

Reading Sample

This sample chapter covers connectivity between SAP Solution Manager and the systems it manages, including tasks performed when you remove, add, or upgrade systems in your landscape. It also covers using SAP EarlyWatch reports for high-level system analysis and diagnosis.



“Managing Systems with SAP Solution Manager”



Contents



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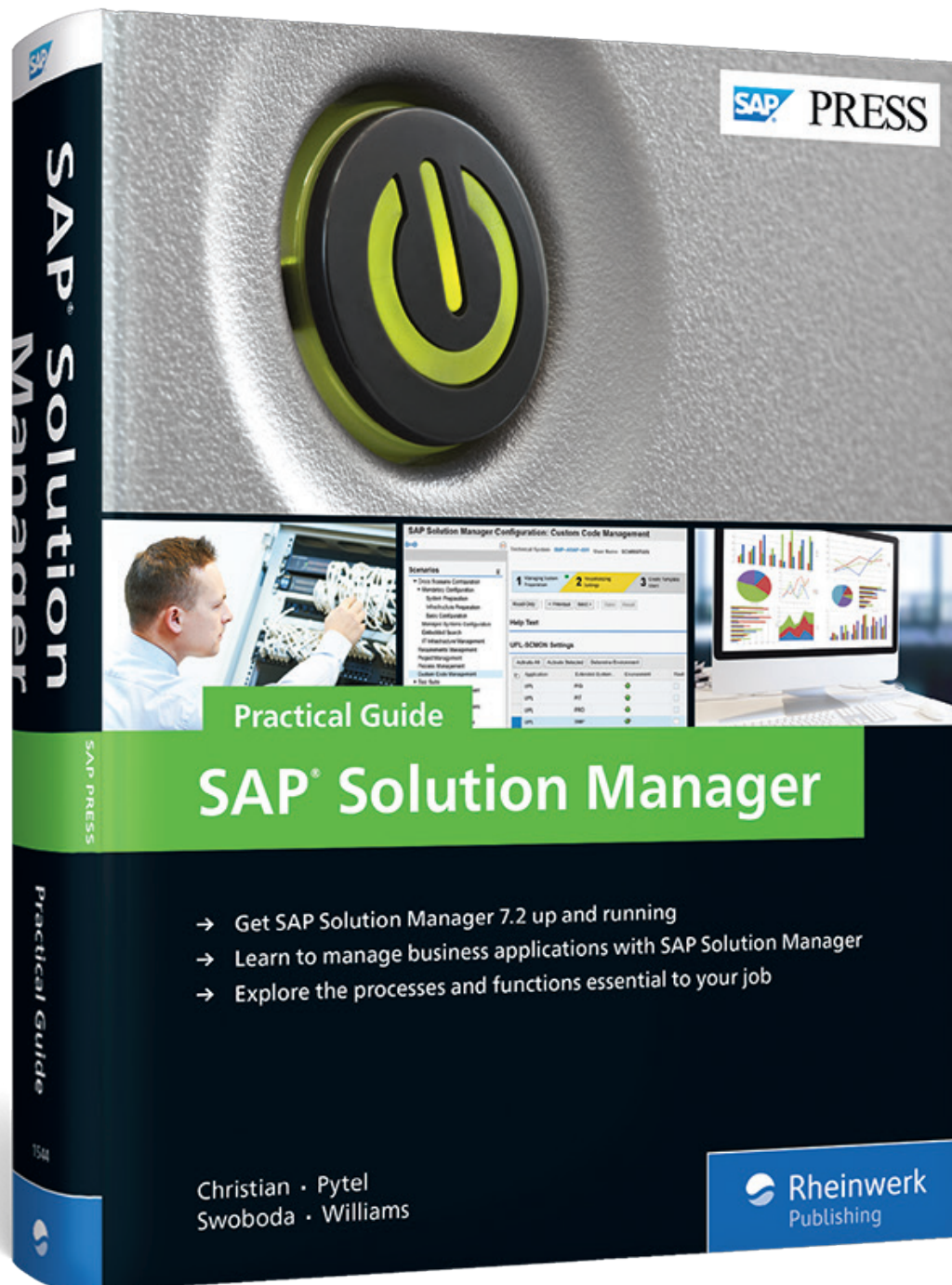
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Chapter 5

Managing Systems with SAP Solution Manager

In this chapter, we'll cover connectivity between SAP Solution Manager and the systems it manages, including tasks performed when you remove, add, or upgrade systems in your landscape. Your team will need to know how to perform these tasks whenever a system is added or removed.

Now that you've completed the baseline configuration of SAP Solution Manager, it's time to connect the other systems in your landscape to it. This will enable SAP Early-Watch reports and the end-to-end diagnostics and will let you move into the configuration of Technical Monitoring, Change Request Management, Custom Code Management, or any other tool within SAP Solution Manager you want to configure. The managed system configuration process essentially connects SAP Solution Manager to other applications, operating systems, and databases. You need administrative access to all levels of your SAP system to establish connectivity. If SAP's Central User Administration (CUA) is active, you'll have some special conditions to follow, as described later in this chapter. CUA limits the automated creation of SAP users and roles that SAP Solution Manager requires.

Many SAP customers will ask, "How often do I need to execute managed system configuration?" The answer is simple: Any time your landscape changes from a technical perspective, you'll need to execute some activities in managed system configuration. The next question from SAP customers is usually, "What SAP systems does SAP Solution Manager support?" The answer is all SAP systems. This includes the SAP BusinessObjects family of products and, with SAP Solution Manager 7.2, the family of cloud-based products offered by SAP. Although SAP Solution Manager may not be technically "managing" your SAP Cloud Platform tenant, it does need to be aware of it. The same goes for peripheral SAP NetWeaver components deployed in SAP customer landscapes, such as SAP Web Dispatcher, your document management system of choice, TREX, SAProuter, and so on.

The system and information displayed in managed system configuration comes from the LMDB discussed in Chapter 2. If this information is incorrect, then subsequent steps in managed system configuration will fail. You'll want to validate the technical system within the LMDB before starting managed system configuration. A *technical system* is a collection of the applications-level components (e.g., SAP ERP and SAP NetWeaver) installed on a single host or distributed across multiple hosts. A technical system is all of the software and hardware that make up an SAP system. For example, your production SAP S/4HANA system might include two SAP HANA databases (one for failover), one central instance, three dialog servers, and one background process server. All of these servers and databases, SAP NetWeaver, and SAP S/4HANA components can be part of a single technical system. When introducing SAP Fiori frontend servers and the SAP Web Dispatcher to this SAP S/4HANA technical system, you can define dependencies between all of these components. In SAP Solution Manager 7.1, the LMDB was important—and it continues to be in SAP Solution Manager 7.2.

In this chapter, we'll dive into the technical details of how to set up and include your managed systems so that SAP Solution Manager can manage them. First, you'll discover what's required within each managed (target) system. Then, we'll walk you through the managed system configuration requirements included within the SAP Solution Manager guided procedure. Finally, we'll show you how to activate SAP EarlyWatch reports so that you can proactively receive critical, timely updates from the managed systems you configured.

5.1 Target System Requirements

SAP Solution Manager can connect to all systems currently under standard support, as defined by the Product Availability Matrix (PAM; <http://support.sap.com/pam>). We know that some customers are running SAP R/3 or SAP ECC 5.0; unfortunately, there's no good news for these customers, because their systems are now covered under customer specific maintenance. SAP is not regularly releasing the SAP add-ons required by SAP Solution Manager for these older systems. If you're running one of these older application versions, you can generate SAP EarlyWatch alerts using SAP Solution Manager 7.2 and can connect diagnostic agents for SAP Support. However, functionality within all other SAP Solution Manager components is not supported on these older releases (essentially, any system based on SAP NetWeaver 6.40 or below).

For the remainder of you running SAP components based on SAP NetWeaver 7.x or above or SAP BusinessObjects 3.x or above, you have lots to deploy—so let's get started!

Next, we'll provide detailed information for how to enable the requirements needed within the target systems. We'll cover setting up the connectivity, installing the Database Shared Library (DBSL) for monitored databases, installing SAP support tools, and installing diagnostics agents.

5.1.1 Connectivity Setup

The first task for connecting SAP systems to SAP Solution Manager is to ensure we have network connectivity between SAP Solution Manager and the managed systems. If all of your systems are within the same datacenter and/or network, then this shouldn't be an issue. We sometimes see issues when customers have an SAP Web Dispatcher or SAP Process Orchestration Advanced Adapter Engine (AAE) deployed within a demilitarized zone (DMZ) and the communication ports are blocked inside to outside or for reporting by the agent to SAP Solution Manager outside to inside. Table 5.1 provides a general reference for ports used by SAP Solution Manager, diagnostic agents, and SAP Support. Replace <nn> with your instance number on either SAP Solution Manager or the managed system.

From Hosts/ Source Host	To Host/ Destination Host	Destination Service	Format (Example)
SAP Support	All SAP Solution Manager instances	J2EE engine (HTTP)	5<nn>00(50100)
SAP Support	All SAP Solution Manager instances	ITS (HTTP)	80<nn>(8000)
SAP Support	All SAP Solution Manager instances	Introscope Manager (HTTP)	Default: 8081
Diagnostics Server	All SAP Solution Manager instances	IGS (HTTP)	4<nn>80(40180)
Diagnostics agent (managed system host)	All SAP Solution Manager instances	J2EE engine (P4)	5<nn>04(50104)

Table 5.1 Example Source and Target System Ports Used by SAP Solution Manager

From Hosts/ Source Host	To Host/ Destination Host	Destination Service	Format (Example)
Diagnostics agent (managed system host)	SAP Solution Manager Java message server	Message server (HTTP)	81<nn>(8101)
Diagnostics agent (managed system host)	Relevant Wily Introscope Enterprise Manager host	Wily Introscope Enterprise Manager (TCP/IP)	Default: 6001
Diagnostics agent (managed system host)	SAP Solution Manager single instance	Web service via ICM (HTTP)	80<nn>(8000)
SAP Support	All managed systems	J2EE engine (HTTP)	5<nn>00 (50200)
SAP Support	All managed systems	ITS (HTTP)	80<nn> (8000)
All SAP Solution Manager instances	Managed systems' database servers	Oracle, MSSQL, DB2, SAP HANA	

Table 5.1 Example Source and Target System Ports Used by SAP Solution Manager (Cont.)

Note

For more information on the ports used by SAP Solution Manager and all SAP components, including SAP NetWeaver, SAP BusinessObjects, and the various database vendors, please see the guide located at <http://service.sap.com/security> under **Infrastructure • TCP/IP Ports Used by SAP Applications**.

Next, you need to understand how the data from the managed systems will be reported to SAP Solution Manager. After all, you won't have any systems to select in managed system configuration if the technical systems in the LMDB don't exist. In Chapter 4, we set up the background jobs in SAP Solution Manager that synchronize the SLD and LMDB on a regular basis (every 15 minutes by default). In Table 5.2, we highlight some of the system types you can connect to SAP Solution Manager and how their information is reported to it. Program SLDREG was covered in Chapter 2.

Note

For a more detailed listing of all software component types, versions, and diagnostic relevancy, visit the SAP Solution Manager Setup Wiki page at <https://wiki.scn.sap.com/wiki/display/SMSETUP>, under **Configuration of SAP Solution Manager System 7.1 • Maintenance of Product in the System Landscape**. The material is titled *SAP Solution Manager 7.1*, but it's still relevant for SAP Solution Manager 7.2.

Technical System Type	Source	Notes
.NET system	Manual creation	No installed application product information.
Apache Tomcat server	SLD data supplier	No installed application product information.
AS ABAP	SLD data supplier	Updates via Transaction RZ70 from AS ABAP.
AS Java	SLD data supplier	Updates via SLD data supplier in SAP NetWeaver Administrator.
SAP BusinessObjects cluster	SLD data supplier	Uses SLDREG.
Database system	SLD data supplier, outside discovery	Outside discovery enhances system information of SLD data suppliers.
Diagnostics agent	SLD data supplier	Built into diagnostics agent.
External service	Manual creation or download	You can create technical systems of the external service type for external systems that host SAP Cloud Services.
IBM WebSphere application server	SLD data supplier	No installed application product information.
SAP liveCache	SLD data supplier (AS ABAP)	Updates via RZ70 from AS ABAP.
SAP NetWeaver Master Data Management server	SLD data supplier	Uses SLDREG.

Table 5.2 Components' Means of Registration with SAP Solution Manager

Technical System Type	Source	Notes
Microsoft Internet Information Services	Outside discovery	No installed application product information.
SAP Web Dispatcher	SLD data supplier	Uses SLDREG.
SAP HANA database	Either SLD data supplier	Register from SAP HANA Administrator Cockpit.
SAP Mobile Platform (formerly Sybase Unwired Platform)	SLD data supplier	Uses SLDREG.
TREX system	SLD data supplier	Uses SLDREG.

Table 5.2 Components' Means of Registration with SAP Solution Manager (Cont.)

Now that you know how managed system application, OS, and database version information is reported to SAP Solution Manager, you need to understand how monitoring data is reported. There are three basic paths via which monitoring data is received or pulled by Solution Manager. In the first, SAP Solution Manager leverages an RFC to an ABAP system. This requires the SAP service tools to be installed on that ABAP system. Using this method, SAP Solution Manager can pull real-time application performance information. In general, the SAP service tools are required for most SAP Solution Manager usage scenarios, such as Test Management, ChaRM, Custom Code Lifecycle Management (CCLM), and so on. We cover the installation of these service tools in later sections.

The other two paths by which Solution Manager receives or pulls monitoring data are via the SAP diagnostic agent and the SAP database client. For the latter, you'll need the database client for any database you want to monitor included in your SAP Solution Manager kernel. For example, say that SAP Solution Manager is running on SAP Adaptive Server Enterprise (SAP ASE) and your SAP S/4HANA system is running on SAP HANA. In that case, you'll need the SAP HANA client installed on SAP Solution Manager and the correct DBSL installed with the SAP Solution Manager kernel. Confused? You don't need to be; just remember that SAP Solution Manager needs the database kernel and database client to connect to the database being monitored. If the database supporting SAP Solution Manager is the same as the database supporting the system to be monitored, then no additional libraries or database clients are needed.

5.1.2 Installing Database Shared Library for Monitored Databases

Now, we'll walk you through the steps for installing DBSL for your monitored databases, as follows:

1. To download and install the most recent DBSL, go to <https://launchpad.support.sap.com> and log in with your SAP Support user ID.
2. Follow the menu path **Software Downloads • Support Packages & Patches • By Category • SAP Technology Components • SAP Solution Manager • SAP Solution Manager 7.2 • Solution Manager ABAP Stack • SAP Kernel <your version>**.
3. Select the OS for your SAP Solution Manager system, then select the database version for the database to be monitored if that database is different than SAP Solution Manager's.
4. Select and download the file that begins with **lib_dbsl_<patch level>.sar** as shown in Figure 5.1. This compressed file contains the DBSL to install with the SAP Solution Manager kernel.

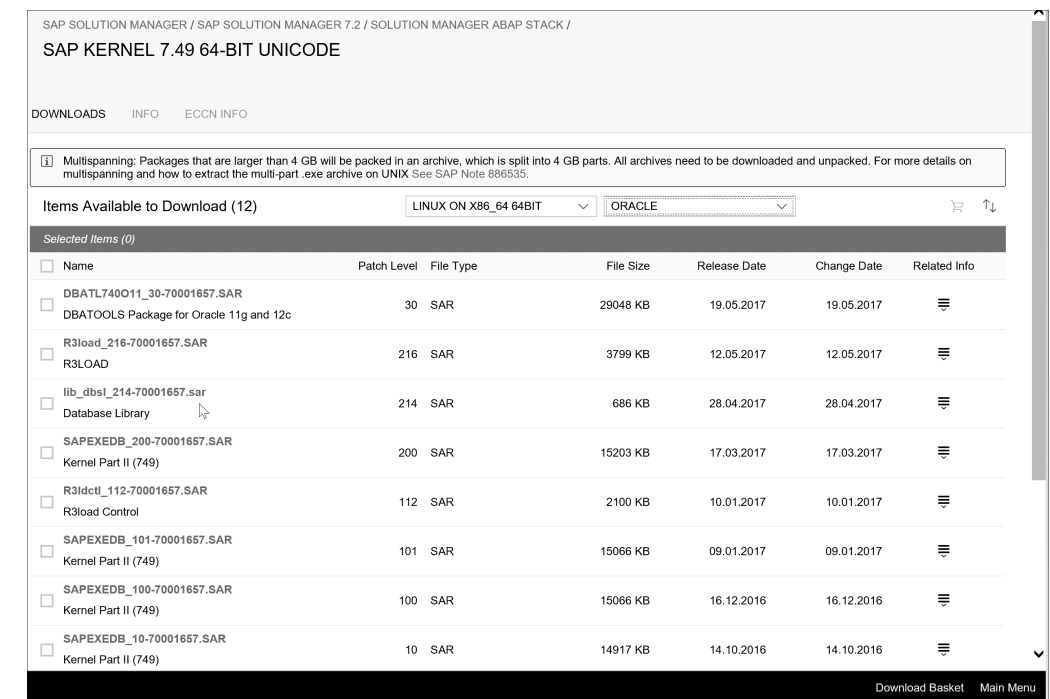


Figure 5.1 Download DBSL File for Oracle Database to be Monitored

- Extract the contents of the SAR file using SAPCAR into your kernel directory. In Figure 5.2, this SAP Solution Manager system has DBSL installed for SAP HANA, DB2, Oracle, Microsoft SQL Server, and SAP ASE. The names of the DBSL files begin with the letters db.

```

ec2-user@solmanlabr~
solmanlab:smladm 61> ls -ltr | grep db
-rwxr-xr-x 1 smladm sapsys 17637 Jul 11 2016 startdb
-rwxr-xr-x 1 smladm sapsys 4743 Jul 11 2016 jdbconnect.jar
-rwxr-xr-x 1 smladm sapsys 10419 Jul 11 2016 stopdb
-rwxr-xr-x 1 smladm sapsys 296 Jul 11 2016 instancedb.lst
-rwxr-xr-x 1 smladm sapsys 10419 Jul 11 2016 stopj2eedb
-rwxr-xr-x 1 smladm sapsys 17637 Jul 11 2016 startj2eedb
-rwxr-xr-x 1 smladm sapsys 265660 Jul 11 2016 sapdbmrfc
-rwxr-xr-x 1 smladm sapsys 302525 Jul 11 2016 setdb4pwd
-rwxr-xr-x 1 smladm sapsys 2167342 Jul 11 2016 dbsybslib.so
-rwxr-xr-x 1 smladm sapsys 2463760 Jul 11 2016 dbsdbslib.so
-rwxr-xr-x 1 smladm sapsys 1925824 Jul 11 2016 dboraslib.so
-rwxr-xr-x 1 smladm sapsys 1708096 Jul 11 2016 dbmsslib.so
-rwxr-xr-x 1 smladm sapsys 1829276 Jul 11 2016 dbdb6slib.so
-rwxr-xr-x 1 smladm sapsys 1654675 Jul 11 2016 dbdb2slibx.so
-rwxr-xr-x 1 smladm sapsys 1332927 Jul 11 2016 dbdb2slib.so
-rwxr-xr-x 1 smladm sapsys 1856126 Jul 11 2016 dbdb2slib9.so
-rwxr-xr-x 1 smladm sapsys 302212 Jul 11 2016 db4cnc1
-rwxr-xr-x 1 smladm sapsys 2427444 Jul 11 2016 dbhdbslib.so
-rwxr-xr-x 1 smladm sapsys 303 Jul 11 2016 sapmanifestdb.mf
-rwxr-xr-x 1 smladm sapsys 954494 Jul 11 2016 dbsl4db4ccm.so
-rwxr-xr-x 1 smladm sapsys 2353904 Jul 11 2016 dbdb4slib.so
-rwxr-xr-x 1 smladm sapsys 7318313 Jul 11 2016 rscpf_db
-rwxr-xr-x 1 smladm sapsys 7344669 Jul 11 2016 sybdbfm
solmanlab:smladm 62> pwd
/sapmnt/SML/exe/uc/linuxx86_64
solmanlab:smladm 63>

```

Figure 5.2 DBSL Files within SAP Kernel

- Restart the SAP Solution Manager ABAP stack for the changes to take effect.

5.1.3 Installing SAP Support Tools

Now that you know how to install DBSL for monitoring databases, we'll walk you through the steps to install the SAP support tools, as follows:

- SAP support tools are required for any ABAP stack that you want to monitor, and SAP has made them tremendously easy to find. To start, go to <https://support.sap.com/supporttools>.
- On this page, you can find the following:
 - The downloads for both ST-PI and ST-A/PI, including new installations, upgrades, and support packages
 - Links to SAP Notes defining the release strategy for each add-on, useful for figuring out what version to install

- Download and install the latest version of each component in each of your managed systems:
 - If you're installing a new ABAP add-on or an upgrade to an older version of the add-on, use Transaction SAINT in client 001.
 - If you're patching the current version of SAP support tools, use Transaction SPAM in client 001.
- Once the installation is complete, log on to the productive client within the system for which you just completed the add-on installation (or update).
- Execute Transaction SA38 and enter program RTCCTOOL. Click **Execute** or press **F8**.
- At this point, the program uses the connection to SAP via SAProuter to validate installed SAP Notes and configured functions. You'll see a screen like the one in Figure 5.3.

Service preparation check

Status Set->Green Addons&Upgr. Settings Help

SAP Servicetools Update

Introduction The recommendations and notes marked yellow or red are missing in your system. Please implement them keeping the given order.

Manual

SAP Notes On the list below, click on the note number links to display the SAP note.

Status details Click either on the lights icon or the hand symbol behind to get more info from the automatic status checks. If Set manually to the installation text tells you to confirm manually or to ignore certain errors, choose 'Set status' -> 'Set to green' in the status details popup.

Addons&Upgr. Help on Addon implementation / Procedure after addon implementation, Procedures before and after system upgrade

Help help on: after&before Upgrade/ transport errors

Status List

No.	Missing recommendations
4.	[Note 69455] Switch on digital content verification DescriptionSwitch on Digital content verification for recommendations of SAP Service prep. check (RTCCTOOL). ImplementationFrom the menu choose "Goto->Digital signatures" and press "Activate".
8.	[Note 12103] Collectors and TCOLL DescriptionPlanning table TCOLL for SAP workload collectors 700-702 and 731+ (SAP note 966309) plus check for master job SAP_COLLECTOR_FOR_PERFMONITOR (program RSCOLL00). ImplementationPress the lights icon for details. 1) Add missing entries to table TCOLL using ST03N -> Expert Mode -> Collector & Performance DB -> Performance Monitor Collector -> Execution Times. [Do NOT add RSCOLL00 itself] 2) In SM37 program RSCOLL00 must be scheduled hourly background job.
1.	[Note 69455] Addon ST-A/PI 01S_731
2.	[Note 69455] ST-A/PI 01S_731 Support Package 2
3.	[Note 69455] Proc. after addon impl.
5.	[Note 539977] Addon ST-PI 740
6.	[Note 539977] ST-PI 740 Support Package 6
7.	Note 1985402 datacoll. for HANA

Successfully implemented recommendations

Figure 5.3 Output from Report RTCCTOOL in Managed System

7. The items in red and yellow require action, and the action might be different for each system. In the example in Figure 5.3, we need to activate digital content verification. The instructions for everything you need to execute are on the screen (see the **Implementation** areas).
8. For any task listed with manual steps, click the **Set->Green** button to let the system know you completed the steps.
9. The SAP support tools are now set up and ready for SAP Solution Manager.

5.1.4 Installing Diagnostic Agents

SAP diagnostic agent installations are well documented by SAP with screenshots. Therefore, instead of documenting an installation, we'll provide some key points and lessons learned from prior installations. Diagnostic agents are installed with the Software Provisioning Manager (SWPM); at the time of writing (May 2017), the current version of SWPM was 1.0 SP 20. Here are a few facts to remember when planning your SAP diagnostic agent deployment and maintenance strategy:

- SAP diagnostic agents can be deployed via SWPM individually or using an unattended mode. See the SWPM documentation for unattended installations at <https://support.sap.com/en/tools>, under **Software Logistics Toolset (SL Tools) • System Maintenance**.
- SWPM requires the latest SAP host agent, as does the SAP diagnostic agent. Keeping your SAP host agent up-to-date on a regular basis is always a good idea. You can find instructions about the automated update capabilities at <https://help.sap.com>; there, search for "SAP host agent". Select a version, then navigate to **SAP Host Agent Upgrade**.
- You never really need to upgrade an SAP diagnostic agent; it gets the updates it needs from SAP Solution Manager when registered correctly. You can uninstall an existing diagnostic agent using SWPM. Now, you can also easily install a new diagnostic agent by using downloaded archive files with SWPM 1.0 SP 20. In the past, you had to extract the kernel and install from the archive files. See SAP Note 2253383 (Diagnostics Agent—SWPM Archive-Based Installation).
- When installing the SAP diagnostic agents, you have two options to register an agent with SAP Solution Manager:
 - Registration with the P4 port is preferred, because it connects the agent directly with SAP Solution Manager. The agent becomes immediately available within managed system configuration to associate with a host.

- SAP diagnostic agents can also be registered to an SLD, and then SAP Solution Manager can discover them later. This potentially adds another step that can fail, but it's useful if you don't have an SAP Solution Manager system available yet.
- Need to find SAP Solution Manager's P4 port? In your browser, go to `http://<host-name>:81<J2EE SCS Instance No>/msgserver/text/logon`. For example, say that the SAP Solution Manager Java SCS instance is 43. Therefore, you would connect to `http://solmanlab.nimblhq.com:8143/msgserver/text/logon` to get the P4 port, as shown in Figure 5.4.

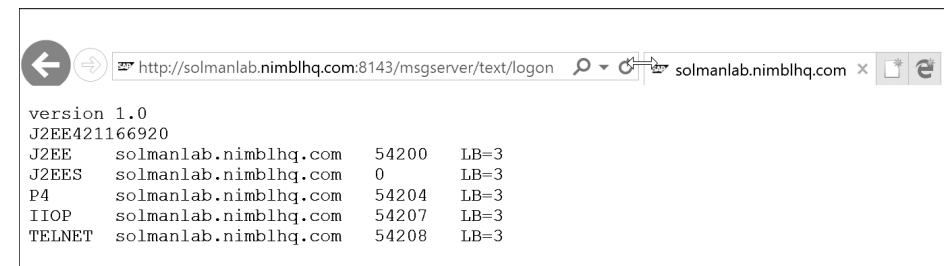


Figure 5.4 Finding SAP Solution Manager Java Stack P4 Port

- If you're working with an existing SAP diagnostics agent and want to manually register with SAP Solution Manager without uninstalling and reinstalling, the following command line options are available:
 - Navigate to the `/usr/sap/SMD/SMDAxx/script` directory (where xx is the SAP diagnostics agent instance; the default is 98).
 - Execute the following script to force a manual registration to SAP Solution Manager:


```

/smdsetup managingconf hostname:"sapms://<solution manager JAVA FQDN"
port:"81XX" user:"SMDAGENT_<SID>" pwd:"<account password"
          
```

 For example:


```

./smdsetup managingconf hostname:"sapms://solmanlab.nimblhq.com"
port:"8143" user:"SMDAGENT_SML" pwd:"Password1"
          
```
- To find out what agents are registered with SAP Solution Manager, open the SAP Fiori launchpad (Transaction SM_WORKCENTER) and click the **Agent Administration** tile under **Solution Manager Administration**. Next, click **Agent Admin • All Agents**. This will open the **Connected Agents** tab, as shown in Figure 5.5, which shows the currently registered SAP diagnostic agents.

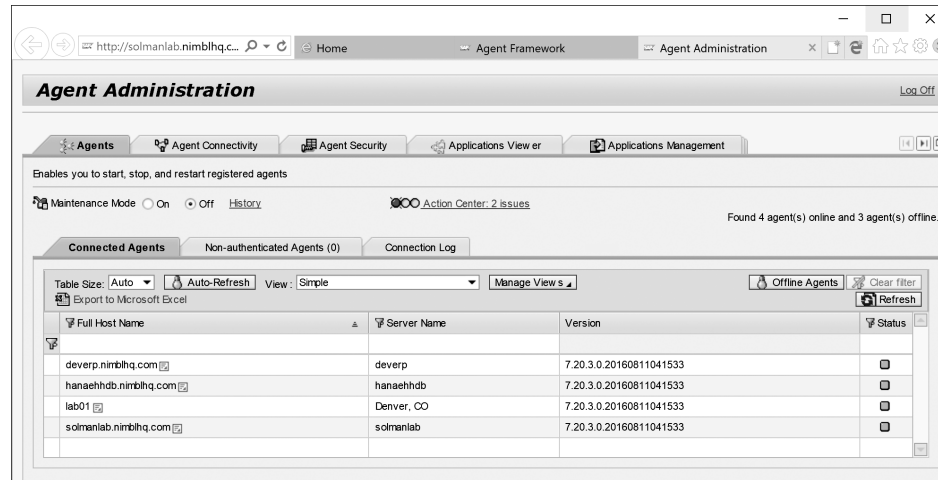


Figure 5.5 Agent Administration in SAP Solution Manager 7.2

Note

For more information on SAP diagnostic agent planning, installation, and maintenance, visit the SAP Community Wiki at <https://wiki.scn.sap.com/wiki/display/SMSETUP>.

5.2 Managed System Configuration

In managed system configuration, you connect technical systems, databases, hosts, and cloud services to SAP Solution Manager. This process is the final prerequisite before you can use other tools within SAP Solution Manager. The guided procedures are well-documented by SAP for managed system configuration. You have to make a decision on the very first screen that will drive the connectivity and services implemented by SAP Solution Manager on that system. When you click the **Configure System** button, you'll see two options. **Minimum Configuration without Service Delivery/EWA** is the first one. You generally use this option when connecting to non-production systems such as a sandbox or development system. Using this option allows Test Management and ChaRM to govern and use these systems, but you don't need to worry about diagnostic agents or SAP EarlyWatch reports.

In general, most customers don't understand the amount of data collected by SAP Solution Manager when selecting the second option, **Full Configuration Including**

Service Delivery/EWA. When using the second option, you configure the managed system and SAP Solution Manager so that all SAP support services can be delivered to that system—for example, if you order go-live verification services as part of SAP support agreements or if you enter an incident with SAP support and SAP wants to leverage end-to-end diagnostics to troubleshoot the issue. You must select **Full Configuration** when connecting to production systems. We generally recommend performing **Full Configuration with Quality Systems** as well. Let's walk through the setup of a full configuration with a managed system in SAP Solution Manager:

1. Logon to SAP Solution Manager with your configuration user in SAP GUI. Run Transaction SOLMAN_SETUP.
2. Navigate to **Managed Systems Configuration** within **Scenarios**.
3. Highlight the row of the system you want to connect. Click **Configure System • Full Configuration Including Service Delivery/EWA**. Remember, if you don't see the system you want to manage here, then you need to check your SLD registration and the technical system in Transaction LMDB.
4. In step 1, **Assign Product**, identify what type of system this is. For example, is it an SAP S/4HANA system or SAP Enterprise Portal?
5. Click **Edit**, then click **Set Automatically**, as shown in Figure 5.6. If you have the system registered in the SLD, your SLD content is up-to-date (SAP Note 669669), and the diagnostic agent is deployed and registered, this step should automatically define what type of system you're trying to manage. If the step is returned with a red light, then you can manually resolve the issue by clicking **Edit Assignment**. However, we recommend returning to your SLD and LMDB to ensure all information is being reported correctly.

Note

Each step in Managed System configuration needs to be complete with a green light on each tab. Complete each step before moving onto the next.

6. Click **Next** to advance to step 2, **Check Prerequisites**.
7. Under **Automatic Activities**, click **Execute All**, and validate the results in the **Log** area.
8. Within step 2, you should have a manual task to create the SAP Solution Manager monitoring user at the database level. In Figure 5.7, the SAP S/4HANA system uses SAP HANA. Click the **Display** link and follow the instructions for your database.

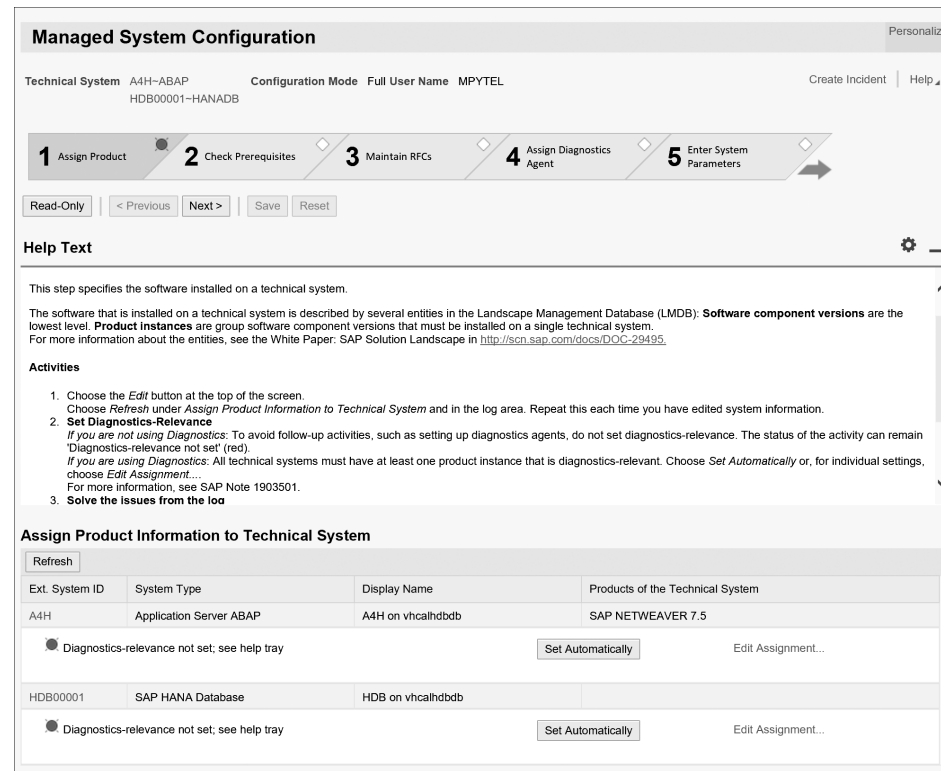


Figure 5.6 Defining Product for New System in Managed System Configuration

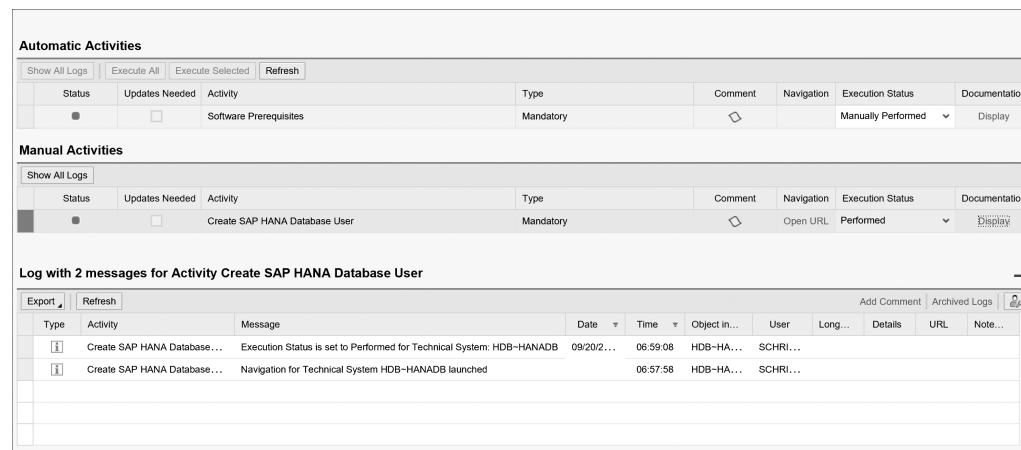


Figure 5.7 Task Execution in Managed System Configuration

9. Click **Next** when complete. In step 3, **Maintain RFCs**, you'll generate the required connectivity to the managed system for all future SAP Solution Manager tools.
10. The options you select in this step can vary based on the system being managed. For example:

- If the system being connected is the transport management system (TMS) domain controller, then you'll want the RFC for read access and RFC for change manager set up for client 000.
- If the preceding condition isn't applicable, then you only need to configure connections to the productive client within that system.
- Figure 5.8 through Figure 5.12 show a QA system with multiple SAP clients configured. We configured RFCs to all clients for a specific test suite use case. Let's quickly explore the RFC types being configured within this step:

- **RFC for read access**
This RFC will read system information such as installed versions, monitoring data, application usage data, and so on. This is a mandatory RFC required for any SAP Solution Manager scenario.
- **RFC for change manager**
This RFC is used by ChaRM to read information about transports, transport contents, cross-system object lock (CSOL) checks, retrofits, and performing actual imports.
- **Trusted system RFC**
This RFC enables users within SAP Solution Manager to seamlessly transition from SAP Solution Manager tools to the target system so long as they have valid user IDs, passwords, and roles assigned in both systems. This RFC requires the authorization object S_RFCACL to be assigned to the user in both source and target systems. The configuration user or system account used in this step will also need this authorization object to be assigned and active.
- **RFC for SAP Solution Manager**
This is set by default to the trusted RFC if it's been created. If not, then it will be defined as the read RFC.
- **RFC for destination and user to SAP Solution Manager**
This RFC is used to send SAP EarlyWatch alert data from the managed system to SAP Solution Manager.

11. In the **Communication RFCs between <SAP Solution Manager> and <Managed System>** section, under **Action**, select **Create RFCs with Generated Users and Passwords**. The following considerations should be taken into place when performing this step:
 - Check the box next to each RFC type discussed earlier for a configuration that supports all tools with SAP Solution Manager.
 - We generally recommend typing in a password so that you can test RFCs manually later. If you let SAP Solution Manager generate the password, you won't see it or be able to log on as that service user.
12. In the **Dialog RFCs between <SAP Solution Manager> and <Managed System>** section, check all boxes for the recommended configuration.
13. In the **Administrator Users** section, enter the following users and passwords:
 - **SAP Solution Manager Administrator**
This is an administrative user in SAP Solution Manager with the S_RFCACL authorization object and the ability to create users, assign roles, and modify RFC connections.
 - **Managed System Setup User**
This is an administrative user in the managed system that has the S_RFCACL authorization object and the ability to create users, assign roles, and modify RFC connections.
14. Click the **Execute** button when all items are checked and passwords entered. Validate the results in the **Log** area, as shown in Figure 5.8.
15. Click **Next** once you've resolved any errors. If you have an error, you can click **Execute** again for only those RFCs that weren't created. The most common error occurs during the trusted RFC setup and is often related to an incorrect assignment of the S_RFCACL authorization object.
16. For step 4, **Assign Diagnostics Agent**, you need to have a diagnostics agent installed and connected to SAP Solution Manager (via SLD or J2EE SCS). Any diagnostic agent installed on the same host as the application server or database server will be displayed. In Figure 5.9, the application server and database are on the same host. Click the **Auto Assign** button.

The screenshot displays the 'Managed System Configuration' interface. At the top, it shows 'Technical System: ECD-ABAP' and 'Configuration Mode: Full User Name: MPTYEL'. A progress bar at the top indicates steps 1 through 8, with step 4 'Assign Diagnostics Agent' highlighted. Below the progress bar, there are navigation buttons: 'Read-Only', '< Previous', 'Next >', 'Save', and 'Reset'. A 'Help Text' section is visible. The main content area is titled 'Clients and Existing RFCs' and contains a table with columns for 'Delete RFCs', 'Test', 'Status', 'Client', 'Name', 'Role', 'Logical System', 'RFC Read Access', 'RFC for Change Manager', 'Trusted System RFC', and 'RFC for SAP Solution Manager'. Below this table, there are sections for 'RFC - Standard Mode', 'Communication RFCs between SML Client 001 and ECD Client 300', 'Dialog RFCs between SML Client 001 and ECD Client 300', and 'Administration Users'. At the bottom, there is a 'Log with 23 messages for Activity Maintain RFCs' section with a table showing log entries.

Figure 5.8 Successfully Created RFCs within Managed System Configuration

The screenshot displays the 'Managed System Configuration' interface. At the top, it shows 'Database: HDB' and 'User Name: MPTYEL'. A progress bar at the top indicates steps 1 through 9, with step 4 'Assign Diagnostics Agent' highlighted. Below the progress bar, there are navigation buttons: 'Read-Only', '< Previous', 'Next >', 'Save', and 'Reset'. A 'Help Text' section is visible. The main content area is titled 'Connect Diagnostics Agents' and contains a table with columns for 'Managed Object', 'Diagnostics Agent', and 'Host Agent'. Below this table, there is a 'Log with 4 messages for Step Assign Diagnostics Agent' section with a table showing log entries.

Figure 5.9 Diagnostics Agents Assigned to the Managed System

17. Click **Next** when you've verified results within the **Log** area. In step 5, **Enter System Parameters**, you'll define more connection parameters for the managed system.
18. Under **Common Parameters**, select the following options:
 - **Introscope EM**
Select the EM host that should be used for this managed system to report its data. Earlier, you installed Wily Introscope Enterprise Manager on the same host as SAP Solution Manager.
 - **Load Balancer Host and Load Balancer Port**
This is typically the central instance used for logon load balancing if there are multiple application servers.
 - **RCA Extractor level**
Leave the default **Level 3** set unless otherwise instructed by SAP.
 - **Activate EWA Alerts in Alert Inbox**
If you want to see SAP EarlyWatch warnings and alerts in the alert inbox, check this box. This is useful for production systems.
 - **Enable System Recommendations**
This setting allows you to use the **System Recommendations** tool to proactively define missing security and performance SAP Notes from the managed system. This is highly recommended.
19. If you have CTS+ active in the landscape, then enter the parameters within the **CTS+ Reporting** section.
20. In the **ABAP Parameters** section, select the SAP Solution Manager user you created in the previous step.
21. In **DB Parameters**, enter the **User Name** and **Password** for the database user you created in step 2, **Check Prerequisites**.
22. Click the **Save** button when you're done and validate results in the **Log** area, as shown in Figure 5.10.
23. In step 6, **Enter Landscape Parameters**, you need to provide SAP Solution Manager with some more details about the SAP software installation paths. In the **Status** column, look for any item requiring parameter input, click it, and enter the parameters on the right, as shown in Figure 5.11. Click **Save** when you're done.

24. If the managed system has multiple application servers, SAP Solution Manager will want to know the installation path for each host.
25. Validate results within the **Log** area and click **Next**.
26. In step 7, **Maintain Users**, update the previously created technical users with the required diagnostics roles. Click **Action Update User Roles**, then click **Execute**.

Common Parameters

Introscope
* Introscope EM: solmanlab.nimblhq.com:6001 (Standalone)

Managed System
* Load Balancer Host: hanaehdb.nimblhq.com
* Load Balancer Port: 8020 HTTPS Check URL...

RCA Extractor Level: Level 3 (default): Collect all RCA-related metrics

Activate EWA Alerts in Alert Inbox:
Enable System Recommendations:

CTS+ Reporting
CTS+ active:
Communication System:
Virtual Queue Name:

ABAP Parameters
* Client: 100
ABAP Setup User: SM_ADMIN_SMI
Password:

DB Parameters
Setup DBA Cockpit / DB extractors:
DBA Cockpit Connection Status:
Instance Name: HDB
Instance Number: 10
User Name:
Password:

Used DB-Connect String: 172.31.254.188:31015
DB-Connect String in LMDB: 172.31.254.188:31015

Log with 83 messages for Activity Enter System Parameters

Type	Activity	Message	Date	Time	Object in...	User
●	Enter System Parameters	System setup data saved to persistent storage	05/26/2...	14:05:31	ECD-ABAP	JSWOB...
●	Enter System Parameters	System setup data saved to persistent storage			HDB-HA...	JSWOB...
●	Enter System Parameters	The DBA cockpit connection HDB is OK; DB Extractors can be activated		14:05:30	HDB	JSWOB...
●	Enter System Parameters	The DBA cockpit connection HDB is OK; DB Extractors can be activated	03/25/2...	11:00:57	HDB	JSWOB...
●	Enter System Parameters	System setup data saved to persistent storage			ECD-ABAP	JSWOB...

Figure 5.10 Defining Additional Users and Connection Settings for Managed Systems

Selection of Landscape Objects

Show all nodes (expert mode) Refresh

Landscape Parameters

Landscape parameters of selected ABAP Instance

Parameter	Value
ICM HTTP Port	8020
ICM HTTPS Port	9443
ICM Host	hanaehdb.nimbhq.com
Instance Installation Path	/usr/sap/ECD/DVEBMGS20/

Save Landscape Parameters Apply values to all corresponding ABAP Instances

Log with 25 messages for Activity Enter Landscape Parameters

Type	Activity	Message	Date	Time	Object in...	User	Long...	Details	URL	Note...
●	Enter Landscape Parameters	Landscape parameters saved for ECD/ABAP HDB/HANADB	05/26/2...	14:06:02	ECD-ABAP	JSWOB...				
●	Enter Landscape Parameters	Landscape parameters saved for ECD/ABAP HDB/HANADB			HDB-HA...	JSWOB...				
●	Enter Landscape Parameters	Landscape parameters saved for ECD/ABAP HDB/HANADB	03/25/2...	10:59:18	ECD-ABAP	JSWOB...				
●	Enter Landscape Parameters	Existence of 2 paths checked			ECD-ABAP	JSWOB...		Show		
●	Enter Landscape Parameters	Landscape parameters saved for ECD/ABAP HDB/HANADB			HDB-HA...	JSWOB...				

Figure 5.11 Entering Landscape Parameters for Managed System

27. Validate results in the **Log** area and click **Next**.

28. In step 8, **Finalize Configuration**, you have both automated and manual activities to complete. All activities must be completed as shown in Figure 5.12. All tasks in this step are straightforward. If you have any questions, click the **Display** link under the **Documentation** column.

Congratulations—you've completed managed system configuration! In the example we walked you through, we connected an SAP S/4HANA system, the process would be the same for SAP ERP, any other SAP Business Suite component, or any SAP NetWeaver AS ABAP system. The guided procedure steps will be different for an SAP NetWeaver AS Java, SAP Web Dispatcher, or SAP BusinessObjects system, but the same principal applies: Leverage the guided procedures to understand the tasks to be performed and execute any automated activities. You want green status lights on each step of the process to ensure the correct configuration and usability when deploying other SAP Solution Manager tools. If you run into errors or issues with the guided procedures, enter an incident with SAP Support using the SV-SMG-INS-CFG software component.

Automatic Activities

Show All Logs Execute All Execute Selected Refresh

Status	Updates Needed	Activity	Type	Comment	Navigation	Execution Status	Documentation
●	<input type="checkbox"/>	Activate Services	Mandatory			Execute	Display
●	<input type="checkbox"/>	Set Up Single Sign-On	Mandatory		Start Transaction	Execute	Display
●	<input type="checkbox"/>	Database Extractor Setup	Mandatory			Execute	Display
●	<input type="checkbox"/>	Extractors Setup	Mandatory		Start Web Dynpro	Execute	Display
●	<input type="checkbox"/>	Schedule SCMON / UPL job in System	Optional			Execute	Display
●	<input type="checkbox"/>	Setup Extractor & House Keeping (SCMON / UPL)	Optional			Execute	Display
●	<input type="checkbox"/>	Activate EZE Trace Upload Service	Optional			Execute	Display
●	<input type="checkbox"/>	Introscope Host Adapter	Mandatory			Execute	Display
●	<input type="checkbox"/>	Apply Settings for EWA Monitoring	Mandatory			Execute	Display
●	<input type="checkbox"/>	Apply Settings for System Recommendations	Mandatory		Open URL	Execute	Display

Manual Activities

Show All Logs

Status	Updates Needed	Activity	Type	Comment	Navigation	Execution Status	Documentation
●	<input type="checkbox"/>	Maintain SAP Router Data	Mandatory		Open URL	Performed	Display
●	<input type="checkbox"/>	Adjust HTTP Log Parameter	Mandatory		Start Transaction	Performed	Display
●	<input type="checkbox"/>	Enable Remote R3 Connection	Mandatory		Open URL	Performed	Display
●	<input type="checkbox"/>	Set Up Remote Connection to SAP HANA DB	Mandatory		Open URL	Performed	Display

Log with 16 messages for Activity Apply Settings for System Recommendations

Type	Activity	Message	Date	Time	Object in...	User	Long...	Details	URL	Note...
●	Apply Settings for System Recommendations	System recommendations for system ECD were configured successfully	03/25/2...	11:01:03	ECD-ABAP	JSWOB...				
●	Apply Settings for System Recommendations	System recommendations for system HDB were configured successfully			HDB-HA...	JSWOB...				
ⓘ	Apply Settings for System Recommendations	Generic storage notification starts (triggered by DIAG_MNGD_SYSPARAMS -Enter System Parameters)		11:00:49	ECD-ABAP	JSWOB...				
ⓘ	Apply Settings for System Recommendations	Generic storage notification starts (triggered by DIAG_MNGD_SYSPARAMS -Enter System Parameters)			HDB-HA...	JSWOB...				
●	Apply Settings for System Recommendations	System recommendations for system HDB were deactivated	09/22/2...	21:49:12	HDB-HA...	SCHRI...				

Figure 5.12 Final Step in Managed System Configuration Completed

5.3 SAP EarlyWatch Report Activation

SAP EarlyWatch reports can be described as the best tool for high-level system analysis and diagnosis. An SAP EarlyWatch report answers questions like the following: How is my system performing compared to SAP recommendations? What is the age of my software components? How fast is my system growing? What is the general performance of the system? Does SAP have any recommendations I should apply to my system? Included as part of both standard and enterprise support agreements with SAP, these reports have been available for over 10 years and continue to add value. It's true that you'll never see an SAP EarlyWatch report saying you've done everything correctly. SAP will highlight older kernel versions or missing patches, which will trigger a yellow rating. That said, the report does add tangible value to SAP ERP, SAP S/4HANA, SAP BW, or any SAP Business Suite system. Within the past few years, SAP has added the ability to generate SAP EarlyWatch reports for SAP BusinessObjects systems. To configure SAP EarlyWatch reports for an SAP S/4HANA system, proceed as follows:

1. Log on to SAP Solution Manager via SAP GUI with your configuration user. Enter Transaction SOLMAN_SETUP. Under **Scenarios**, navigate to **Application Operations • EarlyWatch Alert Management**.
2. Another option is to use Transaction SM_WORKCENTER to open the SAP Fiori launchpad for SAP Solution Manager. Under **SAP Engagement and Service Delivery**, add the SAP-provided tile for **Configuration SAP EarlyWatch Alert**, as shown in Figure 5.13.

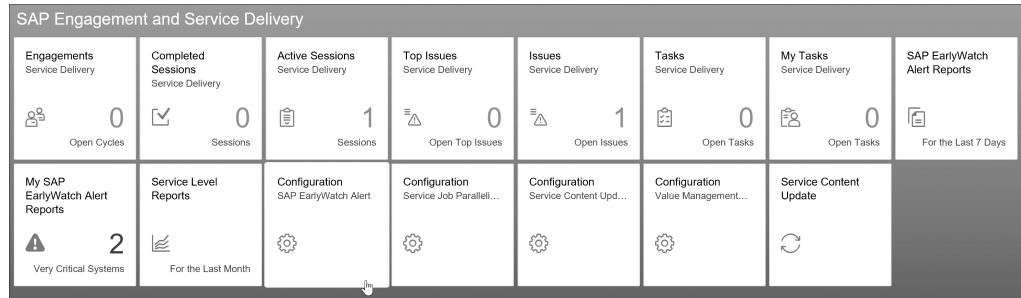


Figure 5.13 Accessing SAP EarlyWatch Alert Configuration from SAP Solution Manager Work Center

3. In step 1, **Define Scope**, select a system to configure. In **Search Criteria**, for **System Type**, select **Application Server ABAP**, as shown in Figure 5.14. Click the **Search** button.
4. Select the line for the system you want to configure and click **Next**.
5. In step 2, **Activate EWA**, select the checkbox for **Activate** and then enter your desired **Automation Period** and **Retention Period**:
 - The **Automation Period** is the frequency of reports. We’ve never seen a need to change this from the default setting, 7.
 - **Retention Period** should be set to 12 months for **Production Systems**. This allows you to analyze one year of performance and usage data in other tools. For all other systems, select a retention period based on your requirements, as shown in Figure 5.15. Two months is most common for nonproduction systems.

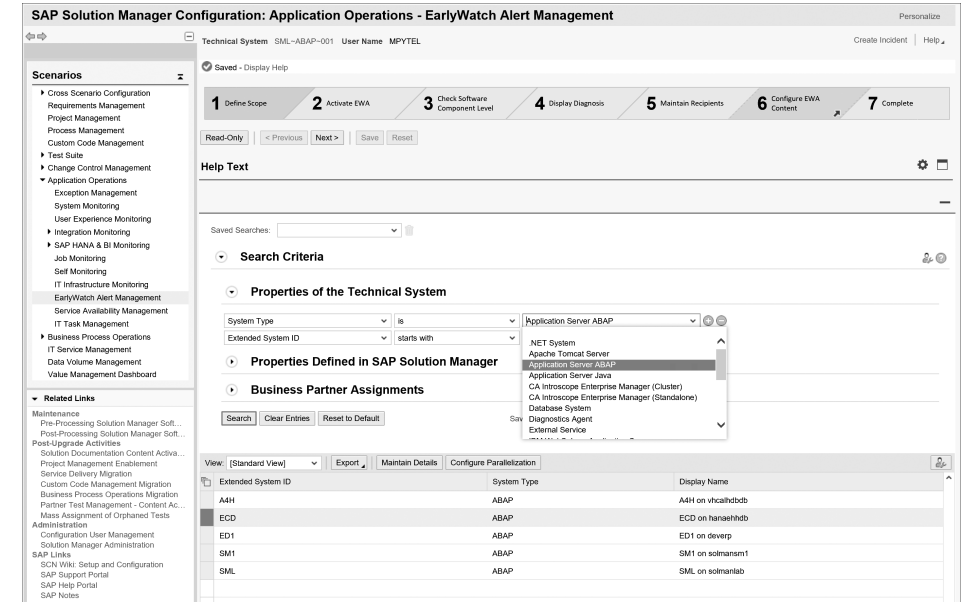


Figure 5.14 Selecting System to Configure SAP EarlyWatch Reporting

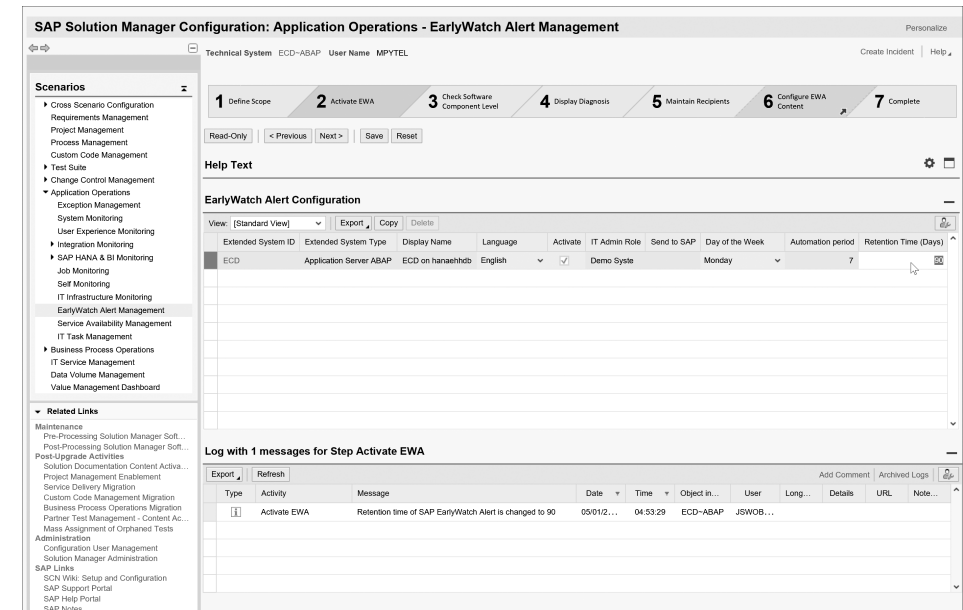


Figure 5.15 Entering Retention Period for SAP EarlyWatch Reports

6. Click **Save** and **Next** to advance to step 3, **Check Software Component Level**.
7. In this step, SAP Solution Manager checks the version of the ST-PI and ST-A/PI ABAP add-ons. If the add-ons are out of date, you'll see an error like the one displayed in Figure 5.16.

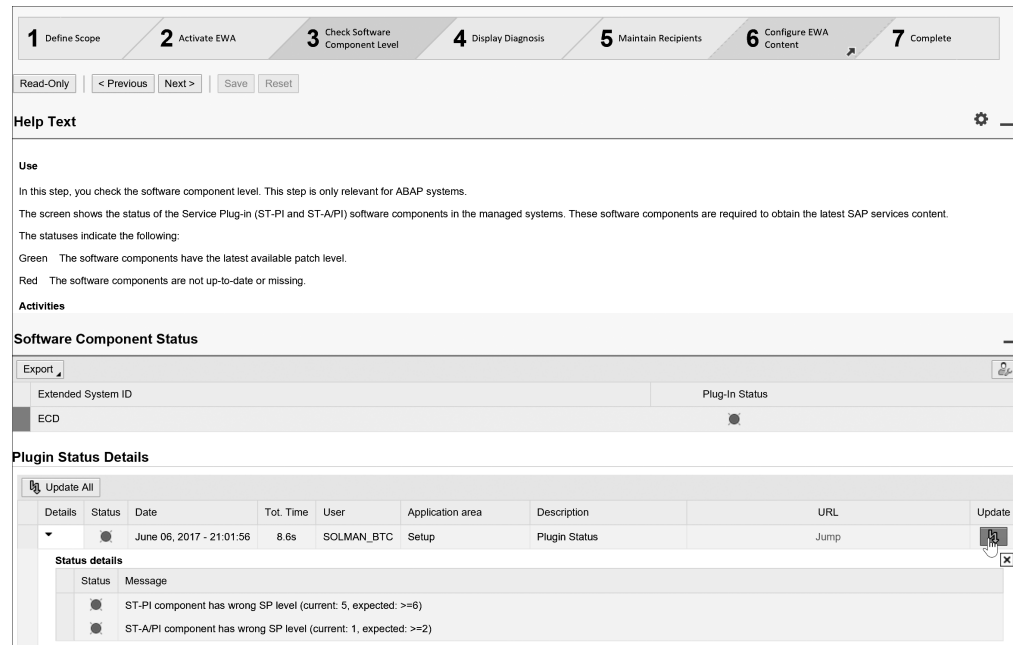


Figure 5.16 Validating Support Tools Add-Ons in ABAP System

8. Resolve any errors and click the **Update All** button. Click **Next** when the status is green.
9. Step 4, **Display Diagnosis**, validates what you completed during managed system configuration. The most common failure here occurs when the Service Data Control Center fails to activate in the managed system. If this happens, run Transaction SDCCN in the managed system and click **Utilities • Activate**.
10. Click **Next** to advance to step 5, **Maintain Recipients**.
11. Click the **Add** button to add someone or a group of people to receive the SAP EarlyWatch reports. The possible recipients are based on business partners or the global recipients list.
12. To add a single person or external list, click **Add** and search for that person or external list.

13. Click in the field under **Extended System ID** to select the system for the SAP EarlyWatch report, as shown in Figure 5.17. Then, select the report format and check the box to see **Red Reports Only**. Yellow and green reports are good; checking this box will ensure that you only see reports when something is bad.

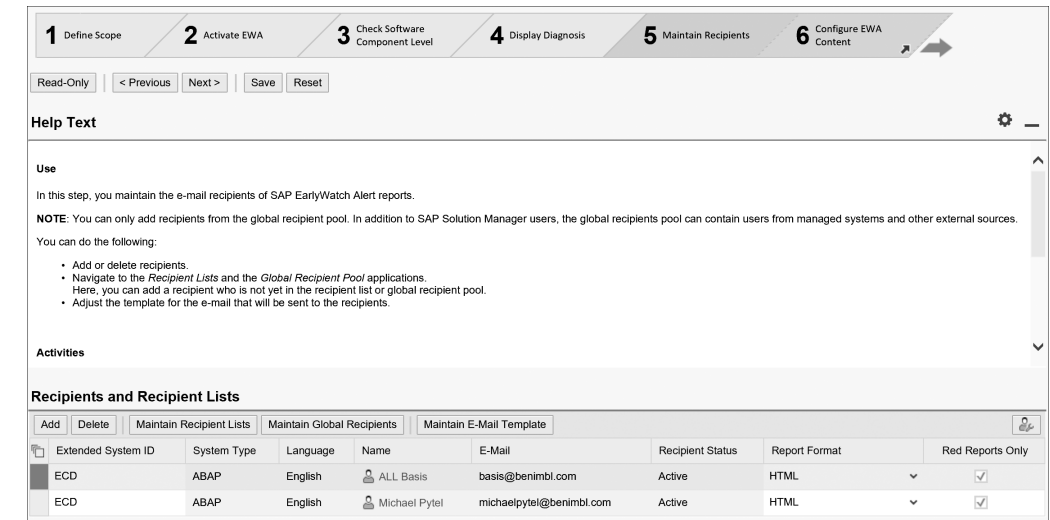


Figure 5.17 Reports Being Sent to Distribution List

14. If you need to add a distribution list to SAP Solution Manager, click the **Maintain Global Recipients** button and navigate to the **External** tab. Click **Add Recipients**, as shown in Figure 5.18.
15. The external list you add within **Maintain Global Recipients** will now be available when you click the **Add** button and search for alert recipients.

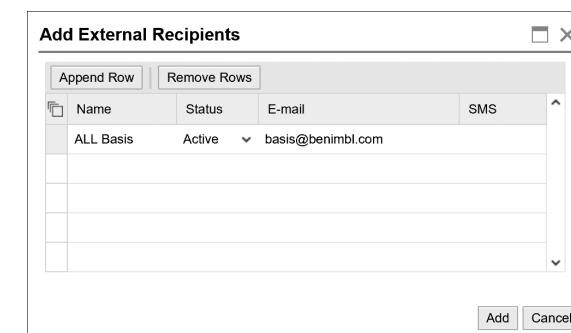


Figure 5.18 Adding Email Distribution List to SAP Solution Manager

16. Return to step 5, click the **Save** button, then click **Next**.
17. Step 6 has three substeps, all of which are optional.
18. In step 6.1, **Maintain Peak Business Hours**, you can define the hours of the day your system is most used. Figure 5.19 provides an example of this setting. For production systems only, define the peak hours. A common definition of peak hours is 9 to 11 a.m. and 1 to 3 p.m.

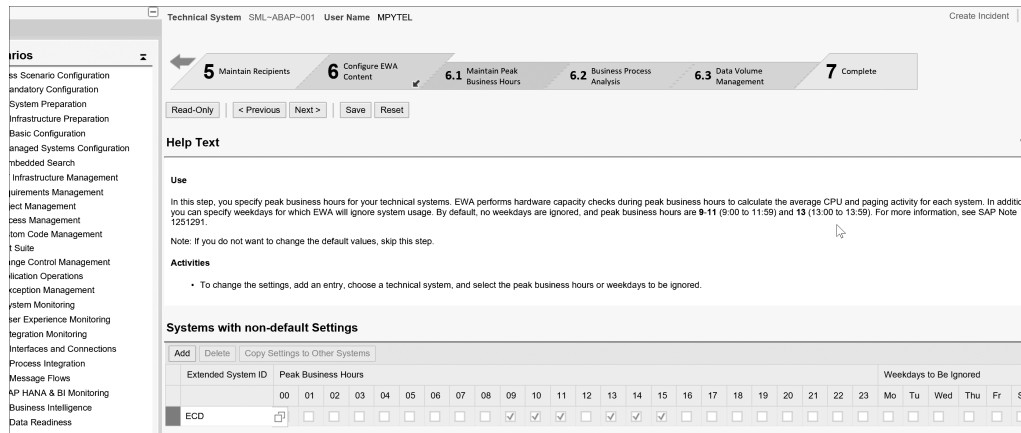


Figure 5.19 Defining Peak Business Hours for System in SAP Solution Manager

19. In step 6.2, **Business Process Analysis**, you can enable SAP Solution Manager to collect data about the business processes in your production system (see Figure 5.20). SAP has added KPIs into the SAP EarlyWatch report for specific standard SAP transactions. Check the **Activate Data Collection** box and click the **Save** button.
20. In step 6.3, **Data Volume Management**, you can activate the data collection so that SAP EarlyWatch reports can report on data growth and recommendations for archiving. Select the productive client and click the checkbox in the **DVM Active** column, as shown in Figure 5.21, then click **Save**.
21. Click **Next** to advance to step 7, then click **Finish**. You've completed SAP EarlyWatch reports configuration!

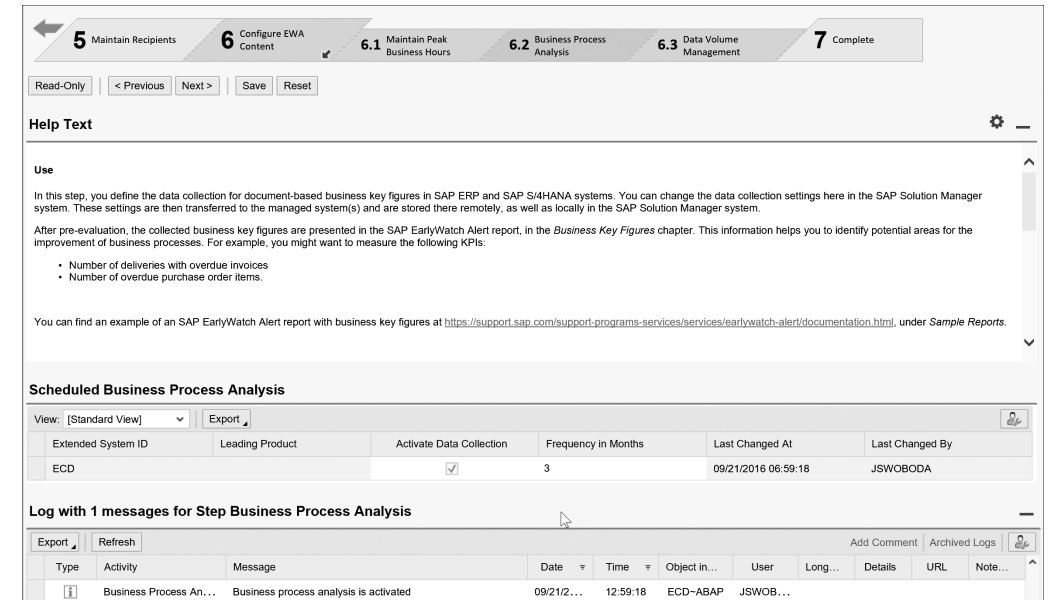


Figure 5.20 Activating Business Process Data Collection in SAP Solution Manager

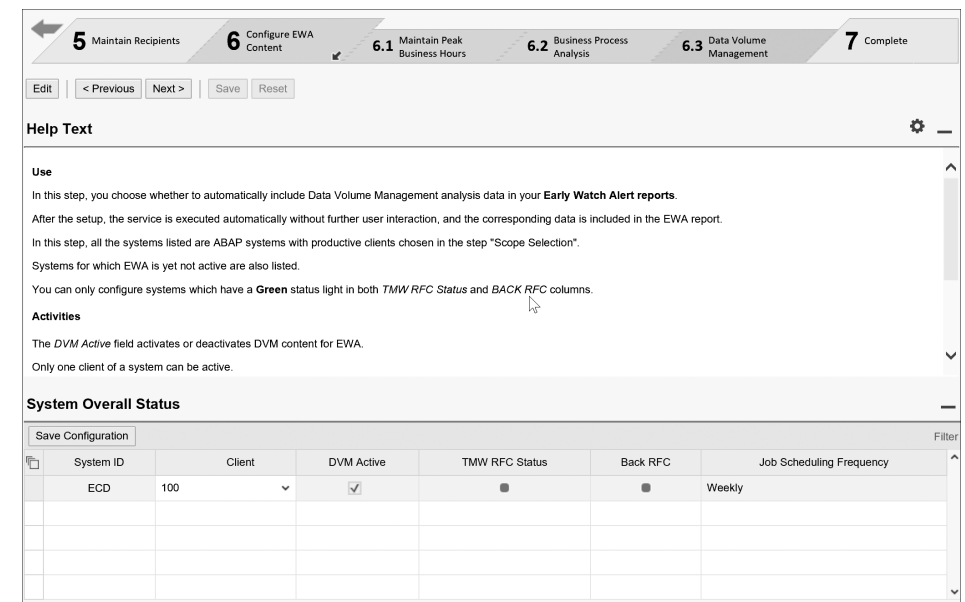


Figure 5.21 Activating DVM for Managed Systems in SAP Solution Manager

5.4 Summary

After completing baseline configuration and connecting to a managed system, you now have a sense of the guided procedures within SAP Solution Manager. In the first part of this chapter, we covered the connectivity requirements for managed systems. These will vary in complexity depending on the system to be managed. In general, the connectivity to SAP Solution Manager shouldn't be considered invasive within your landscape. When deploying SAP support tools on ABAP systems, remember that your installed component versions between development, QA, and production might differ for a time, which will require you to set **Ignore Component Version Mismatch** when performing ABAP transports.

In terms of planning, we generally estimate four hours per system for managed system configuration. If you or your team needs to plan the effort to deploy SAP Solution Manager within your landscape, then this estimate can help. Some systems will go more quickly, especially if you're using the minimum configuration for non-productive systems. However, we use the four-hour estimate to cover diagnostic agent troubleshooting, SAP host agent upgrades, registration to the SLD, running RTCCTOOL, and resolving any errors within the LMDB. Once you've connected a system to SAP Solution Manager, you can move on to the next logical step: configuring monitoring within application monitoring, the topic of the next chapter. Completing the steps in this chapter and the previous chapter will enable error-free deployment of proactive monitoring within your SAP landscape.

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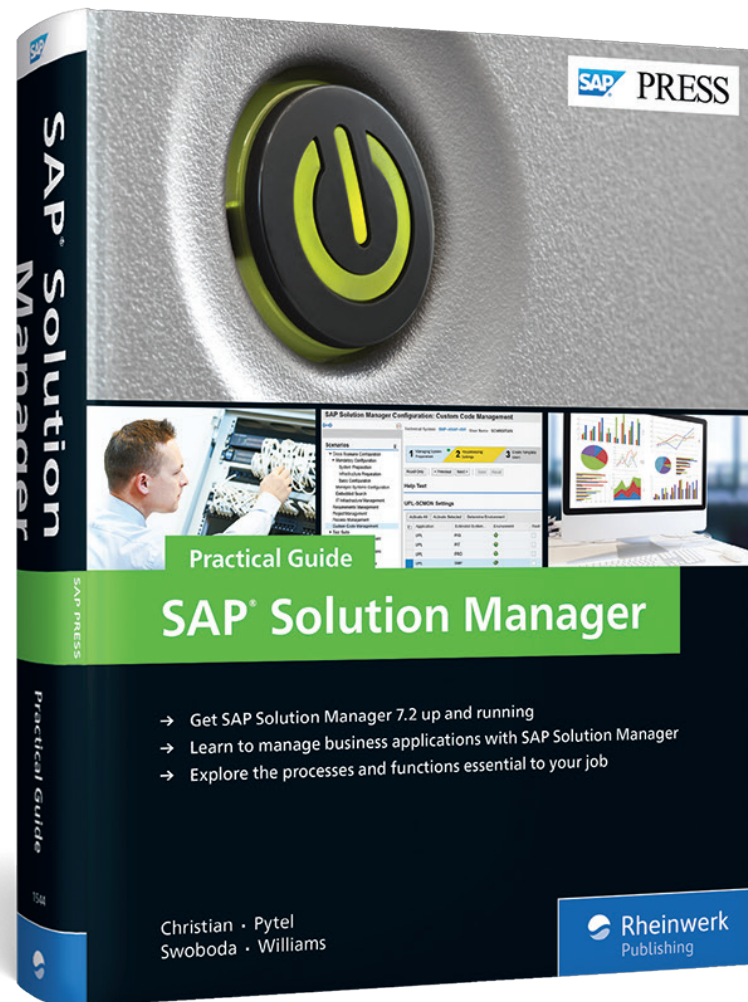
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