Ensure effective system management by configuring the right infrastructure for SAP Solution Manager using central system landscape maintenance

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As businesses grow and complexity increases in modern enterprise system landscapes, successfully configuring, operating, and managing changes to these systems is more difficult than ever. Coordinating and tracking configurations for business processes that span multiple systems, synchronizing configuration changes globally, monitoring systems and implementations, and actively managing the release levels and compatibility of increasing numbers of systems, products, components, servers, and databases top the list of "most difficult tasks" for project teams, including project managers, solution consultants, technological consultants, and IT personnel.

Previous articles[1] have described in detail how SAP Solution Manager greatly simplifies these tasks through a set of sophisticated tools that enable blueprinting of your processes, configuration, testing, customizing synchronization, solution monitoring, and change management. These tools have an immediate, positive impact in most customer implementation and support processes, such as providing central documentation storage for implementations, rollouts, and upgrades, or keeping track of business changes using change logistics and approval mechanisms.

For these tools to run smoothly, however, it is important to know how to properly configure the infrastructure upon which SAP Solution Manager tools rely, a fundamental step that ultimately determines the success or failure of your SAP Solution Manager implementation. This article goes beyond the existing documentation to introduce you to how the infrastructure works and how it is configured using an SAP Solution Manager component called Solution Manager System Landscape (transaction SMSY). SMSY is the cornerstone of all SAP Solution Manager functionality — it houses the settings

[1] For an in-depth look at key SAP Solution Manager functionality, see "SAP Solution Manager — 'Command Central' for Implementing Your mySAP Solutions … and Much More!" in the September/October 2003 issue of *SAP Professional Journal*, and "Looking for Ways Your IT Organization Can Contain Costs Without Sacrificing Services? An Introduction to SAP Solution Manager Tools" in the January-March 2005 edition of *SAP Insider*.

and system connections needed to connect to the satellite systems to be managed, enabling all system data-related tasks to be administrated centrally from within SAP Solution Manager for increased transparency into your systems and products and reduced time and effort for system administration tasks. This article tackles key issues like understanding the data structure on which the infrastructure is based and how to properly define the satellite systems to be managed, including which RFCs you need to generate for various usage scenarios (i.e., implementation, upgrade, etc.). It concludes with some tips and tricks in the form of answers to 11 questions frequently asked by Basis administrators, IT operators, and technical consultants getting started with SAP Solution Manager, to help you avoid pitfalls and reduce the learning curve for your own infrastructure configuration.

Note!

The Solution Manager System Landscape component is commonly referred to by the transaction code used to access it, SMSY. For simplicity, I use this abbreviation throughout the article rather than the full name of the component.

Note!

This article applies to SAP Solution Manager 3.2 SP06 and higher and assumes general knowledge of system configuration, setting up remote connections, user administration, and transport functions (Transport Management System) for SAP systems. Familiarity with system monitoring is helpful but not a must.

Like all configuration projects, it's important to understand how the system and connection settings defined in SMSY are used by the various SAP Solution Manager tools before defining them. To give you this context, let's quickly review the key capabilities of the SAP Solution Manager tools, and look at how SMSY data is used within each.

How SAP Solution Manager tools use SMSY data

Understanding the touchpoints between SMSY data and the SAP Solution Manager tools will not only help you produce a better design of your complete system landscape, it will help you better understand and more easily troubleshoot issues reported by end users. For simplicity, we'll discuss each tool in the context of the usage scenarios supported by SAP Solution Manager.[2] **Figure 1** provides an overview of the supported usage scenarios and the key components associated with each, to provide you with a broad understanding of the different aspects addressed by SAP Solution Manager; in the article, I focus on the aspects that are relevant to central system landscape maintenance in particular.

Note!

A common misconception is that SAP Solution Manager is a once-only implementation assistance tool similar to ASAP. On the contrary, SAP Solution Manager is a platform that operates on a standalone system specialized to support the management of all your systems, and is therefore designed to be a permanent part of your system landscape. It contains a balanced set of tools, content, and services that help you in all phases of your SAP or non-SAP solution lifecycle, from solution implementation, to operation, to optimization.

If you are already familiar with the usage scenarios supported by SAP Solution Manager and their associated tools, feel free to skim this section or jump straight to the

[2] These are the official usage scenarios supported by SAP Solution Manager. Detailed information on these usage scenarios can be found in the SAP Service Marketplace at http://service.sap.com/solutionmanager (navigate to Media Library → Presentations).

next section, which details the data structure on which the SAP Solution Manager infrastructure is based.

Implementation and Distribution

The SAP Solution Manager Implementation and Distribution tools provide functionality for organizing, streamlining, and deploying implementations of all mySAP Business Suite solutions, not just SAP R/3.

The implementation tools include project administration, business process blueprinting, integrated knowledge management, configuration, and testing tools. SMSY data is used extensively across these tools and functionalities. For example, SMSY data is used to connect to the defined satellite SAP systems involved in a particular business process. Users can then effortlessly drill down to the particular transactions in those underlying systems for further evaluation, configuration, or testing, making SAP Solution Manager a hub for cross-system

Usage Scenario	SAP Solution Manager Components
Implementation and Distribution	• ASAP Implementation and Solution Management Roadmaps • Project Administration • Business Blueprint • Configuration • Testing • Customizing Distribution • Customizing Scout
Solution Monitoring	• System Monitoring • Business Process Monitoring • Service Level Reporting • Central System Administration • SAP EarlyWatch Alert
Upgrade	• Same tools as Implementation and Distribution (except for the ASAP Implementation and Solution Management Roadmaps) • Upgrade Roadmap • System Landscape Reporting • Upgrade Services
Change Request Management	• Project Administration • Urgent Correction • Maintenance • Change Request Management in Projects • Change Tracking
Service Desk	• Business Partner Maintenance • iBase Maintenance • Transaction Processing • Transaction Monitor
Service Delivery	• Service Plan • Onsite/remote service delivery • SAP Safeguarding • SAP Solution Management Optimization

Figure 1 Usage scenarios supported by SAP Solution Manager components

configuration. SMSY data also provides an infrastructure to document your non-SAP systems for a complete picture of your implemented business processes.

> ***Note!***
>
> Starting with SAP Solution Manager 3.1, SMSY is used to generate the keys for installing and upgrading to mySAP ERP 2004. The same holds true for installing and upgrading to mySAP Business Suite 2005 using SAP Solution Manager 3.2.

To simplify configuration synchronization (deployment/distribution and consistency checks), SAP Solution Manager provides two key tools: Customizing Distribution and the Customizing Scout. Customizing Distribution lets you distribute customizing data across systems and components in an automated fashion — from SAP R/3 to SAP Master Data Management (MDM), for example. The Customizing Scout lets you compare customizing settings across systems to quickly spot discrepancies and synchronize settings. SMSY data supports both tools by defining the available source and target systems in the system landscape, and establishing the RFC connections required for the tools to connect to these systems.

Solution Monitoring

SAP Solution Manager offers several Solution Monitoring tools:

- System Monitoring and Business Process Monitoring perform technical, real-time monitoring of system components, business processes, and interfaces based on the CCMS monitoring infrastructure.[3] All systems to be monitored, including relevant database and server information, need to be registered centrally in SMSY, and the required RFCs to the satellite systems need to be set up to enable alert monitoring and analysis.
- SAP EarlyWatch Alert is a service (included as part of your regular SAP maintenance fee) that helps you proactively identify potential problems early, avoid bottlenecks, and monitor the performance of your systems and business processes on a weekly basis. SAP EarlyWatch Alert data is collected via the satellite system's Service Data Control Center (transaction SDCCN[4]), a tool included in all SAP ABAP-based systems that supplies SAP Solution Manager with the requisite service session data. This data is presented in a report (in HTML or Microsoft Word format) that summarizes information such as the general component status, hardware status, average response times, current workload, and critical error messages and process interruptions. Although the service session data is intended primarily for SAP service engineers performing SAP service sessions, system administrators can use it to obtain an overview of technical system issues, forecast trends, and react proactively to potential problems (e.g., when hardware size becomes critical and needs to be extended). SAP EarlyWatch Alert uses the RFCs set up in SMSY to establish communication with the satellite systems that send the service session data to the central SAP Solution Manager system.
- Service Level Reporting is a tool for monitoring service level agreements (SLAs) between service customers (IT users) and service providers (the IT organization), which ensure that IT users receive adequate support in accordance with business priorities and at acceptable cost.[5] The SLA covers the extent to which support is delivered — for example, hotline support is available from 8:00 am to 5:00 pm with a certain response time for reported problems — and may also cover the costs for providing these services. Each SLA identifies the business processes and systems that are covered, the key performance indicators

[3] The Computing Center Management System (CCMS) is a monitoring infrastructure that enables you to monitor your entire system landscape based on alerts. The monitoring may include ABAP- and Java-based systems and may also be extended from SAP components to non-SAP components. Alerts are central monitoring elements that are generated based on defined threshold values and serve as "indicators" of system-related problems, such as an IT component being inactive for a defined period of time or response times exceeding defined values.

[4] To use the new SDCCN transaction, plug-in ST-PI_2005_1_<XX>, SP01, is required in your SAP Solution Manager and satellite systems. <XX> stands for the Basis release of your system. For SAP Solution Manager 3.2, the Basis release is 6.20. The minimum release for which SDCCN is available is SAP R/3 4.0B.

[5] An SLA can be a contract between internal partners, such as business process owners and the IT organization, or between external partners, such as the IT organization and a hardware, software, implementation, or outsourcing partner. For more on SLAs, see the article "Defining SAP Service Level Agreements: An IT Manager's Survival Guide" (*SAP Professional Journal*, November/December 2000).

(KPIs) that are measured, and the thresholds for these KPIs. In addition to monitoring SLAs, the Service Level Reporting tool can recommend specific measurements to improve system stability and performance, such as installing SAP Notes or support packages, improving system parameter settings, or making use of SAP services. Service Level Reporting relies on the SMSY data and RFC setup information configured for the System Monitoring, Business Process Monitoring, and SAP EarlyWatch Alert tools.

- Central System Administration (CSA) provides a central list of cross-system and component-specific administration tasks to be performed and monitored by system administrators, such as checking the database monitors, system logs, and lock entries lists of the systems for which they are responsible. CSA uses the system information header data (system ID, installation number, etc.) that is centrally stored in SMSY and the respective RFCs to perform remote analyses of the satellite systems.

Upgrade

SAP Solution Manager provides Upgrade tools to support upgrade project preparation, process blueprinting, configuration, and process testing. For example, the System Landscape Reporting tool provides you with a comprehensive view of your current system landscape that helps you prepare for upgrade and maintenance projects — it lists hosts, databases, systems, software components, and support package levels. The Upgrade Roadmap then guides you through the upgrade process and points out any helpful upgrade services that can be purchased from SAP. Upgrade projects are very similar to implementation projects and require the same SMSY infrastructure.

Change Request Management

The SAP Solution Manager Change Request Management functionality enables you to administer, document, and track changes to your SAP solutions, from making urgent corrections to managing entire maintenance projects. SMSY data and RFC setup information is needed to connect to all systems involved in the change process — from development, to quality assurance, to production. Moreover, the change management functionality provides an infrastructure for change logistics, so that import procedures, such as from quality assurance to production, are completely controlled and tracked by SAP Solution Manager.

Service Desk

The SAP Solution Manager Service Desk functionality supports efficient problem message handling within your organization. Using a specific RFC, which can be created in SMSY, the Service Desk enables end users to create messages describing incidents directly from the application system and then forward these messages to SAP Solution Manager for central processing by the IT support team. For ABAP-based applications, the support message can be created within any SAP system using the Help → Create Support Message or Help → Feedback option (depending on the release level of the system) on the standard menu. For non-ABAP systems, such as SAP Enterprise Portal, a Business Server Pages (BSP) application, which can be launched via a URL, must be configured in SAP Solution Manager. This URL can be integrated into the corporate intranet portal, for instance, allowing end users to centrally access and report incidents via the URL. Service Desk specialists can then review and resolve the messages internally or forward them to an SAP Active Global Support specialist with the click of a button.

To centrally handle message processing, the Service Desk requires system information (system ID, installation number, etc.) to be available in the iBase (Installed Base), which is a hierarchical component structure that provides a comprehensive overview of the customer's configuration landscape. The solutions used in SAP Solution Manager already store and cluster system information maintained in SMSY. So to reduce manual efforts, this information is simply populated into the iBase. This process is similar to registering systems that can report messages to SAP Solution Manager. The Service Desk makes use of the data maintained in the iBase as a primary reference for various identification purposes (to identify the system a message comes from and, if possible, the user who reported the problem, for example).[6] So, compared to the other usage scenario tools, the

[6] This procedure requires solution landscape data (which includes SMSY data) to be replicated into the iBase via transaction DSWP (menu path Edit → Initial Data Transfer for iBase).

Where should I start with SAP Solution Manager?

Customers frequently ask me: Where should I start with SAP Solution Manager? Do I need to implement all of its tools and functionality? While the specific answers to these questions depend on your unique situation, the general answer is to consider your immediate business needs and start with just the scenarios you need. For example:

- If you're about to implement new mySAP Business Suite solutions, consider starting with the SAP Solution Manager project management, business blueprint, configuration, and integrated knowledge management functionalities. These implementation tools help you to manage and structure your implementation project in a consistent and transparent manner, providing insight into all of the affected processes, configuration settings, and systems, and allowing you to centrally manage and store all of your documentation.
- If you've just finished implementing mySAP ERP, consider using the SAP Solution Manager monitoring tools. SAP EarlyWatch Alert, for example, keeps an eye on your productive systems and proactively notifies you of the "health" status of your systems. System Monitoring and Business Process Monitoring allow for a more technical, real-time monitoring of system components, business processes, and interfaces based on the CCMS infrastructure, enabling you to optimize system operability and improve system performance.
- If you're about to test your configured solution, and need to execute process-oriented integration testing, think about using the SAP Solution Manager testing suite, which leverages the Test Workbench. Used in the context of SAP Solution Manager, the Test Workbench allows you to set up an infrastructure for process-oriented testing with test plans split into smaller test packages that serve as worklists for testers. Test packages can include relevant test cases of different types, like eCATT test cases for automated testing, manual test cases, or even existing test cases that you can simply upload and reuse in SAP Solution Manager, providing you with an integrated view of the test scope and centrally stored test results for quick and easy reporting.
- If you're looking for an instrument to administer and track ongoing changes in your daily business, such as configuration changes as part of an urgent correction, consider starting with the SAP Solution Manager Change Request Management functionality. It helps you to systematically adapt your business solution to changed requirements via a consistent approach to documenting, tracking, and auditing the complete change management process, from the initial request to implementing the change in the production system. This improves the efficiency of your change management activities and minimizes business disruptions.

While the usage scenario you start with depends on your current business needs, they all have one thing in common: In order to operate effectively, they need a properly configured SAP Solution Manager infrastructure.

Service Desk functionality makes only indirect use of SMSY data.

Service Delivery

The SAP Solution Manager Service Delivery functionality refers to SAP's service offerings across the solution lifecycle. These services are offered via programs. The SAP Safeguarding program, for example, hosts the SAP GoingLive Check service, which seeks to identify and eliminate potential risks before going live with a new implementation. The SAP Solution Management

Assessment service, also included with the SAP Safeguarding program, maps the solution landscape against the customer's core business processes to identify weak points and their effects on these processes, and to devise an action plan that describes the measures to be taken. The SAP Solution Management Optimization program covers, among others, the SAP EarlyWatch Check service, which helps improve system performance.

SAP Solution Manager provides an extensive catalog of services and programs and enables you to order many of them electronically. All SAP services can be accessed via the Service Plan, a list of service offerings available in SAP Solution Manager that link directly to the SAP Service Marketplace. These can be self-services executed by the customer or services executed with the help of an SAP support expert, either remote or onsite. Once scheduled and delivered, these services are executed as service sessions[7] in SAP Solution Manager. Services such as SAP GoingLive Check and SAP Solution Management Assessment require a minimum set of configuration data in SMSY. RFCs defined in SMSY are used to retrieve service session data from the satellite system SDCCs and to transfer service definition data updates from SAP Solution Manager to the local SDCCs.[8]

Now that you have a solid understanding of the SAP Solution Manager tools, and how they rely on the configuration information defined using SMSY, let's take a look at what constitutes the SMSY data structure itself and how it is defined. Understanding this will help you to properly apply the SMSY data structure in the context of the usage scenarios your company would like to operate.

[7] Service sessions are analyses (which can be performed remotely or onsite by an SAP expert, or as a self-service by the customer, depending on the nature of the service) that make up an SAP service. Each service session has a specific objective and results in an extensive report with a detailed action list and recommendations. For example, the SAP GoingLive Check service consists of five service sessions: Project Session, Feasibility Session, Analysis Session, Optimization Session, and Verification Session.

[8] Service session data is sent via RFC from the SDCC to SAP Solution Manager to prepare and execute services. The SDCC of one particular satellite SAP system can supply multiple SAP Solution Manager systems with service session data for central processing. The satellite system also receives service definition data from SAP Solution Manager, which defines the type of data to collect for a particular SAP service type. If configured to do so, SAP Solution Manager will automatically download service definition data updates on a regular basis from the SAP Service Marketplace. If you have multiple SAP Solution Manager systems, they can be configured to pull these updates from whichever system you define as the master.

Understanding the SMSY data structure

In order to manage system landscapes, SAP Solution Manager uses system information that is derived from the data structure of the systems it manages. It also includes a set of objects that help you classify, organize, and group components in your landscape to simplify system management. To help you understand what system information is used in SMSY, where it comes from, and how SAP Solution Manager leverages this data, in the following sections we'll look at how SAP software data is structured, how system metadata makes its way from satellite systems to SAP Solution Manager, and how SAP Solution Manager enables you to organize this information for efficient system landscape management.

An overview of the SAP software data structure

SAP solutions run on software that is structured in a hierarchical reference model, or catalog, according to product and component. Imagine the software catalog as a collection of building blocks that give you insight into the individual elements that make up the SAP software. The Product Availability Matrix (PAM), available at the SAP Service Marketplace (http://service.sap.com/pam), offers a generalized overview of the software catalog that focuses on the availability dates for new products and solution, application, and component releases, and provides information on mainstream maintenance periods and possible upgrade paths, for example. SMSY focuses on the technical "bits and pieces" of the software catalog — that is, the technical details and information required to install and upgrade the software. Let's take a closer look at the aspects of the software catalog that are used by SMSY.

Product definition. A *product definition* is a framework for modeling, organizing, and clustering the elements of the software catalog. A product definition is the basis for software production and delivery as well as for customer information on delivered and upcoming software. Understanding the product definition is important because it is the basis for setting up systems — the

product definition is used to classify the nature of a satellite system. For example, SMSY uses product definition information to make reliable statements about the types of systems that are part of your system landscape (SAP CRM systems vs. SAP SCM systems vs. SAP R/3 Enterprise systems), and based on that information to use the correct systems in SAP Solution Manager projects and solutions.[9] **Figure 2** shows the elements that constitute an example product definition — *products*, *product versions*, *main instances*, and *software component releases*, which we'll look at next.

Products and product versions. As you can see in Figure 2, the SAP R/3 Enterprise *product*, for example, consists of two *product versions* — 47X110 and 47X200 — which correspond to SAP software releases (i.e., SAP R/3 Enterprise 4.7 Extension Set 1.10 and SAP R/3 Enterprise 4.7 Extension Set 2.00, respectively). SMSY uses product information to classify and group systems instead of representing all of them in a single flat list. When working with SMSY functions, the product version can also work as a filter — assigning systems to units known as "logical components" (more on this concept later) enables you to limit the systems offered in possible entries help lists to only those systems with a matching product version, such as SAP R/3 Enterprise 4.7X110, for example.

Main instances. Each product version consists of smaller units called *main instances*. Main instances are subordinate units of a product that summarize the software packaging units that must operate together in order for the product to work. To understand the main instances concept, consider Microsoft Office. If we picture the Microsoft Office portfolio as one product, then the individual applications it comprises (Word, PowerPoint, Excel, Outlook) are main instances of the product. Similarly, SAP R/3 Enterprise Server, XI Content, and Portal Content are main instances of the SAP R/3 Enterprise product. SMSY uses the concept of main instances in the context of registered satellite systems and logical components (more on these later).

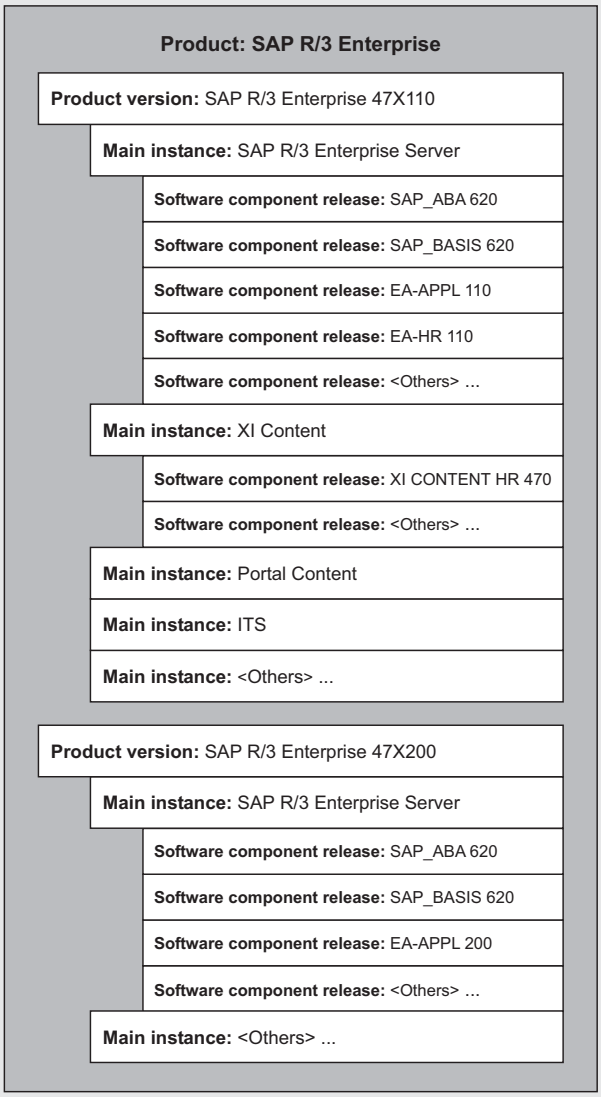

Figure 2 Example product definition

Software component releases. Each main instance clusters a set of *software component releases* — the actual technical software to be installed, patched, or upgraded — that depend on one another to operate technical or business tasks (for example, you would not be able to

[9] In the SAP Solution Manager context, the term *project* refers to the project defined in SAP Solution Manager Administration (transaction SOLAR_PROJECT_ADMIN) and processed by the business blueprint (transaction SOLAR01), configuration (transaction SOLAR02), and testing (transactions STWB_2, STWB_WORK) tools. The term *solution* refers to a model that encapsulates (primarily) productive business processes, systems, and servers as defined in the customer-specific Solution Directory (transaction SOLMAN_DIRECTORY). See the SAP Help Portal (http://help.sap.com) for more details.

use any business applications included in software components EA-APPL and EA-HR if the SAP_ABA and SAP_BASIS software components are not installed).[10] A software component is a reusable component of a product that makes up its smallest installable unit. This modular approach guarantees the assembly, delivery, and maintenance of the software. For example, customers receive changes to a product in the form of an enhancement (upgrade) or a collective correction (support package and support package stacks) for one or more software components. Like products, software components are versioned (e.g., SAP_APPL 470). SMSY uses software component information to automatically calculate and assign a product, which can then be used to classify a system (more on this later). This step is necessary because the system itself does not store its product information.

Now that you are familiar with the product definition elements of the SAP software data structure that are used by SMSY, let's take a look at how SMSY uses this information to enable SAP Solution Manager to centrally manage satellite systems.

How SMSY uses SAP software data to enable SAP Solution Manager to manage satellite systems

The product definition is the base information that resides in all SAP systems, and is the information that SAP Solution Manager uses to manage a satellite system. **Figure 3** depicts an SAP R/3 Enterprise system called U6U with an example client 444 and a logical system name U6UCLNT444,[11] as well as identifiers for the software component releases in use (e.g., SAP_BASIS 620, EA-APPL 200).

> ***Note!***
>
> Information on the installed software component releases can be viewed in any SAP system via the menu path System → Status.

As indicated by the presence of the software components, a product definition has been applied to this system to characterize its nature — let's say the example system has been defined as an SAP R/3 Enterprise system. In order for SAP Solution Manager to manage this SAP R/3 Enterprise system, the product definition information must be transferred into SMSY, either automatically or manually, depending on the infrastructure you have in place (more on this later in the article). Once the information is transferred, the satellite system is classified in SMSY according to product, product version, and main instance. You can build up a complete picture of your entire system landscape in SMSY by storing similar systems under the same product category, so that you do not have to try and manage an overwhelming flat list of perhaps dozens or hundreds of systems. The systems are instead arranged in a hierarchical structure by grouping them with products, such as all SAP R/3 Enterprise systems vs. all SAP CRM systems, making system administration much easier.

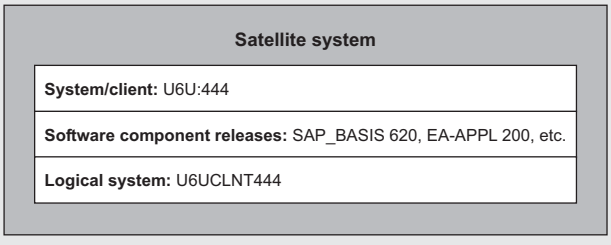

Figure 3 Example satellite system

[10] While the terms *software component release* and *software component version* have the same meaning in the context of SAP Solution Manager, SMSY uses the term *release* for software components (as opposed to *version* for products). The release information for various software components is located on the Software Components tab in SMSY on the product/main instance level of a system.

[11] A *logical system name* is a system attribute that uniquely identifies a system-client combination in your system landscape. This information is used only in the context of Customizing Synchronization, so I will not go into further detail on logical systems here. I mention it only to familiarize you with the technical term used in the system. I prefer to use the more descriptive term *system-client combination*. Logical system information is stored in client table T000 and can be accessed via the client maintenance transaction SCC4.

Take a look at **Figure 4**, which shows how our example U6U satellite system is represented in SMSY. In the Landscape Components view in the left-hand frame, you see system U6U in a structured hierarchy among other SAP R/3 Enterprise systems managed by SAP Solution Manager.

You can also see the relevant main instance of the U6U system, SAP R/3 Enterprise Server. To better understand the idea of "relevant" main instances, let's revisit our Microsoft Office example. You have the option to selectively choose the Microsoft Office applications (main instances) you want to install — for example, you might choose to install Word and Excel, but not PowerPoint and Outlook. While most businesses choose to install the complete Microsoft Office portfolio, since it easily fits on a single PC, with enterprise products such as SAP R/3 Enterprise it may not always be necessary, or even wise, to install the complete software package due to varying business needs, performance and scalability issues, and costs.

You can find additional information on the nature of the satellite U6U system in the right-hand pane of Figure 4. The fields at the top contain information such as product version and main instance, and the various tabs below contain information on header data, software components, and other attributes for the main instance. Also, as indicated by the Read System Data Remote button at the upper right, you can remotely retrieve system data from the corresponding satellite system, such as software component and corresponding support package data, which you can then view on the Software Components tab.

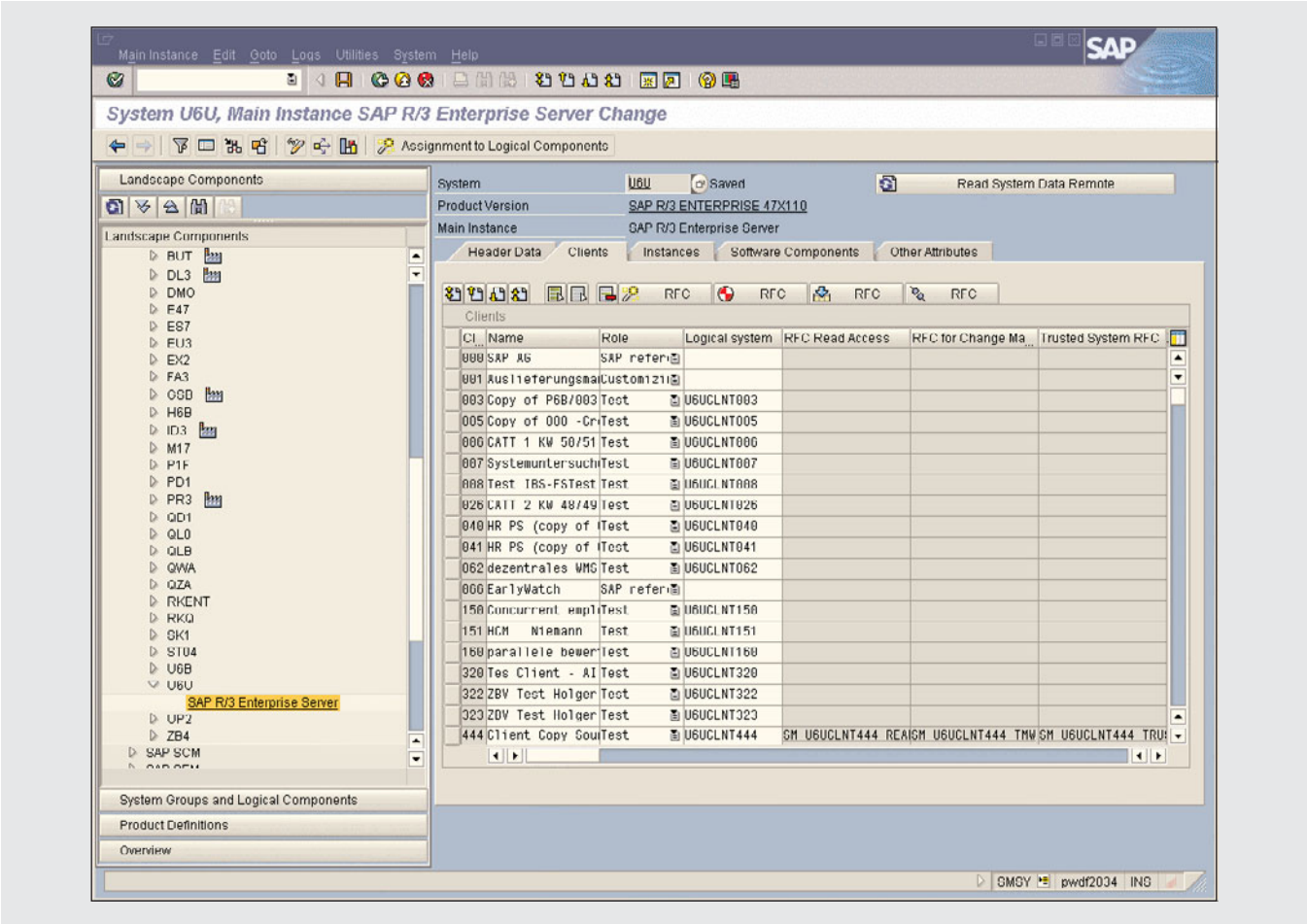

Figure 4 Example satellite system in SMSY

Note!

SMSY provides different views to facilitate your work (see the left pane in Figure 4). As you can see, the Landscape Components view allows you to display and maintain systems, system components, servers, and databases. The System Groups and Logical Components view, which we will look at in the next section, allows you to group sets of landscape components (namely systems) with the same product release and main instance. The Product Definitions view comprises all products, their versions, and their definitions as delivered by SAP, and allows you to add any third-party products in use (see the download at www.SAPpro.com). The Overview view presents a graphical overview of systems, databases, and servers in your landscape. In the example later in the article, we concentrate on the first view, with a special focus on product use and system setup.

Now that you understand the concept of product definitions and how SMSY introduces the system information derived from that SAP data structure element into SAP Solution Manager, let's take a look at how SAP Solution Manager enables this information to be organized for efficient system landscape management.

Efficient system landscape management with SAP Solution Manager

In the next sections I provide a brief overview of how systems that are registered and classified in SMSY are bundled and made available in SAP Solution Manager projects and solutions, and the specific role they play in their given context. While the focus of this article is how to set up the underlying infrastructure for SAP Solution Manager (i.e., register and classify systems in SMSY and create the requisite RFCs), it is important to understand how the infrastructure is then realized and put into use, so that you can create the most effective foundation for managing your system landscape.

Logical components. *Logical components* are administration units used in SAP Solution Manager to group systems with the same product version and main instance, usually belonging to the same transport path, such as development, quality assurance, and production systems. Systems assigned to a logical component fulfill a specific purpose, or "system role" (more on this in a moment), within your system landscape (e.g., configuration, testing).

Logical components enable systems to be used in SAP Solution Manager projects and solutions, and provide system administrators an easy way to work with systems in complex, distributed landscapes. You portray your existing systems and state their dependencies and purpose (development, quality assurance, production systems) in a superior unit, which is the logical component. Imagine a landscape containing two production locations running SAP R/3 Enterprise 4.7X110 development, quality assurance, and production systems — one in Munich and one in Denver. Let's say that we've grouped the systems in each location into the logical components ZMUNICH_R/3_ENT and ZDENVER_R/3_ENT. **Figure 5** shows the ZMUNICH_R/3_ENT logical component. We can use these logical components in SAP Solution Manager to precisely identify the correct set of systems to be used for a specific task (e.g., compare customizing in the Munich systems vs. the Denver systems).

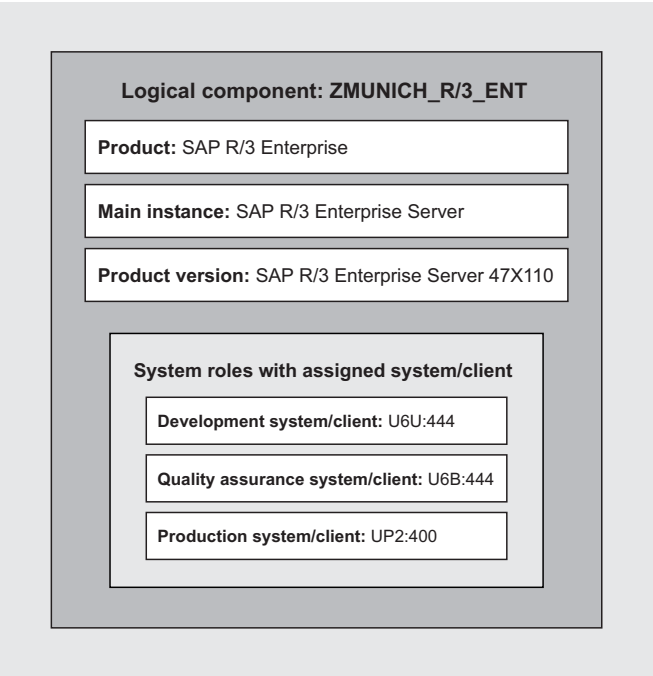

Figure 5 Example logical component

Figure 6 gives you an idea of what the example logical component ZMUNICH_R/3_ENT looks like in the System Groups and Logical Components view in SMSY. As you can see, ZMUNICH_R/3_ENT bundles a development (U6U:444), a quality assurance (U6B:444), and a production (UP2:400) system that operate on product version SAP R/3 Enterprise 47X110.

Once created, the system information in a logical component can be enhanced or changed at any time in SMSY to accommodate additional systems as they are set up or become available to the project. This flexibility allows you to start your project work and subsequently add missing systems to the logical component. Logical components can be reused in different usage scenarios, and any changes made to logical components are automatically reflected in the corresponding SAP Solution Manager projects and solutions that reference that logical component.

Note!

If you work with SAP Solution Manager projects, attributing your business processes to logical components instead of directly to systems makes it much easier to decouple these processes from possible system changes. If you build up an implementation project, you also have the option to describe the scope of the business processes to be implemented on the basis of logical components without having assigned physical systems (development systems, quality assurance systems, etc.) to the processes. This modular approach makes business blueprinting much more efficient because it gives the application team the desired flexibility to define the blueprint scope without worrying about the underlying system infrastructure.

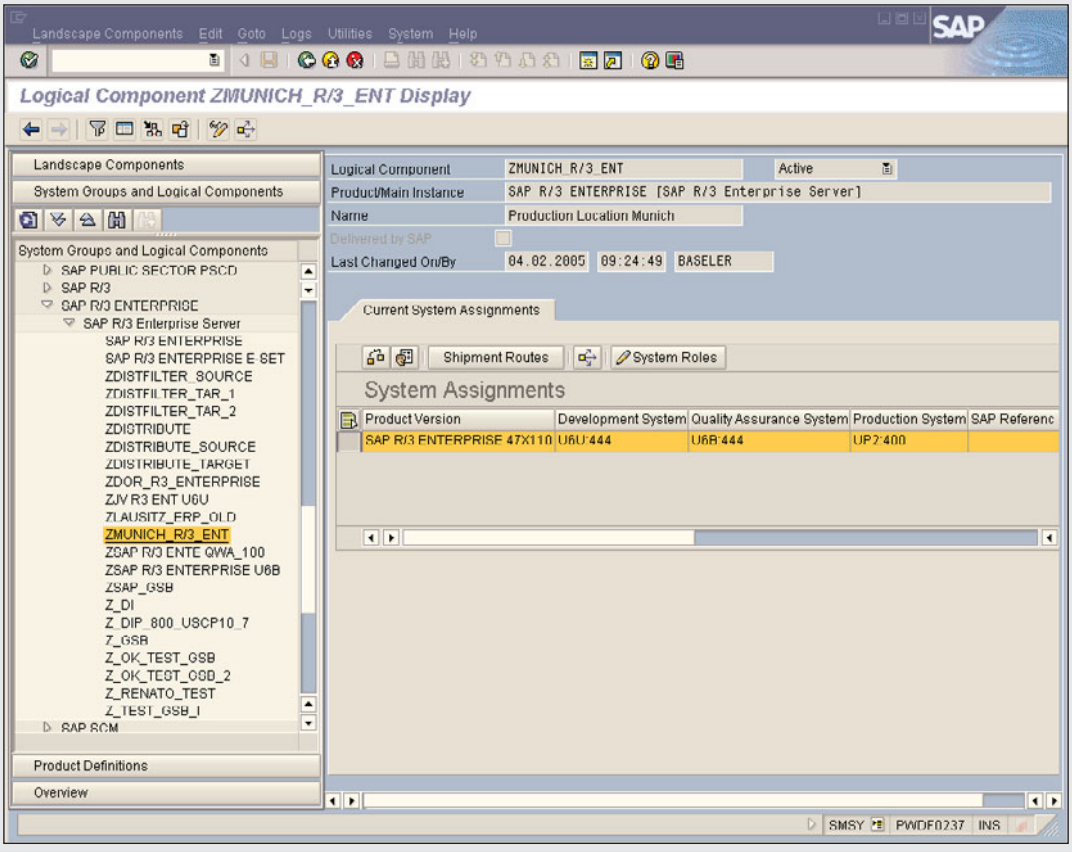

Figure 6 Example logical component in SMSY

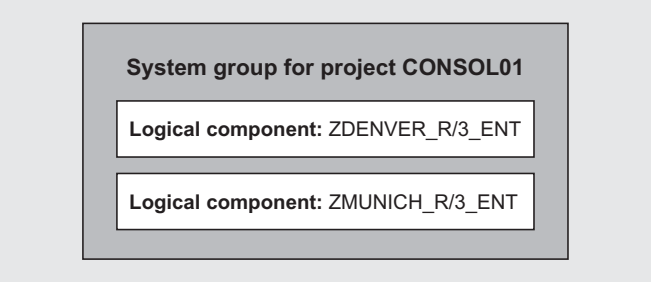

Figure 7 Logical components in a system group

System groups. Logical components that are part of an SAP Solution Manager project or solution can be organized into *system groups* in order to group relevant systems in the defined project or solution context — for example, all systems related to the implementation of mySAP ERP 2005. Take a look at **Figure 7**, which shows two logical components (ZDENVER_R/3_ENT and ZMUNICH_R/3_ENT) collected into a system group that represents a consolidation project (CONSOL01) for integrating these two system landscapes.

Figure 8 shows the SMSY view of the system group for project CONSOL01, including logical components ZDENVER_R/3_ENT and ZMUNICH_R/3_ENT and the system information assigned to each. The system group is initially defined either when creating a project (in transaction SOLAR_PROJECT_ADMIN) or when defining a solution in the context of solution monitoring (via transactions DSWP and SOLMAN_DIRECTORY).

System roles. *System roles* are used to define the purpose of a specific system-client combination in a

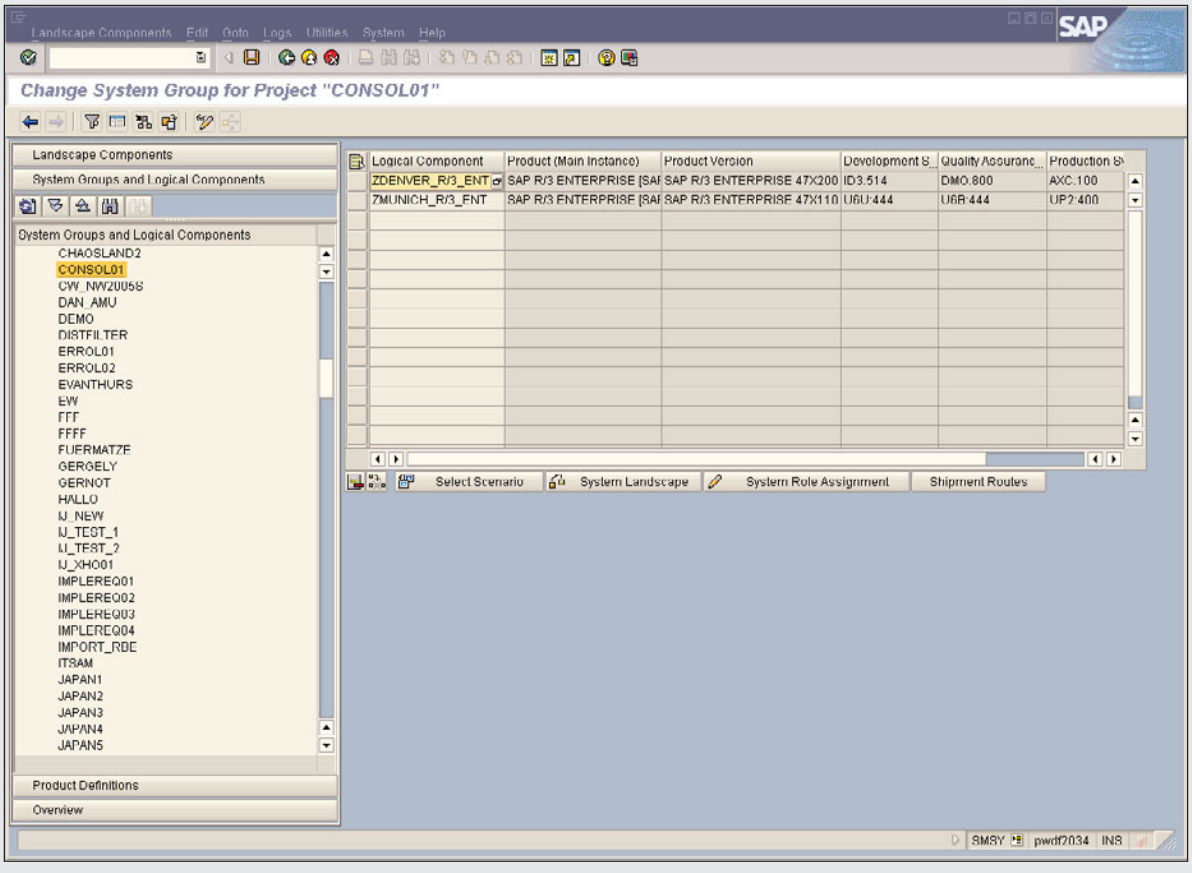

Figure 8 Project-specific system group in SMSY

> ***Note!***
>
> Changes and enhancements made to logical components, such as the addition of new systems, are automatically reflected in the system groups that reference those logical components. Keep in mind that such changes are made directly in the logical components, not via the system groups containing those components, to guarantee the consistent use of logical components in all projects and solutions.

logical component. The example in Figure 5 references the most common system roles: development, quality assurance, and production. Using the system role matrix referenced by the system group containing the logical components involved in a project or solution, SAP Solution Manager knows exactly which system-client combinations to access to perform a project task or solution activity.

Let's say a customizer needs to do some configuration work on a sales order management process running on our example logical component ZMUNICH_R/3_ENT, which is located in the system group for project CONSOL01. This means the customizer needs to access the corresponding satellite development system U6U, client 444, to make the necessary settings in the system's IMG. To direct the customizer to the correct satellite system, SAP Solution Manager simply takes a look at the logical component on which the process runs (ZMUNICH_R/3_ENT) and then checks the system role matrix referenced by the system group for project CONSOL01 to determine the appropriate system-client combination. If you take another look at Figure 8, you can see that SAP Solution Manager will direct the customizer to system U6U, client 444. The benefit of the system role concept is obvious: Project team members don't have to worry about accessing the correct system, and can concentrate on their core business tasks instead.

By now you have a sound understanding of the system information that is used in SMSY, and you have an idea of how the underlying foundation you create with SMSY will later be used to enable efficient system landscape management using SAP Solution Manager solutions and projects. You are now ready to start working with SMSY to create that foundation. Over the course of the rest of this article, I will show you how to register and classify satellite systems in SMSY so that they can be managed by SAP Solution Manager, and how to choose the right RFC connection to enable communication between SAP Solution Manager and the satellite systems.

Configuring your SAP Solution Manager infrastructure — Registering and classifying systems in SMSY

In order to manage the SAP systems in your landscape using SAP Solution Manager, you need to register and classify them in the SAP Solution Manager system using SMSY. There are four ways to do this:

- **Automatically import the satellite system data from the System Landscape Directory (SLD).** If you've already created a system data repository using an SLD[12] — which you may already have in use if you are working with J2EE-based systems, for example — it will be fastest for you to import your landscape data from the SLD into SMSY. The system data retrieved from the SLD will be automatically classified and stored under the corresponding products in SMSY. After the system data import, verify that the system was classified under the desired product category, maintain additional information that cannot be retrieved (e.g., database and database scheme), and maintain the RFC connections to the corresponding satellite systems in order to access the systems for various SAP Solution Manager usage scenarios. (If you do have an SLD in use, and are interested in exploring this technique, see the download available at www.SAPpro.com.)

[12] The System Landscape Directory (SLD) included with SAP Web AS Java 6.40 and higher is a central data repository that is used by various SAP applications, such as SAP Solution Manager and SAP Exchange Infrastructure (SAP XI), to access information on systems and solutions deployed in the system landscape. The SLD holds the description of installed landscape elements and information describing solution components and dependencies.

- **Automatically import the satellite system data from the Transport Management System (TMS).** If you don't have an SLD, but still want to benefit from automatic data capture, you can use automatic data retrieval from the TMS. This option allows you to retrieve system data automatically for all systems in the transport domain in which SAP Solution Manager is located. No additional effort is required to set up your already-running TMS to download data to SMSY; all you need to do is select the TMS data retrieval option in SMSY and the data will be automatically downloaded.[13]

- **Manually define a system "shell" and automatically import the data from the satellite SAP system.** If you do not yet use an SLD, and your system is not in the TMS, you'll have to manually create a "shell" for the satellite SAP system in SMSY and assign it to the product that characterizes the satellite system (e.g., SAP R/3 Enterprise). You'll also need to specify an RFC connection to the satellite system.[14] Once you've done this, SAP Solution Manager will be able to automatically retrieve the relevant system information directly from the satellite system's tables (e.g., available clients, software components, etc.).

- **Manually perform the entire process.** Manually performing the entire process is always an option, but clearly requires significantly more work and knowledge than the other options. However, it is your only option if you don't use an SLD for the system you would like to register, if the system is not in the TMS, and if the system cannot be reached via RFC for retrieving system information. In this case, you have to manually define a system "shell," as described in the previous option, and then manually maintain the system data.

In the following sections, we take a closer look at the third option, which is the most frequently used option for registering satellite SAP systems in SMSY, since many customers are currently running SAP R/3 4.6C and SAP R/3 Enterprise systems, with no J2EE-based systems and therefore no need for an SLD. Additionally, the "shell" option shows you how to register a system from the ground up, which is helpful for understanding how systems are hierarchically structured in SMSY. I also walk you through how to create the appropriate RFC connection to the satellite system according to the scenario at hand.

[13] In SAP Solution Manager 3.2, this TMS data retrieval option is called "LIS" (Landscape Infrastructure Server), which used to be a component of the TMS. Since the LIS is no longer a part of the TMS, the LIS data retrieval option will be renamed "TMS" with SAP Solution Manager 4.0.

[14] The minimum release for reading system data remotely is SAP R/3 4.0B with the corresponding ST-PI plug-in installed.

Note!

You might be wondering, "What about the non-SAP systems in my landscape?" While you cannot perform the kind of in-depth maintenance on your non-SAP systems that you can on your SAP systems, you can manually register them in SMSY for a complete picture of your system landscape and make them available for use in SAP Solution Manager projects and solutions. For a brief look at how to do this, see the download available at www.SAPpro.com.

Note!

Before starting to work with SMSY, the following prerequisites must be in place:

- SAP Solution Manager has been installed according to the SAP Solution Manager Installation Guide.
- At least the following settings have been configured:
  - SAP Solution Manager Implementation Guide → SAP Solution Manager → Basic Settings
  - SAP Solution Manager Implementation Guide → SAP Solution Manager → Scenario-specific settings → General Settings → Mandatory Activities

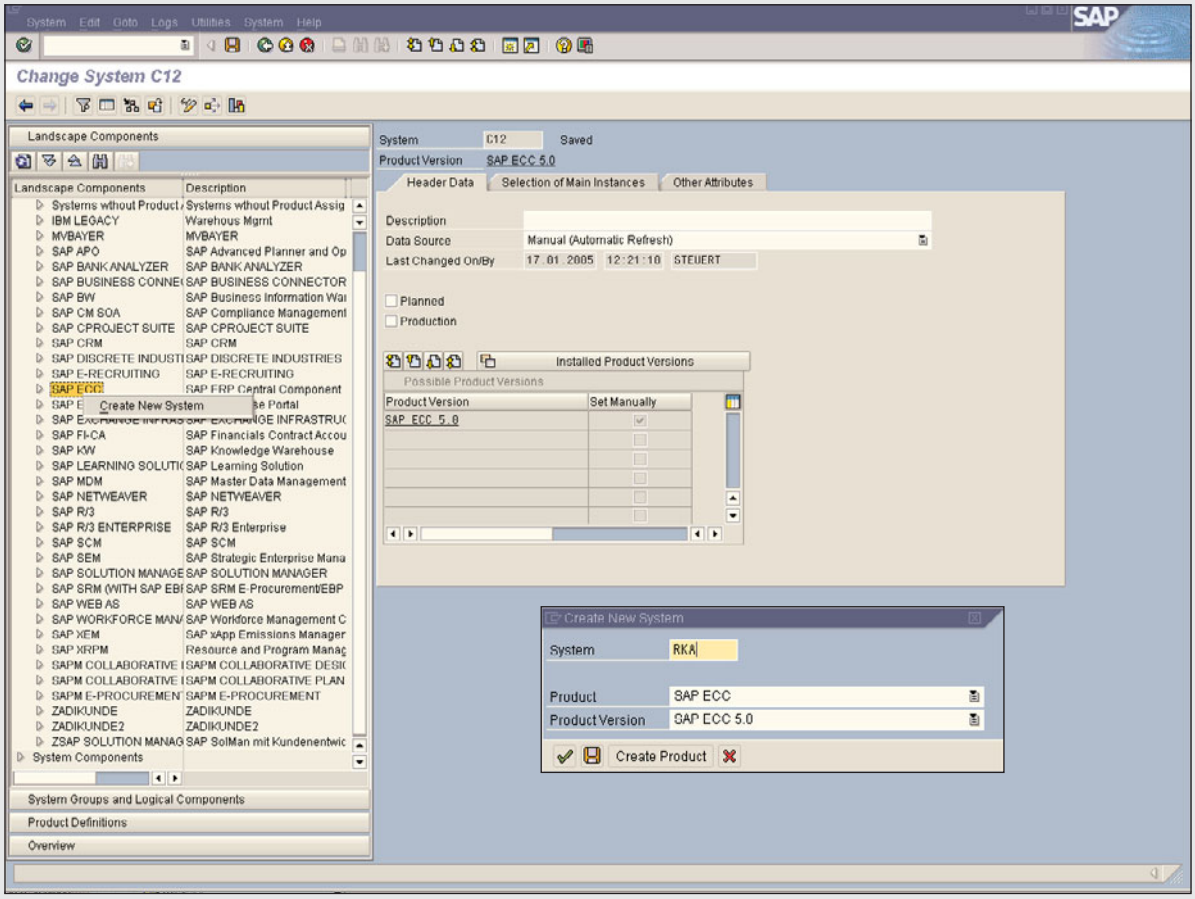

Figure 9 Manually defining a shell for the system in SMSY

Registering a system by automatically importing its data into a system "shell"

Imagine your Chicago-based company has expanded to include a new production location in Bangalore. As a system administrator, you are responsible for the installation, the system landscape documentation, and the preparatory SMSY work required for a mySAP ERP implementation project with SAP ERP Central Component (SAP ECC).[15] The new production location has its own dedicated development, quality assurance, and production systems, whereas the SAP Solution Manager 3.2 system, which you will use to complete your administration tasks and manage the new production location, is located with you at headquarters in Chicago.

In order to use SAP Solution Manager, you need to register and classify all of the SAP systems in the landscape as satellite systems within SAP Solution Manager using SMSY. Let's walk through the steps required to register and classify the SAP ECC development system, which we'll call RKA. Our first task is to manually define a "shell" for this system in SMSY. Follow these steps:

1. In transaction SMSY (see **Figure 9**), open the Landscape Components view in the left-hand pane and then go to the Systems node, which displays a hierarchical tree of product categories for classifying registered systems. Right-click on SAP ECC and choose Create New System from the context menu.

[15] SAP ECC is the successor to SAP R/3 Enterprise.

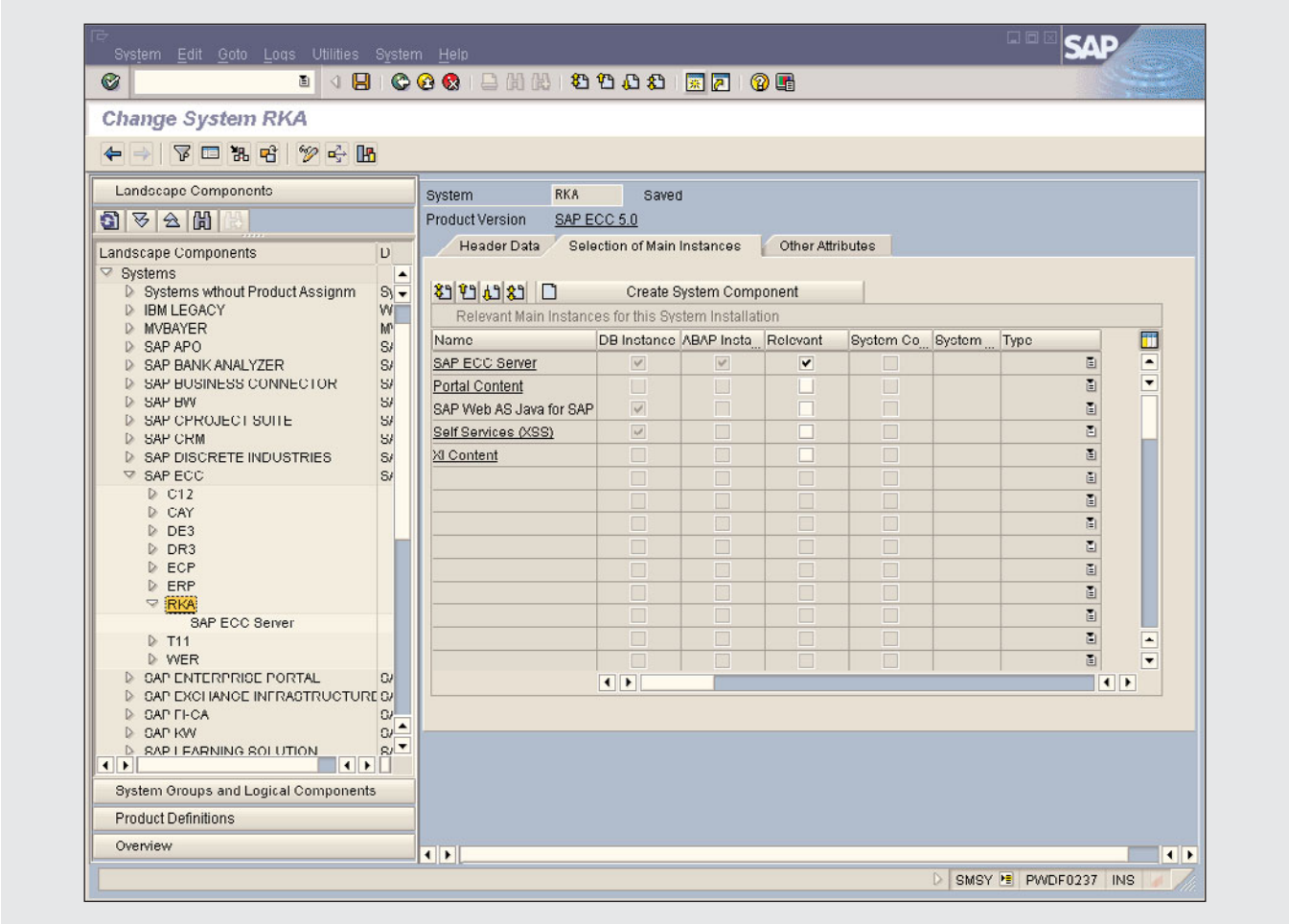

Figure 10 Defining the relevant main instances for the shell system

> ***Note!***
>
> Current SAP product definitions (i.e., product and version information) are automatically available with the SAP Solution Manager installation. The information is updated with the corresponding ST and ST-ICO support packages, which are also available in combination as support package stacks.

2. Enter a system ID (in the example, RKA) in the dialog box that appears.
3. Accept (or change using the possible entries help) the automatically proposed product and product version (in the example, SAP ECC 5.0 since we're creating the system under the SAP ECC product category) in the dialog box, and then save, which returns you to the main SMSY screen.
4. The Selection of Main Instances tab lists the main instances that constitute the selected product (in the example, SAP ECC 5.0). For ABAP-based systems, one installed ABAP main instance will automatically be flagged as relevant. In the example, SAP ECC Server is the only installed ABAP main instance in the satellite system, so it is the only main instance flagged as relevant. As you can see in **Figure 10**, the main instances flagged as relevant appear as subcategories of the SMSY representation of the system in the Landscape Components tree.

Note!

The relevant flag controls whether a system's main instance can be used in SAP Solution Manager projects, such as for implementation and upgrade projects, and in operational processing, such as monitoring. Keep in mind, however, that once a main instance is used for operational processing, the main instance must remain permanently flagged as relevant to avoid inconsistencies in your system landscape.

If there is more than one ABAP main instance available as part of the product definition of the corresponding product, SMSY will flag one by default. If the wrong ABAP main instance is flagged, you can change the default selection. For simplicity, SAP ECC Server is the only installed main instance in our example,[16] but if we wanted to use XI Content or Portal Content as main instances as well, we would need to flag those to be able to use them in SAP Solution Manager projects and monitoring scenarios. Note that in addition to the ABAP main instance, you can flag multiple non-ABAP main instances.

5. Save your entries.

We have now created the framework, or "shell," for system RKA. What is still missing is the information that actually qualifies the main instance on the client, software component, and patch level. Additionally, we have to establish the RFC connectivity so SAP Solution Manager can communicate with the satellite system in order to import its data. Proceed as follows:

1. Select the relevant main instance in the Landscape Components tree — in our example the ABAP main instance SAP ECC Server — and choose the Header Data tab.

[16] In releases prior to SAP Solution Manager 3.2 SP08, if a product consists of various ABAP main instances and you would like to use more than one, you would have to register them as different systems in SMSY. As of SAP Solution Manager 3.2 SP08, you can flag one or more ABAP main instances as "Also installed in Relevant ABAP main instance" in addition to the relevant main instance. Separate systems for every ABAP main instance are therefore no longer required.

Note!

Non-ABAP main instances can also incorporate additional system components. For example, imagine you operate SAP CRM and SAP SCM systems that both make use of a standalone ITS. In SMSY, you simply create the ITS as a system component (using the Create System Component button on the Selection of Main Instances tab for the SAP CRM or SAP SCM system) and reference it (using the System Component Assignment flag on the Selection of Main Instances tab for the respective system). So, technically speaking, the system component then becomes a main instance for those applications. Other system components that can be incorporated as a main instance are Java and TREX systems.

2. On the Header Data tab, you have the option to specify further information on the system, such as a system description. You *must*, however, specify the following data on this tab to identify the system in your system landscape (see **Figure 11**):

   - System number
   - Message server
   - Installation number[17]

   This information is needed for the system connection.

Note!

For non-ABAP main instances, you only maintain header data, instances, and optionally additional system attributes.

3. Switch to the Clients tab (see **Figure 12)** and enter a client number for retrieving system data in the first column of the Clients table (802 in the example).

[17] Installation numbers must always be numerical.

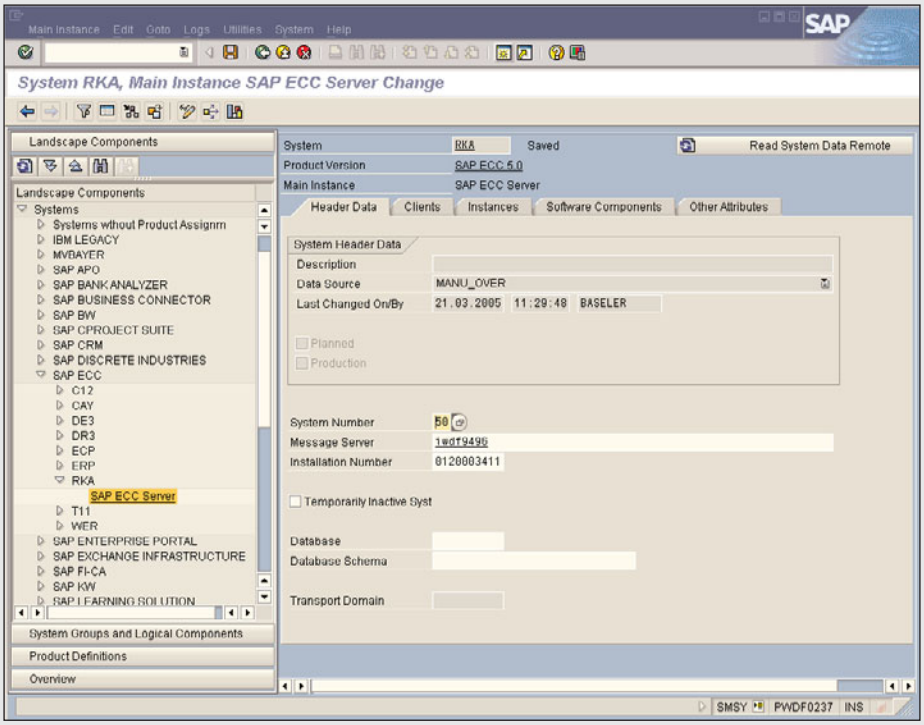

Figure 11 Specify system header data for the main instance

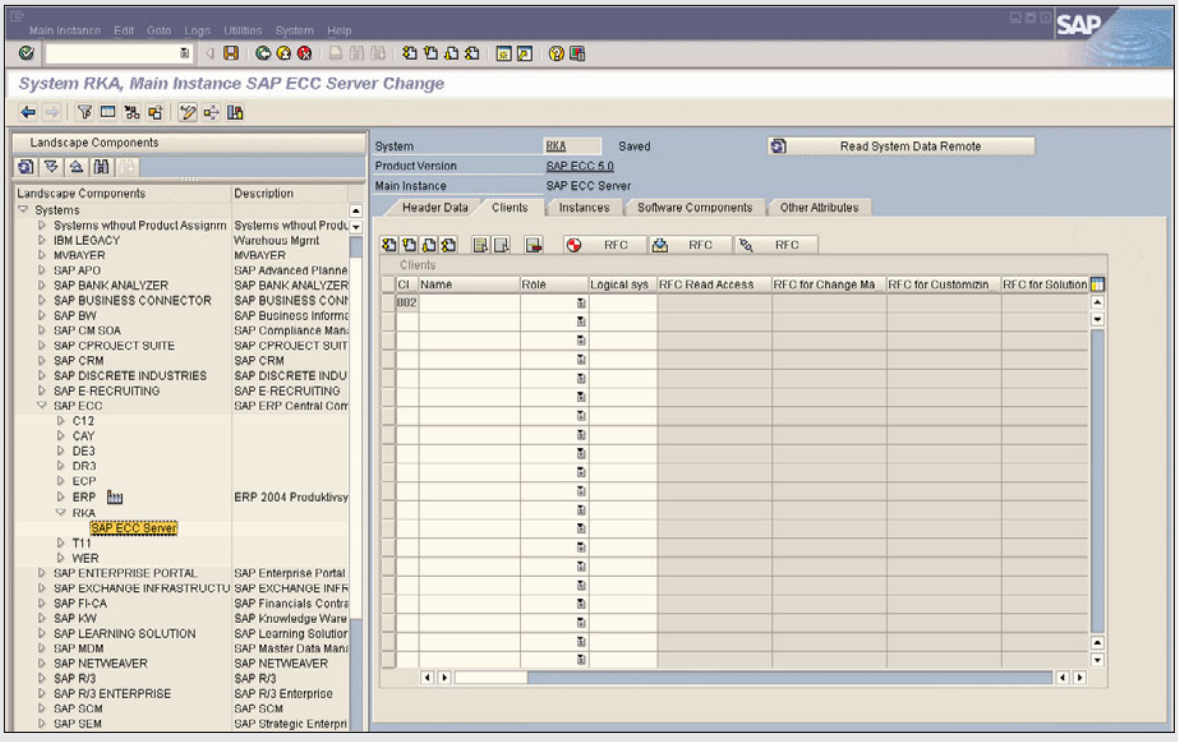

Figure 12 Enter a client from which to retrieve system data

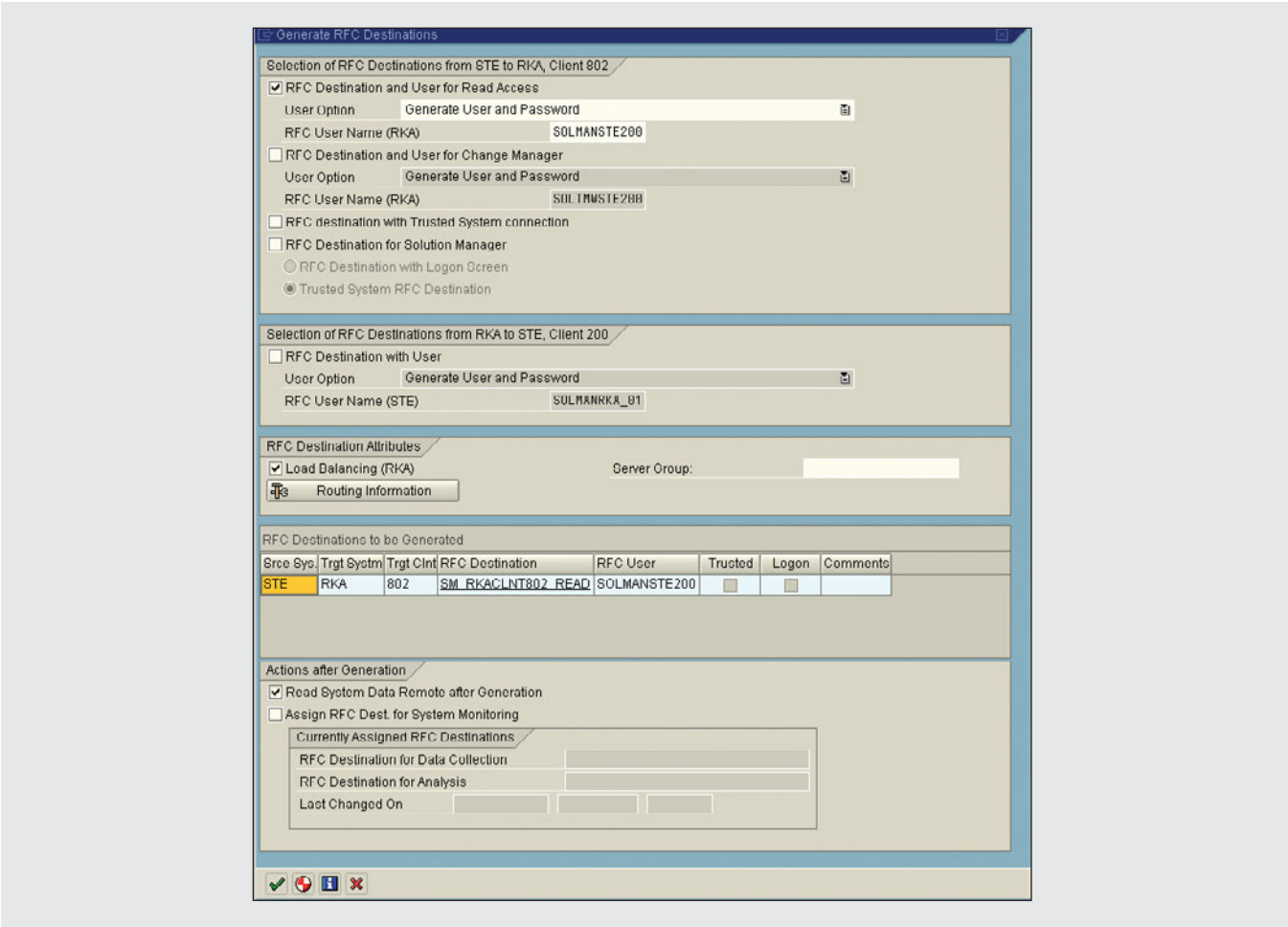

Figure 13 Generate an RFC connection to retrieve system data

4. Select the row of the client you have just added and click on the Create RFC button (RFC).
5. The Generate RFC Destinations window appears (see **Figure 13**). Since we would like to establish an RFC connection to the satellite system and at the same time retrieve system data, select RFC Destination and User for Read Access as the RFC type (more on RFC types in the next section).
6. To enable automatic data transfer with the RFC generation, select the Read System Data Remote after Generation option in the Actions after Generation frame.
7. Start the generation process by choosing the Generate RFC button ( ). During the generation process, you are prompted to log on to the satellite system.

   Additional system data, including all clients, logical system names, software components and their corresponding support package levels, servers, and transport domains are automatically transferred from satellite system RKA to SMSY and displayed (see **Figure 14**).[18]
8. Save your settings.

That's it! We have now successfully registered SAP ECC 5.0 system RKA with main instance SAP ECC Server in SMSY and generated the requisite RFC to

[18] The transport domain is not retrieved directly from the system, but from the domain controller of the system, unless the system itself is the domain controller. The information is automatically requested in the background, so you do not notice this two-step approach (from SAP Solution Manager via the SAP system to the domain controller and back).

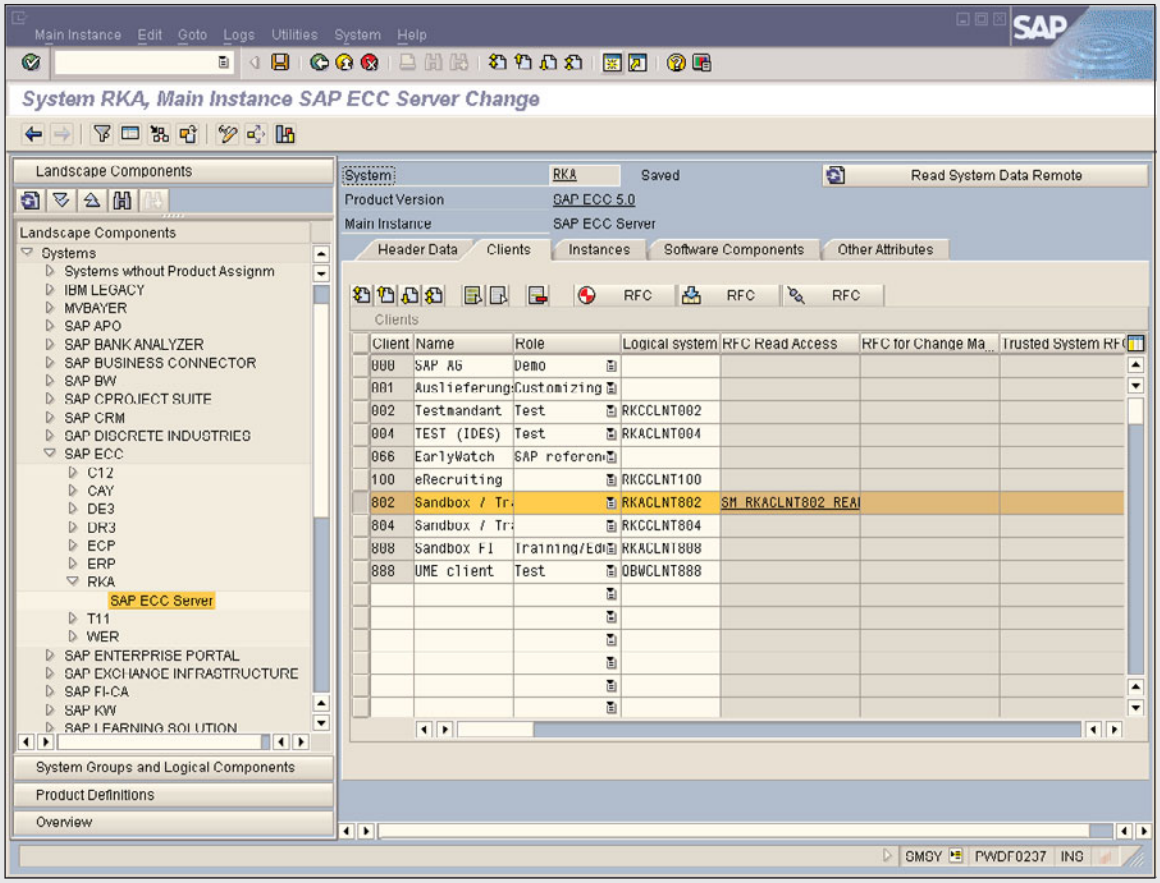

Figure 14 Client information automatically retrieved when establishing the RFC connection

enable communication between the satellite SAP system and SAP Solution Manager. We can now update the RKA system data in SMSY anytime simply by clicking on the Read System Data Remote button. For non-ABAP main instances, however, this information cannot be retrieved via remote reading; you must instead maintain it manually.[19]

While we created an RFC with read access to enable communication between SMSY and the example RKA system, that type of RFC is not always the right choice. It was the right choice for the example for simply reading relevant system data from the system tables, but if you needed to synchronize data across multiple systems, then this RFC would not be sufficient. In the next section, I outline the RFCs that are appropriate to each SAP Solution Manager usage scenario, so that you can generate only the connections required for your specific configuration, saving you time and effort and avoiding negative effects on system performance.

> ***Note!***
>
> The RFC connection you choose is scenario-specific. I'll go into more detail on how to choose the right connection in the next section.

[19] If a non-ABAP main instance points to a system component, as with the ITS example in the note at the upper right of page 108, this information can be automatically retrieved from the SLD, but of course only if you make use of the SLD. The same holds true for TREX or Java-based systems.

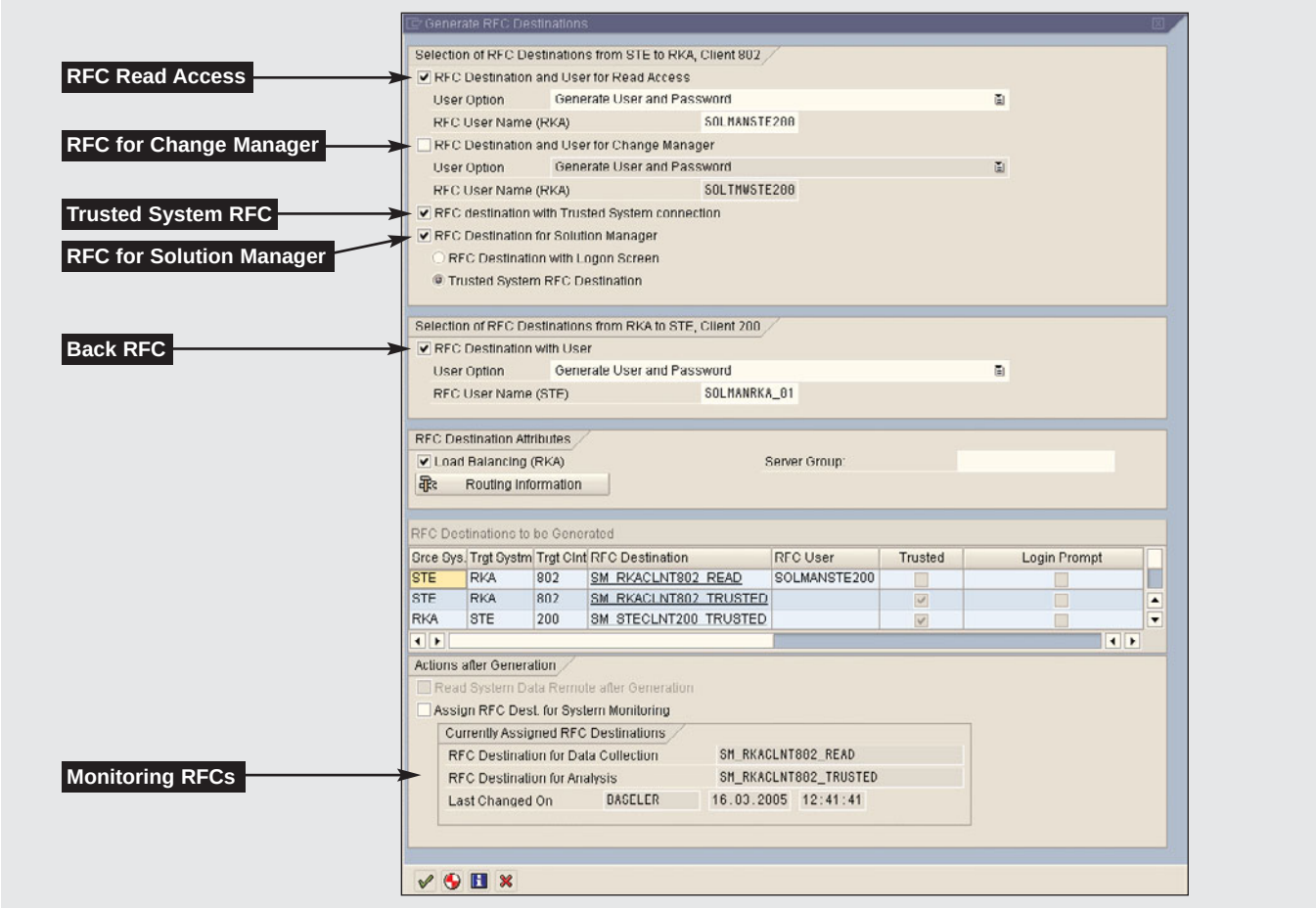

Figure 15 Generating RFCs in SMSY

Generating the right RFC connection between SMSY and the satellite system

SAP Solution Manager offers an automated way of generating these RFCs centrally. You simply have to carry out the following steps, which I briefly touched on in the previous section:

1. On the Clients tab (see Figure 12), select the client for which you would like to generate the RFCs. In the example, we selected client 802 of our example development system RKA.
2. Select the Create RFC button (RFC) and choose the corresponding RFC type (or types) for generation.

Figure 15 shows the available RFC types, along with the short names that are used to refer to them on the Clients tab in SMSY (for simplicity, I refer to the RFC types using their short names throughout the discussion that follows). As an example, in Figure 15 I've selected the RFC types relevant for an Implementation and Distribution usage scenario.[20] You can see the details of the selected RFCs in the RFC Destinations to be Generated table.

[20] The Load Balancing option is selected by default, as shown in Figure 15. I recommend leaving it selected, so that in your satellite system, load balancing is performed by the message server when users log on to the system. The load balancing mechanism distributes the server requests depending on the number of users and the load across any number of application servers. If no specific server group is chosen, as in our example, all application servers will be taken into account for load balancing.

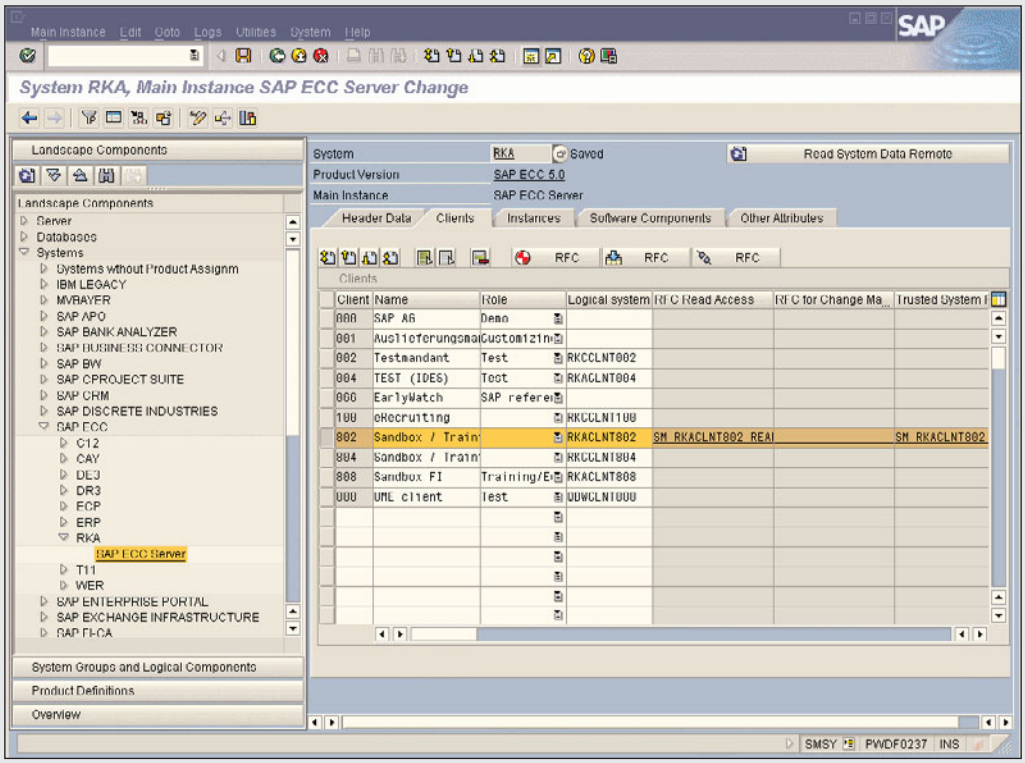

Figure 16 Selected RFC types displayed in SMSY

3. Save your settings. The RFCs are now created. You will have to log on to the satellite system to check your user authorizations regarding RFC generation and user creation. Any errors are displayed in an RFC log launched automatically after RFC generation. In **Figure 16**, the table on the Clients tab shows the selected RFC types — RFC Read Access, Trusted System RFC, and if you scrolled to the right you would see RFC for Solution Manager — and the RFC destination details from the table in Figure 15.

So how do you know which of the available RFC types to choose? In the next sections, I show you how to make the right choice, and the considerations that play a key role in each. For example, different RFCs and related authorizations are required depending on the level of transparency needed within the particular usage scenario. While you do not need to know who triggered a customizing comparison run with the Customizing Scout, because data is only read from the customizing tables, you need a high level of transparency to document who made what changes to the system at what time using change management tools. A sound understanding of

> ***Note!***
>
> A system administrator needs specific authorization for RFC creation, such as permission to create users and assign profiles to them, and to create trusted system RFCs. For more details, refer to the SAP Solution Manager Implementation Guide.[21]

[21] In your SAP Solution Manager system, go to transaction SPRO or click on the SAP Reference IMG button and navigate to SAP Solution Manager Implementation Guide → SAP Solution Manager → Basic Settings → Satellite Systems Preparation → Check User Profile in Satellite Systems and … → SAP Solution Manager → Solution Manager System → Authorization/Users.

> ***Note!***
>
> You may have noticed that the Back RFC is selected in Figure 15, but is not listed as part of the Clients tab display in Figure 16. This is because the Clients tab displays only RFCs pointing out from the SAP Solution Manager system (STE in the example) to the satellite system (RKA in the example). Since Back RFCs point back from the satellite system to the SAP Solution Manager system, they are listed only in the Generate RFC Destinations window (Figure 15), not on the Clients tab in SMSY (Figure 16).

your RFC choices will also enable you to organize your work efficiently. It may not require so much effort to generate all of the RFC destinations for four systems, but generating them for 50, 100, or even more systems is another story, so it will help to eliminate the ones that do not apply.

Let's get started on our RFC tour. As with our tour of the SAP Solution Manager tools at the beginning of the article, we'll examine each RFC option in the context of the SAP Solution Manager usage scenarios and tools.

Implementation and Distribution

As indicated in Figure 15, an SAP Solution Manager Implementation and Distribution scenario uses the following types of RFC connections — RFC Read Access, Trusted System RFC, RFC for Solution Manager, and Back RFC. Let's take a closer look at which are needed when.

Implementation RFCs. The implementation tools require the RFC Read Access. For example, application consultants working in the business blueprinting or configuration tools are likely to assign transactions or IMG activities to business processes. If transaction VA01 is assigned to a sales order process, for instance, the corresponding transaction description "Create Sales Order" would be automatically retrieved from the satellite system via the RFC Read Access and displayed on the Transactions tab in the business blueprinting and configuration transactions (SOLAR01/02). Note that the RFC Read Access requires a dedicated read user,[22] which can be automatically created with and stored in the RFC when it is generated, or you can create it using Central User Administration[23] and make it available to SMSY during RFC generation. Additionally, the RFC Read Access is used in the SMSY transaction itself for retrieving the most up-to-date system data (via the Read System Data Remote button).

The implementation tools also use the RFC for Solution Manager, which lets you:

- Generate IMG projects and views in the satellite systems from the SAP Solution Manager project administration tool.
- Navigate from the central SAP Solution Manager instance to evaluation, development, and test systems to launch SAP transactions and configure business processes via IMG activities, for example.

You must also define the RFC for Solution Manager as either a trusted system or as one with a logon screen (see Figure 15). Defining the RFC as an RFC destination with a logon screen requires the user to enter logon information. Defining the RFC as a trusted system RFC enables users to log on to the correct system without having to know the logon system and client — the system automatically verifies if the user requesting the logon has an identical user name in that system and, if so, grants access to the function, transaction, or IMG activity requested. Moreover, users are not explicitly prompted to log on with their user information when accessing the satellite system.[24] When

[22] The user is created according to the naming convention SOLMAN<SID><CLI>, where <SID> stands for the SAP Solution Manager system identifier and <CLI> for the respective client of the SAP Solution Manager system (e.g., user SOLMANSTE200 in Figure 15).

[23] Central User Administration (CUA) is an SAP Basis tool that supports the maintenance of users in a central system. The same users are often created and the same roles assigned in each client. CUA is designed to perform these tasks in a central system and distribute the data to the systems in the specified system group. SAP Solution Manager 3.2 supports CUA as of SP06. This means that SAP Solution Manager satellite (background) users are first generated via CUA and assigned authorization according to SAP Note 831535, and then simply added (instead of the default user proposed) during RFC generation in the Generate RFC Destinations window.

[24] While SMSY generates the trusted system RFC automatically, if you are interested in further understanding the procedure, see SAP Note 128447 Trusted/Trusting Systems.

the trusted system option is selected, SMSY automatically creates two corresponding trusted system RFCs: one from SAP Solution Manager to the satellite system, and another from the satellite system to SAP Solution Manager.

Note!

The trusted system option for the RFC for Solution Manager type has synchronization points with the Trusted System RFC type. The RFC for Solution Manager simply applies the Trusted System RFC type to the RFC for Solution Manager connection. You do so by selecting the option Trusted System RFC Destination below the RFC Destination for Solution Manager option (see Figure 15).

Note!

Keep in mind that the security option you choose for the RFC for Solution Manager in the context of the implementation tools — i.e., trusted or logon — has a direct impact on the Solution Monitoring tools, which also use this RFC. Since you maintain the RFC as either a logon or trusted system RFC, you also control whether to use a logon or trusted system connection for monitoring purposes.

Distribution RFCs. When you use the Customizing Scout, the RFC Read Access is required in the following situations:

- During a comparison run (e.g., comparing a development and a quality assurance system) to read the current customizing settings, which are then presented in SAP Solution Manager as a customizing object overview list showing identical or different settings
- During navigation into the satellite system to view the current customizing object details on the field level

Customizing Distribution requires three different RFCs:

- The RFC for Solution Manager is used to generate IMG projects and transport requests in the source and target satellite systems.
- The Trusted System RFC enables customizing data transfer from the source to the target system. It is used anytime an active distribution run is initiated, such as at transport recording or at transport release. There are two Trusted System RFCs: One from SAP Solution Manager to the satellite system; another from the satellite system to the SAP Solution Manager system.
- The Back RFC is an RFC destination that points from the satellite system back to SAP Solution Manager. It can also be generated centrally from within SAP Solution Manager. Similar to the RFC Read Access, a specific user is created and stored with the Back RFC. In the context of Customizing Distribution, the Back RFC is required to check locked customizing objects against changes. Customizing Distribution provides a locking mechanism that enables you to protect customizing objects in the satellite systems from undesirable changes. Every time a user tries to access a customizing object, SAP Solution Manager is called to check if it is locked for maintenance.

Upgrade

The SAP Solution Manager Upgrade tools require the same RFCs as the Implementation and Distribution tools.

Solution Monitoring

In addition to the Back RFC, the RFC Read Access and the RFC for Solution Manager are used for Solution Monitoring purposes. The latter two connections can be made available if you do either one of the following for your specific system-client combination:

- Assign the RFCs *during* RFC generation (RFC button) when you intend to use Solution Monitoring.
- Assign and check the RFCs *after* RFC generation (RFC button). If you did not make the RFC assignment during RFC generation, because monitoring was not your focus at the time, this would be your option of choice. Clicking on the RFC button

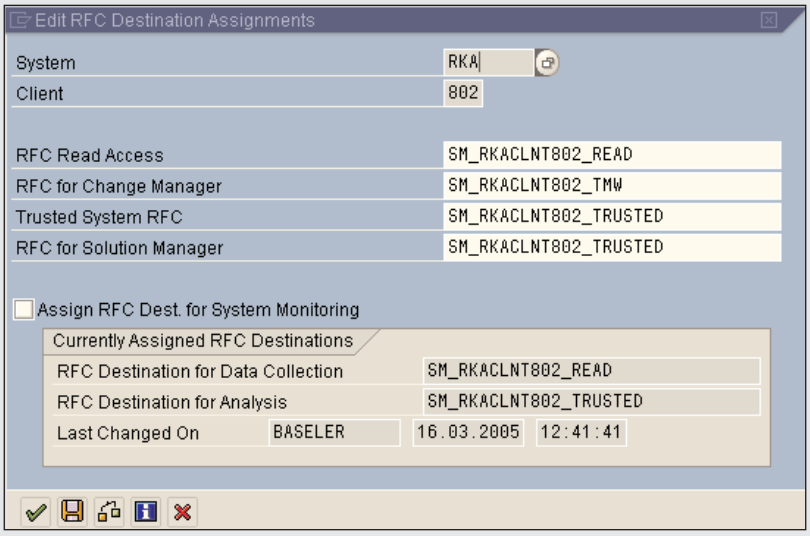

Figure 17 Overview of assigned RFC destinations for Solution Monitoring

displays the RFC destinations currently in use for a specific client (see **Figure 17**) and facilitates check routines regarding communication and authorization. In the bottom part of the screen, you can easily spot that the corresponding RFCs — RFC Destination for Data Collection and RFC Destination for Analysis — have been assigned to facilitate communication. To enable the RFCs for monitoring, simply check Assign RFC Dest. for System Monitoring and save your settings. That's it!

Note!

The RFC Destination for Data Collection and RFC Destination for Analysis are monitoring-specific variants of the RFC Read Access and RFC for Solution Manager, respectively. The RFC Destination for Data Collection and RFC Destination for Analysis are replicated from SMSY into transaction RZ21, enabling System Monitoring, Business Process Monitoring, and CSA to make use of the RFC defined for transaction RZ21.

SAP EarlyWatch Alert and Service Level Reporting. The Back RFC transfers data from the Service Data Control Center (transaction SDCCN[25]) for SAP EarlyWatch Alert to SAP Solution Manager. Additionally, it is used to transfer the latest service definition data from the central SAP Solution Manager system to the local system. Thus, SAP EarlyWatch Alert requires only the Back RFC.[26]

Service Level Reporting is processed locally in SAP Solution Manager and relies on data delivered by SAP EarlyWatch Alert, System Monitoring, and Business Process Monitoring. Therefore, these tools have to be set up and operated in advance. This means that Service Level Reporting does not require specific RFCs itself, but

[25] To use the new transaction SDCCN, plug-in ST-PI_2005_1_<XX>, SP01, is required in your SAP Solution Manager and satellite systems.

[26] There are some additional communication types that run independently of SMSY to support SAP EarlyWatch Alert. An SDCC_OSS connection is used to download service definition data from the SAP Service Marketplace to the central SAP Solution Manager system. Since the satellite systems continuously retrieve this information from the central SAP Solution Manager system, they always work with the most-up-to-date service definition data. Moreover, connection SAPOSS can be used to send SAP EarlyWatch Alert sessions to SAP, which is done automatically every four weeks or when rated red, unless you explicitly prevent it.

> ***Note!***
>
> If you are looking for an easy way to activate transaction SDCCN centrally from SAP Solution Manager, the RFC for Solution Manager can be used directly. To check if the SDCC is already active in the satellite system, use the RFC Read Access destination. To access central administration tasks for transaction SDCCN, in SMSY follow the menu path Goto → Solution Manager Operations → Administration SDCCN.

instead relies on a properly set up infrastructure for SAP EarlyWatch Alert, System Monitoring, and Business Process Monitoring.

System Monitoring and Business Process Monitoring. Monitoring results are displayed in the SAP Solution Manager Operations screen (transaction SOLUTION_MANAGER). You see a graphical display of your systems or business processes based on the system alerts retrieved from the local CCMS. This information is retrieved via the RFC Destination for Data Collection. If you would like to analyze and fix the problem, such as job cancellations or ABAP short dumps, you can navigate into the affected satellite system. This connection is supported by the RFC Destination for Analysis.

Central System Administration (CSA). When setting up a system-specific CSA session, you define the RFC destination used to access the satellite system in order to perform the system administration tasks. The RFC used here is the RFC Destination for Analysis.

Change Request Management

In SMSY, all systems relevant to the Change Request Management process need to be identified and assigned in the context of SAP Solution Manager maintenance projects.[27] For all relevant systems (development, quality assurance, and production) the RFC for Solution Manager has to be created. For development systems, for example, the RFC for Solution Manager is used to create IMG projects centrally from project administration with corresponding CTS projects bundling one or several transport requests. The transport request records the changes to be transported in stages from the development to the production system.

The Trusted System RFC is used for all system-client actions alongside the change process requiring central logon from SAP Solution Manager to the satellite system. Examples are the developer's logon to the development system in order to perform the changes, or the tester's logon to the quality assurance system. For this purpose, the relevant users (developer, tester, etc.) must have the trusted system authorizations assigned in the satellite systems.

The RFC for Change Manager enables the remote creation of transport requests with tasks for the designated developers in the development systems. It is also used for releasing tasks and requests. As with the RFC Read Access, a specific user[28] is created in the background during RFC generation. Via this functionality, all transport requests will always be linked to the underlying change requests.

The RFC Read Access is used in the following circumstances:

- To derive information on the development system in which the change should be implemented from the production system in which the change is initiated via a problem message or change request.
- To track the status of a transport in your system landscape: Is the transport waiting for import into the quality assurance system? Has it already been exported from the development system?

The use of the Back RFC results from the integration of the Change Request Management functionality into the Service Desk functionality. Since change requests can

[27] As of SAP Solution Manager 3.2 SP08, Change Request Management will also support implementation, upgrade, and template projects.

[28] The user is created according to the naming convention SOLTMW<SID><CLI>, where <SID> stands for the SAP Solution Manager system identifier and <CLI> for the respective client of the SAP Solution Manager system (e.g., user SOLTMWSTE200 in Figure 15).

be initiated from support messages, these messages have to be transferred from the satellite system to the SAP Solution Manager system.

Additionally, the Change Request Management functionality works based on the information in transport domains stored in SMSY. Via transport domain assignment, the change management functionality can check right away if systems assigned to one specific logical component are in the same or in a connected transport route. Only then can the change management functionality operate successfully at all.

Service Desk

While the Service Desk functionality mainly uses functions that run independent of SMSY, the Back RFC is used to transfer notifications (i.e., problem messages) from ABAP-based satellite systems to the Service Desk.[29]

Service Delivery

Service definition data is supplied for the delivery of services via SDCC, which only requires the use of the Back RFC from the satellite system to the SAP Solution Manager system. The same RFC is used for delivering service session data from the local SDCC to SAP Solution Manager, where the service is executed.[30] Executing a service session requires the setup of a solution landscape in SAP Solution Manager with systems that have a system ID and installation number.[31]

Summary

Figure 18 summarizes the RFC destination details. Now that you have a solid understanding of the RFCs required for various usage scenarios, let's return to our SAP ECC example. Let's say you receive a request from the functional implementation team: They would like to use the SAP ECC system in an SAP Solution Manager implementation project. What is the minimum set of RFC destinations required for the implementation of an SAP ECC system? According to the matrix in Figure 18, implementation functionality asks for the RFC Read Access and the RFC for Solution Manager to facilitate communication between the SAP ECC system and the SAP Solution Manager system — this is the minimum set of RFCs. If the functional implementation team decided to synchronize data across different systems — by supplying the SAP ECC system with customizing data from an SAP R/3 system, for example — the Trusted System RFC and the Back RFC would be required to operate the Customizing Scout and Customizing Distribution.

Armed with a solid understanding of how to register SAP systems in SMSY, and how to choose the right RFC destination for your particular usage scenario, you are ready to lay the groundwork for efficient system landscape management in your own environment. But before sending you on your way, let me leave you with some tips that will leave you well prepared for a successful implementation.

Tips for ensuring successful system landscape management

The following sections contain the answers to questions frequently asked by system administrators about registering SAP systems in SMSY, to help you avoid common pitfalls and save time.

What support packages do the satellite SAP systems require?

The required minimum support packages depend on the SAP Solution Manager usage scenario you would like to operate. Adequate support package levels are relevant not only for correct RFC generation, but also for navigation into the satellite systems centrally from SAP Solution Manager. They are listed in the SAP Solution Manager Configuration Guide.[32]

[29] To complete the picture, even though not generated from within SMSY, other RFCs used are SAP-OSS to forward messages and SAP-OSS-LIST-O01 to retrieve solutions from SAP.

[30] See the earlier "SAP EarlyWatch Alert and Service Level Reporting" discussion.

[31] To complete the picture, an SAPOSS connection is used by SAP Solution Manager to check for service order status in the SAP Service Marketplace and to schedule service sessions directly in your SAP Solution Manager system.

[32] See the "System landscape management resources" sidebar at the end of the article.

Required RFC/Usage Scenario		RFC Read Access	RFC for Change Manager	Trusted System RFC	RFC for Solution Manager	Back RFC
Implementation and Distribution	Implementation	X			X	
	Customizing Scout	X				
	Customizing Distribution			X	X	X
Upgrade		X			X	
Solution Monitoring	SAP EarlyWatch Alert (SDCC)	X[a]			X[a]	X
	Service Level Reporting	Based on SAP EarlyWatch Alert and System/Business Process Monitoring data				
	System Monitoring	X[b]			X[c]	
	Business Process Monitoring	X[b]			X[c]	
	Central System Administration				X[c]	
Change Request Management		X	X	X	X	X
Service Desk						X
Service Delivery		X[a]			X[a]	X

[a] Not required if SDCC is not administrated centrally from SAP Solution Manager.
[b] Used in the RFC Destination for Data Collection.
[c] Used in the RFC Destination for Analysis.

Figure 18 RFCs required to support SAP Solution Manager usage scenarios

How can I make sure that my RFCs have been properly set up?

Switch to display mode using the Change/Display icon ( ) and go to the Clients tab of the main instance you would like to check. Mark the desired client and choose the RFC button to check the communication and authorization for *all* established RFCs pointing from the SAP Solution Manager system to the satellite SAP system.

How can I determine why RFC generation failed?

Check your RFC action log for the corresponding system. The system will automatically offer it to you right after the generation process or you can access it anytime by choosing Logs → RFC logs from the SMSY menu. Carefully check the log to find out what caused the problem, such as a missing authorization for a certain RFC destination to be generated. If this is the cause of the problem, make sure you have the adequate authorizations for SMSY and for creating users and RFCs in the satellite system before re-generating your RFCs. Also, to avoid inconsistencies, be sure to clean up erroneous RFCs and related users as described next, because SMSY will not overwrite existing erroneous RFCs or users.

How do I proceed after a failed RFC generation?

As of SP06, SMSY provides a simple way of deleting RFCs instead of manually going into the RFC maintenance transaction (SM59) of each affected system. In change mode, which can be accessed via the Change/Display icon ( ), go to the Clients tab of

the main instance for which you would like to clean up the RFCs (see **Figure 19**). Select the corresponding client and then click on the RFC button, which launches the dialog shown in Figure 19. Note that some RFCs pointing from the satellite SAP system to the SAP Solution Manager system will initially not be displayed. To display these RFCs for deletion and cross-check the existence of users in the satellite system, click on the Read Information button at the upper right so that SAP Solution Manager reads the relevant RFC connections from the satellite SAP system. Delete the RFC or user via the delete button ( ).

Note that the RFC and user information in the cleanup dialog window is kept only as long as you stay in the SMSY session. This means that if you have decided to

Note!

Only the RFCs and users in the SAP Solution Manager system itself can be deleted using SAP Solution Manager. Due to security reasons, users and RFCs located in the satellite system have to be deleted manually. As you can see in Figure 19, there is no delete button for the RFC and user located on the satellite system. I recommend that you first navigate to the satellite system's transactions SM59 and SU01 to delete the corresponding RFCs and users manually, and only then delete the RFCs and users in the SAP Solution Manager system.

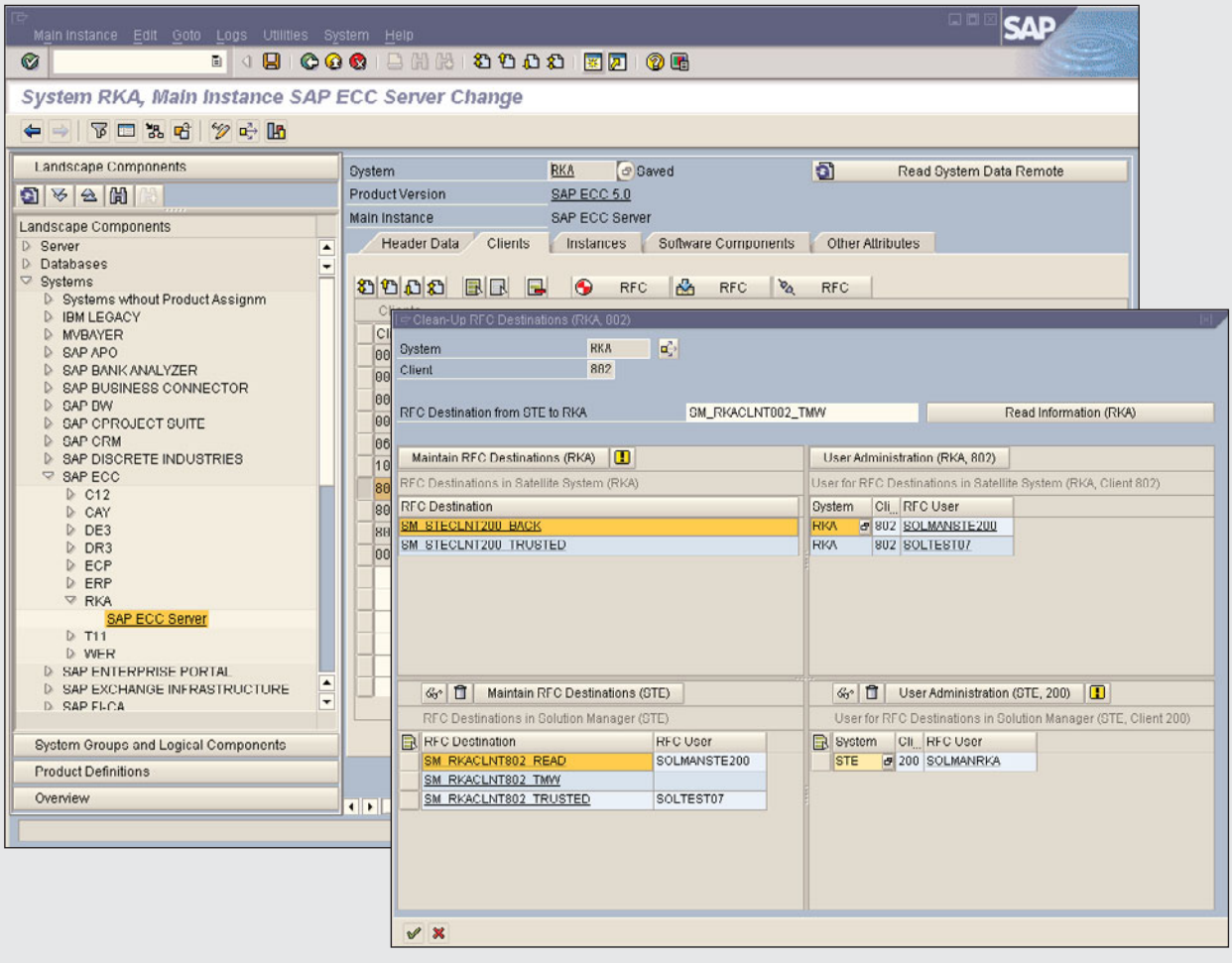

Figure 19 Cleaning up RFC connections and users

not delete users and RFCs right away and leave the SMSY transaction, the information on updated RFCs and users is not stored. You have to re-read the information in a new session to get an up-to-date overview.

What do I do if I have verified the RFC connection but still cannot connect to a satellite system?

Check if one of the following is the case:

- The application server of the satellite system has changed. If so, you need to adjust the appropriate settings in your system header data, namely the message server for the corresponding main instance, and the RFC destinations.
- The respective client in your satellite system was refreshed, which may result in a loss of users, such as the user created by the RFC Read Access and the RFC for Change Manager. Re-create these users manually and then test authorizations and connections to your satellite systems.
- There is an SAP router between SAP Solution Manager and the satellite system that is not registered. With SMSY settings, the path from and to the SAP Solution Manager server, including the router to be passed, has to be maintained in the Landscape Components view on the server level.

How do I remove duplicate system occurrences after automatic system data retrieval?

After an automatic system update via SLD (see the download available at www.SAPpro.com), a system may be assigned to multiple product categories. For example, an SAP Knowledge Warehouse (SAP KW) 6.0 system may appear among others under both the SAP Web Application Server (SAP Web AS) and SAP KW product categories. You can uniquely attribute a system to *one* specific product category on the system's header data overview by clicking on the Installed Product Versions button on the Header Data tab and making the required settings. **Figure 20** shows an SAP KW product with the product version SAP KW 6.0 installed in system BS5. Since this is the only product version installed in the system, system BS5 will appear in the system overview under SAP KW only.

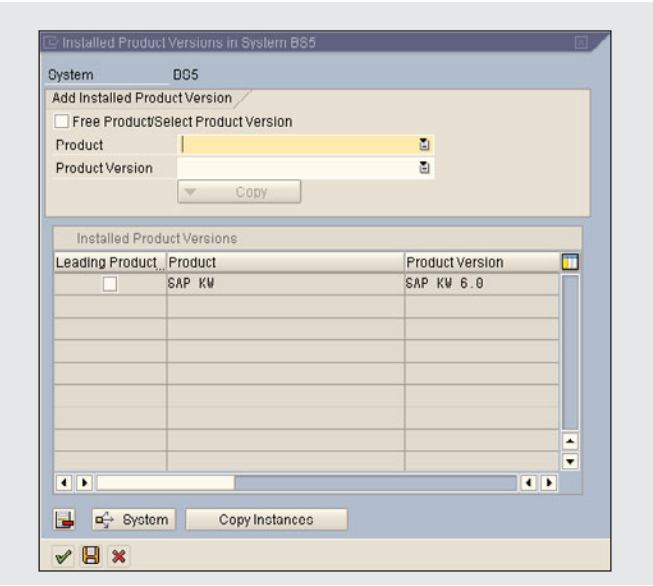

Figure 20 Product version installed on a system

If there were several product versions installed in system BS5, such as SAP KW 6.0 and SAP Web AS 6.20, you could classify one product version as "leading," for example, SAP KW 6.20. In this case, system BS5 would only appear under the leading product version in the system overview — in our case under SAP KW but not under SAP Web AS. This helps reduce the visibility of systems depending on the product versions installed on them. Note that as soon as a system is used under a specific product version in a logical component, it is not possible to change the leading flag to another product version to avoid inconsistencies in your system landscape.

Where do the "Systems without Product Assignment" in my system list come from, and how do I manage them?

Whenever a system that acts as a transport domain controller[33] of other systems is manually registered in SMSY, the systems linked to the domain controller are included in SMSY once you remotely read the data from the domain controller. For these interlinked systems, all

[33] Component of the Transport Management System (TMS), in which the transport route configuration is maintained centrally for all systems in the same transport domain.

Tip!

Once you have upgraded any of your satellite systems, let's say from SAP R/3 4.6C to SAP ECC 5.0, in SMSY the product version assignment and other system data (new software component and patch levels, etc.) may be out of date. This is precisely the case if you have manually assigned the system to one or several products as just described. You can immediately reflect these changes by attributing the system to the new — in this case SAP ECC 5.0 — product version and by clicking on the Read System Data Remote button in SMSY to retrieve the most up-to-date system data.

relevant logon data, such as system ID, application server, and system number, can be retrieved and stored under the system's name in SMSY. However, product information cannot be read[34] from these systems, which are therefore categorized as Systems without Product Assignment under Systems in your Landscape Components view. You have three options for managing this situation:

- If you use an SLD, you can delete the systems from SMSY and have them register themselves in the SLD. Then proceed as described in the first option discussed in the section "Configuring your SAP Solution Manager infrastructure — Registering systems with SMSY."
- If you don't use an SLD, assign the system to the appropriate product version. You can obtain additional system data via the Read System Data Remote button in SMSY.
- Leave the systems unchanged, since they will not harm any of your landscape components. This may be an option if you do not intend to use the systems in any of the SAP Solution Manager usage scenarios. In order to use the systems in SAP Solution Manager projects and solutions, however, product assignment is mandatory.

[34] This applies to SAP Basis releases with installed SP levels available before January 2005 (4.6C - SP48, 4.6D - SP41, 6.10 - SP41, 6.20 - SP44, 6.40 - SP09).

Note!

If you decide to simply delete these systems, they will eventually be reintroduced under the category Systems without Product Assignment the next time you perform remote system data reading for your domain controller system.

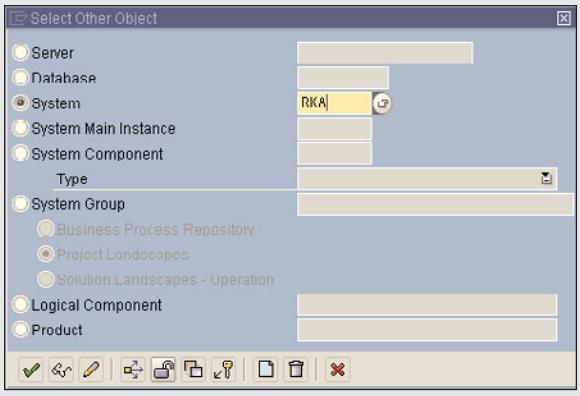

Figure 21 Setting the data source to manual input

Can I still manually add system data if I use automatic system data retrieval?

Yes, you can. Certain input fields are partially disabled, but you can, for instance, add system data such as database information and system description, or you can change the message server if required. To do so, choose System → Other Object from the SMSY menu and select the system for which you would like to manually enhance data (see **Figure 21**). Then click on the Set Data Source to Manual Input button ( ) to set the data source to manual input and make your manual system settings.

Having switched the data source to manual input, the data source status is automatically changed to Manual (Automatic Refresh) on the Header Data tab at the system level. This means that if the system is available in the SLD or TMS, and you have scheduled the corresponding data retrieval,[35] new data from the

[35] As defined in Goto → Setup System Landscape Maintenance (transaction SCDT_SETUP).

corresponding source will automatically overwrite the existing SMSY settings. If you would like to be notified before the overwrite process, it is recommended that you switch to the Manual (Message at Adjustment) data source.

How can I get an overview of system data for multiple systems or for one specific system?

SAP Solution Manager offers system landscape reporting for various purposes:

- Report on all systems belonging to a certain product/version to determine their current state before an upgrade.
- Evaluate all systems in the context of a project or solution.
- Get an overview of system data for one specific system, such as the main instances a system comprises, software and patches installed on the system, and database and server information.

Simply choose Utilities → Analysis from the SMSY menu and make your selection to start the reporting.

Is there anything I have to consider in SMSY if I have made a system copy of my satellite system?

A copied satellite system is essentially a new system that has to be registered in SMSY. In addition to general system copy activities, for SMSY purposes you need to check and rework your RFC destinations. With the system copy, Back RFCs and Trusted System RFCs, as well as the users generated for the RFC for Change Manager and RFC Read Access, will be copied as well. This will inevitably cause errors when you start to centrally generate RFCs from within SAP Solution Manager, because SMSY always generates RFCs and users from scratch. This means that when you try to register the copied satellite system with SMSY, it automatically generates RFCs and users and does not check if parts of the communication setup are already available in the satellite system. To solve this problem, try either of the following:

- Delete named RFCs and users in the satellite system and start automatic RFC generation.
- Manually maintain missing RFCs and users for the satellite system in SAP Solution Manager.

Make sure to change the logical system name in the clients view (transaction SCC4) of the satellite system before reading system data remotely from the satellite system. The logical system has to be uniquely identified in SAP Solution Manager; otherwise some scenarios, such as Customizing Distribution, will not work properly.

For detailed after-copy activities required for an SAP Solution Manager system, refer to SAP Note 495779.

How do I completely remove a system from SMSY when it is no longer operated?

You need to carry out the following steps:

1. Using the where-used list, check if the system is still referenced by any usage scenario that requires an SAP Solution Manager project, an active customizing distribution (as used in Implementation and Distribution, Upgrade, and Change Request Management scenarios), or an operative solution (as used in Solution Monitoring scenarios).
2. Remove a system from *all* its current usages by manually removing it from the logical component. Be aware that some usage scenarios may become completely invalid. For operative solutions (or solution landscapes), monitoring must be deactivated for the system to be deleted, and the system then needs to be removed from the solution.
3. The system is now decoupled from any SAP Solution Manager usage scenario. Remove all available RFCs and users as described previously in the answer to "How do I proceed after a failed RFC generation?" This includes all RFCs pointing from and created in the satellite system to the SAP Solution Manager system as well as from the SAP Solution Manager system to the satellite system.
4. Delete the system from the SMSY Landscape Components tree.

Conclusion

This article showed you how central system landscape maintenance in SAP Solution Manager functions as the key infrastructure provider for smoothly running the majority of SAP Solution Manager usage scenarios, which can deliver support during all phases of a solution's lifecycle — from implementation to operation to optimization. Once the system data is stored in SMSY, system data-related tasks across globally distributed, heterogeneous system landscapes can be administrated centrally from within SAP Solution Manager. To sum up, central system landscape maintenance offers you:

- *Transparency* into your system landscape, including all your systems and products. SMSY helps you see the "big picture" of your complete system landscape.
- *Reduction of time and effort* for system administration tasks.
- *Reduction of manual work* through integration into other SAP technologies, such as the TMS and the SLD, which can serve as an initial and periodic data supplier for SMSY-related data. Starting from here, you can extend the scope of centrally maintained systems and enable communication for the various SAP Solution Manager usage scenarios by establishing RFC connections.
- *Security* due to proactive notification of system data-related changes. This way you always stay up-to-date with your system definition in SAP Solution Manager.

What you've learned here may serve as a starting point for you to further explore SAP Solution Manager and its usage scenarios, and to evaluate the ones that may be beneficial to your company. At the same time, you now have a "how to" available at your fingertips that helps you to efficiently manage major aspects of your system landscape.

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System landscape management resources

- SAP Solution Manager 3.2 Configuration Guide and Implementation Guide (IMG) for information on configuring all SAP Solution Manager usage scenarios:
  - As of SP05, an IMG structure is available within the SAP Solution Manager system. In transaction SPRO, click on the SAP Reference IMG button to access the SAP Solution Manager Implementation Guide.
  - The SAP Solution Manager Configuration Guide provides details on the technical requirements, minimum support package levels, and functionality used for all usage scenarios, as well as configuration notes and information on roles and authorizations. It naturally complements the IMG. The configuration guide can be found in the SAP Service Marketplace (http://service.sap.com/instguides) under SAP Components → SAP Solution Manager → Release 3.2.
- For functional deltas between SAP Solution Manager 3.1-3.2, refer to the development and support package news in the SAP Service Marketplace (http://service.sap.com/solutionmanager) under Media Library → Technical Papers. This information complements the online documentation and contains a detailed description of new features and functions.
- For help on the functional use of SMSY, consult the SAP Help Portal (http://help.sap.com) and navigate to Documentation → SAP Solution Manager → SAP Solution Manager 3.2 → Projects → Project Preparation → Solution Manager System Landscape.
- Information on authorizations in SAP Solution Manager and satellite systems can be found in SAP Notes 625773 (SAP Solution Manager roles), 803142 (SAP Solution Manager roles for satellite systems), and 831535 (Profiles of background users at RFC generation).

