • UPGRADE TOOLS • SAP EHP INSTALLER.

4.1.4 Overview of the Technical Activities

This section provides an overview of the technical activities for installing an enhancement package. They are described in detail in the following sections.

1. **Preparations in SAP Solution Manager**

This refers to the settings in the SYSTEM LANDSCAPE MANAGEMENT work center. It includes, for example, integrating new SAP systems and creating a new logical component. For more information, see Section 4.2, System Landscape in SAP Solution Manager.

2. **Selection of the packages and creation of the package configuration file**

This refers to the settings in the CHANGE MANAGEMENT work center. This includes, for example, creating a new maintenance process in the Maintenance Optimizer and downloading the packages. For more information, see Section 4.3, Maintenance Optimizer in SAP Solution Manager.

3. **Installation of the enhancement package**

This is the tool-based installation process of the enhancement package in the SAP system landscape. For more information, see Sections 4.4, SAP Add-On Installation Tool, and 4.5, SAP EHP Installer.

Figure 4.3 illustrates the overall process of an enhancement package installation from the technical preparations and settings in SAP Solution Manager to the technical installation.

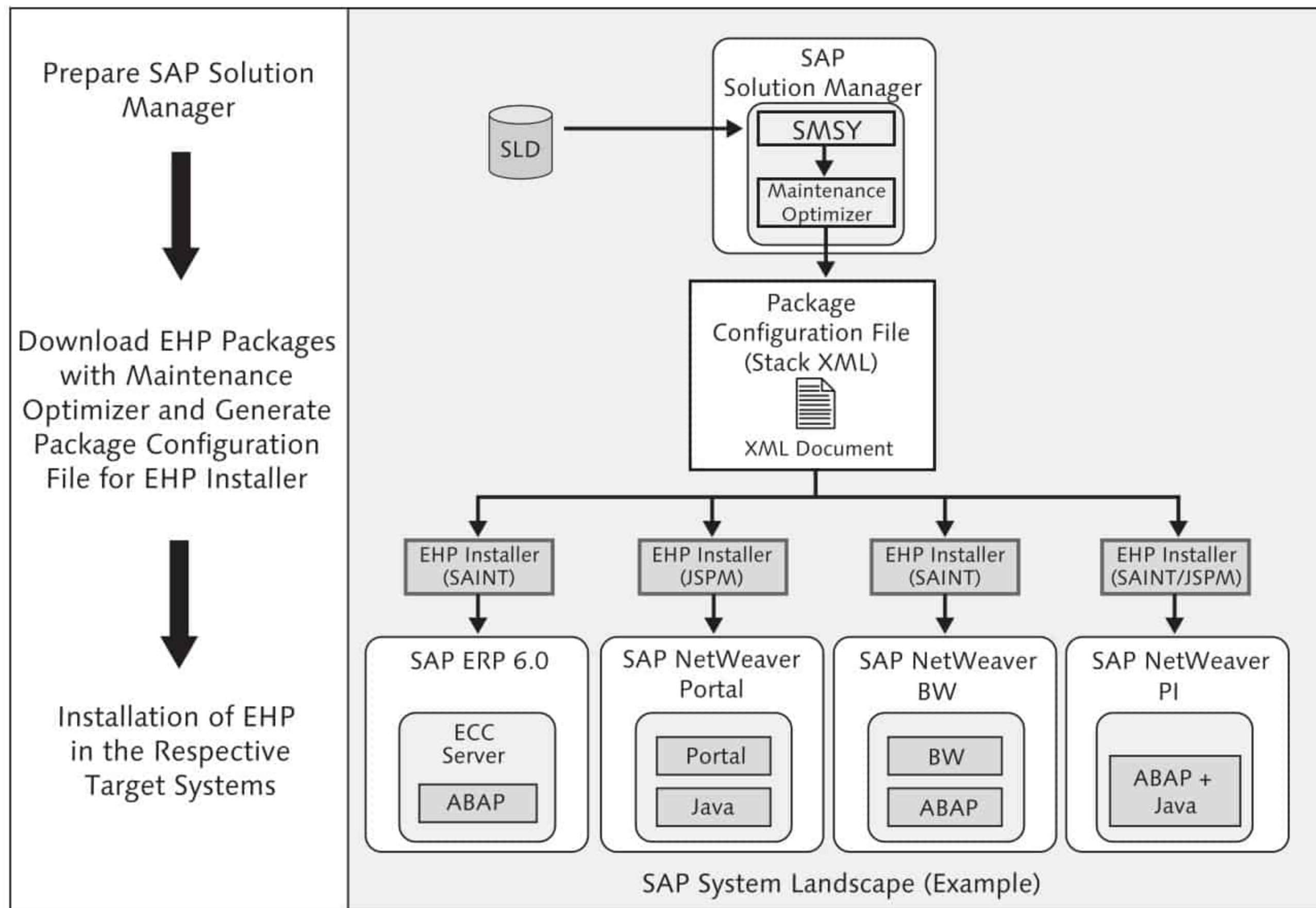


Figure 4.3 Overview of the Overall Process of the Technical Activities of an Enhancement Package Installation

4.2 System Landscape in SAP Solution Manager

Maintaining your SAP system landscape lays the foundation for creating maintenance processes in the Maintenance Optimizer. The system landscape in SAP Solution Manager can be considered a mapping of your actual system landscape. In general, there are two ways to access the system landscape in SAP Solution Manager:

- ▶ Via Transaction SMSY
- ▶ Via Transaction SOLMAN_WORKCENTER

The system landscape is part of the SYSTEM LANDSCAPE MANAGEMENT work center and the central access point for all business functions that are required to define and manage your system landscape. See Figure 4.2.

The following sections give you an overview of the settings that are required in SAP Solution Manager for installing an enhancement package for SAP ERP systems. If your system landscape is already maintained, you can perform the following steps to check your existing system configuration.

Note

You can find detailed instructions on the definition of systems in the SAP Help Portal at <http://help.sap.com> • SAP SOLUTION MANAGER <CURRENT RELEASE> • BASIC SETTINGS • SOLUTION MANAGER SYSTEM LANDSCAPE • CREATE SYSTEMS.

4.2.1 Automatic Creation of Systems Using the SLD

It is recommended that you define all systems and system components using the *System Landscape Directory* (SLD). If your SAP ERP landscape contains Java-based systems or dual-stack systems, the data transfer from the SLD is mandatory for automatically transferring the Java software component statuses. You can only create the system entries in the system landscape manually for pure ABAP-stack systems. Section 4.2.2, *Manually Creating Systems in the System Landscape*, provides more information on this.

Before you can replicate the system entries of the system landscape from the SLD, you must make sure that all relevant systems on the ABAP and Java side are registered in SLD.

Registering ABAP-Based Systems

To register an ABAP-based system in the SLD for the first time, proceed as follows:

1. Call Transaction RZ70 in the target system.
2. Enter the following information in the SLD BRIDGE: GATEWAY INFORMATION area:
 - ▶ HOST: name of the host where the SLD is running
 - ▶ SERVICE: port number on which the SLD is running
3. Click the DEFAULT button in the DATA COLLECTION PROGRAMS area, and confirm the dialog with YES.
4. Click the ACTIVATE CURRENT CONFIGURATION button.
5. Click the START DATA COLLECTOR AND JOB SCHEDULING button.

6. Now, log on to the SLD, and have the system display the technical systems that are registered in the SLD. Check to see if the system ID of your system is in the list of the ABAP-stack systems.

Registering Java-Based Systems

To register a Java-based system in the SLD, proceed as follows:

1. Start the Visual Administrator, and navigate to the HTTP SETTINGS node via the CLUSTER • SERVER • SERVICES • SLD DATA SUPPLIER • RUNTIME menu path.
2. Enter the following information in the HTTP CONNECTION area:
 - ▶ HOST: name of the host where the SLD is running
 - ▶ SERVICE: port number on which the SLD is running
 - ▶ USER/PASSWORD: name and password of a user on the SLD host who has the *DataSupplierLD* role
3. Save your changes.
4. Click the TRIGGER DATA TRANSFER TO SYSTEM LANDSCAPE DIRECTORY (SLD) button to test the connection to the SLD.
5. If necessary, restart the SLD Data Supplier to force an immediate data transfer.
6. Log on to the SLD, and have the system display the technical systems that are registered in the SLD. Check to see if the system ID of your system is specified in the list of the Java-stack systems.

Registering Dual-Stack Systems

To register a dual-stack system in the SLD, you first need to register the ABAP part of the system. This procedure is identical to the procedure for pure ABAP-stack systems. Afterward, you have to separately register the Java part of the system in the SLD. This procedure is also identical to the procedure for pure Java-stack systems.

Automatically Transferring the Host Data

After registering your systems in the SLD, log on to your SAP Solution Manager. Check Transaction SM37 to see if the LANDSCAPE_FETCH background job is already scheduled. If the job doesn't exist yet, you can schedule it as follows:

1. Start the work center using Transaction SOLMAN_WORKCENTER, and navigate to the SYSTEM LANDSCAPE MANAGEMENT work center.
2. From the navigation area under RELATED LINKS, select the SYSTEM DATA TRANSFER ENTRY. This takes you to the SET UP SYSTEM LANDSCAPES • SAP SOLUTION MANAGER area via a new dialog box.
3. In the SYSTEM LANDSCAPE menu, select the SCHEDULE DATA TRANSFER FROM TMS/SLD entry.
4. Confirm the scheduling of the data transfer in the INITIAL DATA TRANSFER IN BATCH dialog box by clicking the YES button.

Alternatively, you can also schedule the data transfer using Transaction SMSY_SETUP. Please note that you still need to manually maintain some settings in the system landscape after the automatic transfer of the host data and system entries from the SLD. For more information, see Section 4.2.3, Necessary Manual Postprocessing.

4.2.2 Manually Creating Systems in the System Landscape

To create new systems and servers, start the work center via Transaction SOLMAN_WORKCENTER.

1. In the navigation bar, go to the SYSTEM LANDSCAPE MANAGEMENT tab.
2. From the navigation area under RELATED LINKS, select the SYSTEM LANDSCAPE entry (see Figure 4.2).

Alternatively, you can also access the system landscape via Transaction SMSY. If your system landscape has already been created, you can perform the following steps to check to see if your system data is fully maintained. Figure 4.4 displays the initial screen of the system landscape in SAP Solution Manager.

Manually Creating Host Data (Server)

Let's start by creating the host data. To do this, create the servers of the SAP systems you want to generate a maintenance process for.

1. In the SYSTEM LANDSCAPE initial screen, select the SERVER landscape component.
2. In the context menu (right-click on the SERVER landscape component), select the CREATE NEW SERVER entry.

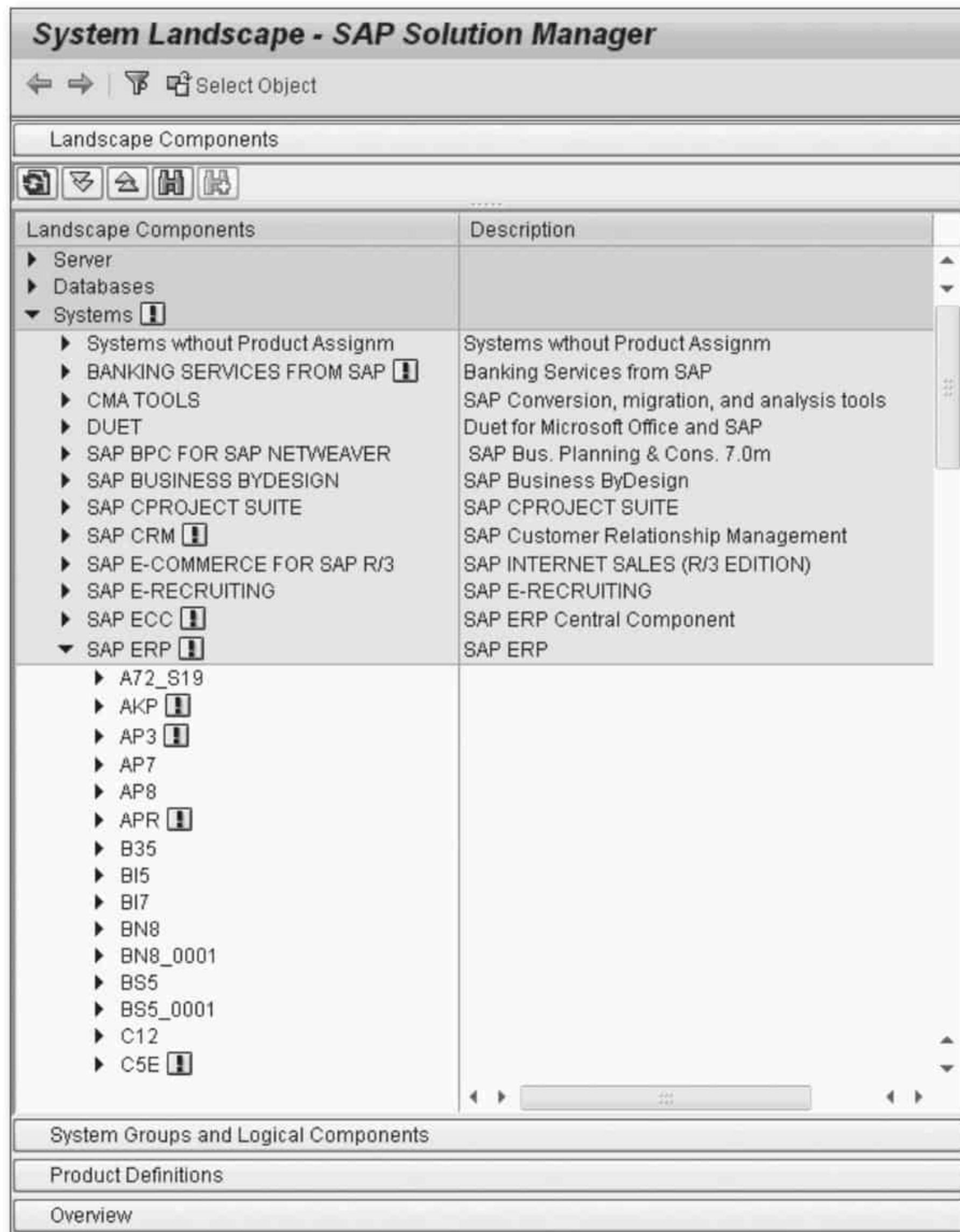


Figure 4.4 System Landscape in SAP Solution Manager

3. Enter the host name and save your entries.
4. Select the host name under the SERVER landscape component. On the right-hand side of the screen, you can maintain the details on the server. Enter your specifications in the various tabs – for example, the fully qualified host name in TECHNICAL DATA – and save your entries.

Manually Creating System Entries

Once you've created the servers of your landscape, you can proceed with the next step; that is, you can create the SAP system. Maintain all SAP systems of your product landscape for which you want to create a maintenance process.

1. In the initial screen of the system landscape, select the SYSTEMS component.
2. In the context menu (right-click on the SYSTEMS entry), select the CREATE NEW SYSTEM WITH WIZARD option.
3. Enter the system ID and all required data. Select a product and a product version from the input help. The correct product description for an SAP ERP 6.0 system (SAP ECC Server) is SAP ERP, the correct product version is SAP ERP 6.0. These specifications are also correct if you've already installed an enhancement package version in your SAP ERP system. Confirm your entries with NEXT.
4. Select the relevant main instances; for example, SAP ECC Server for an SAP ERP 6.0 system (SAP ECC Server). Bear in mind that only one ABAP instance per system can be defined as relevant. You can select additional ABAP instances in the ALSO INSTALLED column. Confirm your entries with NEXT.
5. Enter the system ID and the message server of your SAP system. Confirm your entries with NEXT.
6. Choose the GENERATE RFC DESTINATION and ASSIGN RFC DESTINATION fields. Confirm your entries with NEXT, and exit the wizard by selecting COMPLETE.

4.2.3 Necessary Manual Postprocessing

After you've created a new system with the help of the system wizard or the SLD, manual postprocessing is required. Select the system ID of the newly created SAP ERP system, and navigate through the following tabs.

1. In the SELECTION OF MAIN INSTANCES tab, you need to define additional main instances as relevant if they are connected to your SAP ERP system. An ABAP-stack system is defined as relevant through the SAP ECC Server main instance.
2. If a Java product instance runs on another technical system (for example, on SAP NetWeaver Portal), select the SYSTEM COMPONENT checkbox, and enter the corresponding system ID as a Java system component, as shown in Figure 4.5.
3. If additional ABAP product instances are installed on your SAP system, select the corresponding entries in the ALSO INSTALLED IN RELEVANT ABAP MAIN INSTANCE field.
4. Enter any additional information on your system in the other tabs.

Main Instance	DB Instan...	ABAP Inst...	Relevant	Also Instal...	System C...	System ...	Type	Extended Assignment of...
SAP E-Recruiting	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP ECC Server	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP FSCM - FSCM Server (ABAP)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP Learning Sol-Frontend ABAP	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP NW - Business Intelligence	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP NW - Mobile Infrastructure	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP NW - Process Integration	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP SEM	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP SRM - Catalog Content Mgmt	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP SRM - Server	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP SRM - Server ECC Add-On	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP Workforce Management	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP cProject Suite	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Portal Content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP Easy Document Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP FSCM - Biller Direct	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP Frontend EH&S EXPERT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP Frontend EH&S WWI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP Integration for Elster	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP Learning Sol-Client (Auth)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP Learning Sol-Client (Lern)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP Learning Sol-Frontend CP	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP NW - Adobe Docu. Service	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	A31	Java	
SAP NW - Applic. Server Java	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP NW - BI Java	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP NW - Content Server	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SAP NW - EP Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IS1	Java	
SAP NW - Enterprise Portal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	E12	Java	
SAP NW - Mobile Infra. Client	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

Figure 4.5 Selecting the Main Instances of an SAP ERP 6.0 System (SAP ECC Server) with Three Assigned Java System Components

Important Information

Check to see if the system data in the SOFTWARE COMPONENTS is up to date. If needed, update the system data using the READ SYSTEM DATA REMOTE button before you create a new maintenance process in the Maintenance Optimizer of your system. If required, reading the system data updates the version of the software component and the support packages that are entered in the SOFTWARE COMPONENTS tab.

The Maintenance Optimizer accesses the data of the system landscape in a new maintenance process and determines the required support packages based on the versions entered here.

4.2.4 Creating Logical Components

A logical component is an administrative entity that assigns logical systems in the system landscape and across projects to the following:

- ▶ A main instance of a product with a product version; for example, the SAP ECC Server main instance of the SAP ERP product with the SAP ERP 6.0 product version
- ▶ The various system roles within a project, for example, the *development system* role for the configuration

Logical components are always created for a product, such as SAP ERP, and should comprise all systems of a line (development, quality assurance, and production systems). The logical component of a product lets you create a maintenance process for the assigned systems.

You can also create a logical component in the system landscape of SAP Solution Manager. If you haven't created a logical component for the SAP ERP product yet, proceed as follows:

1. Navigate to the SYSTEM GROUPS AND LOGICAL COMPONENTS area in the system landscape.
2. Select the LOGICAL COMPONENTS menu area.
3. In the context menu (accessed by right-clicking on the LOGICAL COMPONENTS entry), select CREATE NEW LOGICAL COMPONENT. Ensure that the logical component is assigned to the SAP ERP product and the SAP ERP 6.0 product version. Confirm your entries.
4. The system displays detailed information on the logical component in the right-hand area of the screen. In the CURRENT SYSTEM ASSIGNMENTS tab, you maintain the various system types (for example, development, quality assurance, and production systems) of your SAP ERP product landscape.
5. Save your entries.

4.2.5 Summary

Let's summarize the individual steps again:

- ▶ Your SAP ERP systems are assigned to the SAP ERP product and the SAP ERP 6.0 product version in the system landscape.

- ▶ You've defined the relevant instances for each system to be maintained in the SELECTION OF MAIN INSTANCES tab in the system landscape. At least the SAP ECC Server main instance is defined as relevant.
- ▶ Additional system components of your landscape are defined as relevant in SELECTION OF MAIN INSTANCES, and the information on the system type (for example, Java) is maintained.
- ▶ The software component versions and the support package versions of your systems are up to date.
- ▶ A new logical component was created, if required, and the SAP ERP systems of your system line are contained therein.

This concludes the required settings in the system landscape of the SYSTEM LANDSCAPE MANAGEMENT work center. Section 4.3 presents the Maintenance Optimizer, which is part of the CHANGE MANAGEMENT work center, and describes how to create a new maintenance process to download enhancement packages.

4.3 Maintenance Optimizer in SAP Solution Manager

Solution maintenance has become considerably more complex and time-consuming over the years. In an SAP ERP system, for example, the number of software components has increased considerably. Chapter 2, Section 2.1, Brief Introduction to the Development of the SAP ERP Architecture, provides more information on this topic. In SAP R/3 4.6C, a system consisted of approximately five different software components; today — with SAP ERP 6.0 (the SAP ECC Server) — there are more than fifty components. Each software component has its own support packages, which SAP provides bundled as support package stacks. To make things easy, SAP provides a tool that clearly shows the maintenance processes in a clear format and supports you in the planning and implementation of maintenance activities: the Maintenance Optimizer. In general, there are two ways you can access the Maintenance Optimizer in SAP Solution Manager:

▶ **Via Transaction SOLUTION_MANAGER**

Select a solution in the SOLUTION OVERVIEW. In the CHANGE MANAGEMENT tab go to the MAINTENANCE OPTIMIZER entry. Click the CREATE NEW MAINTENANCE TRANSACTION button.

You can find a detailed description on downloading enhancement packages using Transaction SOLUTION_MANAGER in the document "How to Install EHP4: A Practical Guide" (at <http://service.sap.com/erp-inst> • SAP ENHANCE-

MENT PACKAGES FOR SAP ERP 6.0 • SAP ENHANCEMENT PACKAGE 4 FOR SAP ERP 6.0).

► **Via Transaction SOLMAN_WORKCENTER**

Section 4.3.2, Downloading an Enhancement Package for SAP ERP, provides a step-by-step description on how to create a new maintenance transaction via this transaction. This procedure is recommended by SAP.

Figure 4.6 shows the CHANGE MANAGEMENT work center of SAP Solution Manager. In the OVERVIEW area, you can get an overview of all your maintenance activities in your system landscape. Moreover, from the CHANGE MANAGEMENT work center you can start the *guided procedure* of the Maintenance Optimizer, which guides you through the planning and download of support package stacks and enhancement packages, for example.

Note

Support package stacks contain specific combinations of several support packages and patches for a software product version. This bundling forms a consistent unit, taking into account the technical dependencies.

The *SP Stack Schedule*, which you can view in the SAP Service Marketplace at <http://service.sap.com/sp-stacks> • SP STACK SCHEDULE, provides information on delivery dates for support package stacks.

A special SAP Note is published for each support package stack. This note is a list of the support packages contained in the support package stack, and useful information and references. You can find these SAP notes at <http://service.sap.com/notes> using the search term "Release & Information Note" (RIN).

4.3.1 Basic Settings in the Maintenance Optimizer

Before you can use the Maintenance Optimizer, you need to make some basic settings for creating a maintenance transaction. The information page of the Maintenance Optimizer in the SAP Service Marketplace, which you can access via <http://service.sap.com/mopz>, is a good place to start. There you can find, for example, a description of the basic settings, an overview of frequently asked questions and their answers, and further information on the usage options of Maintenance Optimizer. Another source of information is SAP Note 1024932, which provides a list of related SAP notes and documentation on this topic.

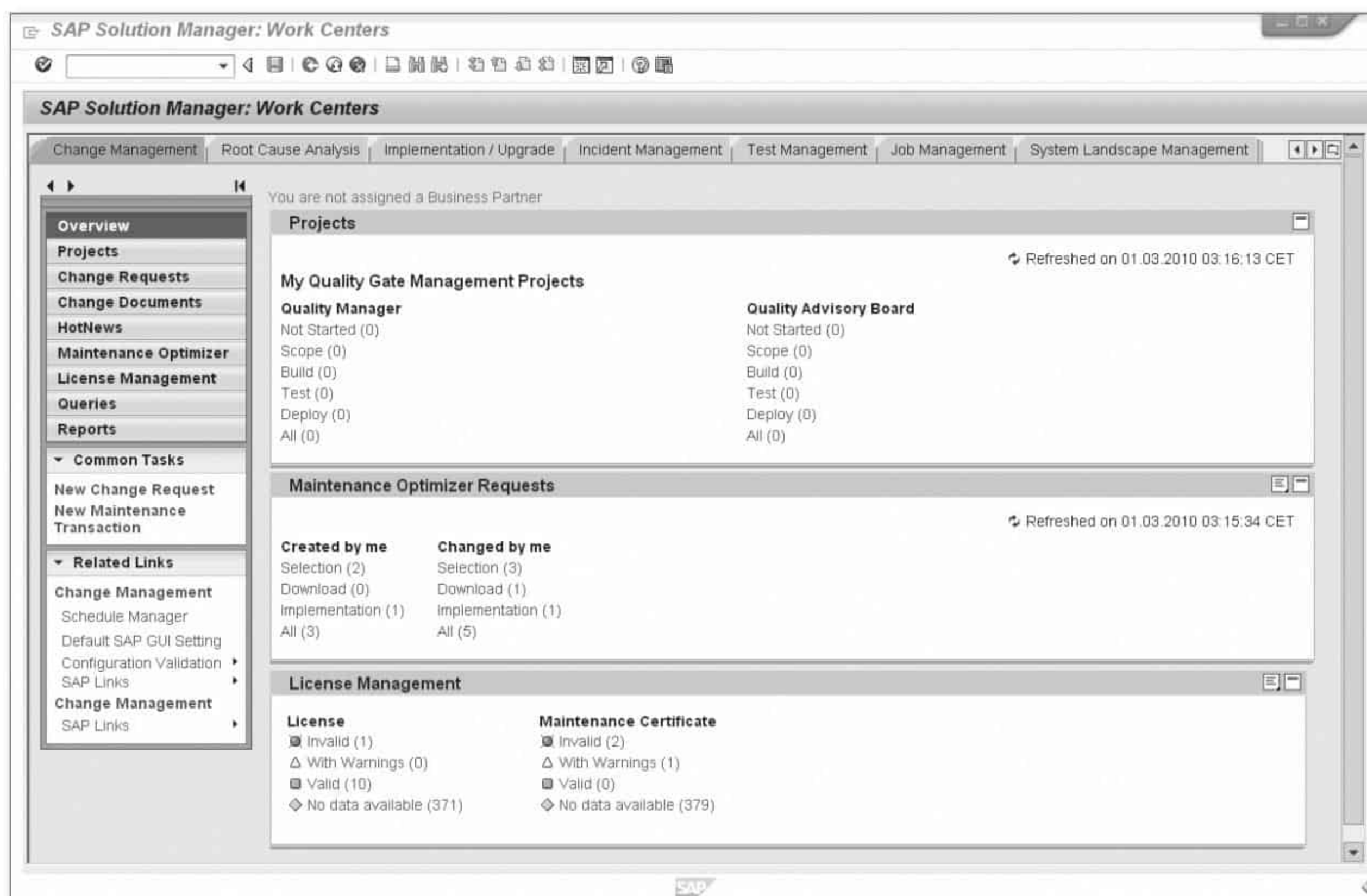


Figure 4.6 Initial Screen of the Change Management Work Center

4.3.2 Downloading an Enhancement Package for SAP ERP

This section describes how you can download enhancement packages for SAP ERP via a product maintenance transaction in the Maintenance Optimizer. The description is based on SAP Solution Manager 7.0 SP22.

1. Start Transaction SOLMAN_WORKCENTER, and navigate to the CHANGE MANAGEMENT work center (see Figure 4.6).
2. In the navigation area under COMMON TASKS, select the NEW MAINTENANCE TRANSACTION function.

The system opens a new window with the maintenance transaction that consists of various steps (see Figure 4.7).

Note

The Maintenance Optimizer retrieves its system data exclusively from the system landscape of SAP Solution Manager. During maintenance transactions, it takes into account all of the main instances of the product version assigned to the system to be maintained that are marked as relevant.

Figure 4.7 Initial Screen of the Maintenance Transaction of the Maintenance Optimizer

1. Plan Maintenance

- ▶ Enter the required information for this transaction; for example, a description of the maintenance transaction. Input is required for fields marked with a red asterisk.
- ▶ Optional: Select a solution from the value set.
- ▶ Select a product version, such as SAP ERP 6.0, for which you want to implement a maintenance transaction. The Maintenance Optimizer then suggests the systems that are created in the SAP ERP 6.0 product version in the system landscape.
- ▶ Select the systems where you want to install the enhancement package. In principle, you can create a maintenance transaction for one or more systems. For more information, refer to Chapter 5, Section 5.1.4, Special Features of the Package Configuration Files.
- ▶ Click the CONTINUE button to go to the next step.

2. Select Files

- ▶ Select the mode for receiving the files. Select `CALCULATE FILES AUTOMATICALLY`.
- ▶ Confirm your entries with `CONTINUE`.
- ▶ Select the maintenance option, `ENHANCEMENT PACKAGE INSTALLATION`. Confirm your entries with `CONTINUE`.

The Maintenance Optimizer displays up to seven additional steps in which you can select files for download. The number of additional steps may vary depending on your entries in these additional steps.

1. Additional step: Choose Stack

- ▶ Select the enhancement package version you want to install. After you've specified the enhancement package version, the system automatically suggests a support package stack in the next value set. Select the desired version of the target stack. Choose `STACK DETAILS` to view the support packages contained therein.
- ▶ You now see a list of the relevant technical usages. Activate the checkboxes of the technical usages you want to install. You can only select a technical usage if the prerequisites for the installation are met; that is, the required instance must be marked as relevant in the system landscape of SAP Solution Manager (see Section 4.2.3, Necessary Manual Postprocessing).
- ▶ Technical usages whose prerequisites are not met are indicated in gray. If you click on the name of a gray technical usage, the system opens a list with detailed information on the corresponding prerequisites; for example, the required instance. The red list entries indicate the prerequisites are not met.
- ▶ Click `CONTINUE` to confirm your selection.

2. Additional step: Confirm Target

- ▶ The Maintenance Optimizer takes you to a list of systems for which maintenance files were determined. Select the `SID` of a system to display the package list in a new dialog window, and check your selection.
- ▶ Click `CONTINUE` to confirm this step.

3. Additional step: Select Add-On Products

- ▶ The Maintenance Optimizer shows a list of installable add-on products. Click on the checkboxes of all add-on products you want to install.
- ▶ Click the `CONTINUE` button to go to the next step.

4. Additional step: Select OS/DB-Dependent Files

- ▶ The Maintenance Optimizer shows a list of operating systems and databases. Click on the checkboxes that you need to combine your operating system and database.
- ▶ Click CONTINUE to confirm your selection.

5. Additional step: Select Stack-Independent Files

- ▶ If your selection contains files that are not assigned to a stack, the Maintenance Optimizer now displays the files with no stack.
- ▶ Click the CONTINUE button to go to the next step.

6. Additional step: Select Stack-Dependent Files

- ▶ The Maintenance Optimizer shows a list of files that are part of a stack. Check this selection.
- ▶ Click CONTINUE to confirm your selection.

7. Additional step: Confirm Selection

- ▶ Select the tool you want to use to download the determined packages; for example, *download basket* or SLM.
- ▶ Click CONTINUE to confirm your selection.

8. Download Files

- ▶ When you select DOWNLOAD BASKET, the Maintenance Optimizer informs you that the files were sent to your download basket; a separate confirmation is not required. Click the DOWNLOAD FILES FROM DOWNLOAD BASKET button to start the download process.
- ▶ The Maintenance Optimizer informs you about the file names of the package configuration files and the storage location.
- ▶ Choose CONTINUE when you've completed the download process.

9. Implement

- ▶ In a list you can specify the implementation status of the systems for which you've created this maintenance transaction. Select the COMPLETED status if the installation was implemented successfully. Only when you've selected the COMPLETED status for all systems can you continue with the next step.
- ▶ The Maintenance Optimizer shows a list of the packages confirmed. Here, you can view detailed information such as package attributes and import conditions. You also have the option of viewing a package-dependent report on side effects (*side-effect report*).

- ▶ In the STACK FILES tab you can save the package configuration file in a local target directory on your workstation.
- ▶ Click CONTINUE to confirm this step.

10. End Maintenance

- ▶ End the maintenance transaction after the successful implementation. To do this, click the COMPLETE TRANSACTION button. Changes to the maintenance transaction can no longer be made.

4.3.3 Package Configuration File

Based on your selection, the Maintenance Optimizer generates a package configuration file in XML format (*stack XML*). The package configuration file includes a list of all packages that are imported into your SAP system, as shown in the excerpt of Figure 4.8. The implementation tool (for example, EHP Installer) needs this file to execute the installation. Using the package configuration file, all selected packages are imported during the enhancement package installation. You can find the package configuration file in the *Electronic Parcel Service inbox* (EPS inbox) of SAP Solution Manager under /USR/SAP/TRANS/EPS/IN.

The screenshot displays the SAP Solution Manager interface. The main window shows a test catalog structure for 'Localization Topics Non-HCM: Test Case Templates'. The structure is organized into several categories:

- Golden Tax China:**
 - GTI - Invoices with Good List (EHP3_GT1_003)
 - Creation of First Upload File to be uploaded to the GTI System (EHP3_GT1_002)
 - GTI-Inbound File Processing (EHP3_GT1_001)** (highlighted)
- RE-FX Portugal:**
 - Municipal Property Tax:**
 - Customizing:**
 - Property Tax Rate Limits in Portugal (GS_REFX_PT_CUST1)
 - Property Tax Rates and Exemptions in Portugal (GS_REFX_PT_CUST2)
 - Property Tax Installments (GS_REFX_PT_CUST3)
 - Property Tax Contract Types for Portugal (GS_REFX_PT_CUST4)
 - Master Data:**
 - Property Tax Master Data Maintenance and Calculation in Portugal (GS_REFX_PT_CUST11)
 - Property Tax Exemptions (GS_REFX_PT_CUST12)
 - Allocation of Usage Objects to Property Tax Objects (GS_REFX_PT_CUST14)
 - Cockpit and Postings:**
 - Property Tax Cockpit for Portugal (GS_REFX_PT_CUST21)
 - Maintenance of the Property Tax Data in the IMI cockpit (GS_REFX_PT_CUST22)
 - Property Tax Values from the Payment Request (GS_REFX_PT_CUST23)
 - Posting of Property Tax Installments (GS_REFX_PT_CUST24)
 - Carry Over of Property Tax Values (GS_REFX_PT_CUST25)
 - Property Tax Consistency Checks (GS_REFX_PT_CUST26)
 - Others:**
 - Property Tax Consistency after Customizing Changes (GS_REFX_PT_CUST31)

The right-hand side of the screenshot shows a 'Performance Assistant' window for the selected test case 'GTI-Inbound File Processing'. It provides detailed information:

- Description:** To download the Inbound File sent from the Golden Tax System to SAP system.
- Preparation:** Run the outbound program to create the Outbound file.
- Execution:**
 - Program: IDGTCN_IBFILE
 - Transaction: GT_DL
 - Select the Inbound File from the Server and Execute the program.
- Check:**
 - The program would update the SAP tables with the GTI number.
 - Run the transaction GT_UL in test mode for the same selection criteria.
 - Check the GTI number being updated against an invoice.

Figure 4.8 Excerpt of a Package Configuration File (Stack XML)

Practical Tip

In a dialog step of EHP Installer you must enter the path to your download directory. This directory can either be a local directory on your central instance or an integrated directory. Ensure that the following data is available in this download directory:

- ▶ All packages that the Maintenance Optimizer determined in the maintenance transaction
- ▶ Package configuration files
- ▶ Kernel archives
- ▶ Current versions of the `tp` and `R3trans` transport programs (as archives)

4.4 SAP Add-On Installation Tool

The SAP Add-On Installation Tool (SAINT) is the released import tool for older enhancement package versions for SAP ERP 6.0 systems (SAP ECC Server). Using Transaction SAINT, you can install enhancement packages up to and including enhancement package 3. With SAP enhancement package 4, the new installation tool, SAP EHP Installer, was launched. Only customers that operate the SAP ERP systems on a 32-bit architecture must import enhancement package 4 using SAINT. Currently, EHP Installer is not available for 32-bit platforms.

4.4.1 Differences to the EHP Installer

The installation process using the SAP Add-On Installation Tool (SAINT) differs fundamentally from an enhancement package installation using EHP Installer. The essential differences are as follows:

- ▶ The SAP Add-On Installation Tool is a pure ABAP-based installation tool and can be called via Transaction SAINT.
- ▶ The tool update is carried out via SAP Patch Manager (SPAM) update packages.
- ▶ Access to the operating system is not mandatory for the technical import process.
- ▶ Java components of an enhancement package are installed exclusively with the *Java Support Package Manager (JSPM)*, up to and including enhancement package 3.

- ▶ The technical import conditions must be checked in the preparation phase based on SAP notes.
- ▶ An installation using SAINT is a resumable process that is similar to importing support packages.
- ▶ There is no separate instance (shadow instance) for downtime minimization.
- ▶ During the import process, the SAP ERP system should not be used in production, and you shouldn't import transports or run background jobs.
- ▶ The SAP ERP system is not restarted during the import process. A restart is required if you exchange the kernel archives together with the enhancement package installation (as of enhancement package 4).
- ▶ To optimize the import runtime, you are provided with the options `PARALLEL IMPORT` (SAP Note 1309506) and `DOWNTIME MINIMIZED` (SAP Notes 744343 and 1293666).
- ▶ With SAINT you can't implement enhancement package 4 in *one* installation step. You first need to import enhancement package 3; then you can install enhancement package 4. Make sure to take this into consideration when you plan the technical downtime for the production system.

4.4.2 "Downtime Minimized" Option

If you want to reduce the downtime for importing SAINT to a minimum, you can use the `DOWNTIME MINIMIZED` import mode. In this process, SAINT executes some of the phases in the live operation and prompts you during the import to end the live operation. You are also notified when you can start the live operation again.

The disadvantage of this procedure is that the system is changed by the imports during its use in production, so the point of no return and the start of the downtime do not coincide. The point of no return starts with the import module, *Import 1*. Resetting the installation is then only possible by importing a database backup. In this context, you must by refer to SAP Note 744343.

Moreover, you should note that the `DOWNTIME MINIMIZED` option in the SAINT cannot be compared to the downtime minimized approach of EHP Installer. EHP Installer forms a parallel instance (shadow instance) during the live operation in which all installations steps are executed. Therefore the EHP Installer does not work in the actual live instance until the technical downtime starts; e.g., when switching to the new repository takes place. This procedure, which is called a *system switch*, is described in detail in Section 4.5.3, The System Switch Procedure of

EHP Installer. For the sake of completeness, you should note that EHP Installer imports some transports into the production system before the technical downtime and generates new indexes, if required.

In the SAP Service Marketplace at <http://service.sap.com/erp-inst> • SAP ERP • SAP ERP 6.0 • SAP ENHANCEMENT PACKAGE FOR SAP ERP, you can find the installation guide for installing an enhancement package using SAINT. This guideline is called "Installation Guide SAP ERP 6.0 Enhancement Package 4 Using SAINT/JSPM."

4.5 SAP EHP Installer

This section covers the SAP EHP Installer installation tool, which was released with the implementation of enhancement package 4 for installations. EHP Installer is based on the upgrade tool *SAPup*, and uses the system switch procedure. In comparison to traditional installation tools like SAINT, this procedure enables a considerable reduction of the technical downtime and has been tested and optimized successfully in recent years (see Section 4.5.3, The System Switch Procedure of EHP Installer).

Besides the system switch procedure, EHP Installer also provides a newly designed graphical user interface. Along with this new design, all user dialogs were revised and made more user friendly. In addition, the majority of technical information is now directly read from the system; only customer-specific information must be entered via user dialogs. Furthermore, the error messages were considerably improved with more meaningful texts and with additional information and references to log files. Another optimization was achieved by standardizing the new user interface, *Software Delivery Tool* (SDT GUI), for the following system types:

- ▶ ABAP-stack systems
- ▶ Java-stack systems
- ▶ Dual-stack systems (ABAP and Java)

In the past, two different user interfaces were required for an enhancement package installation in these system types. In the case of dual-stack systems, these even had to be operated in parallel. With EHP Installer, you can edit these system types with a standardized user interface, which is a considerably more user friendly.

Now let's look at the installation tool, EHP Installer. The following sections use path specifications for Unix operating systems. For path specifications for other operating system types, refer to the installation document.

Note

EHP Installer has been enhanced once again in its functional scope: Besides the installation of enhancement packages, you can now also use it for *pure support package installations*. In maintenance projects without enhancement packages, only the *SAP Patch Manager* (SPAM) has been released so far. So now you can select between two tools for ABAP-stack systems:

- ▶ SPAM
- ▶ EHP Installer

EHP Installer is particularly suited for installing a larger number of support package stacks in a maintenance project. Using EHP Installer technology, you can considerably reduce the system downtime in comparison to the SPAM.

4.5.1 Key Terminology

The system switch procedure used today has a long development history. Before discussing the procedure in more detail, however, let's first outline some terminology for a better understanding:

- ▶ **Repository**

The repository is the central storage for all development objects of the ABAP Workbench – for example, programs, table definitions, dynpros, function modules, or classes – and it is used across clients. The entire repository is in the form of client-independent tables at the database level. One of the main activities of an upgrade or enhancement package installation is to replace development objects in the repository with new versions that are delivered with the new release or enhancement package.

- ▶ **Shadow repository**

In the system switch procedure, a temporary shadow repository is created in parallel to the repository of the source system. In this shadow repository, you can import new versions of the development objects while production work continues in the original system. At the database level, the shadow repository consists of *shadow tables*, whose names often only differ in the ending ~ from the name of the original table in most database platforms. However, some client-dependent shadow tables are created too. Although they are not part of the repository in the narrower sense, they are indispensable for operating the shadow instance.

- ▶ **Shadow instance**

A shadow instance is a minimal ABAP system instance created in parallel to the

source system. Contrary to the original instance, the shadow instance only accesses the shadow repository. The combination of the shadow instance and the shadow repository forms the shadow system, which was used for the first time with the system switch upgrade technology.

► **Repository switch**

The repository switch procedure involves an upgrade technology that was developed for reducing downtime. The main purpose of this procedure is the creation of a shadow repository (formerly without a shadow instance) in parallel to the live operation and the switching of the repository to the technical downtime.

► **System switch**

The system switch procedure was introduced with SAP Web Application Server 6.10 and is still used today; it is a further development of the repository switch procedure. In addition to the shadow repository, a new SAP instance, the shadow instance, is generated that has access to the tables of the shadow repository. The shadow instance enables the manual adjustment of the data dictionary (DDIC) modifications and the activation of the objects in parallel to the live operation. The switch to the new repository takes place in the technical downtime. This advanced technology enables a significant reduction of system downtime.

4.5.2 Development from the Repository Switch to the System Switch Procedure

The *repository switch procedure* was established with the upgrade from SAP R/3 2.2 to SAP R/3 3.0. With this procedure, it was possible to considerably reduce the technical system downtime for the first time. Parallel to the live operation, a new repository was created in the background of the live repository, in which an early main import was executed. The switching to the new repository didn't take place until the technical downtime, though the manual adjustment of the data dictionary modifications, and long-running phases (for example, the activation of the DDIC), were still part of the technical downtime.

In the years following the release of SAP R/3 3.0, system downtime became more significance to enterprises, often due to increasing globalization. As a result, a new or improved procedure for reducing this downtime became the goal of SAP development. Different technologies were discussed and compared; finally, SAP decided to further develop the existing procedure, the *system switch upgrade*, which is still used successfully today. EHP Installer also uses the system switch upgrade

procedure, but in an adjusted form. To illustrate this distinction, it is referred to as the *system switch procedure* in the SAP enhancement package installation.

4.5.3 The System Switch Procedure of EHP Installer

Now let's focus on the system switch procedure used by EHP Installer. Prior to the actual technical downtime, a comprehensive technical installation preparation and preprocessing takes place while the regular live operation continues. This period is referred to as *installation uptime* (or *uptime* for short).

One of the first steps during uptime is to generate a shadow instance. The required directory structure at the operating system level is created in the installation directory of EHP Installer under EHPI/ABAP/<SAPSID>. The shadow instance is prepared for the creation of the shadow repository later in the installation.

The actual shadow repository is generated in the DBCLONE phase. But unlike a technical upgrade, the shadow repository is not created from the export media of the new SAP release version, but from the original system. This process occurs in parallel to the live operation and is referred to as the *clone process* or *system clone*. To create the shadow repository, you copy the client-independent repository tables of the original system and selected client-dependent tables as shadow tables (see Figure 4.9). Because the term *clone* is often confused with a one-to-one copy of the original system, we want to emphasize once again that the only tables copied are those that are required for the operation of the shadow instance. Large tables with application data are not usually copied.

The creation of the shadow repository and various other activities in the shadow system can be implemented in parallel. If the number of parallel uptime processes (*maximum uptime processes*) is too high, this can compromise the live operation (see Chapter 5, Section 5.3, Analysis and Optimization of an Enhancement Package Installation). The shadow system is started for the first time in the START_SHDI_FIRST phase. During the uptime, the following steps, which characterize the system switch procedure, are performed in the shadow system:

- ▶ Modification adjustment of the data dictionary objects (Transaction SPDD).
- ▶ Activation of inactive DDIC objects in the ACT_UPG phase. The inactive dictionary objects can originate from both the enhancement packages and the relevant support packages or customer-specific transports.
- ▶ Distribution of activated DDIC objects in the PARDIST_SHD phase. In this phase it is decided whether and when the relevant database objects must be changed, and the necessary database statements are predefined.

- ▶ An early main import (SHADOW_IMPORT_* phases), which imports the majority of the new support packages, enhancement packages, and installed add-on packages (with kernel tools) into the shadow repository.

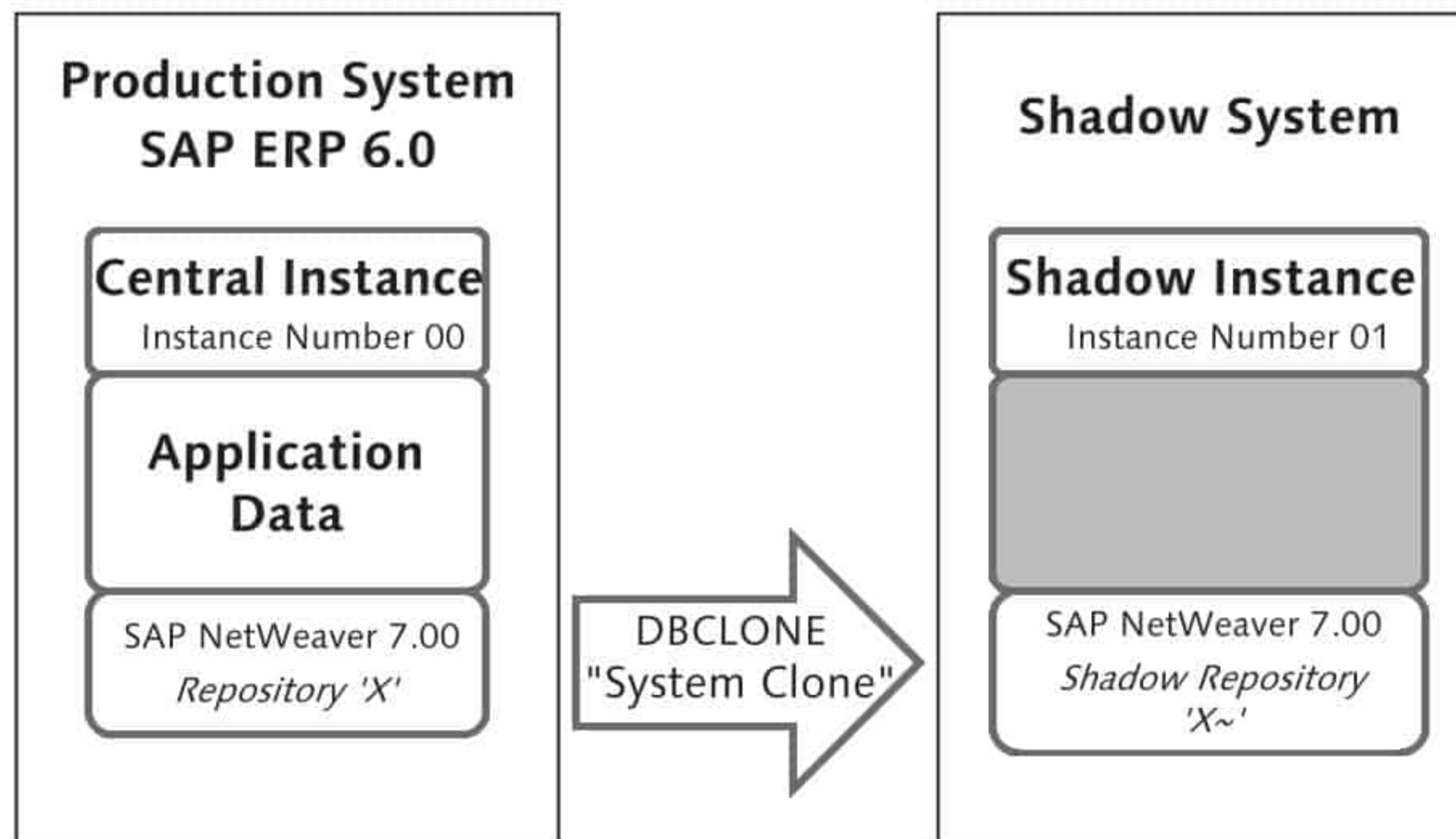


Figure 4.9 Creating the Shadow Repository (Schematic Display)

After these steps, the shadow repository is almost complete and contains a consistent description of the target system's table structure. However, it is still separated from the original system. The shadow instance is stopped and deleted before the technical downtime, or more precisely, in the STOP_SHDI_LAST phase. The shadow instance (caution: not the shadow repository!) is generated for one purpose: So that the administrator or developer can log on to the shadow system to implement the modification adjustment of the data dictionary objects, and then remove activation errors.

Switching to the new repository only occurs during the technical downtime and when importing the pending data. The repository switch works as follows: The repository tables of the original system are deleted (but not the tables including the application data!), and the corresponding tables of the shadow repository are renamed from $X\sim$ to X (x stands for the table name).

The switch to the new repository takes place in the first half of the technical downtime. The new SAP kernel is also exchanged, and the SAP instance profile is adjusted. All downstream activities run on the "new" instance. These include, for example, the main import, the import of outstanding transport requests, the implementation of tables with application data, the execution of programs, and other phases.

One side effect of this system switch procedure is that additional hardware resources are required for the shadow instance:

- ▶ Disk space (in the database instance)
- ▶ Processor performance (CPU)
- ▶ Memory; that is, available physical main memory

It is therefore also possible to install the shadow instance on a physically separate host; Chapter 5, Section 5.2.4, Configuring EHP Installer (Preconfigured Modes), provides detailed information on this topic. The shadow instance, however, is generated in a minimum configuration, and the required hardware resources are usually available in the hardware of the production system.

4.5.4 Supported Tools for the Enhancement Package Installation

The release of EHP Installer took place together with the implementation of enhancement package 4 for SAP ERP 6.0 and enhancement package 1 for SAP NetWeaver 7.0. Older enhancement package versions are installed using SAINT and JSPM. You can use Table 4.1 to determine the respective released tools for installing enhancement packages.

SAP Enhancement Package Versions	SAINT	JSPM	EHP Installer
Enhancement packages 2 and 3 for SAP ERP	✓	✓	✗
As of enhancement package 4 for SAP ERP	✗ *	✗ **	✓
Enhancement package 1 for SAP Solution Manager 7.0	✓	✓	✗
Enhancement package 1 for SAP NetWeaver PI 7.1	✗	✗	✓
Enhancement package 1 for SAP NetWeaver 7.0	✗	✗	✓

**Exception: EHP Installer is only released for 64-bit platforms. Enhancement package 4 installations on 32-bit platforms must be implemented using SAINT.*

***Exception: JSPM can only be used if no enhancement package 1 for SAP NetWeaver is installed together with the enhancement package 4 installation (SAP NetWeaver systems only).*

Table 4.1 Supported Tools for SAP Enhancement Packages

Refer to SAP Note 1256600 for installing enhancement packages. SAP Note 1245473 discusses current developments, changes, and important information on EHP Installer.

4.5.5 Technical Structure of the Installation Program

In the past, you had to use different user interfaces for ABAP-stack and Java-stack systems in case of an upgrade or an enhancement package installation. Both system types use separate programs that work with system-specific control programs (server programs). With EHP Installer, the different control programs have been harmonized. Although stack-individual installation programs are still used, such as the SAPehpi program for ABAP-stack systems and the SAPJup program for Java-stack systems, they are now capable of communicating with *one* control program, *Software Logistics Controller* (SL Controller), as shown in Figure 4.10.

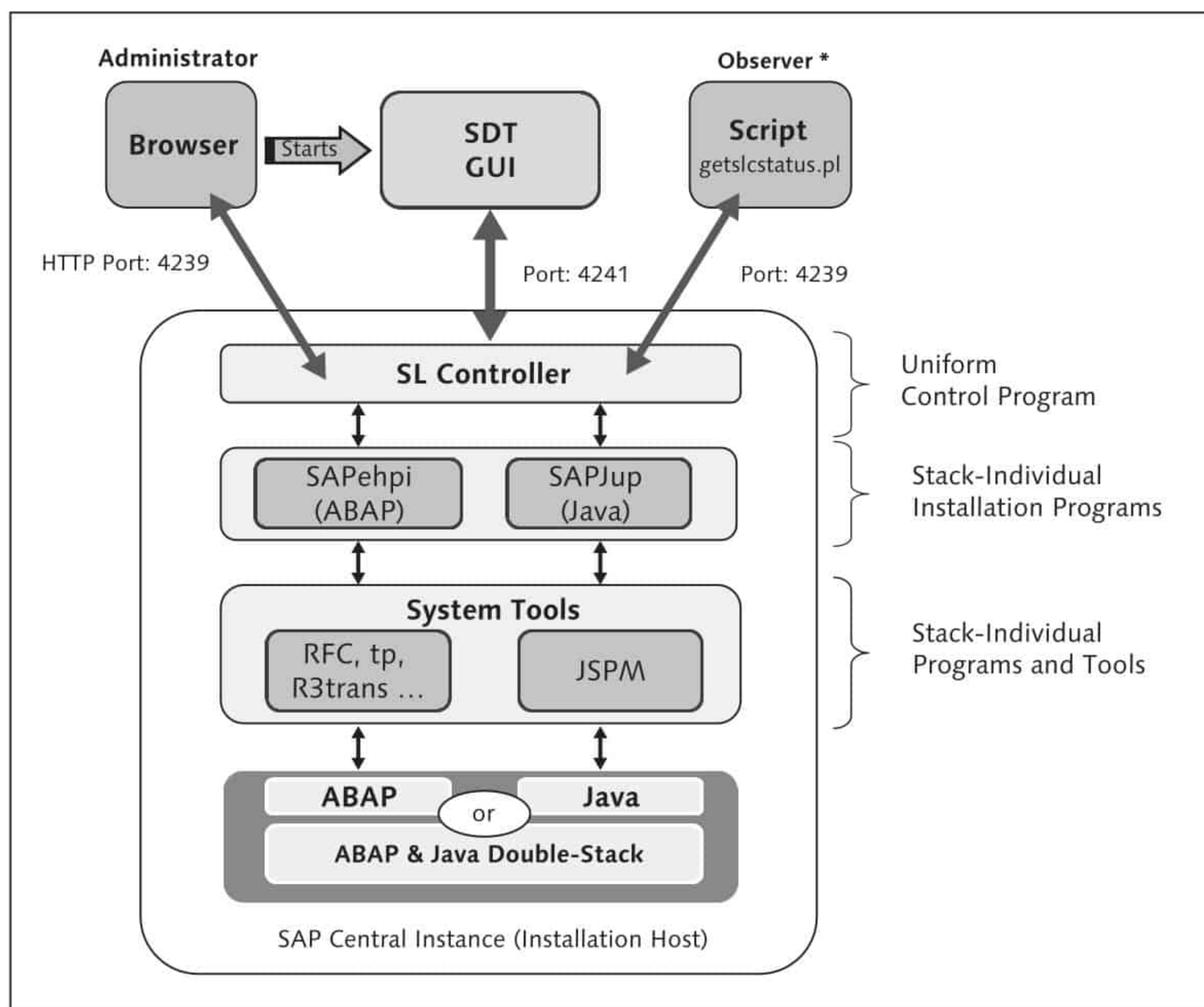


Figure 4.10 Schematic Structure of EHP Installer

Before discussing the design of the graphical user interface in more detail, let's first take a look at the structure of EHP Installer. EHP Installer is structured as a two-level client-server application. The individual parts of the application include the following:

- ▶ The front-end tool, Software Delivery Tool GUI (SDT GUI)
- ▶ The server program, Software Logistics Controller

Front-End Tool SDT GUI

SDT GUI is the central user interface of EHP Installer. SDT GUI forwards all user entries and commands for starting, stopping, or repeating a phase to SL Controller.

SDT GUI manages the user role of the *administrator*. The administrator is authorized to make dialog entries, start and stop the installation, or repeat individual phases. The *observer* mode is only authorized to query the installation status. The observer mode is not currently included in the standard scope of EHP Installer.

Server Program SL Controller

SL Controller is the next step of the Upgrade Assistant Server (UA Server), and is used both for enhancement package installations with EHP Installer and in new upgrade tools. SL Controller can be used in multiple tools; that is, it can work with both ABAP and Java programs, as shown in Figure 4.10.

When EHP Installer is used, you don't start SL Controller directly, but via a script called `STARTUP` (Windows: `STARTUP.BAT`), which is executed in the SAP central instance and which starts SL Controller automatically. SL Controller requires an authentication of the user via a password. SL Controller itself, however, doesn't execute any technical changes to the SAP system. Its function can be described by the term *control module*, because its main tasks are to forward user input and control and monitor the communication between the user frontend and the installation process. Depending on the system type, SL Controller works with the `SAPehpi` program for ABAP-stack systems, or the `SAPJup` program for Java-stack systems. In the case of dual-stack systems, it communicates with the two programs in parallel. The `SAPehpi` and `SAPJup` programs implement the technical installation activities. In doing so, they access secondary programs; for example, `JSMP` or the `tp` transport control program, if required.

The task area of SL Controller can be illustrated based on a practical example: A user dialog prompts the administrator to enter the password of the DDIC user. After the administrator has entered the password via the user frontend, he confirms his entry with `CONTINUE`. SL Controller receives the entry confirmation and forwards it to the `SAPehpi` program, which then starts a *remote function call* (RFC) to the SAP system and checks the entered password for the DDIC user. If the

password entered is incorrect, the RFC call cancels with an error code. This information, in turn, is forwarded to the SAPehpi program, which then creates a new user dialog with the additional message that the password entered was incorrect. It then transfers the dialog to SL Controller, which displays the new dialog window for the user via SDT GUI. In this new dialog window with the error message, the administrator can reenter the DDIC password. After the password has been entered again, the administrator can confirm his entry with CONTINUE. If the entry is correct, the installation continues.

4.5.6 Communication Routine

The SL Controller server program is started on the installation host, the SAP central instance; the user interface, STD GUI, however, can optionally be started on the workstation. The only communication between these two components is via the dialogs of SDT GUI on the workstation.

To create the communication routine, start the installation program in the SAP central instance using the `STARTUP` script. SL Controller starts and waits on port 4241 for a connection to SDT GUI in the standard setting. The administrator has two options for establishing the connection to SL Controller:

- ▶ Via a direct call of SDT GUI using the *Dual Stack Upgrade GUI (DSUGUI)* program
- ▶ Via an indirect call of SDT GUI using an HTTP request, for example, an Internet browser

Both variants are designed in such a way that they can be executed on a workstation. The advantage of this communication routine is obvious: Even if the administrator ends the frontend tool (whether intentionally or due to a technical problem; for example, a defective network connection), SL Controller and the programs continue on the SAP central instance. So the enhancement package installation is continued without an active frontend tool. You can log on to SL Controller again later by starting the frontend tool.

If you decide to call SDT GUI via an Internet browser, this call is via the `http://<host name of central instance>:<port>` address. Port 4239 is used in the standard setting. The administrator can start SDT GUI via the Internet browser and access the phase list of the installation. A manual change of all port numbers is possible when you start SL Controller. Chapter 5, Section 5.2.3, Parallel Enhancement Package Installations on a Physical Host, provides the exact instructions.

The individual user entries are done via the graphical frontend, SDT GUI, and forwarded to SL Controller. It receives the commands; however, it doesn't execute them itself but forwards them to SAPehpi or SAPJup.

The installation programs process the information received and are responsible for the installation activity. In doing so, they access secondary programs if required; these programs execute further installation instructions. These secondary programs include, for example:

- ▶ The `tp` transport control program that starts one or more transport steps
- ▶ The `R3trans` transport program; for example, for a data import
- ▶ An RFC call that can start background jobs and reports via function modules

On the Java side, the JSPM is used to deploying process of software packages. In dual-stack installations, the secondary programs work in parallel.

Another task of the SAPehpi or SAPJup programs is to monitor and evaluate the program execution, to interrupt or continue the installation, and to forward a message to SL Controller in case of an error.

The entire installation process of an enhancement package installation using EHP Installer includes 500 phases that are processed successively. Some phases are done within a few seconds (for example, changing a field content of a table or setting a flag); other phases have runtimes that last for hours; for example, importing entries into control tables or executing reports and programs.

4.5.7 Starting EHP Installer

This section outlines the start process of the installation tool. You need two files for this: The enhancement package installation tool as an SAR archive and the SAP cryptographic software tool (JCE Policy archive). You can find both archives in the SAP Service Marketplace at <http://service.sap.com/swdc>. In the first step, you, as the `<SID>adm` user, extract the SAR archive to your SAP central instance with the following command:

```
SAPCAR - xvf <download directory>/<path>/<archive>.SAR
```

This process creates the installation directory called EHPI with numerous subdirectories at the operating system level. The directory structure as a whole is simply referred to as *installation directory* (see Section 4.5.8, Installation Directory). The

installation directory contains the `STARTUP` start script (Windows: `STARTUP.BAT`), which the `<SID>adm` operating system user can execute using the command

```
/EHPI/STARTUP jce_policy_zip=<path specification JCE Policy archive>
```

This command starts SL Controller. In the next step, the frontend tool, SDT GUI, must be started via an Internet browser with the URL `http://<host name>:4239`, or by directly executing the SDT GUI program using the command

```
EHPI/sdt/exe/DSUGUI
```

All other interactions occur via the graphical user interface. Refer to the technical documentation of EHP Installer in the SAP Service Marketplace at <http://service.sap.com/erp-inst> for further descriptions on the exact procedure of the start process.

4.5.8 Installation Directory

In the installation directory under `/EHPI/ABAP/LOG` you can find the log files on the installation, in addition to many installation-relevant files. This is also the storage location of the `SAPehpiCONSOLE.LOG` file, which documents the entire installation process. This file records user interactions with exact timestamps and exact start and end times for the installation phases. The `SAPehpiCONSOLE.LOG` file is a helpful utility for error and installation analysis. The `/EHPI/ABAP/SAVE` directory contains files that were saved during the enhancement package installation and can be reused for follow-up installations; for example, the instance profile of the shadow instance. The `/EHPI/ABAP/TMP` directory is the temporary directory of EHP Installer. Here, you can store, for example, transport files before and while the `tp` transport control program imports them. After the transport has been completed, they are moved to the `/EHPI/ABAP/LOG` directory. The `/EHPI/ABAP/BIN` and `/EHPI/ABAP/MEM` directories contain very sensitive files, such as the `SAPehpi` ABAP installation program, various library files, control files, and the "memory" of EHP Installer.

In the installation directory under the `/EHPI/ABAP/EXE` path, you can find the kernel programs that are used during the enhancement package installation. The directory of the shadow instance is stored under `/EHPI/ABAP/<SID>`. The `/EHPI/SDT` directory contains files for the frontend tool, SDT GUI. The `/EHPI/JAVA` structure comprises the executable files and log files of the Java components. Figure 4.11 shows the schematic structure of the installation directory.

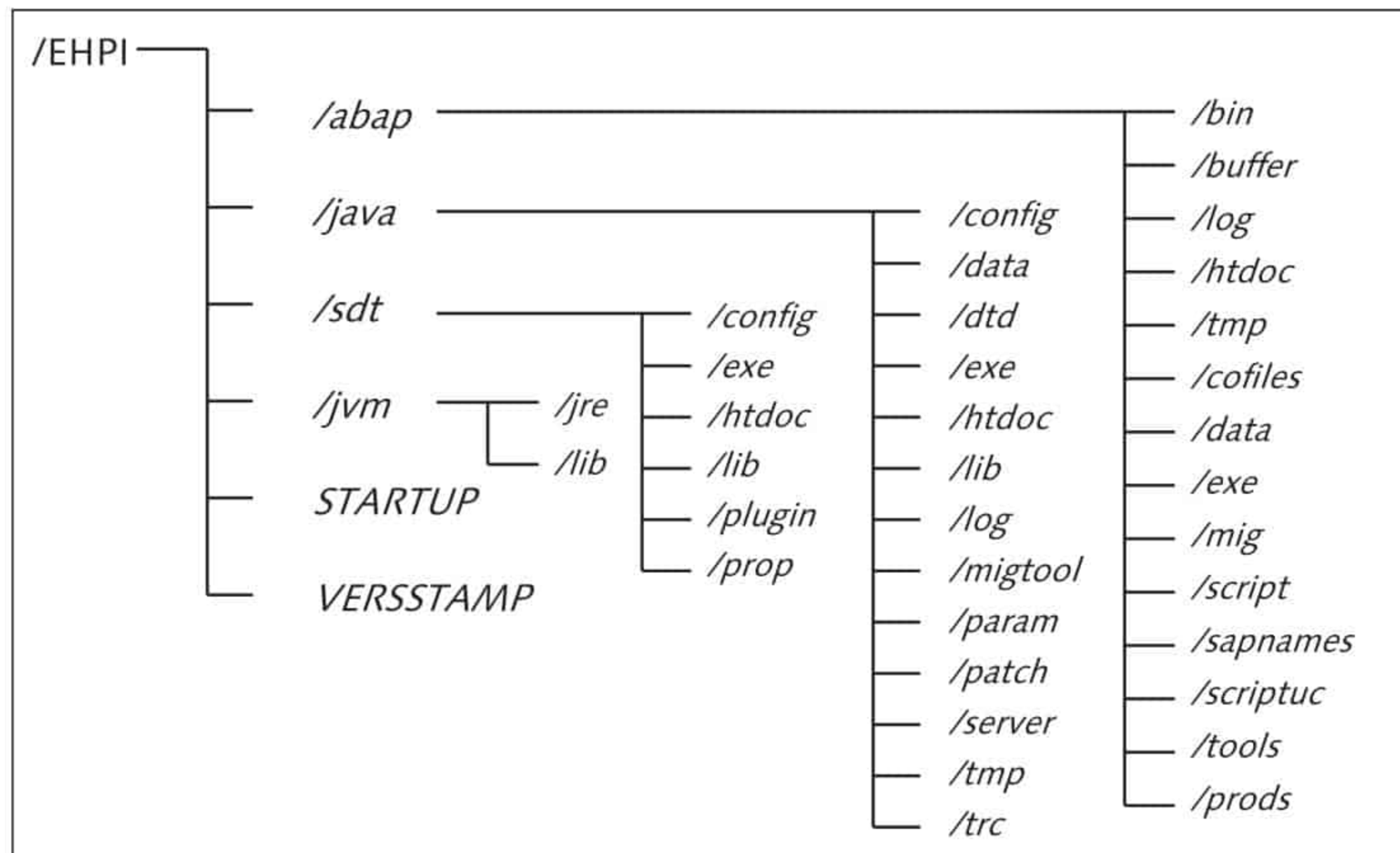


Figure 4.11 Structure of the Enhancement Package Installation Directory (First and Second Level)

4.5.9 Installation Interface SDT GUI

In the previous chapter, you learned that EHP Installer uses the user interface of Software Delivery Tool (SDT GUI). This newly designed graphical interface was introduced with SAP Business Suite 7 (Figure 4.12). Among other things, the new technology allows for the provision of a holistic frontend tool to ABAP-stack, Java-stack, and dual-stack systems.

SDT GUI lets you monitor the installation process and navigate through the individual installation steps (roadmap steps). The GUI consists of the following main elements:

- ▶ Menu bar
- ▶ Installation roadmap, including steps 1 through 8
- ▶ Tabs (for example, Monitor, ABAP, Java)
- ▶ Navigation buttons

The following sections present the SDT GUI functions individually (see Figure 4.12).

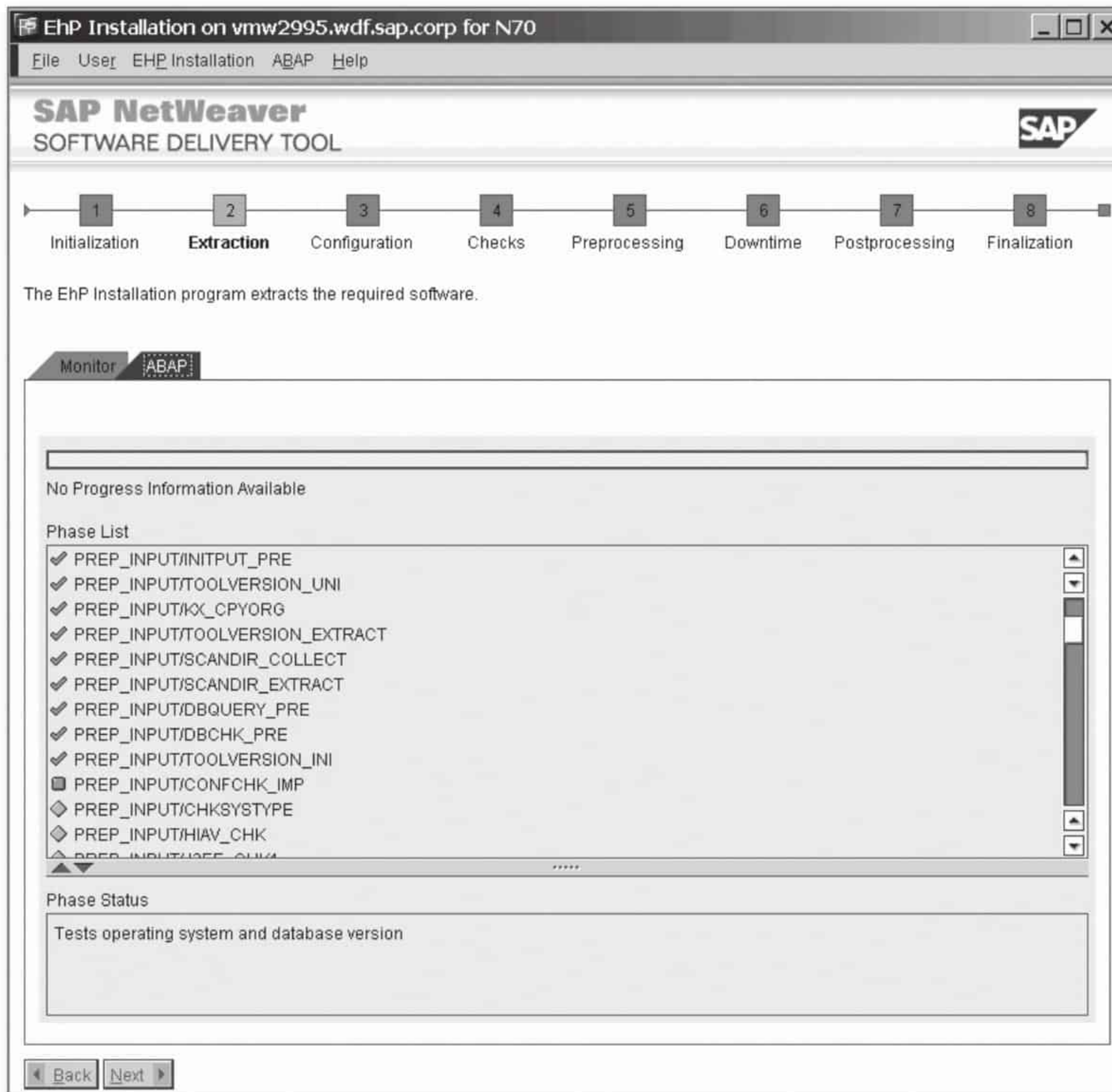


Figure 4.12 Installation Interface of EHP Installer in the Extraction Roadmap Step

Menu Bar

The menu bar offers various selection options for controlling an enhancement package installation. The most important menu options are the following:

- ▶ **FILE**
In this menu option you can close the user interface without terminating SL Controller. The installation process continues in the background.
- ▶ **USER**
In this menu option you can change the administrator password.

- ▶ **ENHANCEMENT PACKAGE INSTALLATION**
You are provided with selection options for immediate termination of the installation, and the option to completely reset the current installation with **RESET INSTALLATION**. This way, you undo all changes made by the installation. Your SAP system is then in the initial state it had prior to the installation. A reset of the installation in roadmap steps 1, 2, 3, or 4 is only possible using the **BACK** button.
- ▶ **ABAP**
The options in the **ABAP** menu entry are not required for regular installations. Use these options if the SAP support team requests you to do so.
- ▶ **HELP**
Various help offerings are available here.

Installation Roadmap

The installation phases are subdivided into eight consecutive steps, the *roadmap steps*, for example, roadmap step 1 (Initialization) or roadmap step 6 (Downtime). The active roadmap step is indicated in orange in the user interface. This highlighting helps you to monitor the progress of the installation. Section 4.5.10, Roadmap Steps of an Enhancement Package Installation, presents the individual installation steps in detail.

Tabs

The information and input area is subdivided into various tabs; for example, **MONITOR** and **ABAP**. The **MONITOR** tab informs you about the status of the respective roadmap step.

ABAP-stack systems have the **ABAP** tab; **Java**-stack systems, however, include the **JAVA** tab. Accordingly, both tabs are available for dual-stack systems. The required user entries during a roadmap step are made in the respective tabs of the stack. By switching between the tabs, you can conveniently handle enhancement package installations in dual-stack systems via a holistic frontend tool.

Navigation Buttons

Navigation between the roadmap steps is done using the control elements, **BACK** and **NEXT**, which supports an intuitive usage. If you are in roadmap steps 1 through 4, you can use the **BACK** button to completely reset the installation. Note, however,

that you must manually delete the installation directory after a successful reset. The directories are created again by reextracting the SAR archive.

Practical Tip

Observer Mode and Alert Function

To activate the observer mode and the alert function, the following SAP Developer Network (SDN) blog provides useful tips:

<https://www.sdn.sap.com/irj/scn/weblogs?blog=/pub/wlg/12870>.

Both functions will be included again in the standard functional scope in a future version.

Scroll Mode

Officially, the scroll mode is no longer intended for installations. However, you can still start it for ABAP-only systems from the installation directory under /EHPI/ABAP/BIN using the command

```
SAPehpi gt=scroll
```

A tool that allows for session management at the shell level must be installed in the target system. The scroll mode does not provide you with any of the advanced features that are available in the user interface. Only use the scroll mode in exceptional cases.

4.5.10 Roadmap Steps of an Enhancement Package Installation

The eight consecutive roadmap steps describe the installation process from the start of the installation tool to the successful completion of the process. The installation consists of several hundred phases that are processed sequentially. These phases are grouped in eight logically consecutive roadmap steps (see Figure 4.13). Installation steps 1 through 4 prepare the system for the enhancement package installation. This is followed by the *Preprocessing* and *Downtime* steps. Subsequent to the technical downtime, various postprocessing tasks are performed for the installation, before you can close the user frontend in the last step (*Finalization*). The following pages present the individual roadmap steps to give you an impression of what happens in the background of the installation.

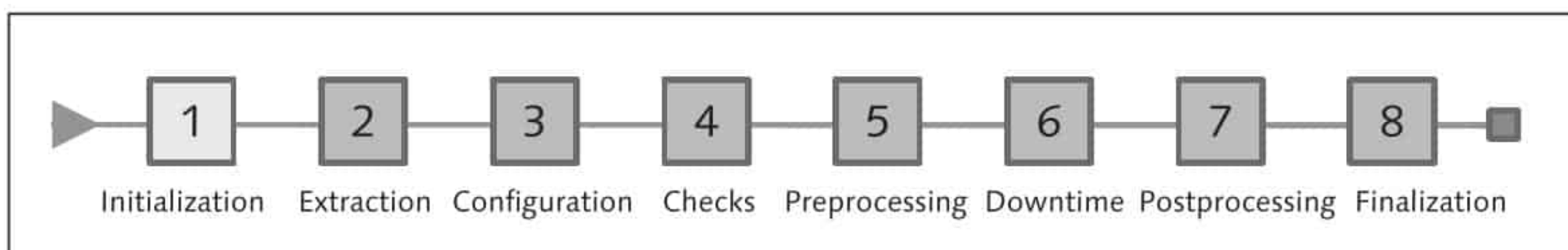


Figure 4.13 Roadmap Steps of EHP Installer

Roadmap Step 1: Initialization

In the *Initialization* roadmap step, SL Controller analyzes your system. To do this, the installed SAP system stacks are determined in the SAP central instance; for example, there are checks to see if your system is an ABAP-stack, Java-stack, or dual-stack system. According to this analysis, in the case of an ABAP-stack, for example, the ABAP tab is added to the user interface next to the MONITOR tab. The *Initialization* roadmap step is completed within a few seconds. When you click the NEXT button, the installation continues with the next roadmap step.

Roadmap Step 2: Extraction

In the *Extraction* roadmap step, the system settings are read and data is queried via the system. In the dialog windows, you must enter, for example, the enhancement package installation key, the path to your download directory, and the password of the DDIC user.

EHP Installer analyzes the content of the download directory and reads which enhancement package components and support packages are stored there. The packages are extracted in the SCANDIR_* phases and copied to the transport directory. The system kernel is copied to the installation directory under /EHPI/ABAP/EXENEW and /EHPI/ABAP/EXE. The installation tool checks the DIR_PUT profile parameter and compares it with the path of the installation directory. If the values don't match, it automatically sets the DIR_PUT profile parameter to the value "EHPI/abap." As this roadmap step proceeds, ABAP tools, such as help reports, are imported into the system via transport.

The net runtime of the *Extraction* roadmap step amounts to a couple of minutes. To complete this phase, a dialog window appears including instructions and information on possible errors or warnings (see Figure 4.14). You can also find this information in the CHECKS.LOG file in the installation directory under /EHPI/ABAP/LOG (in case you should close the window accidentally). The history of the CHECKS.LOG file is included in the CHECKS.SAV file. Perform the necessary corrections, and repeat this phase. You can start the next roadmap step as soon as the dialog window no longer contains any error entries.

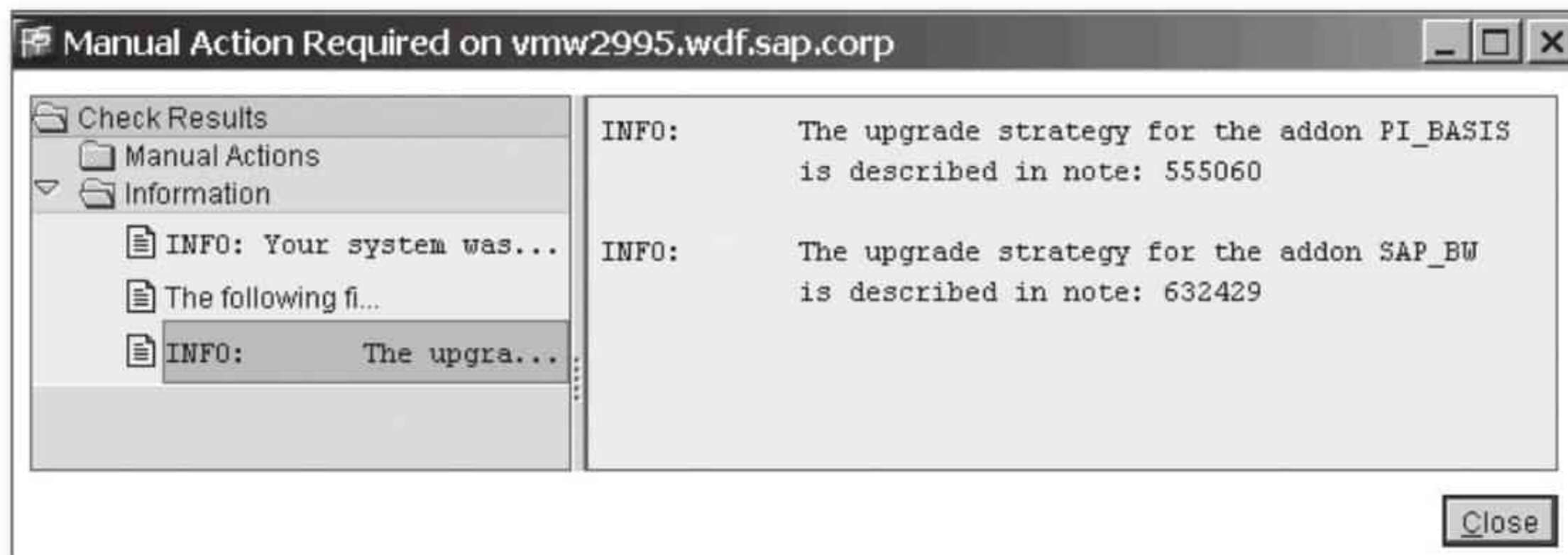


Figure 4.14 Dialog Window with Information and Instructions

Roadmap Step 3: Configuration

In the *Configuration* roadmap step, you must make some technical specifications on the installation. During your first installation, you should allow some extra time for this step. First, some configuration information on the installation is required.

Note

The preconfigured mode, `MANUAL SELECTION OF PARAMETERS`, is comparable with an expert mode. Select this option if you want to enter the detail information on the installation individually. You can use the expert mode, for example, to specify the number of batch, uptime, and `R3trans` processes individually, or to freely select the instance number of the shadow instance. For more information on preconfigured modes, refer to Section 5.2.4, *Configuring EHP Installer (Preconfigured Modes)*.

During the `EHP_INCLUSION` phase, you will be asked to provide the package configuration file (stack XML). Enter the correct path to this stack XML file, which you've generated in SAP Solution Manager prior to the start of the installation. The stack XML file is stored in the `/SAPMNT/TRANS/ EPS/IN` directory of your Solution Manager (see Section 4.3.2, *Downloading an Enhancement Package for SAP ERP*, and Figure 4.8). If the stack XML file is stored in your download directory, the installation tool automatically offers it for selection. All support packages and enhancement package archives, which are located in the download directory, are then extracted to the `<DIR_EPS_ROOT>/IN` directory of the central instance (default: `/SAPMNT/TRANS/ EPS/IN`). This may take some time. Subsequently, it is checked whether a valid installation queue can be created from the imported packages.

Later in the installation — more precisely, in the IS_SELECT phase — you obtain an overview of the add-ons installed in your system. Use the linked SAP notes to check which handling is suggested, and use this information to decide whether you can keep the add-on in its current version or whether you need to update it. Prior to the start of the installation, inquire about which strategy your add-on vendor supports. For more information on handling add-ons, refer to Chapter 5, Section 5.2.5, Handling Add-Ons in Enhancement Package Installations.

Caution: In the following phase, BIND_PATCH, you can add additional support packages to your installation queue; for example, the latest HR support packages or support packages for your add-on software. The installation tool checks to see if the equivalence of the support packages is met. (If warnings occur, do not ignore them under any circumstances! For more information on the topic of equivalence, refer to Chapter 2, Section 2.2.6, Support Package Strategy and Equivalence Levels.) The shadow instance is prepared over the course of this roadmap step and includes, for example, the generation of instance profiles.

Practical Tip

Check the parameters of the shadow instance profile. You can find the profile files in the installation directory under /EHPI/ABAP/<SID>/SYS/PROFILE. If sufficient hardware resources are available, you can add individual parameters or increase the buffer areas. This can positively influence the duration of the installation uptime.

At the end of this roadmap step, a new dialog window opens displaying information and instructions on errors and warnings. Repeat the roadmap step until all errors are removed.

Roadmap Step 4: Checks

The *Checks* roadmap step is the last step of the installation preparation. Until the end of this step, you have the option of resetting the installation using the BACK navigation button. In the subsequent installation step, *Preprocessing*, this is only possible via the RESET INSTALLATION menu option.

In this roadmap step, the installation tool examines whether the prerequisites required for the enhancement package installation are met. These prerequisites include, for example, whether the existing disk space meets the requirements of the installation. You are usually prompted to create new table spaces in the database and extend existing ones. Further examination steps check whether open or canceled updates exist in your system. These must be removed at the beginning

of the *Downtime* roadmap step at the latest. The net runtime of the *Checks* roadmap step amounts to a couple of minutes. Note that the creation of new table spaces may take some time.

Roadmap Step 5: Preprocessing

At the beginning of the *Preprocessing* roadmap step – more precisely, in the *REPACHK2* phase – you are prompted to lock the development environment. The result of locking the development environment in the development system is that transport requests can no longer be created, released, and transported. The development activities must cease with the confirmation of this lock (until the completion of the enhancement package installation).

The result of locking the development environment in a production system is that transports can no longer be carried out. Emergency corrections can only be implemented in the system directly. Consider here that possible corrections to the repository no longer exist in your production system after the system switch to the technical downtime. All manual changes to the repository have the potential to result in errors and cancelations of the installation routine. For this reason, carefully plan and communicate the setting of this lock in your enterprise.

The lock of the transport environment is followed by the creation of the shadow repository. In the *DBCLONE* installation phase (formerly *RUN_RSDBSCP*Y), all required tables (caution: no application data!) of your production system are copied to the shadow database.

Practical Tip

You can monitor the progress of the *DBCLONE* phase using the *DBCLONE<No.>* background job in Transaction *SM37*, or directly at the operating system level using the log files *DBCLONE<No.>.<SID>*. To understand the creation of the shadow repository, you should take a look at the log file *DBCLONE<No.>.<SID>*, which is available in the */EHPI/ABAP/TMP* installation directory.

Example 1:

```
"START ENHTOOLS -> ENHTOOLS~"  
"ENHTOOLS has 6 rows."  
"ENHTOOLS DONE""1"
```

The *ENHTOOLS* table is copied ("cloned") and renamed to *ENHTOOLS~*. *ENHTOOLS* contains six entries that are transferred to the shadow repository.

Example 2:

```

"START ENHTOOLS_UVL -> ENHTOOLS_UVL~"
"ENHTOOLS_UVL content is not required."
"ENHTOOLS_UVL DONE""0"

```

The ENHTOOLS_UVL table is copied and renamed to ENHTOOLS_UVL~. The data content of the ENHTOOLS_UVL table is not required in the shadow repository.

The difference from the technical upgrade, which works with the SAPup program, is the way the shadow instance is created (see the Additional Information box). The SAPup program generates the shadow tables from the export media of the upgrade export DVDs, whereas EHP Installer creates the shadow tables from the basis tables of the original instance. A shadow system is only generated for an ABAP-stack system, not for a Java-stack system.

Additional Information

For a better understanding, you should know the following backgrounds: The following programs are used in a technical release change (upgrade):

- ▶ SAPup for an ABAP-stack system
- ▶ SAPJup for a Java-stack system
- ▶ SAPup and SAPJup for dual-stack systems

A shadow system (shadow instance and shadow repository) is only generated for the ABAP stack. The shadow repository is created from the export media of the upgrade export DVDs.

The following programs are used in an enhancement package installation using EHP Installer:

- ▶ SAPehpi for an ABAP-stack system
- ▶ SAPJup for a Java-stack system
- ▶ SAPehpi and SAPJup for dual-stack systems

A shadow system (shadow instance and shadow repository) is only generated for the ABAP stack. The shadow repository is created from the original system.

Over the course of this step, the data dictionary modifications in your system are determined. Execute the adjustment of the modifications from the shadow instance, and save the adjustment in *one* transport request. You can integrate this transport request with the enhancement package installation of your system line's subsequent systems without having to adjust the objects again manually. To do this, plan the corresponding transport request for export in Transaction SPDD. Don't confirm the successful adjustment of modifications until all objects are pro-

cessed in Transaction SPDD; an incomplete adjustment can result in data loss. For more information on SPDD modification adjustment, refer to the installation guide of EHP Installer and the *Troubleshooting and Administration Guide* (see Chapter 5, Section 5.2.1, Additional Documentation and Information).

The successful adjustment of the object is followed by the ACT_UPG phase, which activates your customer objects and other SAP objects. An activation log provides information about the activation errors in this phase. It is absolutely necessary to carry out an in-depth analysis of the activation errors with subsequent manual removal. For more information, see Chapter 5, Section 5.2.7, Activation Errors in the ACT_UPG Phase.

The SHADOW_IMPORT_INC phase is the last time-consuming phase of the *Preprocessing* roadmap step. A large part of the objects of the integrated add-ons, support packages, and enhancement packages are now imported into the shadow repository. This step is also referred to as *shadow import* or *early main import*, which is significantly responsible for the reduction of the technical downtime. The shadow instance is already shut down at this point (STOP_SHDI_LAST phase), and can no longer be started; however, the shadow repository still exists. At the end of the *Preprocessing* roadmap step, in the DOWNCONF_TRANS phase, you are informed that your SAP system is now ready for technical downtime.

You are requested to stop the production activities in your system, lock the users, and (important!) save the installation directory (see Figure 4.15). In addition, save the instance profiles and the kernel directory of your SAP system. Once you've confirmed the dialog window, the SAP system is stopped, and you are requested to create a database backup. Make sure that you can recover the current system status using the data backup in case of technical problems; for example, hardware defects. Only after you've confirmed this dialog step does the next roadmap step, *Downtime*, begin.

Note

It is usually not necessary to create an offline backup of the database. Experience has shown that many customers usually use a *consistent* online backup (that is, including all archive logs). You can start an online backup in parallel to the live operation, which saves valuable time.

Experience has shown that the runtimes of the *Preprocessing* roadmap step are very specific in terms of hardware and installation. Without doubt, this step must not be underestimated with regard to the net runtime; it lasts several hours.

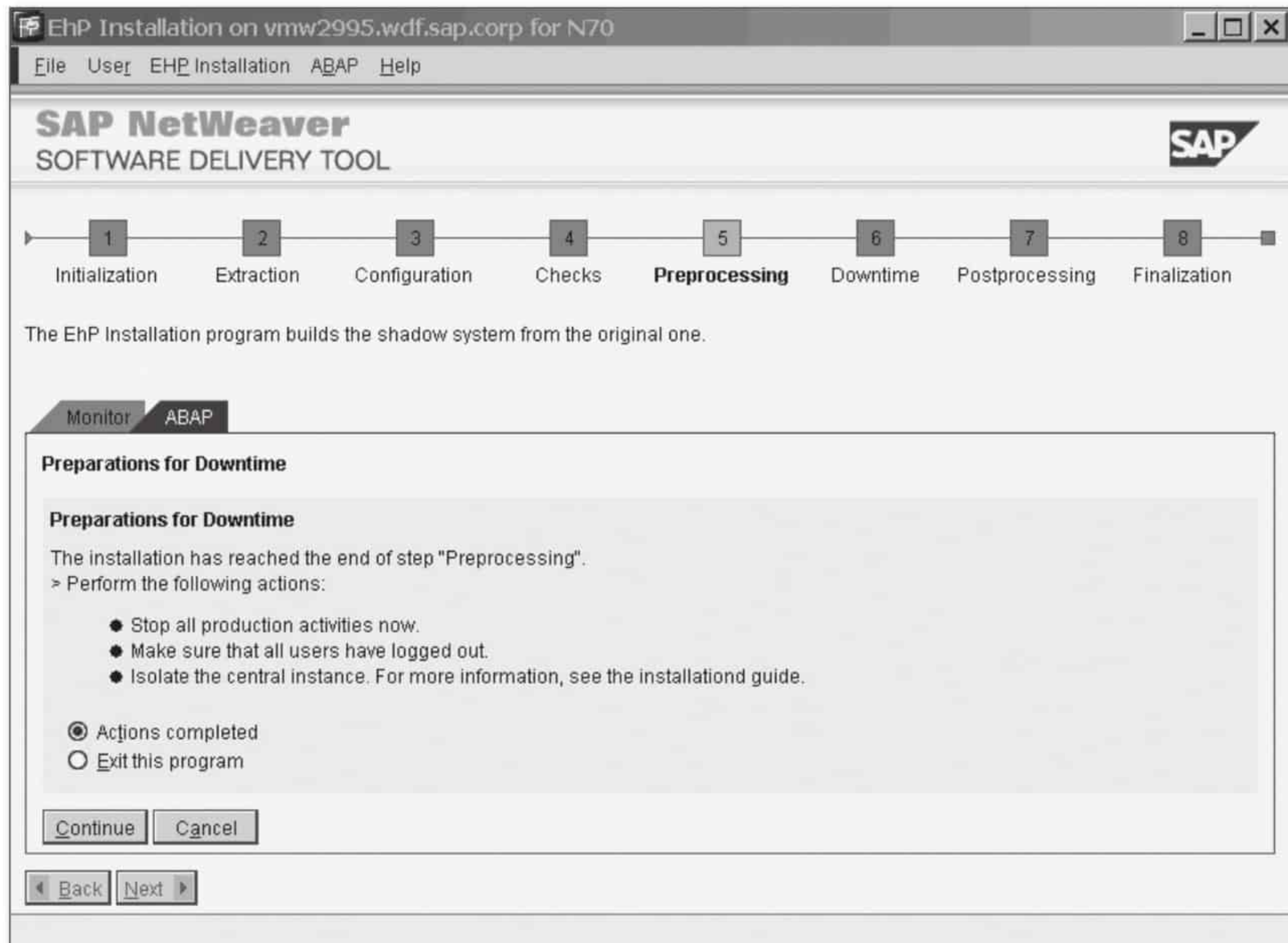


Figure 4.15 EHP Installer before the Downtime Roadmap Step

Roadmap Step 6: Downtime

The technical downtime is the core of an enhancement package installation. The SAP system cannot be accessed by an end user during this time, and it is stopped and started again several times (mainly for performance optimization). The *Downtime* roadmap step can be divided into two subareas:

1. Switching the tables and the kernel
2. Table conversion, main import, and program execution

Let's first consider the steps that are executed in part 1. The system is locked against logon at the beginning of the technical downtime; a logon is only possible with user DDIC in client 000, and the switching of the repository and the kernel is prepared. In the EU_SWITCH phase, the development environment is switched initially; that is, the original tables are deleted and the shadow tables that end with ~ are renamed to the original tables.

Let's consider the system switch technology more closely based on an example: In the DBCLONE phase (*Preprocessing* roadmap step), you created (i.e., cloned) the ENHTOOLS table with the same structure as the ENHTOOLS~ table. In the EU_SWITCH phase (*Downtime* roadmap step), the ENHTOOLS table is deleted in the original instance (`drop table SQL` command), and the ENHTOOLS~ shadow table is renamed to ENHTOOLS (`rename table SQL` command). The successful switching of the development environment is followed by the switching to the new kernel version. The new SAP kernel is copied from the /EHPI/ABAP/EXENEW installation directory to the kernel directory under /USR/SAP/<SID>/SYS/EXE/RUN of your original instance. This constitutes the end of the first downtime part.

Part 2 of the downtime is the actual main import. The following briefly outlines the most important phases:

► **PARCONV_UPG (parallel conversion)**

This phase comprises the parallel conversion; that is, the database tables are brought to the target status.

► **TABIM_UPG (table import)**

This phase comprises the table import; that is, the missing contents that could not be imported in the shadow import in the SHADOW_IMPORT_INC phase are now written to the target tables. The SAP system is shut down for the runtime optimization during the table import.

► **XPRAS_UPG (execute program after import of upgrade)**

Programs and after-import methods are executed in this phase.

If you've integrated an SPAU transport with adjusted repository objects into the installation, this transport is imported in the TABIM_UPG phase. One of the last activities of the *Downtime* roadmap step is the SAP system startup and unlocking the development environment, as you can see in the SAPEHPICONSOLE.LOG log file:

```
>> <Date, time> START OF PHASE MAIN_NEWBAS/STARTSAP_PUPG
Unlocking SAP system ...
Unlocking development environment ...
Starting system ...
Restarting service ...
Starting system ...
System is available.
>> <Date, time> END OF PHASE MAIN_NEWBAS/STARTSAP_PUPG
```

You can find the SAPEHPICONSOLE.LOG log file in the installation directory under EHPI/ABAP/LOG. In your installation screen, the system displays the message that the downtime is over and the application servers can be started. The *Downtime* roadmap step ends when you confirm this dialog information. Section 5.3, Analysis and Optimization of an Enhancement Package Installation, provides information on the optimization of the technical downtime.

Roadmap Step 7: Postprocessing

In the *Postprocessing* roadmap step, the system informs you about some of the necessary manual technical postprocessing. This includes, among other things, scheduling background jobs, implementing a backup, and generating ABAP programs (SAP Load Generator, Transaction SGEN). The installation guide of EHP Installer, which you can find in the SAP Service Marketplace at <http://service.sap.com/erp-inst>, includes additional application-related and technical postprocessing.

Practical Tip

The dialogs in the *Postprocessing* installation step are for informational purposes only. It is usually not necessary to perform the described activities immediately. You can first complete the installation, end the installation tool, and implement the technical postprocessing all at once.

In the SPAUINFO phase, you obtain information about how many repository objects must be adjusted (Transaction SPAU).

Implement the modification adjustment in your SAP system, and save your adaptations in *one* transport request. End the adjustment in Transaction SPAU using the MARK REQUEST option. The transport number is then automatically written to the UMODAUTO.LST file and stored in the /SAPMNT/TRANS/BIN directory. For all subsequent enhancement package installations of your system line, you now have the option of integrating this SPAU transport request with the installation. Confirm the completed adjustment of modifications in the enhancement package installation tool, and continue with the installation.

Finally, a result report on your installation is created in the CREATE_UPGEVAL phase. This evaluation provides critical information about the runtimes of individual phases and forms the starting point of a detailed analysis for optimizing your installation. You can find the UPGANA.XML analysis file and the *UpgAnalysis.xsl* style sheet in your installation directory under /EHPI/ABAP/HTDOC. To view the analysis file in HTTP format, the style sheet must be located in the same direc-

tory at the operating system level. Section 5.3.3, Runtime Analysis File of an Enhancement Package Installation, provides more information on the content of the UPGANA.XML file.

The system prompts you to send the UPGANA.XML file to SAP. You should definitely use this option after each installation, because only with your runtime data can SAP ensure a permanent optimization of the installation tool. The installation concludes with the backup of the log files and the deletion of the installation directories that are no longer required. The pure runtime of the *Postprocessing* roadmap step amounts to a few minutes. When scheduling, though, you must take into account the implementation of the modification adjustment in Transaction SPAU in the installation of your development system. The duration for processing the modifications depends on their scope and the number of people involved in the adjustment.

Roadmap Step 8: Finalization

The *Finalization* roadmap step ends the installation tool and SL Controller in your SAP central instance. You can end the installation interface using the EXIT button. This installation step only takes a few seconds. Your enhancement package installation is now complete, and you can start with the technical postprocessing in accordance with the installation guide.

4.5.11 Installing Technical Usages Retroactively

You've installed SAP enhancement package 4 for SAP ERP using EHP Installer. After the installation, you realize that one or more technical usages have not been installed in this installation (for example, due to wrong selection in the maintenance transaction or because further functional requirements arose).

In this case, there is an exception rule for the usage of SAP Add-On Installation Tool (SAINT). The following conditions must be met to install additional technical usages in a 64-bit architecture using SAINT:

- ▶ All SAP NetWeaver software components must already correspond to Version 7.01; for example, SAP_Basis 701, SAP_ABA 701.
- ▶ A package configuration file (stack XML) that is generated by the Maintenance Optimizer is used.
- ▶ The package configuration file contains no new version of the SAP_APPL component.

Because of this, using SAINT is basically restricted to cases in which the *Central Applications* technical usage (or another technical usage that contains the SAP_APPL 604 component) was installed using EHP Installer.

For the *initial* installation of enhancement package 4 on an SAP ERP 6.0 system (on a 64-bit operating system), you must use EHP Installer. Consider the additional work in your planning if you install individual technical usages retroactively (among others, in the installation, modification adjustment, and test effort areas).

4.5.12 Phase List for the Enhancement Package Installation

The phase list is a critical information source for installations using EHP Installer. It contains all of the installation phases and related information. Besides the full phase name and a brief description of the phase, it lists the name of the log and error files, as you can see in the excerpt of the phase list in Figure 4.16.

Module: Import and Modification Transfer					
Phase	Arguments	Duration	UPGRADE Actions	Log Files	User Actions
SQLDB_PARAMEU1	"PARAMEU1"		Performs actions for restart handling	PARAMEU1.LOG	
SETSYNC_DOWN_START_CLONE	"DOWNTIME" "STARTED"	dialog	events for sync with Jump		
SETSYNC_EULCK_START_CLONE	"EU_LOCKED" "STARTED"	dialog	events for sync with Jump		
ADJUSTCHK	"SAP_MOD_EHP" "ADJUSTCK.ELG" "ADJUSTMT.INF"		Determines ABAP Dictionary objects that need to be adjusted	ADJUSTCK.LOG	Confirm message, if necessary
DBCLONE_NODATA	"DBCND" "DBCLONE_NODATA.ELG" "NODATA"		Clones tables without data from original to the shadow system	DBCLONE_ND.LOG	
DBCLONE_DATA	"DBCWD" "DBCLONE_DATA.ELG" "DATA"		Clones tables with data from original to the shadow system	DBCLONE_WD.LOG	

Figure 4.16 Excerpt of the Phase List of an Enhancement Package Installation Using EHP Installer

You can find the PHASELIST.XML phase list and the SAPUPPHASELIST.XSL style sheet in your installation directory under /EHPI/ABAP/HTDOC. To open the phase list in HTML, the style sheet must be stored in the same directory.

Practical Tip

Use the phase list in the case of technical errors in the installation process as the first source to find out which activity is executed in the respective phase and which log files are written.

Example:

- ▶ Phase name: SCANDIR_PRP
- ▶ Action: *Scans the download directory and presets variables*
- ▶ Logs: SCANDIRP.LOG
- ▶ User action: No entry (that is, no user dialog in this phase)

From this list you can see that the download directory is read in the SCANDIR_PRP phase. The cause of a cancelation in this phase could be that the access authorizations for the download directory are not specified correctly.

4.6 Service Offers and Useful Utilities

SAP provides its customers with a variety of utilities and service offers for enhancement packages. This section is supposed to draw your attention to some offers that can support you in the planning and implementation of an enhancement package installation.

4.6.1 SAP Enhancement Package Info Center

SAP promised its customers to continuously provide new business processes; in this context, SAP has implemented an area in the SAP Service Marketplace that specifically provides information about SAP enhancement packages for SAP ERP. These pages serve as a central entry point for technical and functional information. The information ranges from the SAP enhancement strategy in general, to the overview of available enhancement package versions for SAP ERP 6.0 – including an overview of new functions, application areas, and benefits of business functions – to technical details. Besides a vast number of useful details, these pages also provide access to documentation, release information, and test catalogs. You can access the SAP Enhancement Package Info Center at <http://service.sap.com/erp-ehp>. The technical installation guides on EHP Installer are available in the SAP Service Marketplace at <http://service.sap.com/erp-inst>.

4.6.2 SAP Enhancement Package Experience Database

Evaluations on enhancement package projects in general, and specifications on project runtimes, downtimes, reasons for installing SAP enhancement packages, and so on are information customers often ask about. The *SAP Enhancement Package Experience Database*, also known as the *EHP Experience Database* (see Figure 4.17 and Chapter 3, Section 3.4, Enhancement Package Project Statistics) lets you access data and evaluations by SAP customers. The EHP Experience Database is available via the SAP Enhancement Package Info Center at <http://service.sap.com/erp-ehp> • SAP ENHANCEMENT PACKAGE EXPERIENCE DATABASE or at <http://service.sap.com/ehp-db>. An online questionnaire lets you give feedback on your experience. Your information is evaluated anonymously and incorporated in SAP's statistical database.

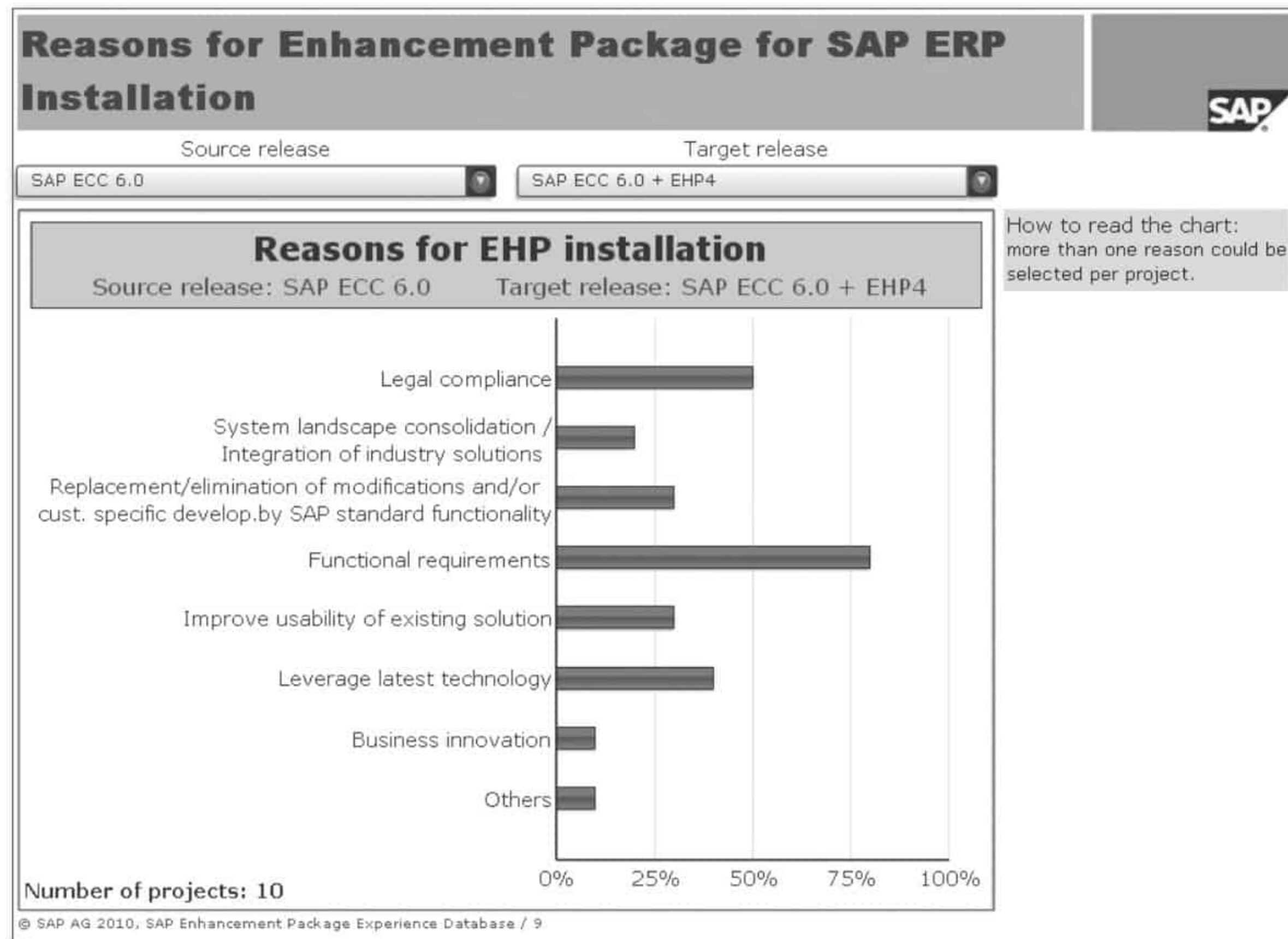


Figure 4.17 Excerpt of SAP Enhancement Experience Database

4.6.3 Solution Browser Tool

The *solution browser tool* is an application you can use to gather information on delta functions in a targeted manner. Start the solution browser tool via the URL <http://erp.fmpmedia.com> (see Figure 4.18). You can specify a language in the left area of the menu. Then select your current release version in the SOURCE RELEASE VERSION area (for example, *SAP ERP 6.0*), and choose the enhancement package version that you want to install (for example, *SAP Enhancement Package 4 for SAP ERP*) in the TARGET RELEASE VERSION area. Under the SOLUTION AREA selection option, you can limit the functional area for which you want to obtain information (for example, *Human Capital Management*). After you've started the search, the system shows a list of the delta functions in the display area. Using the name of the delta function, you can navigate to the detail view and learn more about the selected function.

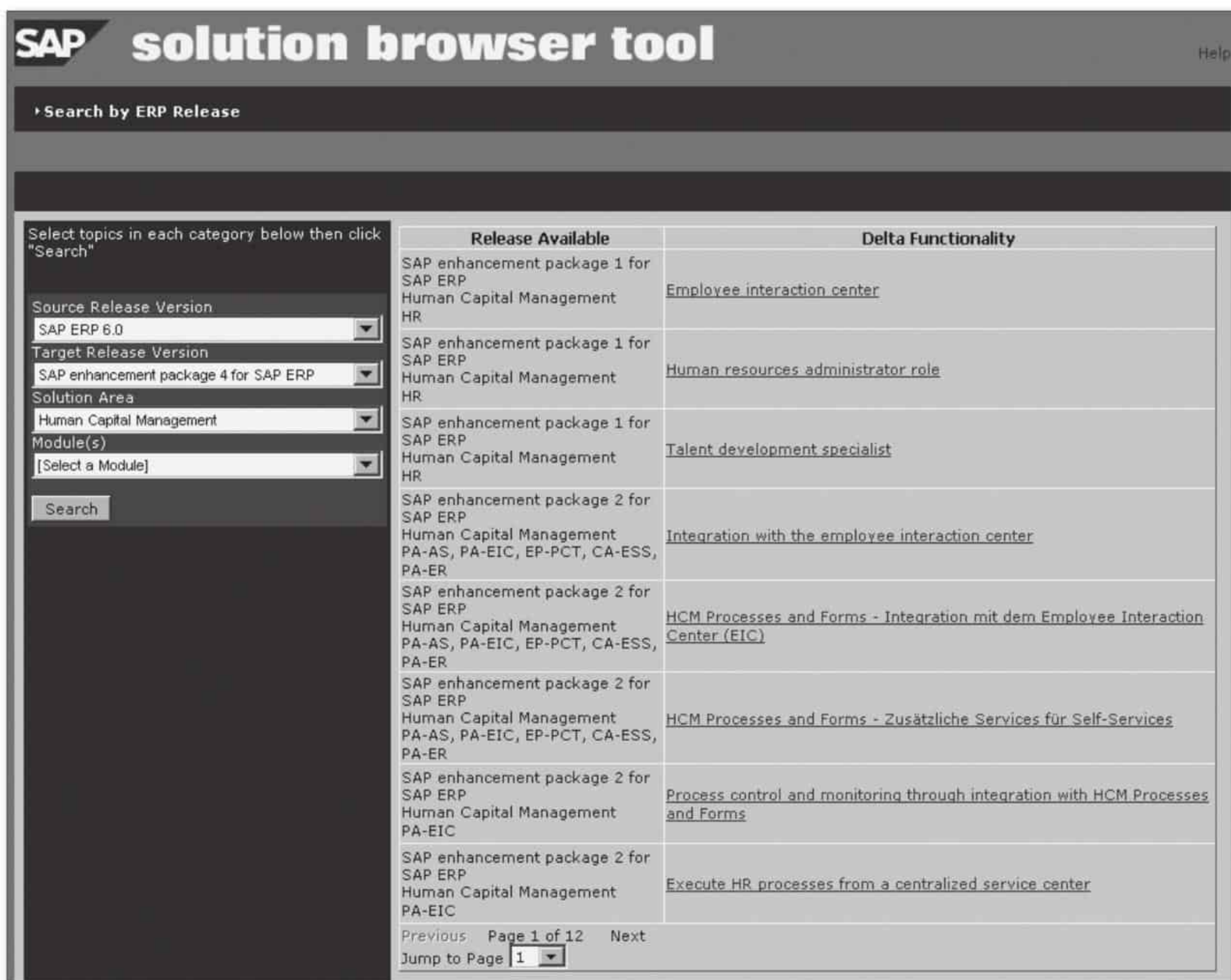


Figure 4.18 Solution Browser Tool

4.6.4 ASU Toolbox

The installation of SAP enhancement packages is accompanied by some application-specific steps before and after the technical installation. The *Application-Specific Upgrade (ASU)* toolbox supports you in determining the steps for this, and executing them in the system in a controlled way. It uses a two-level processing process:

1. In the first step, you load the steps to be processed (ASU content definition) into the SAP system and save them there. The XML file of the ASU content definition is attached to SAP Note 1000009 and can be downloaded there. Using Transaction `/n/ASU/START`, you then import it into your SAP system.
2. In a subsequent step, a task list is generated from the ASU content definition; this list must then be processed within an enhancement package installation. The task plan contains both *preparation steps* and *follow-up steps*.

For more information on the ASU toolbox, refer to SAP Note 1000009.

4.6.5 Upgrade Dependency Analyzer

The Upgrade Dependency Analyzer (UDA) is an application in the SAP Service Marketplace that shows technical dependencies between system components (product versions) of different release versions. The Upgrade Dependency Analyzer is available in the SAP Service Marketplace at <http://service.sap.com/uda>.

4.6.6 Test Catalogs and Test Case Templates

SAP provides test catalogs for each business function of SAP enhancement packages. These test templates comprise various predefined test cases, so-called test case templates. *End-user tests* are required whenever one or more business functions are activated and thus new business functions are used. Using test case templates, you can test and validate new business functions in a targeted manner. You can supplement and enhance the templates with customer-specific test cases. The test case templates address the following questions:

- ▶ **Test preparation**
What preparations must be made before a test?
- ▶ **Test execution**
Which transactions must be executed in which sequence?

► Test result

How can you evaluate the test result?

You can access the test case templates after the installation of SAP enhancement packages via Transaction SFW5 (see Figure 4.19).

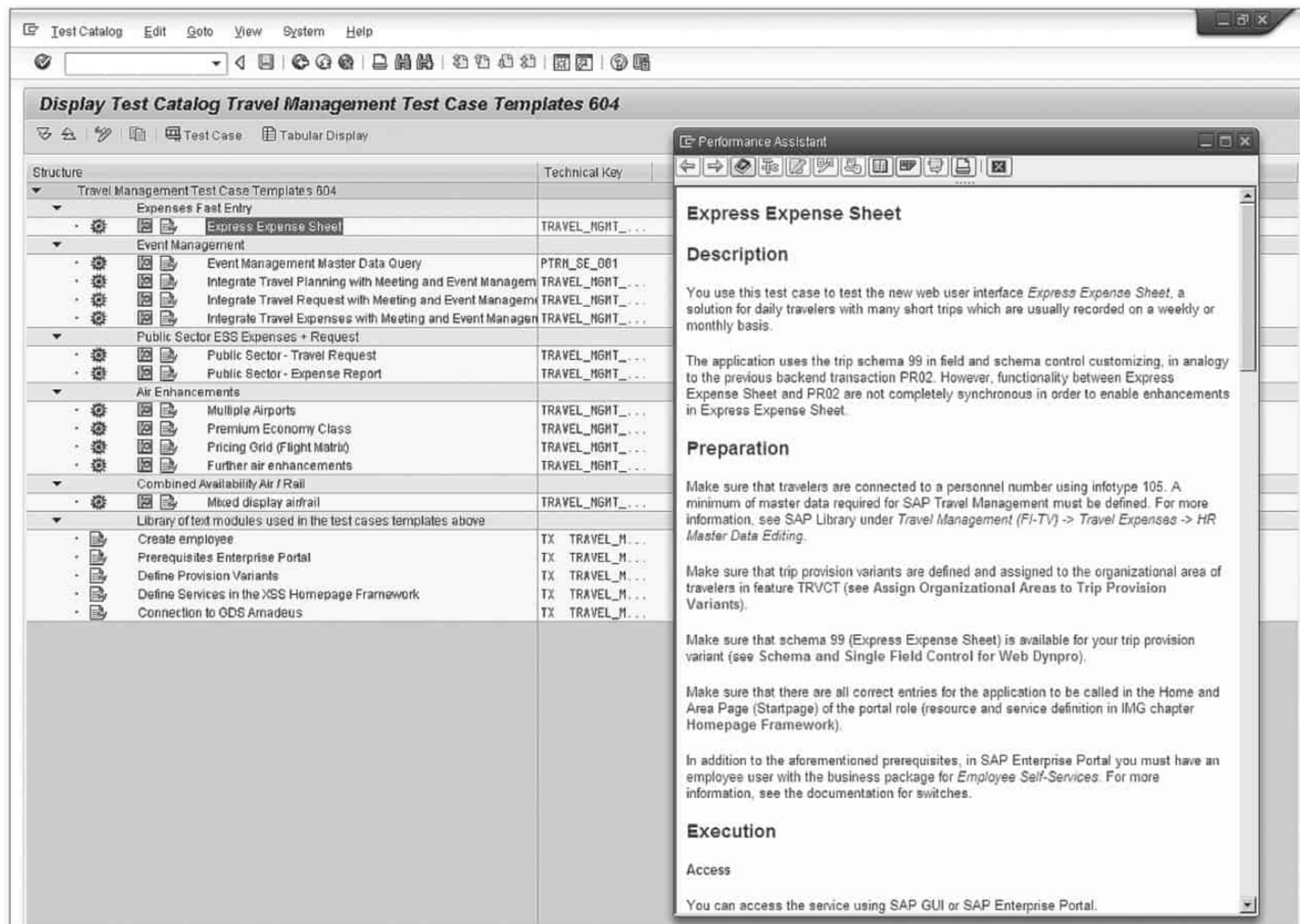


Figure 4.19 Example of a Test Case Catalog for the Travel Management Business Function

Using the TEST CATALOG column, you can navigate to SAP's test case catalog for each business function. You can also download the test case templates via the SAP Service Marketplace at <http://service.sap.com/erp-ehp>. For more information on test case templates, see Chapter 2, Section 2.4, Business Functions, and Chapter 3, Section 3.1.5, Test Management.

Note

A detailed description on how to use a test catalog is available in the SAP Help Portal at <http://help.sap.com> • SAP ERP • SAP ERP ENHANCEMENT PACKAGES • BUSINESS FUNCTIONS (SAP ENHANCEMENT PACKAGE 4 FOR SAP ERP 6.0) • WORKING WITH TEST CASE TEMPLATES.

4.6.7 Switch Framework Cockpit

In SAP Solution Manager, you are provided with an additional function that enables the central management of business function and business function sets for your connected system landscape. Besides the management functions, the Switch Framework cockpit also offers the option to centrally activate business functions and to check the technical interdependencies of business functions. You start the Switch Framework cockpit in your SAP Solution Manager using Transaction SOLMAN_WORKCENTER. Go to the SYSTEM LANDSCAPE MANAGEMENT work center, and select the SWITCH FRAMEWORK COCKPIT entry in the navigation area. The system takes you to the central Switch Framework cockpit, and you can use the SWITCH FRAMEWORK DATE • READ/UPDATE button or view the Switch Framework data of your connected SAP systems. For more information on the Switch Framework cockpit, refer to the SAP Help Portal at <http://help.sap.com> • SAP SOLUTION MANAGER <CURRENT RELEASE> • BASIC SETTINGS • SYSTEM LANDSCAPE SOLUTION MANAGER • SWITCH FRAMEWORK COCKPIT.

4.6.8 Service Offers for Enterprise Support Customers

The service offer *SAP Accelerated Innovation Enablement* (AIE) is part of SAP Enterprise Support. The various parts of this offer are customized for customers who are interested in new functions from SAP enhancement packages and their technical concept. To do this, SAP offers up to five days of remote maintenance service per calendar year, so that you can get information about the new functions. An evaluation of the innovative ability of the latest SAP enhancement packages and their deployment according to your business process requirements are included in this service offer. You can find more information on this service offer and the order process in the SAP Service Marketplace at <http://service.sap.com/enterprisesupport>, and in SAP Note 1300402.

4.6.9 Service Offers from Consulting

SAP Deutschland AG & Co. KG offers its customers a variety of consulting offers and services regarding SAP enhancement packages. The following are two offers from technical consulting.

SAP Enhancement Package Planning for ERP

The *SAP Enhancement Package Planning for ERP* service offer is a consulting offer that is specifically customized to the requirements of SAP customers who are inter-

ested in installing SAP enhancement packages. Among other things, the following subject areas are discussed in a two-day workshop held by experienced technical consultants:

- ▶ Basic principles, technical design, architecture, and Best Practices of SAP enhancement packages for ERP
- ▶ Usage and role of SAP Solution Manager (system landscape and Maintenance Optimizer) within the scope of an enhancement package project
- ▶ Project planning, discussion of various project approaches, and creation of a customer-specific roadmap
- ▶ Identification of relevant business functions and technical usages
- ▶ Technical dependencies within the SAP system landscape
- ▶ SAP EHP Installer: functioning and experiences

Customers are provided with a final report that includes a clear summary of the workshop results. After the workshop, SAP can submit an offer for a technical enhancement package installation.

Technical SAP Enhancement Package Coach

The *Technical Enhancement Package Coach* (TEC) is an integral part of your project team and supports you in planning and implementing your enhancement package project. The TEC is an experienced technical consultant who can enriches your installation project with knowledge and experience (Best Practices) he's gained in numerous customer and ramp-up projects. Thanks to a dense network within the SAP organization, additional questions can be addressed in a timely manner. The TEC's fields of activity include the following:

- ▶ Support in project planning
- ▶ Quality assurance and project reviews
- ▶ Support for technical questions and training of administrators for enhancement package installation
- ▶ Proposals for optimizing the runtime and downtime
- ▶ Follow-up for support messages and open questions
- ▶ Support in the creation of a cutover planning for the transition weekend

You will be sent a customer-specific offer after a preliminary telephone discussion. For more information on the consulting offers and the order, refer to <http://service.sap.com/ufg>; you can also send an inquiry to upgradecc@sap.com.

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