HP Operations Smart Plug-in for SAP

for HP Operations Manager for Windows®

Software Version: 11.10

Configuration Guide

Document Release Date: February 2009
Software Release Date: October2008

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Contents

1 Introduction

This section provides an overview of the HP Operations Smart Plug-in for SAP (SPI for SAP). The information in this section describes how the SPI for SAP integrates with HP Operations Manager (HPOM) and other HP software products and helps you understand how to customize both the SPI for SAP and other HP software products to meet the needs of your environment.

Smart Plug-in for SAP

The SPI for SAP is a software package linking SAP NetWeaver to HPOM. The union offers a complimentary and consolidated view of SAP performance information and overall resource characteristics.

This integration allows the correlation of SAP performance data with the performance data of the operating system, the database, and the network—all from one common tool and in one central management system. Integrating SAP performance data with the HPOM environment helps you detect and eliminate bottlenecks in a distributed environment. In addition, the integration allows for system optimization and service-level monitoring. The SPI for SAP performs the following tasks in a distributed HPOM environment:

- Collect real-time information about events and configuration—including useful on-line instructions for fast problem resolution
- Monitors SAP nodes to detect potential problem areas and keep track of systems and events
- Collects performance data to ensure system throughput and notifies you of any performance bottlenecks
- Provides a direct, context-sensitive access to the SAP front-end
- Complements and extends the SAP Computing Center Management System (CCMS)
- Stores events and action records for all SAP managed nodes into a central repository
- Runs routine SAP management tasks
- Integrates SAP environments with the service map—the SPI for SAP includes a policy that automatically generates service views of the SAP systems installed on your managed nodes.

Features and Benefits

The SPI for SAP provides you with a centralized problem-management environment with HP Operations agents on SAP NetWeaver managed nodes. The use of the central HP Operations management server avoids the duplication of administrative effort. The SPI for SAP provides the following capabilities for managing your SAP system:

Availability Management

Availability management alerts you when something in your SAP NetWeaver environment is going wrong, for example: a disk is full or a key process has either stopped prematurely or failed to start at an appropriate time. The combination of the SPI for SAP and HPOM alerts SAP NetWeaver administrators about such conditions and provides the following additional assistance in the alert message:

- Advice on fixing the problem that generated the alert
- Pre-defined operator-initiated actions that you can initiate from the message itself
- Automatic actions, such as an e-mail message to a manager or administrator, if a critical condition occurs

The SPI for SAP provides an interface with CCMS, which monitors availability issues with SAP. This interface is easy-to-use and notifies the SPI for SAP of any availability problems identified by CCMS. The SPI for SAP monitors over 70 SAP-related conditions in the overall SAP NetWeaver System. When problems occur, the SPI for SAP can call on a wide range of UNIX, Microsoft Windows, and SAP management tools to fix the problems.

The SPI for SAP can perform the following management tasks:

- CCMS alert monitoring, including:
  - ABAP/4 database events
  - SAP instance buffer problems
  - Tracing information
  - Enqueue server messages
  - SAP general messages
  - Rolling and paging activities
  - Internal SAP database events
  - Configuration status information
  - Syslog messages
- Syslog monitoring:

  Through CCMS syslog alerts
- Batch job monitoring:
  - Aborted jobs
  - Long-time running jobs
  - Jobs that failed to start
- Process monitoring:

Monitoring of all processes and conditions associated with an instance

- File monitoring:

  Monitoring relevant external files for SAP (log files, trace files)

- Monitoring SAP status and events by means of SPI ABAP modules. SAP status and events include:
  - Change of system operating mode
  - SAP locks
  - ABAP/4 dumps
  - Work process availability
  - Work processes modes (debug, private, no restart)
  - System change options
  - TemSe consistency
  - ALE monitoring
  - RFC-destination monitoring
- Solution-Manager integration
  - Read CCMS alerts from satellite systems
  - Write HPOM messages to CCMS
  - Assign alerts to Solution-Manager process steps and use HPOM to monitor the alerts

Managing from a Business Perspective

In the HPOM console, you can use the Service Map to view the impact of the events that trigger the messages displayed in the HPOM console. The Service Map displays the problem in a graphical format that makes you aware of the business impact of lower-level component failures or performance degradations.

Using the Service Map, you can navigate quickly to the root cause of a service failure and, by simple point-and-click navigation, browse to faulty components for further diagnosis and advice about problem resolution.

The SPI for SAP can also perform service discovery and can automatically generate a service view that shows your SAP environments from a service perspective. You can use the components of this service view as building blocks to create line-of-business views that reflect the impact of SAP events on your business.

Performance Management

Performance management tells you about problems and bottlenecks that can lower end-user productivity within your SAP environment. The SPI for SAP allows you to collect, analyze, and view metrics that indicate the state of the SAP environment.

These fully integrated HP Software products allow correlation of SAP performance metrics with a variety of other performance data such as metrics for operating systems, databases, and networks. The integration offers a consolidated view of SAP performance and overall system-resource characteristics and enables you to optimize SAP System performance.

The SPI for SAP monitors the following SAP metrics:

- Work-process number, type, and status
- Job statistics and state
- End-to-end transaction times
- Spool and print jobs
- Work-load statistics
- Buffer statistics
- Memory-performance indicators
- Logged-in users
- Document volumes
- SAP Internet Communication Manager (ICM) status and performance

Remote Monitoring with the SPI for SAP

You can extend the scope of the SPI for SAP to monitor the status of SAP NetWeaver on remote SAP servers, which are *not* managed nodes and where the SPI for SAP is *not* installed. You can set up and perform the remote monitoring from a managed node, where the SPI for SAP software *is* installed, correctly configured, and running.

You can use the remote-monitoring feature provided by the SPI for SAP to monitor an SAP System running in an environment that is not supported by the SPI for SAP, for example; a mainframe environment.

You can use the alert-classes section at the end of the monitor-configuration file to associate an instance of a monitor with a specific host, SAP instance, or processes on the remote server in the same way as you can with a normal (local) managed node. For more information about the remote-monitoring feature, see the *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help*.

Monitoring ITS

The SPI for SAP includes a dedicated SAP Internet Transaction Server (ITS) monitor, which allows you to monitor the following:

- **Status and availability**

  Checks the availability of the various components of the ITS server, including; AGate, WGate, and web server

- **Communication Problems**

  Pinpoints communication problems between the ITS components even in an environment with multiple ITS instances and complex load sharing

The collected data can then be used with HP Reporter to investigate problems and monitor general availability issues.

Monitoring SAP Web AS Java (J2EE)

To make sure that complex SAP NetWeaver environments remain available around the clock, it is essential to be able to monitor both the Web AS ABAP and the Web AS Java. The SPI for SAP provides pre-defined monitoring policies for ABAP Web AS and capabilities to manage

the Web AS Java. The SPI for SAP helps you extend the CCMS alert monitor `r3monal` to monitor the SAP J2EE Engine, which is an integral part of the SAP Web Application Server Java (WebAS Java).

Monitoring the SAP Enterprise Portal

The SAP Enterprise Portal provides a secure and stable web interface that gives users global access to the information, applications, and services that they need to work effectively in the SAP landscape. The SPI for SAP allows you to monitor critical aspects of the Enterprise Portal such as availability, response times, configuration, and performance.

If your SAP System provides users with an Enterprise Portal, you can configure the SPI for SAP's CCMS-alert monitor—`r3monal`—to monitor CCMS alerts relating to the portal's availability and send messages to the HP Operations console when problems occur. You can also use the SPI for SAP to collect and correlate performance and availability data and display the correlated data in service reports for more convenient viewing.

Monitoring the CEN

If your SAP landscape includes multiple systems and numerous instances, you can reduce management overheads by using SAP CCMS to monitor the entire landscape from one system, which SAP calls the central monitoring system (CEN), and then configuring the SPI for SAP to monitor CEN. The SPI for SAP can then map alerts identified in the CCMS subsystem to messages that it sends to the HP Operations console.

Monitoring Stand-Alone Enqueue Servers

The enqueue server manages information about the locks currently in use by the users logged into the SAP System; the lock-related information is stored in the lock table of the main memory. If the host on which the enqueue server is running fails, the lock data is lost and cannot be restored even when the enqueue server restarts. In a high-availability environment, you can avoid problems of this kind by configuring a stand-alone enqueue server in combination with an enqueue-replication server running on a separate host.

The SPI for SAP allows you to monitor alerts generated by a stand-alone enqueue server configured in a high-availability WebAS environment. For more information about configuring `r3monal` to monitor a stand-alone enqueue server in WebAS, see *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help*.

Monitoring Security

Organizations often have to invest precious time and money to protect the ERP environment against security attacks. The challenge is not just to monitor security-related events around the clock but also to identify and investigate the following:

- Insecure system settings
- Unauthorized attempts to access critical systems
- Attempts to change system configuration

The SPI for SAP enables you to extend the range of the CCMS alert monitor `r3monal` and combine it with the power of the security monitor `r3monsec` to monitor a wide variety of security events in the SAP sub-system, for example:

- The privileges and authorizations assigned to (and used by) important SAP users
- Insecure (default) passwords in use by SAP and Oracle users
- SAP System parameters which affect overall system security
- Miscellaneous security events such as failed logons or attempts to change SAP System settings
- SAP security-audit areas, for example: RFC calls and logons, changes to SAP System configuration, starting transactions or reports.

Monitoring the ABAP Dispatcher

The SPI for SAP's ABAP-dispatcher monitor—`r3mondisp`—checks the size, content, and status of the dispatcher queues and reports the different types of SAP work-processes that it finds. If a dispatcher queue becomes so full that it could have an adverse effect on SAP-System performance, or if a low percentage of work processes is idle, the SPI for SAP's ABAP-dispatcher monitor generates an alert, which is sent to the HP Operations console. This feature can help you troubleshoot performance issues in the SAP Systems you are monitoring with the SPI for SAP and, in addition, improve System performance by ensuring that the SPI for SAP monitors which need to login to SAP check the status of the dispatcher queue before requesting a dialog process.

Service Reporting

The SPI for SAP includes a pre-defined set of service reports, which describe the services running on the SAP managed nodes. Service Reports are produced by HP Reporter (Reporter) using default templates that are designed for display in a web browser. The reports include both graphs and text to represent the state of monitored services in your SAP environment. Reporter allows you to request both scheduled and on-demand versions of reports.

HP Reporter light is no longer bundled with HP Operations; you must install and use the *full* version of the HP Reporter to view SPI for SAP reports.

SPI for SAP service reports correlate the data extracted from either the HP Software Embedded Performance Component (CODA) or the HP Performance agent. You can use the correlated data to generate reports which display short-, medium-, or long-term views of your IT environment and supplement the detailed, real-time graphs available with the HP Performance Manager.

Combined Availability and Performance Management

When using both the availability- and the performance-management capabilities, performance alarms can be automatically forwarded to an SAP administrator. The SAP administrator can then start HP Performance Manager to view the performance problem directly. This consolidated approach allows you to manage availability and performance problems consistently and efficiently.

High-availability Environments

The SPI for SAP provides support for high-availability environments, allowing you to continue to make use of the product's functionality, even after a failover, regardless of where the package is running. Whether it is the management server or the SAP servers that are configured to run in a high-availability environment or a combination of the two, you can install and configure the SPI for SAP quickly and easily to monitor SAP in the way that you see fit. For more information about installing and configuring the SPI for SAP in a high-availability SAP environment, see The SPI for SAP in a High-availability Environment on page 49.

Integration with HPOM

At the heart of the SPI for SAP is a set of monitors (data collectors) which are designed to check and report on different aspects of SAP system health. The SPI for SAP includes the following monitors:

CCMS ALERT	collects alerts from the SAP internal monitor, the CCMS alert monitor
Syslog	collects messages from the SAP syslog (from CCMS)
Jobs	identifies SAP batch jobs that are in an abnormal state; for example, aborted jobs
Processes	reports on the availability of SAP work processes and database processes at operating system level
Files	reports on errors in the SAP trace and log files
SPI ABAP	modules that carry out monitoring tasks within SAP, for example; checks on SAP operation modes, SAP dumps, and the availability of work (and other) processes

The SPI for SAP monitors are completely integrated into HPOM, both in their configuration and distribution and, in addition, in the day-to-day tasks of receiving messages and taking actions to resolve problems.

The SPI for SAP handles the process of configuring and deploying monitors automatically by means of the configuration-file policy type.

Messages and Actions

The SPI for SAP monitors integrate the day-to-day management of the SAP systems with the features and functionality offered by HPOM. The monitors identify conditions and inform the HP Operations agent on the managed node. The monitors compare the conditions they find on the monitored SAP Systems with conditions defined in the message-source policies and forward matching conditions to the management server in the form of a message. The SPI for SAP assigns messages from its own monitors to SAP-specific message groups, which appear in the console after the installation of the SPI for SAP completes.

The full range of HPOM message facilities are available for SPI for SAP messages, including the differentiation of messages according to severity, a detailed description of the condition together with advice on problem resolution, and pre-defined operator-initiated and automatic actions.

The sequence of events within the message flow is as follows:

1. An event occurs on an object that is being monitored by one of the alert monitors, for example; a batch job aborts. The SPI for SAP's batch-job monitor generates an alert and sends a message as a result.
2. The HP Operations agent on the managed node receives the message.
3. The HP Operations agent examines the message and, if necessary, applies filters, which suppress any duplicate messages or messages that match suppress conditions and allow any other messages to continue on to the management server.
4. The SPI for SAP stores active messages in the HPOM database.
5. The SPI for SAP displays messages in the HP Operations console.
6. Administrators and operators can now select messages and, if available, start any operator-initiated actions. An operator-initiated action can take the form of a request to open the SAP GUI if, for example, a job aborts. The related message could have an operator-initiated action which calls the job-overview transaction and displays it in the SAP GUI.
7. When the operator acknowledges a SPI for SAP message, the message is immediately removed from the active database and put into the history database; this helps improve statistics and facilitates reports and other analysis.

Easy Customization

The information in this section explains how you can customize the flow of messages between SAP and HPOM in both the SAP environment and HPOM, as described in the following two sections:

- Customization in SAP on page 16.
- Customization in HPOM on page 17.

Customization in SAP

In SAP, you can customize the flow of messages between SAP and HPOM in the following ways:

- Enable or disable SAP client groups so that these are tracked or not tracked in the CCMS alert monitor. This method is discussed in the *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help*.
  - Enabled CCMS alerts: the SPI for SAP identifies specific alerts, generates a message, and forwards the message to the management server, where it appears in the console.
  - Disabled CCMS alerts; no internal SAP CCMS alerts means there will also be no message.
- Set up selected alert messages so that they are included in the SAP system log file. More information about this method is available in the *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help*.

Customization in HPOM

You can customize the flow of messages between SAP and HPOM in the following ways:

- Configure and use powerful monitors to fine tune the control of your distributed SAP environment. For more information, see the *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help*.
- Configure and apply filters to display only the relevant types of messages in the HPOM console. For more information, see the *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help.*
- Change the severity of SPI for SAP messages to suit the needs of your specific environment. For more information, see the *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help*.

2 Software Installation

This section provides the information you need to install the SPI for SAP. This section covers the following high-level topics:

Before You Begin

Before installing the SPI for SAP, make sure you perform the following checks:

- Ensure that the systems on which you want to install the SPI for SAP software meet the requirements listed in the following sections:
  - Hardware, Operating System, and Disk Space Requirements on page 20.
  - Compatible Software Versions on page 21.
- For each SAP instance, note the following:
  - Which SAP version is installed?
  - Is SAP installed on a central instance or an application server?
- Create a list of all the SAP clients you want to monitor with the SPI for SAP. For each client, list the following data:
  - The hostname of the SAP application server
  - The SAP system ID
  - The SAP Instance number
  - The SAP client number
  - The operating-system platform (UNIX, Linux, or Microsoft Windows)
  - User name/password to be used for monitoring

Use this information to set up the environment for the SPI for SAP.

Installation Requirements

The following sections list the requirements that must be met before you install the SPI for SAP on the management server:

Hardware, Operating System, and Disk Space Requirements

Before you install the SPI for SAP, use the information provided in Table 1 to ensure that your systems (HPOM management server and all the managed nodes) meet the requirements for hardware, software, operating-system support, and disk space. For information about which managed-node platforms the SPI for SAP supports, see Table 1.

Table 1 Hardware, Operating System, and Disk Space Requirements

Product	Operating Systems	Minimum Disk Space
SPI for SAP on the management server[a]	• Windows Server 2003 • Windows Server 2008 (only x86)	1 GB
SPI for SAP on managed nodes	HP-UX	Approximately 40MB.[b] The disk-space requirement on the node will increase with the amount of data collected and logged by the SPI.
	AIX	
	Windows	
	Linux [c]	
	Solaris	
SPI for SAP Reporter Package	Windows	1 GB

a. On the management server, make sure that the PATH system variable includes the locations of Windows utilities/commands and Windows Script Host.

b. Includes 8.5MB for the transports

c. SuSE Linux Enterprise Server (SLES); Red Hat Enterprise Linux (RHEL). To monitor Linux nodes on IA-32 platform, you must install the 32-bit emulation layer, compatibility layer (for running the x86 binaries), and compatible standard C++ libraries on all Linux nodes. Since the SPI for SAP supports RHEL5 and SLES10 through the emulation mode, refer to the Red Hat Enterprise Linux /SuSE Linux Enterprise Server documentation to understand the prerequisites of running 32-bit applications.

For more information on supported platforms, see **http://h20230.www2.hp.com/sc/support_matrices.jsp**

Compatible Software Versions

Before you configure (or upgrade) the SPI for SAP, use the information provided in Table 2 on page 21 and Table 3 on page 21 to ensure that you are using a version of HPOM that is compatible with the current version of the SPI for SAP. In addition, you will need to ensure the following:

- The HP Operations agent software must be available on the HPOM management server
- The standard HPOM management-server policies must be available on the HPOM management server
- HP Reporter must be available if you want to view service reports for SAP.

  HP Reporter light is no longer bundled with HPOM; install the HP Reporter product to generate reports from the data collected by the SPI for SAP.

  If you want to edit existing (or create new) reports for the SPI for SAP, make sure that Crystal Reports (version 8.5 or later) is available on the machine hosting the HP Reporter (version 03.70 or later)
- To generate graphs from the data collected by the SPI for SAP, you must install HP Performance Manager in the HPOM environment.

Table 2 lists the software versions for the HPOM management server, which the current version of the SPI for SAP supports.

Table 2 Supported HPOM Management-Server Platforms

HPOM Version [a]	Operating System Platform
07.50	Microsoft Windows Server 2003
08.10	• Microsoft Windows Server 2008 (only x86) • Microsoft Windows Server 2003

a. Installed systems should be patched to the latest required level

Table 3 on page 21 shows which combinations of the SAP kernel and (in brackets) the SAP Basis versions of SAP the SPI for SAP supports, for example: 4.6D (4.6C). Note that the last three columns of Table 3 on page 21 reflect a change to the SAP version-numbering system and show the SAP *basis* version and (in brackets) the SAP *kernel* version. For example, 6.20 (6.20) means SAP *basis* 6.20 (SAP *kernel* 6.20).

Table 3 Supported Managed-node Platforms and SAP Versions

Managed-Node Operating System	SAP Kernel (Basis) Version 4.6D [a] (4.6C)	SAP Basis (Kernel) 6.20 (6.20/6.40)	6.40 (6.40)	7.0 (7.0)	7.1 (7.1)[b]
AIX	•	•	•	•	•
HP-UX	•	•	•	•	•

Table 3 Supported Managed-node Platforms and SAP Versions

Managed-Node Operating System	SAP Kernel (Basis) Version 4.6D [a] (4.6C)	SAP Basis (Kernel) 6.20 (6.20/6.40)	6.40 (6.40)	7.0 (7.0)	7.1 (7.1)[b]
Linux	•	•	•	•	•
Solaris	•	•	•	•	•
Windows	•	•	•	•	•

a. According to SAP, 4.6D is not a complete SAP release; the 4.6D kernel is shipped with the 4.6C Service Release 1.

b. ABAP-stack only

You must install the latest version of the Microsoft .NET Framework on all Windows nodes.

Obsoleted Software Versions

The following, features, software, or operating systems are no longer supported with this version of the SPI for SAP:

- HP-UX 11.00
- The SPI for SAP no longer provides support for the Windows 2000, 2000 Advanced Server operating systems on either the HPOM management server or the managed node.
- The current release of the SPI for SAP no longer provides support for the HP-software Self-healing Services (SHS) feature, which is now obsolete.

Changes and Modifications to the SPI for SAP

This section provides information that is designed to help you complete the post-installation phase of the upgrade process by listing the changes and additions, which are introduced with the latest version of the SPI for SAP. This section covers the following topics:

For more detailed information about the topics covered in this section, see the section about customizing the SPI for SAP in the *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help*.

General Changes

The current release of the SPI for SAP does not have any Japanese localized policies: Japanese localized policies will be provided in a subsequent, separate release.

The SPI for SAP's central configuration file policy `r3itosap.cfg` no longer contains an example section relating to SAP version 3.1; the current version of the SPI for SAP no longer supports versions of SAP, which are older than SAP 4.6C. For more information about the versions of SAP which the SPI for SAP supports, see Compatible Software Versions on page 21.

Tools and Tool Groups

The current release of the SPI for SAP contains the following changes or additions to the SPI for SAP applications and application groups:

New Tools

This version of the SPI for SAP introduces the following new applications:

- **Install the RFC Library:** Use this application to place the downloaded SAP RFC libraries into the appropriate directories on the management server.
- **Install/Remove Performance Package:** Use these applications to install and remove the SAP/Performance subagent.
- **Check the SAP NetWeaver Connection:** Use this application to checks the connection with the SAP NetWeaver Web AS before you start monitoring.
- **Configure SPI SAP NetWeaver Monitors:** Use this application to perform necessary configuration tasks on the SAP NetWeaver Web AS.

Policies and Policy Groups

The current release of the SPI for SAP contains the following changes or additions to policies and policy groups:

- **Policy Groups**

  The SAP NetWeaver Java Monitoring policy group is introduced in this version. This policy groups adds several policies that help you monitor the SAP NetWeaver Web Application Server (J2EE) environment. For more information, refer to the *HP Operations Smart Plug-in for SAP Online Help*.

- **New ConfigFile Policies**

  The following new ConfigFile policies are added:

  global_SiteConfig: Provides access-related information for the SAP NetWeaver Web Application Server.

- **Policy Version Number**

  The current SPI for SAP release updates the version number for all monitor and configuration policies to "11.0".

Reports

The current version of the SPI for SAP introduces the following new reports that are generated from the metrics collected from the SAP NetWeaver Web AS nodes:

- Threads usage rate for different ports
- Connections count
- Memory Consumption
- Sessions view
- Requests view
- Comparison of application and system threads
- Comparison of application and system waiting tasks

SAP Transport

This version of the SPI for SAP includes a new SAP transport—the removal transport. While removing the SPI for SAP from your SAP environment, the new transport helps you remove all the objects that were added to the environment by the SPI for SAP. This transport is included in the `R3Trans.car` file.

Upgrading the SPI for SAP

This section describes how to upgrade the SPI for SAP software from version 10.10, 10.50, or 10.70 to version 11.10. Before you upgrade the SPI for SAP software, read through the recommendations below.

1. Ensure you have read and understood the requirements in Hardware, Operating System, and Disk Space Requirements on page 20 and Compatible Software Versions on page 21.
2. Use a backup facility to save the complete, current configuration. This enables you to restore the configuration in the event that the upgrade is unsuccessful.
3. Make safety copies of any configuration-file templates that contain modifications you made to the original configurations. Note that the location of the policy templates from SPI for SAP version B.09.01 onwards is as follows:

   ```
   %OvShareDir%\SPI-Share\sapspi
   ```

   For more information about the changes to policy templates, see Changes and Modifications to the SPI for SAP on page 22.

4 Although policies are protected by the version system, it is always a good idea to backup the SPI for SAP policies, which you have deployed to the managed nodes. If you have modified any of the SPI for SAP message-source policies, create a safety copy of the SPI for SAP policy group and all the policies it contains.

> You cannot simply overwrite the new policy templates delivered as part of the SPI for SAP version 11.10 with the backup copy of the previous template version: you have to merge any changes you made to the old policy templates into the new policy templates. Since the SPI for SAP includes revised and improved policy templates, overwriting them with an older version can result in unmatched messages and might even cause more serious problems. For more information about the changes to policy templates, see Changes and Modifications to the SPI for SAP on page 22.

5 If you are using (and want to upgrade) the SPI for SAP performance monitor sub-agent version 10.10, you need to remove the old SPI for SAP performance monitor sub-agent from the managed nodes *before* you remove and upgrade the SPI for SAP. Read the section Upgrading the Performance Monitor on page 73 before continuing with the next step, which concerns the removal of the old SPI for SAP software.

6 Install the new SPI for SAP software on the HPOM management server according to the instructions provided in Installing the SPI for SAP Software on page 26.

> The set-up process removes the existing SPI for SAP software on the management server and replaces it with the newer version.

7 Install the SPI for SAP integration for the HPOM console on any additional system where you intend to run the HPOM console remotely in combination with the SPI for SAP. The Common Installer cannot perform this step automatically; you must perform this step manually by locating the console-integration package and double-clicking it to launch the set-up program.

> If the set-up program finds an existing SPI for SAP console-integration package, it removes it and replaces it with the newer version.

For more information about the location of the console-integration package, see Installing the SPI for SAP Software on page 26.

8 Configure the SPI for SAP to monitor SAP as described in Configuration: SAP-Specific Tasks on page 31. These instructions take you through the process of setting up SAP to allow access to the SPI for SAP monitors and configuring the SPI for SAP monitors to look for and report the information you want to see.

9 Configure the SPI for SAP to work with HPOM as described in Configuration: HPOM Administration Tasks on page 41. These instructions take you through the process of deploying the SPI for SAP instrumentation and policies.

10 Upgrade the SPI for SAP performance monitor sub-agent

Before converting any data, read the instructions in Upgrading the Performance Monitor on page 73 and, in addition, in the section about upgrading the SPI for SAP performance monitor sub-agent in the *SPI for SAP Online Help*.

Installation Overview

The complete configuration of the SPI for SAP comprises three distinct phases, performed in the following sequence:

1 Installing the SPI for SAP Software on page 26

The *HP Operations Smart Plug-ins* installer installs the SPI for SAP software on the HPOM management server. You also need to configure and set up the SAP GUI for windows.

2 Verifying the Installation of the SPI for SAP Software on page 27

You set up an SAP user and the SAP transport for the SPI for SAP and configure the SPI monitors according to the monitoring requirements of your environment.

3 Installing the SAP GUI on page 29

You integrate the SPI for SAP with HPOM and bring all SAP application servers under HPOM management.

Installing the SPI for SAP Software

Before you install and configure the SPI for SAP software, make sure that you install HPOM and patch it to the latest required level. After completing the installation of HPOM, use the *HP Operations Smart Plug-ins* DVD to install the SPI for SAP software.

To Install the SPI for SAP software, follow these steps:

1 Use the HP Operations Smart Plug-ins - Wizard to install the SPI for SAP software. When the InstallShield-wizard dialog box appears, select SPI for SAP by placing a check mark in the appropriate box as illustrated in Figure 1 on page 27. Note that you have to scroll through one or two screens before you see the check box for the SPI for SAP.

2 From the Product Selection Install Wizard dialog box, follow the on-screen instructions.

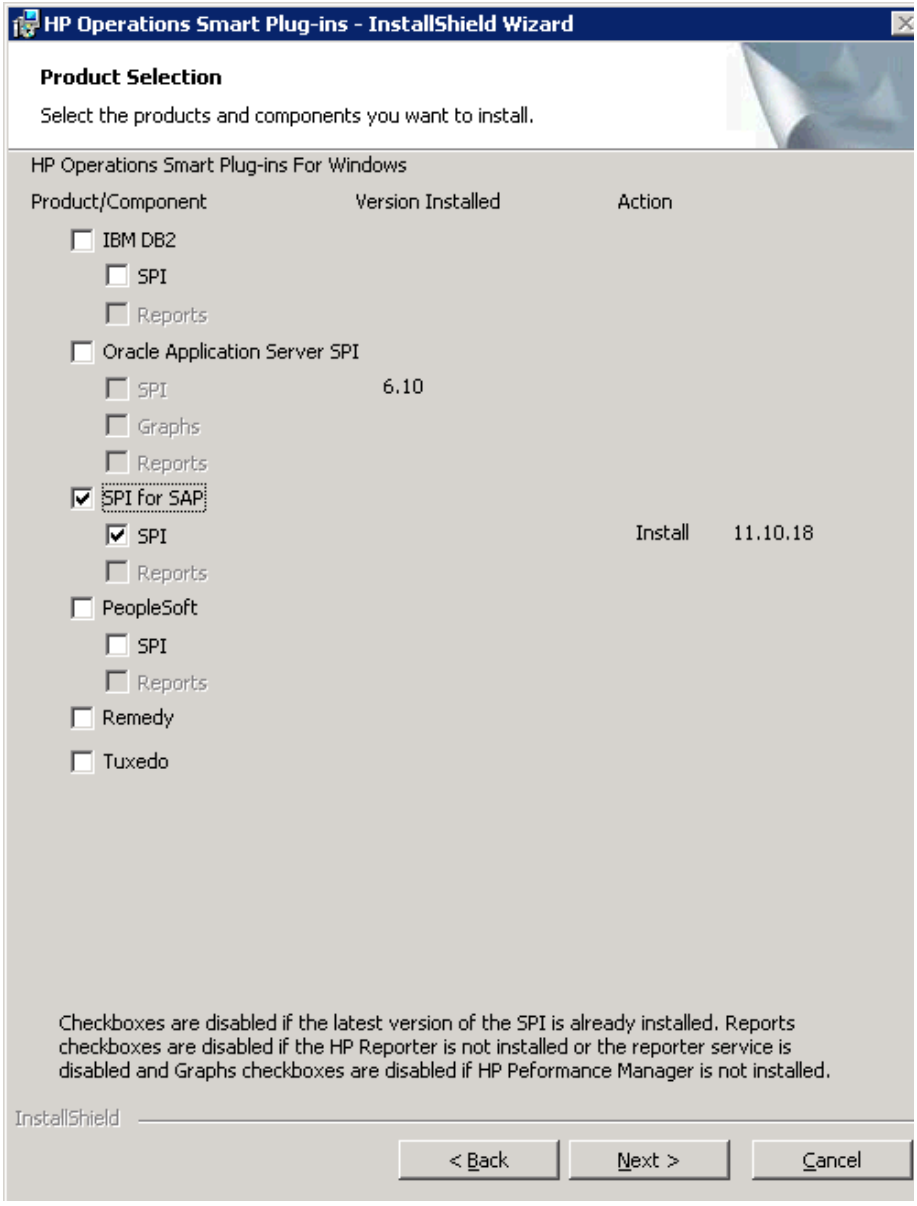
3 Install the SPI for SAP integration for the HPOM console on any additional system where you intend to run the HPOM console remotely in combination with the SPI for SAP.

The Common Installer does not install the console-integration package automatically on remote systems; you have to install the package manually by locating the console-integration package file and double-clicking it to launch the set-up program. You can find the console-integration package on the HP Operations Smart Plug-ins DVD in the following location:

```
<DVD>\SPIs\SPIs Console Packages\SPI-SAP-ITO-CONSOLE.msi
```

4 Before continuing with the configuration of the SPI for SAP software ensure the installation process completed correctly by following the instructions listed in Verifying the Installation of the SPI for SAP Software on page 27.

Figure 1 InstallShield Wizard Selection Dialog



Verifying the Installation of the SPI for SAP Software

It is recommended that you carry out a number of simple checks to verify that the installation of the SPI for SAP software has completed successfully and that all the required elements are available before you continue with the configuration of the software.

To Verify the Installation of the SPI for SAP Software, follow these steps:

1 In the HPOM console, browse to the following item:

Tools > SPI for SAP

Check that the following sub-directories are present:

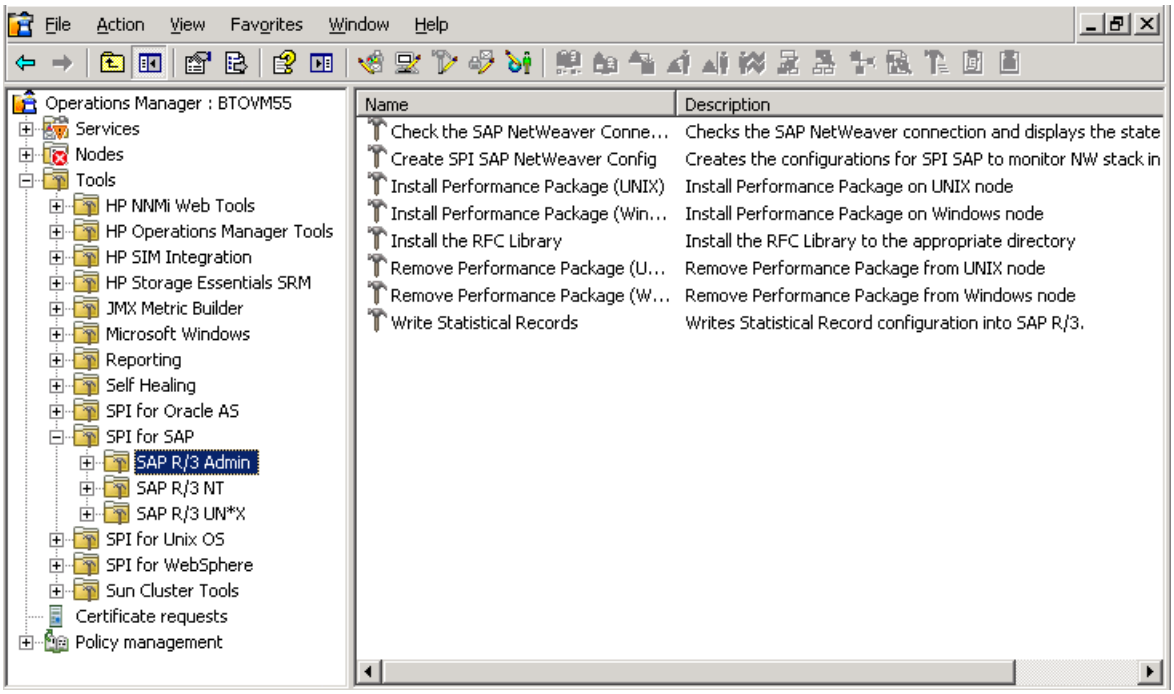
— SAP R/3 Admin

— SAP R/3 NT

— SAP R/3 UN*X

2 Clicking each sub-directory in turn to confirm tools are present as illustrated in Figure 2.

Figure 2 SPI for SAP tools sub-directory



3 Although the SPI for SAP does not install them, you should check that the ConfigFile policy packages are available, since they are required. In the HPOM console tree, browse to the following item:

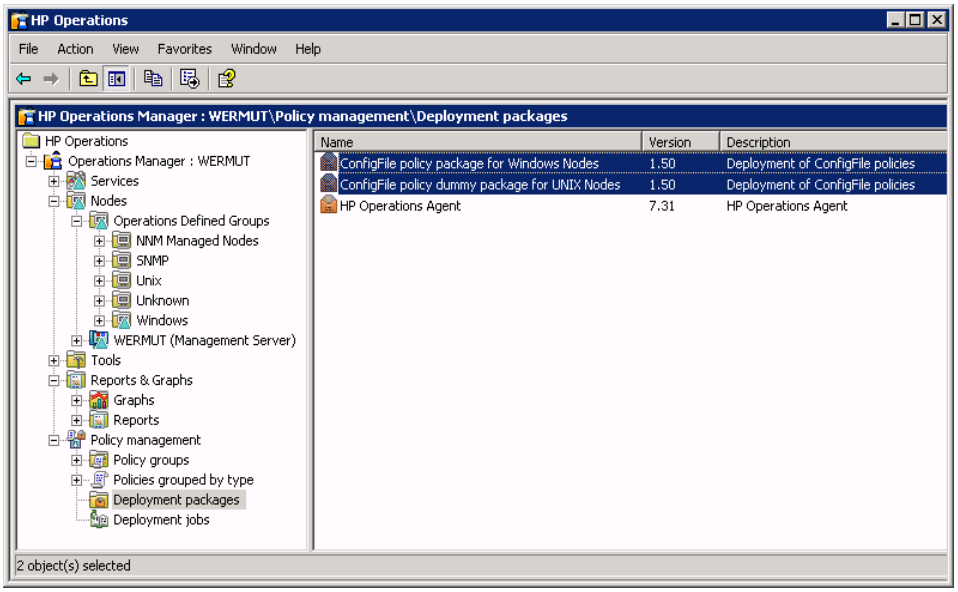
Policy management > Deployment packages

The following items (belonging to the configuration-file policy type) should be present as illustrated in Figure 3.

— ConfigFile policy package for Windows Nodes

— ConfigFile policy dummy package for UNIX Nodes

Figure 3 Checking the Installed Packages



Installing the SAP GUI

In this step, you install the SAP GUI on the HPOM management server as well as on the machines where you want to run a HPOM console. You should use your SAP installation media to install the most recent version of the SAP GUI available in your environment. Most of the operator-initiated actions and tools included in the SPI for SAP start the SAP GUI to access and display SAP information. For this reason, a SAP GUI *must* be available on the machine hosting the HPOM management server and, in addition, on any system where you want to run a remote HPOM console. For more information about installing the native GUI for SAP, see the appropriate SAP documentation.

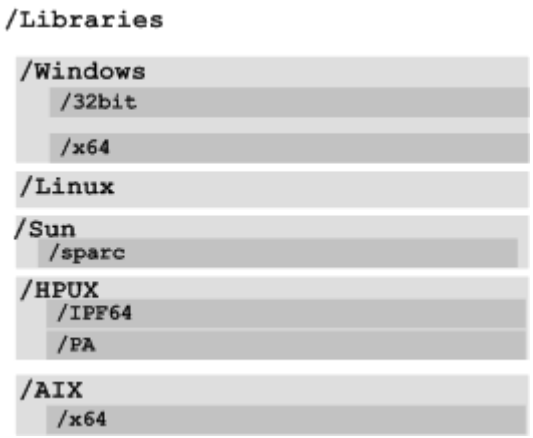
Downloading SAP Libraries

You must download the necessary SAP RFC libraries on the management server. To download the SAP RFC libraries, follow these steps:

1 Create the following folder on the management server:

```
C:\temp\Sap_RFC_Downloads\Libraries
```

2 Inside the newly created Libraries folder, create the following folder structure.



a Create the `Libraries` folder under the `C:\temp\Sap_RFC_Downloads` folder.

b Under the `Libraries` folder, create the `Windows`, `Linux`, `Sun`, `HPUX`, and `AIX` folders.

c Under the `Windows` folder, create the `32bit` and `x64` folders.

d Under the `Sun` folder, create the `sparc` folder.

e Under the `AIX` folder, create the `x64` folder.

f Under the `HPUX` folder, create the `IPF64` and `PA` folders.

3 Download the appropriate flavors of the RFC SDK 6.40 from the SAP Software Distribution Center website (**http://service.sap.com/swdc**).

Regardless of the version of SAP deployed in your environment, always download the RFC SDK version 6.40.

Extract the contents of the RFC SDK and copy the library files into the directories created in step 2 as listed in the following table:

Node Platform	Library File	Copy into the Folder
Windows 32-bit	`librfc32.dll`	`/Windows/32bit`
Windows X64	`librfc32.dll`	`/Windows/x64`
Linux[a]	`librfccm.so`	`/Linux`
Solaris	`librfccm.so`	`/Sun/sparc`
HP-UX IA-64	`librfccm.so`	`/HPUX/IPF64`
HP-UX PA-RISC	`librfccm.sl`	`/HPUX/PA`
AIX[b]	`librfccm.so`	`/AIX/x64`

a. Use the RFC SDK 6.40 for the Linux IA-32 platform.

b. For all supported flavors of AIX, use the **AIX 64-bit** RFC SDK (6.40).

4 After placing the library files into the newly created folders, run the `Install the RFC Library` tool on the management server from the `SAP R/3 Admin` tool group.

3 Configuration: SAP-Specific Tasks

This section describes how to complete the SAP-specific part of the installation of the Smart Plug-in for SAP. The tasks in this phase require knowledge of SAP transactions and specific monitoring requirements. You will be working with the HPOM console as well as on the SAP system application servers and will need to log on to HPOM as an operator and to the SAP clients as a user with authority to perform the SAP tasks included in this phase.

Configuration Overview

The tasks in this section are as follows:

1 Applying the SAP Transports on page 31.

In this step, you copy the SPI for SAP transport files to each of the SAP central instances that you want to monitor with the SPI for SAP and apply them.

2 Setting Up an SAP User for HPOM on page 35.

In this step, you enable HPOM tools and policies to log on to SAP whenever they need to access SAP data.

3 Setting Up Configuration Values for the SPI for SAP Monitors on page 38.

In this step, you set up initial configuration values for the Smart Plug-in for SAP monitors. You must complete this task *before* you deploy the monitor-specific configuration files to the managed nodes. This topic is covered in much greater detail in the section on monitor customization in the *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help*.

4 Modifying Configuration-File Policies on page 39.

In this step, you use the configuration-file policy editor to create global configuration-file policies. There is much more information on this topic in the section on monitor customization in the *SPI for SAP Online Help*.

After you set up and deploy the configuration-file policies, you must also deploy the corresponding Smart Plug-in for SAP policies to the SAP managed nodes. See Deploying SPI for SAP Policies to Managed Nodes on page 45.

Applying the SAP Transports

In this step, you copy the transport files provided by the Smart Plug-in for SAP to the SAP transport directories on each HPOM managed node that is an SAP central instance. This section provides further information about the following topics:

- The SPI for SAP Transports on page 32

- SAP Transport Naming Conventions on page 32

The SPI for SAP Transports

The SPI for SAP provides a number of different transport files. Since the transports contains monitors that serve a specific purpose, it is important to understand where each transport needs to be imported and why. The SPI for SAP contains the following transports:

- `R3Trans.car`

  The `R3Trans.car` transport contains all the ABAP monitors that the SPI for SAP uses along with the default configuration settings; you import the `R3Trans.car` transport into each of the ABAP instances that you want to monitor with the SPI for SAP through SAP's central monitoring system (CEN).

- `SAPSPI_CCMS_Monitors.car`

  The `SAPSPI_CCMS_Monitors.car` transport adds the SPI for SAP's CCMS-based monitors for J2EE, System security, standalone-enqueue servers, the Enterprise-Portal, and XI monitoring to the CCMS monitor set HP OV SAP-SPI. You import the `SAPSPI_CCMS_Monitors.car` transport either into the individual SAP systems whose CCMS alerts you want to monitor with the SPI for SAP or, if configured, into the central monitoring system (CEN). In SAP terms, the CEN is the system you configure as the central management point of control for any CCMS alerts originating from anywhere in the monitored SAP landscape.

For more information about the SPI for SAP monitors as well as instructions for modifying existing (or adding new) monitors to standard SPI for SAP monitor sets, see the *SPI for SAP Online Help*.

SAP Transport Naming Conventions

The SPI for SAP provides transports for supported SAP versions that include SPI for SAP functionality in the SAP name space "/HPOV/". As a result of this naming convention, administrators now must use the *new* SPI for SAP name-space transports if they want to use the SPI for SAP to monitor SAP Systems. For more information about the SAP versions that the SPI for SAP supports, see Installation Requirements on page 20.

It is possible to import the new SPI for SAP name-space transport into an SAP System where previous versions of SPI for SAP transports have already been imported.

Table 4 lists the naming conventions used for the transport objects provided by the SPI for SAP.

Table 4 Naming Conventions for Transport Objects

Transport Class	Transport Object
Table of Contents	/HPOV/ZHPSPI0*
Development Class	/HPOV/SAPSPI
Domain	/HPOV/ZITO_*

Table 4 Naming Conventions for Transport Objects

Transport Class	Transport Object
Function Groups	/HPOV/NW04 /HPOV/ZBTO /HPOV/ZLPO /HPOV/ZSPA /HPOV/ZSPB /HPOV/ZSPY /HPOV/WEBAS /HPOV/WEBAS70 /HPOV/SOLMAN
Function modules	/HPOV/OV_*
Programs	/HPOV/YSPI* /HPOV/ZHPSPIB1 /HPOV/ZHPSPIB2 /HPOV/ZHPSPIT1 /HPOV/ZHPSPI00*
Roles	/HPOV/SAPSPI_MONITORING* /HPOV/SAPSPI_SECURITY_MON

To copy the SPI for SAP transport files to the managed nodes, follow these steps:

1 Use the Windows Explorer tool to locate the SAP transport packages, which by default reside in the following directory on the HPOM management server:

`%OvShareDir%\Packages\SAPTransports`

The SAP transport package is stored in the SAP-specific `.car` format and is accompanied by a readme file explaining which SAP transports you must import into each SAP version.

2 Use the `ftp` method to transfer the package to each of the SAP central instances you want to manage with HPOM.

The operating-system user executing the `ftp` operation requires write permission in the transport directory. If necessary, enable write access to the transport directory manually.

3 On each of the managed nodes, as SAP administrator (<*SID*>adm) use the `CAR` (or `SAPCAR`) command to unpack the transport files to `/usr/sap/trans`. Enter:

- **`CAR -xvf R3Trans.car`**

  `R3Trans.car` contains the SPI for SAP's ABAP monitors.

- **`CAR -xvf SAPSPI_CCMS_Monitors.car`**

  `SAPSPI_CCMS_Monitors.car` contains the transport files for the SPI for SAP's CCMS-based monitors.

- For more information about the SPI for SAP's transports, see The SPI for SAP Transports on page 32; for more information about the SPI for SAP's CCMS monitors, see *SPI for SAP Online Help*.

> The SAPCAR command is available on any SAP Kernel CD and replaces the CAR command in versions of SAP from 4.6.

4 Continue importing the SAP transport files following the instructions described in the following sections; you can use either the command line or the SAP GUI.

To Import Transport Files using the Command Line, import the Smart Plug-in for SAP transport to your SAP central instance. For example, enter the following commands as SAP administrator (<*SID*>adm) on the appropriate HPOM managed node:

```
cd \usr\sap\trans\bin
tp addtobuffer <transport_file_name> <SID>
tp import <transport_file_name> <SID> client=<client_number>
```

In this example, <*SID*> is the SAP system ID and <*transport_file_name*> is the name of the transport file, which corresponds to the version of SAP running on the HPOM managed node, for example:

```
tp addtobuffer SPIK900132 CIA
```

The transport file name, `SPIK900132`, and the SAP System ID, CIA, are used here only to illustrate the correct syntax for the `tp` command. For more information about transport numbers and SAP versions, see the following file on the HPOM management server after installation of the software bits:

```
%OvShareDir%\Packages\SAPTransports\readme
```

If the `tp` command indicates that it cannot find files or required information, use the `pf=<path>\TP_DOMAIN_<SID>.PFL` option to define the location of the `tp`-parameters file. In the following example, we assume that you installed SAP in the `e:\` partition:

```
pf=e:\usr\sap\trans\bin\TP_DOMAIN_<SID>.PFL
```

If for any reason an error occurs, you can clean the buffer using the following command:

```
tp cleanbuffer <SID>
```

Repeat this procedure on each SAP system you want to manage with HPOM.

Alternatively, you can import transport files with the SAP GUI. To import transport files using the SAP GUI, follow these steps:

1 Log on to all SAP Systems where you want to apply the SPI for SAP transport file.

> Transports *must* be applied to *each* SAP System.

2 In the SAP GUI, enter the following transaction ID to display the SAP Transport Management System (SMTS) login page: **`STMS`**

3 In the SAP Transport Management System login page, click the **`Transport`** icon (or press the **`F5`** function key).

4 Select the SID of the SAP System into which you want to import the SPI for SAP transport.

5 In the file menu, click **Extras > Other requests > Add**.

6 In the Transport-Request-to-Import queue, enter the following:

<Transport_file_name>

A `readme` file lists the SPI for SAP transport file names; you can find the `readme` file on the HPOM management server in the following location:

```
%OvShareDir%\Packages\SAPTransports
```

7 Highlight the desired transport.

> If you do not select any transport, SAP assumes you want to select *all* transports in the list.

8 Select **Request > Import**. The Import Request dialog box opens.

9 Select the **Check [✓]** icon or use the **Enter** key to add transaction requests.

10 Enter the target client number (000 is the default client number).

> You must import the SPI for SAP user role into the client where you created the SAP user "ITOUSER". For more information, see Setting Up an SAP User for HPOM on page 35. The default client for the SPI for SAP user-role transport is 099.

11 Check items in the Option tab that are appropriate for your system.

12 Click the **Check [✓]** icon or press **Enter**.

Setting Up an SAP User for HPOM

You need to provide HPOM with an SAP log on so that SPI for SAP tools, monitors, or actions have access to SAP. For each SID where you want to allow automated logon of HPOM users, perform the following actions:

1 Log on to SAP.

2 Call the transaction: **`SU01`**.

3 Create a new user named ITOUSER, using the parameters specified in the following table.

User roles: SAP User Roles need to be defined from SAP version 4.6C onwards. Use transaction `SU01`, as shown in Figure 4. Note that ITOUSER requires authorizations to be able to execute SPI for SAP ABAP functions. Select the following user roles:

- `/HPOV/SAPSPI_MONITORING_TCODE`

  Enables the use of certain SAP transactions and does not place any restrictions on the SPI for SAP functionality.

- `/HPOV/SAPSPI_MONITORING_NO_TCD`

  The role does not contain any SAP transaction authorizations (NO_TCD) and restricts the SPI for SAP functionality by preventing the SAP user from starting SPI for SAP applications or operator-initiated actions. The SAP user can, however, still logon to SAP.

- `/HPOV/SAPSPI_SECURITY_MON`

  If you plan to use the `r3monsec` monitor to monitor SAP System security, you must also assign to ITOUSER (or the user under which `r3monsec` runs) the authorizations defined in /HPOV/SAPSPI_SECURITY_MON, the SPI for SAP security user role.

User type: **`DIALOG`** - If you do *not* set the user type to DIALOG and do *not* define a corresponding password, the SAP GUI will *not* work and many of the operator-initiated actions and applications within HPOM will *not* be available. However, performance and event monitoring *do* work with the CPIC/SYSTEM user.

Initial password: Any SAP-admissible value except **`HPSAP_30`** - The password **`HPSAP_30`** is associated with the use of the `=default` value in the SPI for SAP's central configuration file `r3itosap.cfg`. If you intend to use the `=default` value, you cannot enter **`HPSAP_30`** now as you will need it when you first log in to SAP (as ITOUSER) after completing setup, and SAP prompts you to set ITOUSER's password.

Since user-role transports are client-dependent, you must create the SAP user `ITOUSER` in the same SAP client as the import client of the SPI for SAP user-role transport. If you do not, it is not possible to assign user role `/HPOV/SAPSPI_MONITORING*` to the newly created `ITOUSER`.

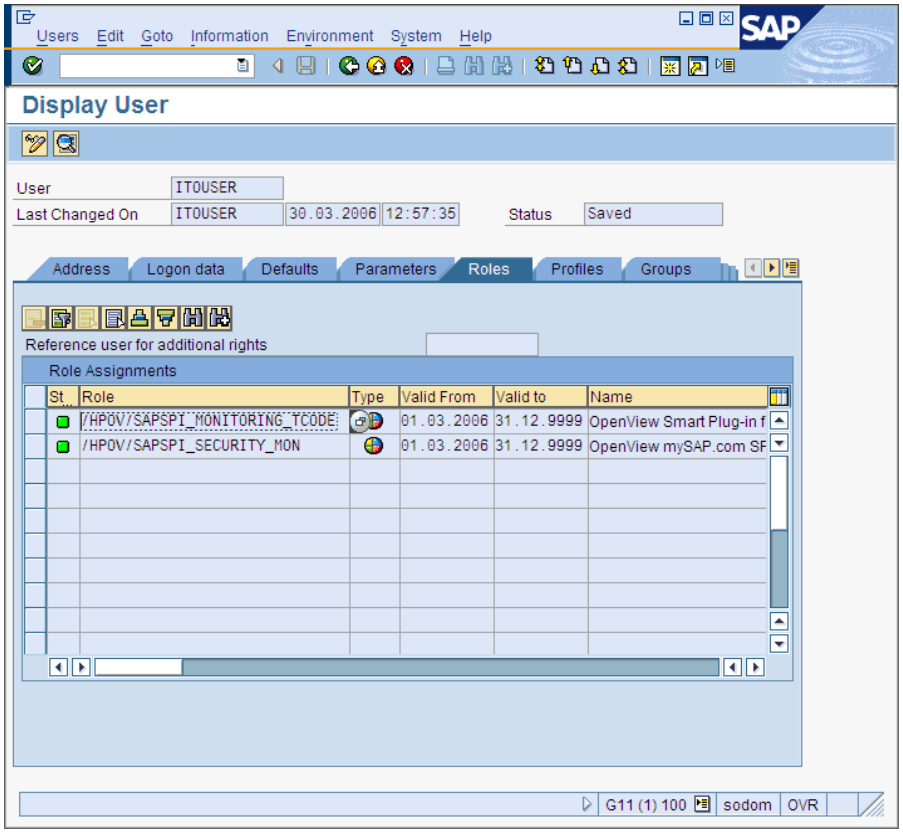
4 Activate the profile and assign it to the SAP user `ITOUSER`, which you have already created.

While assigning SPI for SAP roles, it is important to verify that all required authorization objects are active and the user comparison completes successfully. SAP uses the color green to indicate that user authorization objects are active or that user comparisons complete successfully; the color red indicates that you need to activate user authorization objects or complete a user comparison.

5 Log on to SAP as the user `ITOUSER`.

6 SAP prompts you to change the password, which you initially defined for `ITOUSER`. If you do not need to define your own SAP user logins and intend to make use of the `=default` value in the SPI for SAP's central monitor-configuration file `r3itosap.cfg`, enter the following new password: **`HPSAP_30`**.

Figure 4 SAP 4.6C User Roles for ITOUSER



Setting Up Configuration Values for the SPI for SAP Monitors

To conclude the SAP-specific tasks, you have to set up initial configuration values in monitor-specific configuration files for each of the Smart Plug-in for SAP monitors *before* you deploy the configuration files to the managed nodes. The Smart Plug-in for SAP includes the monitors listed in Table 5 below.

Table 5 Smart Plug-in for SAP Monitors

Monitor Name	Description
r3monaco	Alert collector for TemSe calls
r3monale	ALE monitor
r3monal	CCMS monitor
r3monchg	System change monitor
r3moncts	Correction and Transport system monitor
r3mondev	Trace monitor of the SAP logfile: *<SID>*/*<INSTANCE>*/work/dev*
r3mondmp	ABAP/4 Dump monitor
r3mondisp	ABAP/4 Dispatcher monitor
r3monjob	Job monitor
r3monlck	Lock check monitor
r3monoms [a]	Operation mode switch monitor
r3monpro	Operating system process monitor
r3monrfc	SAP RFC destination monitor
r3monsec	Security monitor
r3monspl	Spool monitor
r3montra	Transport monitor
r3monupd	Update monitor
r3monusr	User monitor
r3monwpa	Work-process availability monitor
r3status	SAP status monitor

a. Due to changes in SAP, the operation-mode monitor r3monoms is not supported with SAP Netweaver 04/WebAS 07.

The Smart Plug-in for SAP also includes two sets of configuration and distribution tools as follows:

Global tools which apply to *all* managed nodes

Local tools which apply only to a *specified* managed node

For more information about (and instructions for) configuring monitors see the *SPI for SAP Online Help*.

Modifying Configuration-File Policies

In this step, you use the configuration-file policy editor and the default policy templates to create your own global configuration-file policies for each of the SPI for SAP monitors, which run on the SAP servers you want to monitor with the SPI for SAP. HPOM keeps track of the changes you make by saving the modified policy with an numeric suffix that increments with each new version of the policy; if the default policy version number is 11.0, the new version you save will be 11.1.

The SPI for SAP provides a default configuration-file policy for each configuration file. Although you can use the default configuration for initial deployment, you will need to modify the configuration to suit the needs of your SAP environment.

To modify a configuration-file policy for the SPI for SAP monitors, follow these steps:

1. In the HPOM console, browse to the following directory:

   Policy Management > Policy Group > Agent policies grouped by type

2. In the details pane, double click the configuration-file policy corresponding to the SPI for SAP monitor that you want to modify, for example: `r3mondmp`. The configuration-file policy for `r3mondmp`, the ABAP Dump monitor, appears in the configuration-file policy editor.

   The filename `r3mondmp.cfg` is used here only as an example. If you want to modify the default configuration files, edit the global configuration file which corresponds to each of the Smart Plug-in for SAP monitors you want to deploy to (and run on) the SAP managed nodes.

3. Scroll down through the configuration-file policy and make the appropriate modifications for your environment.

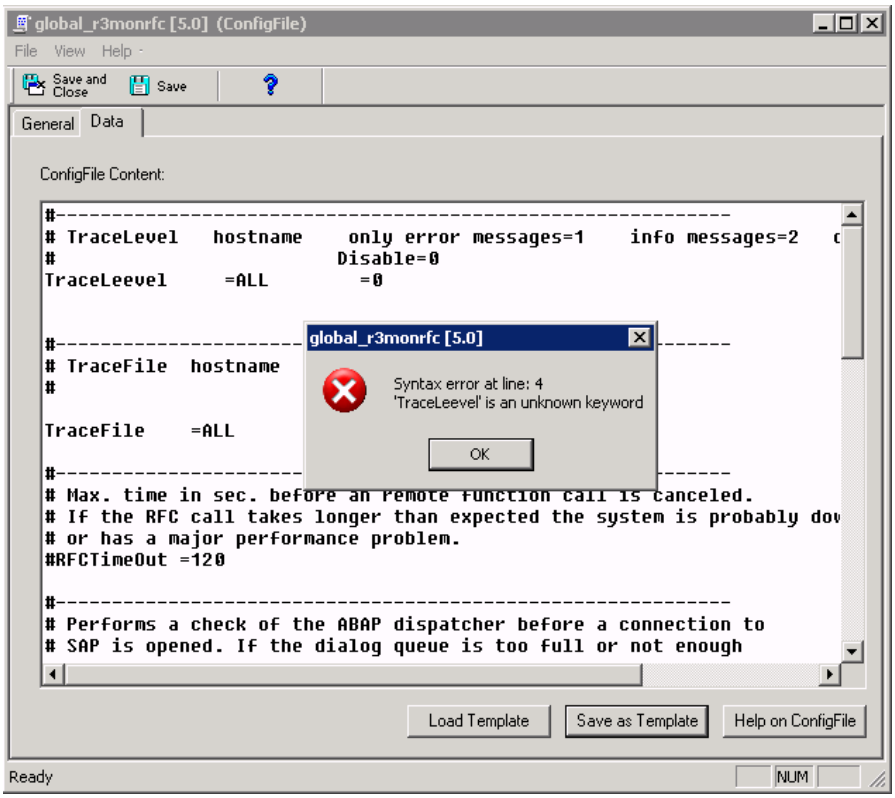
4. Click **Save** to confirm the changes to your configuration-file policy and exit the editor. The new version of the configuration-file policy for the SPI for SAP monitor appears in the list of policies in the details pane.

   If you use HPOM tools to edit a configuration file which uses the `r3moncol` structure, the SPI for SAP automatically validates the contents of the file when you attempt to save it and will not allow you to save a file that contains a configuration error. For more information about the validation tool and the error messages it generates, see the *SPI for SAP Online Help*.

   If the SPI for SAP finds an error in the modified configuration file, it displays a message indicating what the problem is. For example, if you misspell the keyword TraceLevel when attempting to set the trace level (info, all, debug) in a monitor configuration file, you see the following (or similar) message when trying to save the modified file: "`TraceLeevel is an unknown keyword`", as illustrated in Figure 5 on page 40. You will have to locate and fix the problem before trying to save the file again. When the SPI for SAP is sure that the modified file is valid, it saves the file and increments the file version number, too.

5. Deploy the newly created configuration-file policies to the SAP managed nodes as described in Deploying SPI for SAP Policies to Managed Nodes on page 45.

Figure 5 Configuration-file parsing error.



4 Configuration: HPOM Administration Tasks

In this phase of the SPI for SAP configuration, you use the HPOM console to integrate the SPI for SAP with HPOM and bring all the SAP servers that you want to monitor under HPOM management. In this section, you complete the following tasks:

1 Specifying SAP Systems to Monitor on page 41.

2 Configuring the SPI for SAP Monitors on page 44.

3 Deploying SPI for SAP Policies to Managed Nodes on page 45.

The tasks in this section assume that the SAP systems you want to monitor with the SPI for SAP are *already* HPOM managed nodes. If this is not the case, see the HPOM on-line help for instructions that explain how to add managed nodes to HPOM.

Specifying SAP Systems to Monitor

This section describes how to use the configuration-file policy editor to define which SAP Systems you want to monitor with the SPI for SAP. You must use the `r3itosap.cfg` configuration file to define the SAP Systems to monitor with the SPI for SAP.

To specify the SAP systems to monitor, follow these steps:

1 In the HPOM console, browse to the following directory:

Policy management > Policy groups > SPI for SAP

You must set up SAP users for each SAP client so that the users have permission to display and maintain CCMS. The list of SAP clients you made in Before You Begin on page 19 includes the information you need for each configuration line. For more information about how to set up SAP users for HPOM, see Setting Up an SAP User for HPOM on page 35.

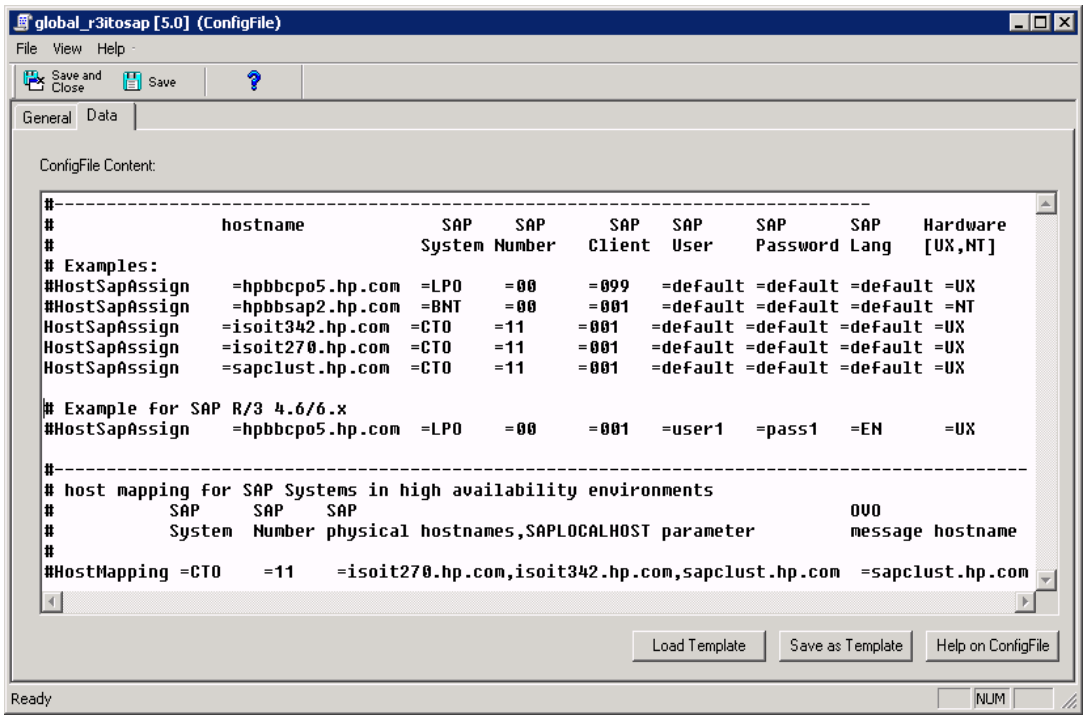
2 In the HPOM console, locate and double-click the `global_r3itosap` policy template. The configuration-file policy editor displays the selected file as illustrated in Figure 6 on page 42.

3 Using the format of the examples in the `r3itosap.cfg` configuration file, add a `HostSapAssign` entry for each SAP instance, which you want to monitor with the SPI for SAP. When adding entries to `r3itosap.cfg`, bear in mind the following important points:

- The language specified in each `HostSapAssign` entry determines the language the SPI for SAP monitors use when logging in to SAP and must be one of the languages currently supported by the SPI for SAP transports, for example: =EN (English) or =JA (Japanese). The language you specify here does not affect or determine the language used when starting the SAP GUI.

- `r3status`, the tool the SPI for SAP uses to monitor the status of SAP Systems, does not attempt to verify or validate the existence of the SAP Systems specified in `r3itosap.cfg`. If `r3status` cannot find a named SID, for example: because of a spelling mistake, it reports the SID as unavailable.
- In the central, SPI for SAP, monitor-configuration file `r3itosap.cfg`, the string `=default` is associated with the default ITOUSER password “HPSAP_30”. If you intend to make use of your own SAP user logins, you need to replace `=default` with the appropriate user password. As long as you use the HPOM policy editor to edit the `r3itosap.cfg` file, the password is encrypted automatically when you save the file. By default, the SPI for SAP resolves the name of the managed nodes that generate messages as the host name defined in the SAP variable, SAPLOCALHOST.

Figure 6 Editing the r3itosap.cfg File



4 If the hosts you add to the `r3itosap.cfg` file are configured in a high-availability cluster, you need to add an extra entry to the host-mapping section of the `r3itosap.cfg` file: the information in the host-mapping section maps the names of the physical nodes in the high-availability cluster to the name of the node defined in the SAP variable, SAPLOCALHOST and, in addition, to the host name you want to associate with any messages from the cluster when they appear in the HPOM console or the Service Map.

The host names specified in the `r3itosap.cfg` file *must* be known to HPOM and be resolvable. Whether you choose to use long or short host names depends on how you have set up name resolution in your network.

The cluster host-names appear in the `HostMapping` entry in the form of a comma-separated list. The last item in the `HostMapping` entry defines the name of the host with which you want to associate any messages that are generated by nodes in the high-availability cluster. For example;

```
=ClusterHostA,ClusterHostB,SAPLOCALHOST =<HPOM_Msg_Node>
```

Short host names are not allowed in the host-mapping section of the `r3itosap.cfg` file. Make sure you use fully qualified host names for all the host names you specify in the host-mapping section of the `r3itosap.cfg` file.

The example below shows the entry you would add to the host-mapping section of the `r3itosap.cfg` file if you want to use the SPI for SAP to monitor a high-availability cluster in which the names of the two physical nodes are `True` and `False`, the SAP variable `SAPLOCALHOST` is defined as `maybe`, and the name of the host with which to associate messages from the cluster is `example`.

Example: Mapping SAP hosts in a cluster

```
# cluster host mapping
HostMapping =EP7 =78 =true.com,false.com,maybe.com =example.com
```

In a high-availability cluster, the name of the host with which you associate HPOM messages (<*HPOM_Msg_Node*> in the example above) is usually (but does not *have* to be) the same as the host defined in `SAPLOCALHOST`. Whether `SAPLOCALHOST` is (or is not) the same as <*HPOM_Msg_Node*> has an impact on what you need to include in the host-mapping section, as follows:

- If `SAPLOCALHOST` and <*HPOM_Msg_Node*> are the same host:

  No entry for `SAPLOCALHOST` is required in the list of physical cluster nodes, for example:

  `=ClusterHostA,ClusterHostB =`<*HPOM_Msg_Node*>

- If `SAPLOCALHOST` and <*HPOM_Msg_Node*> are *not* the same host:

  You need to add an entry for `SAPLOCALHOST` at the end of the list of physical cluster nodes, for example;

  `=ClusterHostA,ClusterHostB,SAPLOCALHOST =`<*HPOM_Msg_Node*>

All physical nodes in the high-availability cluster must appear in the HPOM console. You also need to add to the HPOM console as node type `Other` (Message only) the host which you define in <*HPOM_Msg_Node*> in the example above. For more information about setting up the SPI for SAP in a high-availability environment, see Configuring the SPI for SAP in a Cluster Environment on page 56.

To ensure that automatic or operator-initiated actions are always able to open an SAP GUI on the node where the SAP instance is running in the high-availability cluster, you need to add a `HostSapAssign` entry to the `r3itosap.cfg` file, which specifies the cluster-host name defined in the variable <*HPOM_Msg_Node*>.

See also Host Mapping on Cluster Nodes on page 57 for information about how to avoid problems with HP Operations agent settings for host names and IP addresses overriding settings defined in the host-mapping section of the SPI for SAP's central configuration file, `r3itosap.cfg`, which could cause the wrong host name to appear in messages originating from the cluster.

5. Save your changes and exit the policy editor. When saving the policy, we recommend you use the configuration-file policy-type naming conventions, for example: `global_r3itosap`.

6. Deploy the `r3itosap.cfg` policy to the managed nodes you want to monitor with the SPI for SAP. Right click the `r3itosap.cfg` policy you modified and use the following menu option:

All Tasks > Deploy on...

The information in the `r3itosap.cfg` policy is used by the service auto-discovery policy, `r3sdisc`, to generate a service view of your SAP landscape. If you intend to use the service-views feature, make sure that you deploy the `r3itosap.cfg` policy to the managed node(s) for which you want to generate service views before you run the service auto-discovery. For more information about running service discovery and setting up service views, see the *SPI for SAP Online Help*.

Configuring the SPI for SAP Monitors

The SPI for SAP monitors that you deploy to the SAP servers that are managed by HPOM require information about what to monitor and how. The monitors obtain this information from default configuration files, which are installed by the SPI for SAP. Each of the SPI for SAP monitors has its *own* default configuration file.

In this step, you use the configuration-file policy editor to edit global configuration files (from the default files) for *each* of the SPI for SAP monitors which runs on the SAP servers. After you have edited the configuration files, you deploy them to the SAP servers using the standard HPOM policy-deployment mechanism.

To modify an existing configuration-file policy for the SPI for SAP monitors, follow these steps:

1 In the HPOM console tree, browse to the following directory:

Policy Management > Policy Groups > SPI for SAP

2 In the details pane, locate and double-click the configuration file associated with the monitor you want to configure, for example; the `global_r3mondmp` file. The configuration-file policy editor displays the selected file as illustrated in Figure 6 on page 42.

The `r3itosap.cfg` file shown in Figure 6 on page 42 is not associated with any one, particular monitor; it is the SPI for SAP's central configuration file, which all the other monitors use to login to the SAP Systems you want to manage. This is the *only global* configuration file that *must* be edited.

3 Although all other *global* configuration files can be used in their default state, they generate a large number of messages, some of which you might not at first need. If you want to modify a configuration file, for example to ensure you only receive the messages you *do* need, scroll down to the end of the Configuration File content box, where you will find the alert definitions and can make any changes as required. For more information about the contents and syntax of the SPI for SAP monitors, see the *SPI for SAP Online Help*.

4 Save your policy and exit the configuration-file policy editor. The modified configuration-file policy for the SPI for SAP `r3mondmp` monitor appears in the list of policies in the details pane.

If you use HPOM tools to edit a configuration file which uses the `r3moncol` structure, the SPI for SAP automatically validates the contents of the file when you attempt to save it and will not allow you to save a file that contains a configuration error. For more information about the validation tool and the error messages it generates, see the *SPI for SAP Online Help*.

5 Deploy the modified configuration-file policies to the SAP managed nodes as described in Deploying SPI for SAP Policies to Managed Nodes.

Deploying SPI for SAP Policies to Managed Nodes

The SPI for SAP policies are organized into default groups, all of which are part of the policy group SPI for SAP. The SPI for SAP policy groups are:

- SAP ITS 6.20
- SAP R3 4.6/6.xCI
- SAP R3 4.6/6.x/7.0AS/7.1kernel
- SAP R3 7.0CI/7.1kernel
- SAP NW Java Monitoring

You can assign only *one* policy group to a managed node. Which policy group you assign is determined by the software and software version running on the managed node and whether the node is a central instance or an application server.

Remember to deploy an alert monitor's configuration-file policy before deploying the corresponding alert monitor itself. The alert monitors read these configuration files on startup. For example, you need to deploy the `r3moncts` configuration-file policy before you deploy the corresponding alert monitor, `r3moncts`. For more information, see Configuring the SPI for SAP Monitors on page 44.

The SPI for SAP default policy groups contain all the SAP monitors supplied with the Smart Plug-in for SAP. Deploying a policy group automatically activates the monitors, which the group contains. In addition, since all SPI for SAP policies belong to the Category "SPI for SAP Instrumentation", when you deploy a SPI for SAP policy or policy group, the policy-deployment operation triggers the deployment of the required SPI for SAP instrumentation. The SPI for SAP instrumentation package contains the actions, commands, and monitors, which the SPI for SAP requires to ensure features and functionality work as expected.

To Avoid Receiving Unnecessary or Unwanted Messages, follow these steps:

1 Make copies of the default policy groups and modify the *copies* to create your own policy groups containing only those monitors and policies you need.

2 Tune the policies and monitors to suit the requirements of your environment before deploying them to the nodes you want to manage with the Smart Plug-in for SAP. This will help prevent additional unwanted messages.

Create Policy Groups

As HPOM administrator, make your own policy group as illustrated in Figure 7 on page 46. You should then remove those policies and monitors you *do not* need from the new policy group, as follows:

1 Expand the **Policy Groups** item and select and expand SPI for SAP to display all the default policy groups for the Smart Plug-in for SAP.

2 Create a new policy group by selecting and right-clicking SPI for SAP and selecting the following menu:

New > Policy Group

3 Enter a name for the new policy group in the fields provided, and then click **OK**.

4 In the left pane, select the existing policy group from which you want to copy policies and, in the details pane, drag the policies you want to place in the new policy group over and drop them on to the policy group you have just created.

Deploy Policy Groups

Deploy the new policy group to the SAP nodes by following the instructions below. Which policies and policy groups you deploy depends on which SAP version is installed on the managed nodes and whether the nodes host a central instance or an application server.

1 In the console tree, select and right click the new policy group or groups you have created (containing the monitors you need) and use the following menu option:

All Tasks > Deploy on...

2 Use the Deploy Policies on... window to select the managed nodes to which you want to deploy the new policy group

3 Click **OK** to finish deploying policies.

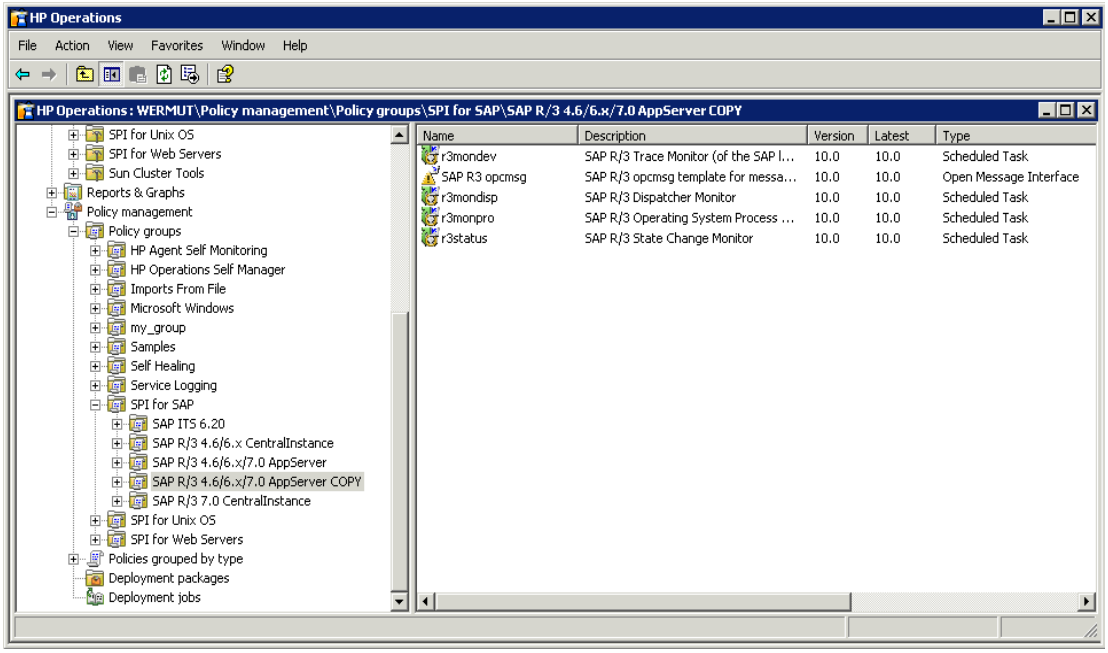
➤ You can use this opportunity to deploy any other policies not present in the SAP -specific policy groups.

4 To check that the policies deployed successfully, right click a managed node and selecting the following menu option from the drop-down menu that appears:

View > Policy Inventory

➤ Some of the monitors may require SAP configuration. See Configuration: HPOM Administration Tasks on page 41 for additional information on SAP-Specific tasks.

Figure 7 Removing Policies from a Policy Group



You can configure the HP Operations agent to use a non-privileged user on Windows nodes. For more information, refer to Using a Non-Privileged Windows User with the SPI for SAP on page 111.

Additional Configurations for OVO for Windows 7.50

If you use HPOM for Windows 8.10, skip this section.

If you use the SPI for SAP with OVO for Windows 7.50, you must perform the following tasks:

- Install **Microsoft Visual C++ 2005 SP1 Redistributable Package (x86)** on the management server. You can download this component from **http://www.microsoft.com**.
- For all Windows nodes, you must set the path for `opcmsg.exe` file to an environment variable. To create the variable and set it to the right path on a Windows managed node, follow these steps:
  a. On the Windows managed node, search the file `opcmsg.exe`.
  b. Create a new system variable `OvBinDir`.
  c. Set `OvBinDir` to the path of the `opcmsg.exe` file.

5 The SPI for SAP in a High-availability Environment

The information in this section helps you to understand the process of installing and configuring the SPI for SAP in a high-availability environment such as MC/ServiceGuard or Microsoft cluster. Although the information provided in this section concentrates on example configurations, the basic concepts are the same for any high-availability environment as far as the SPI for SAP is concerned.

The information in this section explains how to set up the SPI for SAP to manage SAP on *managed nodes*, which are configured in a high-availability environment. If you want to set up the HPOM management server in a high-availability environment, see the HPOM documentation.

This section covers the following topics:

Cluster Configurations

The most typical implementations of high-availability software in SAP landscapes involve configuring the central-instance server and the database server in a cluster and installing either one *combined* high-availability package on the central-instance server or, alternatively, two *separate* high-availability packages on the central-instance server and the database server, respectively. Typically, application servers are not configured as part of the high-availability cluster. The two configurations which we describe in more detail in this section are as follows:

- the single-package configuration

  In the single-package configuration, the SAP database and central instance are located on the *same* server and included in the same high-availability package. The combined package can be switched temporarily to the adoptive node in the event of problems.

- the twin-package configuration

  In the twin-package configuration, the SAP database and central instance are located on *different* servers. Either package can be switched temporarily to the alternative node in the event of a problem on the host or adoptive node.

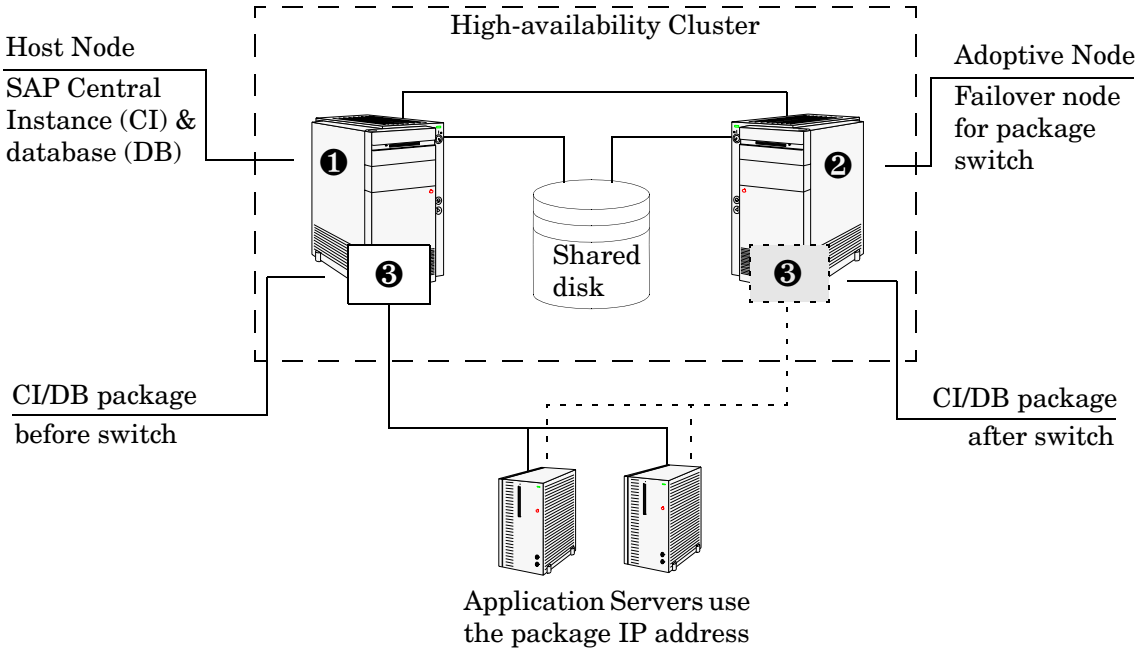
The Single-Package Configuration

In the single package concept, the server where the database and central instance normally run is included in a cluster with another server, which will act as the adoptive node in the event of a package switch. The adoptive node can perform any one of the following roles:

- SAP application server
- SAP test or development system
- Stand-by

In Figure 8 on page 51, the application servers, which are not included in the cluster, reference the cluster package (❸) by means of its re-locatable IP address, not by reference to the fixed IP address of the node on which the cluster package is running. If a problem occurs, the central instance and database are taken down on the *host* node (cluster node ❶), and then brought up again on the *adoptive* node (cluster node ❷). At the same time, the shared disks are deactivated on the host node and reactivated on the adoptive node.

Figure 8 The Single-Package Configuration

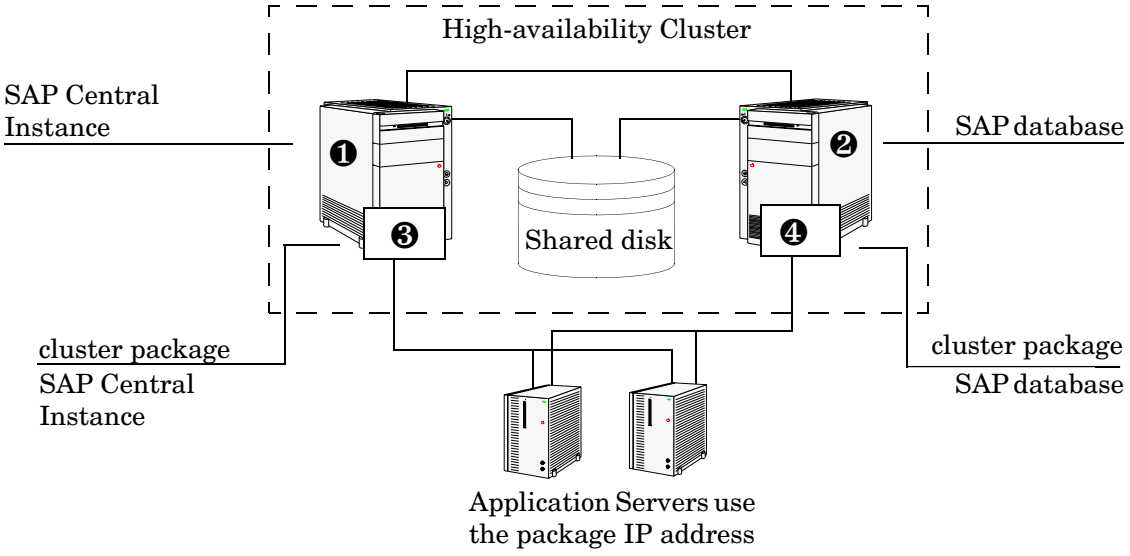


After the cluster software completes these actions, the application servers can reconnect to the central instance and database (❸ in Figure 8 on page 51) using the same relocatable IP address, which, as the name suggests, moves with the package.

The Twin-Package Configuration

In the twin-package configuration, the central instance and the database are installed on different servers, which for the sake of convenience we can call cluster nodes ❶ and ❷ respectively, as illustrated in Figure 9 on page 51. The central-instance server and the database server form a high-availability cluster, where each server can act as the adoptive node for the other in the event of a package switch.

Figure 9 The Twin-Package Configuration before a Package Switch

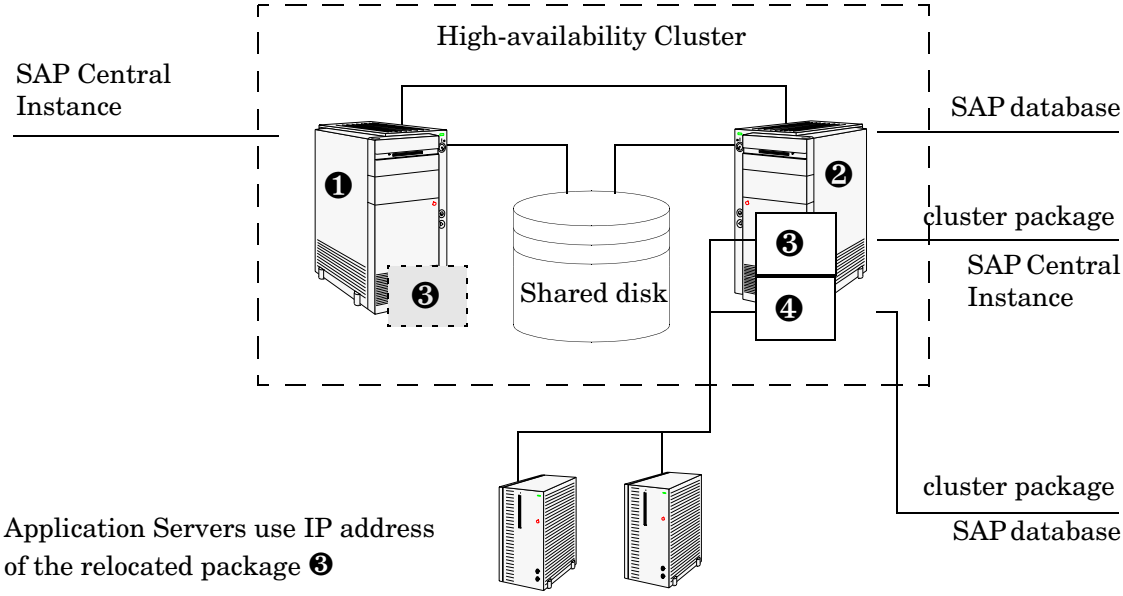


The application servers are not included in the cluster and, as illustrated in Figure 9 on page 51, reference each package by means of each package's own relocatable IP address—not the fixed IP addresses of cluster-nodes ❶ and ❷.

If a problem is identified on the central-instance server, the central instance (❸) is taken down on cluster node (❶), and then brought up again on the cluster node (❷). At the same time, the central instance shared disk is deactivated on the host node and reactivated on the adoptive node.

Figure 10 on page 52 shows the situation *after* the switch of the SAP central- instance package (❸). As soon as the central-instance package is up and running on the cluster node (❷), the application servers can reconnect to the central instance using the same IP address as before the failover, namely; the central-instance package's relocatable IP address, which moves along with the package at the time the failover occurs.

Figure 10 The Twin-Package Configuration after a Package Switch



Before You Begin

The information in this section is designed to help you install and configure the SPI for SAP in a high-availability environment: it is not intended to explain either how to set up the high-availability software or HPOM. Before you start the process of installing the SPI for SAP in a high-availability environment, please read through and consider the information included in the following sections:

- Software Requirements on page 53
- Configuration Requirements on page 53
- Service Reports and Performance Graphs on page 53
- Service Views on page 53

Software Requirements

The cluster software must already be correctly installed and configured in your SAP landscape, and the cluster should function correctly. For example, you have to decide whether to configure one package for the central instance and the Database Server or set up separate packages for each part. These decisions become important later in the configuration process.

Configuration Requirements

The SAP servers in the high-availability cluster must already be configured as HPOM managed nodes with the appropriate HPOM agent software and functionality installed and running.

All physical nodes in the high-availability cluster must be added to the HPOM console. You also need to add to the HPOM console as node type "Other" (Message only) the host name which you define as the HPOM message host name in the host-mapping section of the `r3itosap.cfg` file. For more information, see Specifying SAP Systems to Monitor on page 41.

Service Reports and Performance Graphs

If you want to generate SPI for SAP service reports and performance graphs for all the nodes in the high-availability cluster, make sure that the following conditions are true:

- The appropriate performance-agent functionality (HP Software Embedded Performance Component or the HP Performance Agent) must be installed, configured, and available on all the nodes in the cluster
- The appropriate SPI for SAP performance sub-agent functionality must be installed, configured, and available on all the physical nodes in the high-availability cluster. For more information about installing and configuring the SPI for SAP Performance sub-agent, see the *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help*.
- Both HP Performance Manager and HP Reporter must be installed, correctly configured, and available on a machine that can see the nodes in the high-availability cluster. Note that these services are not usually (and do not need to be) part of the cluster itself.

Service Views

You can use tools provided by the SPI for SAP to generate Service Views automatically. If you want to make use of Service Views with the SPI for SAP, you need to set it up to see the services you want the SPI for SAP monitor in the SAP environment.

The service-discovery process uses information stored in the `r3itosap.cfg` file to determine which SAP Systems are to be monitored. You need to ensure that you have entered in the Host Mapping section of the `r3itosap.cfg` file the names of the nodes in the high-availability cluster. For more information, see Configuring the SPI for SAP in a Cluster Environment on page 56.

Installing the SPI for SAP in a Cluster Environment

To use the SPI for SAP in a high-availability environment, you have to install the HPOM agent, the SPI for SAP instrumentation, and policies on *all* nodes in the cluster where the SAP package can run—this means, both the host node and adoptive node(s).

It is always a good idea to make sure that the daily backup of the SAP environment is correctly set up and that there is a valid backup available for restore *before* you start the installation of the SPI for SAP actions, commands, monitors, and policies.

Before you deploy the SPI for SAP to the cluster nodes, you need to deploy the appropriate SPI for SAP policies. For example, you have to deploy a central-instance policy group such as `SAP R3 4.6/6.xCI` to all managed nodes, where a package that includes a SAP R/3 4.6/6.x central instance runs or the policy group `SAP R3 7.0CI/7.1kernel` to all managed nodes where a package that includes a SAP R/3 7.0 central instance runs.

If no SAP instance is running on the node, the SPI for SAP monitors will work immediately after installation, but will not generate any messages.

However, the `r3status` monitor sends an SAP System down message after you run the monitor for the first time. The HostMapping entry in the `r3itosap.cfg` file maps the physical hostname of the system to the virtual hostname of the central instance. The message browser indicates that this message originates from the virtual hostname. If the r3status monitor on the other node (where SAP is running) also runs for the first time, the monitor will send an SAP System up message, which again appears to be arriving from the virtual hostname. In effect, there will be two contradictory messages from the virtual host at the same time. The order of these messages cannot be predicted. This event occurs only for the first `r3status` run because initially the `r3status.his` files are not available on each node. The `r3status` monitor sends messages only if the current status of the node is different from the status at the last run, which is maintained in the `r3status.his` file.

Note that SPI for SAP tools which open a SAP dialog will return an error if you try to execute them on a stand-by node, where no SAP package is running.

If an application-server instance is already running on the managed cluster-node, the monitors will run and generate messages relating to the Application-server instance. You should configure the monitors that normally only run on a central-instance server in such a way that, when they start after a package switch, they do not generate messages relating to problems with the Application-server instance, too, since this could lead to the generation of duplicate or misleading messages. For more information, see Special-Case Scenarios on page 60.

To Install the SPI for SAP Monitors

You install the SPI for SAP monitors in a high-availability environment in the same way as in a normal environment, that is; using the standard HPOM policy-deployment mechanisms. The only difference is that you have to perform the operation once for each physical node in the cluster, as follows:

1 **Pre-requisites:**

Before you start the installation of the SPI for SAP monitors described in this section, make sure that you have completed *all* the steps described in the section Configuration: SAP-Specific Tasks on page 31, which walks you through the process of setting up the appropriate accounts, logins, paths, and permissions required to ensure that SAP and HPOM can communicate efficiently.

If you do not ensure that the appropriate user accounts and permissions have been set up in both SAP and HPOM *before* you start the installation and configuration of the SPI for SAP described in this section, the SPI for SAP action, commands, and monitors will not function correctly. This could lead to the generation of incorrect or duplicate messages and the collection of misleading performance data.

2 Set up the `r3itosap.cfg` file to reflect the high-availability cluster.

You need to enter information about the configuration of the high-availability cluster in the Host-mapping section of the `r3itosap.cfg` file: the `r3itosap.cfg` file is the file you use to specify the SAP Systems, which you want to monitor with the SPI for SAP. For more information about the `r3itosap.cfg` file, see Specifying SAP Systems to Monitor on page 41.

3 Check the monitor configuration:

Configure the SPI for SAP monitors, which you want to run on the cluster nodes. The configuration must be identical for all the nodes in the high-availability cluster in order to avoid the generation of confusing messages and potentially misleading performance data after a package switch. For more information, see Setting Up Configuration Values for the SPI for SAP Monitors on page 38.

The only exception to this rule is when the adoptive node is already configured as an application server. For more information, see Special-Case Scenarios on page 60.

4 Deploy the SPI for SAP components:

Use the HPOM console to deploy the appropriate SPI for SAP components to *each* physical node in the cluster. The policies you deploy must match the version of SAP, which is running on the managed node. In addition, you must make sure that you deploy exactly the same components (instrumentation and policies) to *all* the nodes in the cluster. In this way, you ensure that the SPI for SAP continues to monitor the same SAP instances in the same way, regardless of where the SAP instance is running.

For more information about deploying SPI for SAP components to HPOM managed nodes, see Configuration: HPOM Administration Tasks on page 41. You will need to complete all the instructions for *each* node in the high-availability cluster.

5 Special Considerations:

On each node in the high-availability cluster, ensure that each monitor can see its history file, `r3<monitor_name>.his`, both before and after a failover package switch by setting the history path in each monitor's configuration file, `r3<monitor_name>.cfg`. For more information about the location of SPI for SAP monitor history files and the options you need to set and change, see Monitor History Files in a High-availability Cluster on page 58.

Configuring the SPI for SAP in a Cluster Environment

In a high-availability cluster where the host and adoptive nodes have identical roles, you approach the process of configuring the SPI for SAP in the same way as if you had to configure the SPI for SAP twice, with the following caveats:

1 **SAP logins and user accounts for the SPI for SAP**

Use the HostSapAssign section in the `r3itosap.cfg` file to set up the SAP logins, accounts etc. required by the SPI for SAPon *all* physical nodes in the cluster. For more information, see Defining SAP Logins in a High-availability Environment on page 60.

2 **Tell the SPI for SAP about the high-availability cluster nodes, which you want to monitor.**

You need to enter information about the configuration of the high-availability cluster in the Host-mapping section of the `r3itosap.cfg` file: the `r3itosap.cfg` file is the file you use to specify the SAP Systems, which you want to monitor with the SPI for SAP. For example, you need to specify the names of the *physical* hosts in the high-availability cluster and the name of the virtual or relocatable host with which you want to associate the messages originating from the cluster when the messages appear in the HPOM console. You might also need to specify in the list of physical nodes the name of the host defined in SAPLOCALHOST, but only if it is different from the host you want to associate with incoming messages.

If the HPOM agents are running on the physical nodes in the cluster, you must perform an additional, manual, configuration step to ensure that messages in the console display the correct node name. For more information, see Host Mapping on Cluster Nodes on page 57.

For more information about the `r3itosap.cfg` file, the entries you need to add to the host-mapping section, and the required syntax, see Specifying SAP Systems to Monitor on page 41.

3 **Configure the SPI for SAP Monitors**

You have to configure the SPI for SAP monitors in exactly the same way on *all* the physical nodes in the cluster, where the package is configured to run. For more information about configuring the SPI for SAP monitors, see Configuring the SPI for SAP Monitors on page 44.

A local configuration that is specific to one particular node in the cluster is not recommended as it can lead to a situation where different monitoring conditions are applied after a package is switched. Special-Case Scenarios on page 60 describes one or two exceptions to this rule.

4 **Deploy the SPI for SAP components**

In this task, you assign and distribute the appropriate SPI for SAP components to *all* the physical nodes in the high-availability cluster, where the package is configured to run. For more information about deploying the SPI for SAP components, see Deploying SPI for SAP Policies to Managed Nodes on page 45.

5 **History files for the SPI for SAP Monitors**

Make sure that the correct history file is available for each SPI for SAP monitor both before and after a failover package switch. For more information, see Monitor History Files in a High-availability Cluster on page 58.

6 **Special Requirements in your SAP environment**

Make sure that any special requirements in your SAP environment are known to the SPI for SAP monitors. For more information, see Special-Case Scenarios on page 60.

If the adoptive node in the cluster has the additional role of application server, make sure you read the instructions in Special-Case Scenarios on page 60 before you start the configuration process.

Host Mapping on Cluster Nodes

If the HPOM DCE agent discovers that multiple IP addresses are assigned to a single physical node in the high-availability cluster, the messages the agent sends show the host name associated with the IP address that is registered on the HPOM management server for the cluster node. This is the name of the node where the cluster package is running at the time the message is sent.

Although this behavior is a feature of the HPOM DCE agent in cluster environments, it overrides the SPI for SAP's host-mapping functionality, which can lead to a situation where the wrong name appears to be associated with messages displayed in the console. To ensure that the host-mapping feature works as intended and the correct host name is displayed in SPI for SAP messages coming from the high-availability cluster, you must disable the DCE agent feature on HPOM nodes, as follows:

1. Log on as a user with administrative privileges to each physical node in the high-availability cluster where an HPOM DCE agent is running and open a command shell.
2. Locate and open the `opcinfo` file for editing; you can find the `opcinfo` file in the following locations:
   - UNIX and Linux operating systems:

     `/opt/OV/bin/OpC/install/opcinfo`
   - Microsoft Windows operating systems:

     `%OvAgentDir%\bin\OpC\install\opcinfo`
3. For DCE agents managed by HPOM, use the keyword `OPC_SET_PROXY_FLAG_FOR_IP_ADDRESSES` in the `opcinfo` file on each physical node in the high-availability cluster to specify the IP address of the package (the virtual node) that you want to replace the cluster-node name as registered on the HPOM management server, when a message from one of the cluster nodes appears in the console. For example:

   ```
   OPC_SET_PROXY_FLAG_FOR_IP_ADDRESSES <Pkg_IP_Address>
   ```

   If your high-availability cluster has multiple packages running (for example, for SAP and for Oracle), use commas "," to separate multiple IP addresses in the list, as follows:

   ```
   OPC_SET_PROXY_FLAG_FOR_IP_ADDRESSES \
   <SAP_Pkg_IP_Address,Oracle_Pkg_IP_Address,...>.
   ```

   Spaces are *not* allowed in the list of IP addresses defined by OPC_SET_PROXY_FLAG_FOR_IP_ADDRESSES. Never include the IP address specified in OPC_IP_ADDRESS in the list of IP addresses.
4. Restart the agent with the new configuration using the following commands:

   ```
   opcagt -kill; opcagt -start
   ```

Setting the proxy flag in the opcinfo file shows how to set the proxy flag in the `opcinfo` file.

Setting the proxy flag in the opcinfo file

```
############################################################
# File:         opcinfo
# Description:  Installation Information of HPOM Managed Node
# Package:      HP Operations
############################################################
OPC_INSTALLED_VERSION A.07.29
PERF_INSTALLED_VERSION A.07.27
SVCDISC_INSTALLED_VERSION A.07.28
COMM_INSTALLED_VERSION 2.6.8.0
OPC_MGMT_SERVER pc057.test.test
OPC_INSTALLATION_TIME 01/15/06 16:58:51
OPC_SG FALSE
OPC_SET_PROXY_FLAG_FOR_IP_ADDRESSES 12.34.67.89
```

Monitor History Files in a High-availability Cluster

The SPI for SAP alert monitors `r3monal`, `r3mondev`, `r3monpro` and `r3status` have their own history file with the extension `.his`, for example; `r3monal.his`. Each time one of these SPI for SAP monitors starts, it relies on the contents of its history file `r3<monitor_name>.his` to determine the last events monitored and, as a result, the point at which the current monitor run should start. This mechanism is designed to avoid the problem of duplicate messages.

Note that `r3monal` writes new information to their respective history files if, and only if, the SAP System they are monitoring is available and the SPI for SAP monitors can connect. If the SAP System being monitored is *not* available, these monitors only update the time stamp to reflect the time of the latest monitor run. The monitors `r3mondev`, `r3monpro`, and `r3status`, on the other hand, write to their respective history file after each monitor run whether or not the SAP System they are monitoring is available or not.

The r3monal Monitor's History File r3monal.his

```
#-------------------------------------------------------------
# Keyword           SAP       SAP       SAP           Last Scan
#                   System    Number    Instance      Time
LastScannedSystem   =SP6      =33       =DVEBMGS33    =1073908785
-------------------------------------------------------------
```

The history files for the SPI for SAP monitors reside on the managed node where the monitors are running in a directory specified in each monitor's configuration file, `r3<monitor_name>.cfg`. By default, this directory is `%OVAGENTDIR%\conf\sapspi` for Microsoft Windows managed nodes and `/var/opt/OV/conf/sapspi` for all UNIX managed nodes except AIX, which uses the directory `/var/[lpp | opt]/OV/conf/sapspi` for [DCE | HTTPS] managed nodes.

If the SPI for SAP monitor cannot find or read its history file, it does not know when the last monitor run took place and, as a consequence, has no way of determining which alerts need reporting and which it can safely ignore.

If a SPI for SAP monitor cannot find or read its history file, the monitor assumes it is starting for the first time and, with the exception of the alert monitor `r3moncol` which reads the relevant tables in the SAP-alerts log database, parses the SAP trace and log files for any information gathered in the one day prior to the monitor start time. This could lead to the generation of a large number of duplicate messages.

If the cluster package switches to another node, then the SPI for SAP monitors can no longer access the most recent history files stored on the failed cluster node. This may lead to the generation of duplicate messages—messages that have already been sent to HPOM. For `r3monal`, the duplicate messages can be avoided by enabling `CCMSAcknowledgeMessage`. Refer to the *r3monal: CCMS Acknowledge Message* section of the *SPI for SAP Administrator's Reference* for more information on `CCMSAcknowledgeMessage`.

The `r3moncol` monitors keep their history information in the SAP tables. As a result, they do not have a `.his` history file. The `r3mondev` monitor reads the SAP trace and log files, and keeps the line number for each file in `r3mondev.his`. Therefore, in principle, `r3mondev` is prone to sending duplicate messages if the package is switched to the other node. If `r3mondev.his` is stored on the local disks and `r3mondev` on the new node, the SPI for SAP starts scanning from a point that was scanned on the previous node already.

However, after starting an SAP instance, new `dev_*` files will be created. Most of the `dev_*` files will be copied to `dev_*.old` files before creating new files. Therefore, `r3mondev` never monitors the `dev_*.old` files.

`r3mondev` detects (through the `Inode` column in `r3mondev.his`) if a file is created anew, and then starts scanning the new file from the beginning. Therefore, you can use the default configuration for `r3mondev` and it is not necessary to place `r3mondev.his` on a shared disk.

Special Considerations for the Alert Monitors

This section contains information which is intended to help you set up the SPI for SAP alert monitors in a high-availability environment. For more detailed information about the alert-monitor configuration files and keywords for `r3monal` in particular, see the *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help*. To set up the SPI for SAP alert monitors in a high-availability environment, you need to carry out the following steps:

1. Enable (=1) the `r3monal` monitor's auto-acknowledgement feature for CCMS alerts in SAP to avoid duplicate messages appearing in the HPOM console
2. Define a CCMS Monitor Set, for example; "HPOM", and a CCMS Monitor, for example; "SPI Monitoring", for the messages you want to forward from CCMS to the HPOM console. Note that the monitor-set feature can be only used with the XMI/XAL interface.

CCMS Monitor Sets on page 59 shows which parameters you should use in `r3monal.cfg` file to set up the `r3monal` monitor to use the XMI/XAL interface, which is available with SAP 4.6 and higher and *must* be enabled for the `r3monal` monitor in a cluster environment.

CCMS Monitor Sets

```
# Triggers auto-acknowledge of CCMS alerts
#-------------------------------------------------------------
# CCMSAcknowledgeMessage SAP     Ack. filtered    Enable=1
#                        System  Messages         Disable=0
CCMSAcknowledgeMessage   =SP6    =0               =1

# A Monitor Set defines the messages you want to forward to
# the HPOM console.
#-------------------------------------------------------------
# Monitor Set    SAP      SAP     Monitor Set  Monitor
#                System   Number
CCMSMonitorSet   =SP6     =33     =HPOM    =SPI-Monitoring
```

```
-------------------------------------------------------------
```

In addition, in order to prevent `r3monal` sending duplicate messages in the event of a package failover, you have to use the keyword `CCMSAcknowledgeMessage` to enable the `r3monal` monitor's auto-acknowledgement feature for CCMS alerts in SAP. This feature automatically acknowledges CCMS Alerts in SAP so that they are not repeatedly found by the SPI for SAP and used to generate messages.

Defining SAP Logins in a High-availability Environment

When setting up the SPI for SAP in a high-availability environment, remember to include references to SAP instances running on all *physical* nodes in the cluster in the `r3itosap` file, the file which the SPI for SAP uses to define all SAP logins. When you enter the information for the SAP logins in this file, it is essential that you use the names of the *physical* nodes in the high-availability cluster, since the SPI for SAP monitors reference the physical node (and not the relocatable IP address associated with the package) when they do a host-name lookup. For more information about specifying SAP logins in a cluster environment, see Specifying SAP Systems to Monitor on page 41.

The SPI for SAP uses the host-mapping section of the `r3itosap.cfg` file to define information about the configuration of the high-availability cluster, such as the names of the physical hosts and the name of the managed node to be associated with messages originating from the cluster. For more information, see Configuring the SPI for SAP in a Cluster Environment on page 56.

If the adoptive node in the high-availability cluster is already configured as an application server, then the logins for both the central instance (=CI) and the application server (=APP) can lead to problems with some of the SPI for SAP components, for example; `r3moncol` and `r3monpro`, both of which require special configuration as described in Special-Case Scenarios on page 60.

To ensure that automatic or operator-initiated actions are always able to open an SAP GUI on the virtual node in the high-availability cluster, add a `HostSapAssign` entry to the `r3itosap.cfg` file, which specifies the host name defined in the variable `SAPLOCALHOST`.

Special-Case Scenarios

For reasons of efficiency or cost, the adoptive node in a high-availability cluster might already be in use as an application server. If this is the case in your environment and regular high loads mean that you need the central instance to maintain the same performance level after the failover package switch as before, you have the option of shutting down the application server on the adoptive node after the failover so that the machine's performance is available solely to the central instance. You can then share the user load between any other available application servers.

If performance is not an issue in your environment, you can choose to keep the application server instance running on the adoptive node even after the failover package switch. However, if an instance of an SAP application server is running on the same machine as an SAP central instance, you will need to ensure that the SPI for SAP monitors are made aware of this fact and do not generate messages for both the central-instance and the Application-Server. The SPI for SAP monitors which are only designed to work with the central instance should be set up to exclude monitoring of the Application-Server instance. The `r3moncol` and `r3monpro` monitors, for example, require special attention.

Each SPI for SAP monitor has a configuration file that you use to define which SAP instances in your SAP landscape it should watch and, in addition, what information it should collect. For example, you use the `r3monpro.cfg` file to configure the `r3monpro` monitor to collect information about either the central-instance processes or the processes tied to the Application-Server instance. Note that the *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help* has much more information about the individual SPI for SAP monitors as well as additional hints about what aspects you can configure to suit the requirements of your environment.

The SAP instance number associated with the application server already running on the adoptive node cannot be the same as the SAP instance number associated with the SAP central instance, which starts on the adoptive node after the failover package switch.

Table 6 shows which monitors apply to which SAP instance types.

Table 6 SPI for SAP Monitors and SAP Instance Types

SPI for SAP Monitor Name	Central Instance	Application Server
r3monaco	✓	
r3monale	✓	
r3monal [a]	✓	
r3monchg	✓	
r3moncts	✓	
r3mondev	✓	✓
r3mondisp	✓	✓
r3mondmp	✓	
r3monjob	✓	
r3monlck	✓	
r3monoms [b]	✓	
r3monpro	✓	✓
r3monrfc	✓	
r3monsec	✓	
r3monspl	✓	
r3status	✓	✓
r3montra	✓	
r3monupd	✓	
r3monusr	✓	
r3monwpa	✓	

a. CCMS 4.x only

b. Due to changes in SAP, the operation-mode monitor r3monoms is not supported with WebAS 7.0.

The r3moncol Monitor in a High-Availability Cluster

The `r3moncol` monitor collects alerts from all the SPI for SAP alert-collector monitors such as; `r3monale`, the iDOC-Status Monitor, and `r3mondmp`, the ABAP-dump monitor. The alert monitors themselves ensure that alert collectors are executed according to a defined schedule and report any messages that come back from the called function.

The `r3moncol` monitor is only intended to run on an SAP central instance: it is not designed to run on an application server. As a consequence, if the adoptive node in a high-availability cluster is running an application server, care has to be taken to ensure that the monitors that are started when the central instance comes up on the adoptive node after the failover switch do not become confused about which SAP instance to monitor—application server or central instance.

To avoid problems when the central instance and the application server are running on the same cluster node at the same time, for example; after a system failover, you need to ensure that each of the monitors which the `r3moncol` starts when the central instance comes up on the adoptive node is configured to ignore alerts associated with the application server and monitor *only* those alerts that belong to the central instance. This means modifying the configuration file of *each* of the SPI for SAP's central-instance monitors listed in Table 6 on page 61 in such a way as to make sure that the monitor is tied to a particular SAP central-instance number, for example; 00. By default, the SPI for SAP monitors are configured to monitor *all* SAP instances present on the node, which in this special-case scenario would include the unwanted Application-Server instance, too.

Tying the r3monale Monitor to an SAP Instance Number illustrates how the configuration file for the `r3monale` monitor on the *adoptive* node would look if you configured `r3monale` to monitor only the central instance (for example=00) on the adoptive node `nodename2.com` and *not* the instance of the application server (=01), which is already running. Note that the node name you specify in this file is the name of the *physical* cluster node: <*CI*> refers to the SID for the central instance. Note, too, that the configuration files illustrated in Tying the r3monale Monitor to an SAP Instance Number and Tying the r3monpro Monitor to an SAP Instance Number are incomplete (...) and are included in this form only for the purposes of illustration.

Tying the r3monale Monitor to an SAP Instance Number

```
#AlertMonFun SAP SAP SAP SAP Alert Enable=1 (...)

# Host System Number Client Monitor Disable=0 (...)

#-------------------------------------------------------------------------
--

AlertMonFun =ClusterNodeA =CI =00 =099 =ALE =1 (...)

AlertMonFun =ClusterNodeB =CI =00 =099 =ALE =1 (...)
```

The r3monpro Monitor in a High-Availability Cluster

The `r3monpro` monitor scans for and checks all processes associated with a given SAP instance, for example; the dialog, enqueue, update, batch, dispatch, message, gateway, and spool work processes. However, the `r3monpro` monitor can be used to monitor database processes, too.

If the adoptive node in a high-availability cluster is running an application server, then care has to be taken after a package switch that the `r3monpro` monitor started by the package does not assume that the processes associated with the application server also need to be monitored along with the processes belonging to the central instance. One way of ensuring this is to specify the exact number of processes to be monitored by `r3monpro` in the `r3monpro.cfg` file (in the column: `Process number=#`). The number of processes to monitor must be the same on each node both before and after the failover package switch.

In addition, if you want to ensure that the `r3monpro` monitors only those processes belonging to a specific SAP instance on a node where multiple SAP instances are running, for example; after a package switch, you have to make sure that the `r3monpro` monitor knows which SAP instances it is supposed to watch. You can do this by modifying the `r3monpro.cfg` file on the adoptive node in the cluster in such a way that each SAP instance number (defined in the column: `SAP Num=`) is linked to a specific process name, and a defined number of process instances, as illustrated in Tying the r3monpro Monitor to an SAP Instance Number.

Tying the r3monpro Monitor to an SAP Instance Number

```
#AlertInstMonPro  SAP    SAP   Process   Enable  Mode   Proc  (...)
#                 Sys    Num   Name        =1           Num   (...)
#-------------------------------------------------------------------
AlertInstMonPro   =T11  =00   =dw.sapSID*  =1   =Min    =9    (...)
AlertInstMonPro   =T11  =01   =dw.sapSID*  =1   =Min    =6    (...)
```

Performance Tools in a Cluster Environment

If you are the using the Performance agent (or HP Software Embedded Performance Component) to monitor SAP in a high-availability environment, you must install the performance agents on both nodes in the cluster, namely; the *host* and *adoptive* nodes, and then configure the performance agent to monitor the same SAP System IDs on both nodes.

- Since `r3perfagent` will always use the physical hostname in a cluster environment, you must specify the clustered SAP-system details by configuring `r3perfagent` with the manual mode (**`888`**). If you are configuring `r3perfagent` on a physical cluster node, `r3perfconfig` *may* offer you the option (**`x`**) on the SAP system with the virtual node. In this case, use the manual configuration (**`888`**) by specifying the physical cluster nodename.

In the event of a failover and subsequent package switch, the Performance agent stops collecting values for the SAP metrics on the host node and, as soon as the package comes up on the adoptive node, starts to monitor and report the appropriate SAP metrics on the adoptive node. Metrics for physical components such as CPU and disk performance continue to be collected on both nodes irrespective of where the package is running. This needs to be taken into account when generating and publishing performance reports and graphs.

- The SPI for SAP service reports do not correlate the values collected by the Performance agent on the cluster over time. The reports process the data separately for each cluster node. This means that if a package switches from the host node to the adoptive (backup) node, the values for the switched instance will be split between the two nodes in the cluster. If the scenario described reflects the situation in your environment, you will have to use the reports from both nodes to get a complete view of SAP performance.

Service Reports and Performance Graphs in a Cluster Environment

If you want to generate SPI for SAP service reports and performance graphs for all the nodes in the high-availability cluster, make sure that both the HP Performance Manager and HP Reporter are installed, correctly configured, and running on a machine which can see the cluster nodes. You will also have to ensure that the appropriate performance-agent functionality (HP Software Embedded Performance Component or the HP Performance Agent) is installed, configured, and available on all the physical nodes in the high-availability cluster and the appropriate SPI for SAP performance sub-agent integration functionality is installed and correctly configured.

Note that operating-system (OS) reports are tied to the individual physical nodes in the cluster. This means that the SPI for SAP monitors are collecting OS data even when the SAP package is not running, for example; on the backup (adoptive) node.

You can generate reports and graphs for the high-availability cluster using SAP-, hardware-, and network-related metrics, which the performance agents collect from the physical nodes in the cluster. Since the performance agents run on all the physical nodes in the cluster and are independent of the SAP package, reports which use hardware- or network-related metrics can even be configured to include the periods during which the SAP package is not running, for example; on the adoptive node *before* a package switch and on the host node *after* the package switch. Note that SAP-related metrics such as status and availability are linked to the physical node where (and during the time which) the package is running.

Service Views in a Cluster Environment

You can use tools provided by the SPI for SAP to generate Service Views of the SAP environment automatically. If you want to make use of Service Views with the SPI for SAP, you need to set it up to see the services you want the SPI for SAP to monitor in the SAP landscape and ensure that incoming messages are linked to the correct physical nodes in the cluster.

The service-discovery policy needs to be able to read the `r3itosap.cfg` file to determine the SAP Systems which the SPI for SAP is monitoring and, more specifically, the host-mapping section. The information in the host-mapping section of the `r3itosap.cfg` file specifies the names of the nodes in the high-availability cluster and, in addition, which node name should be associated with messages generated by nodes in the cluster. For more information about the contents of the `r3itosap.cfg` file, see Configuring the SPI for SAP in a Cluster Environment on page 56 and Specifying SAP Systems to Monitor on page 41.

Only physical nodes can appear in the service tree, and data can only be collected for the physical node on which the package is running at a given point in time.

Removing the SPI for SAP Software in a Cluster Environment

The SPI for SAP software and functionality has to be removed from each individual physical node in the high-availability cluster, where the product was installed and configured. This will involve the following steps:

1. If you installed the SPI for SAP Performance Sub-agent on the managed nodes in the cluster, you will have to remove it and its components from the SAP managed nodes in the high-availability cluster before you proceed to step two. For more information, see Removing the SPI for SAP Software from the Management Server on page 108.
2. After removing the SPI for SAP Performance Sub-agent, you have to remove the SPI for SAP components from the SAP managed nodes in the high-availability cluster. For more information, see Removing SAP-management Functionality from Managed Nodes on page 107.

6 SAP Internet Transaction Server (ITS) Monitoring

This section describes how to install and configure the ITS Performance Monitor so that you can make full use of the functionality provided by the SPI for SAP to monitor the load and performance of the SAP Internet-transaction Server 6.20. The instructions in this section assume that either HP Software Embedded Performance Component (CODA) or the Performance Agent is already available on all the HPOM managed nodes, where you want to run the ITS Performance Monitor.

The SPI for SAP ITS monitor is designed to monitor the Agate server. If your environment has the Agate server and the Wgate servers running on separate hosts, make sure that you install the ITS Performance Monitor on the host where the Agate server is running.

To install the ITS Performance Monitor on an HPOM managed node, you need to perform the steps indicated below, each of which is described in more detail in the subsections that follow:

Installation Pre-requisites

Before you start the installation of the SPI for SAP ITS Performance Monitor, make sure that the ITS AGate node on which you have chosen to install the ITS Performance Monitor meets the following requirements:

- Your SAP ITS instance must be running on one of the following operating system:
  - Windows 2000 or Windows 2003
  - SuSE Linux Enterprise Server (SLES) 8 or 9
  - Red Hat Enterprise Linux (RHEL) 3 or 4
- HPOM agent is installed and running
- ConfigFile policy package for Microsoft Windows node is available
- Either the Performance Agent for Microsoft Windows or the HP Software Embedded Performance Component must be running on the SAP ITS 6.20 server
- SAP ITS 6.20 must be installed and configured
- *Optional*: HP Performance Manager must be available (but not necessarily on the ITS 6.20 server machine) if you want to generate and view performance graphs.

- *Optional*: HP Reporter must be installed and available (but not necessarily on the ITS 6.20 server machine) if you want to generate and view service reports.
- The ITS Performance Monitor depends on the presence of the `SPI data collector` instrumentation in the following location on the HPOM management server:

  `%OvInstallDir%\Instrumentation\<`*`OS_Tree`*`>\SPI Data Collector`

Setting up the ITS Monitor

The SPI for SAP's ITS Performance Monitor uses information in the ITS `global.srvc` configuration file to provide a default configuration automatically. However, to set up the ITS Performance Monitor to collect performance information, you need to perform the following configuration tasks:

1 Set the SAP_REGISTRY_PATH environment variable

In order to find the installation location of the ITS 6.20 on the AGate node, the `r3monits` monitor needs the environment variable SAP_REGISTRY_PATH to point to the ITS 6.20 XML registry. This variable must be visible to the HPOM agent. On Microsoft Windows operating systems, the variable is set during the installation of ITS 6.20. On Linux operating systems, the variable has to be set manually during the installation of the ITS 6.20 software.

If you do not change the suggested installation directories, the default values for the SAP_REGISTRY_PATH environment variable are as follows:

- Linux operating systems:

  `/usr/sap/its/6.20/config`

- Microsoft Windows operating systems:

  `C:\Program Files\SAP\ITS\6.20\config`

2 Configure the `its_ping` service

The `r3monits` monitor uses information in the ITS 6.20 `global.srvc` configuration file to provide a default configuration automatically. However, since the `r3monits` monitor uses the `its_ping` service to determine the status of the system, you must configure the `its_ping` service by using the ITS 6.20-administrator web console to add the following entries together with the appropriate values to the file `its_ping.srvc`:

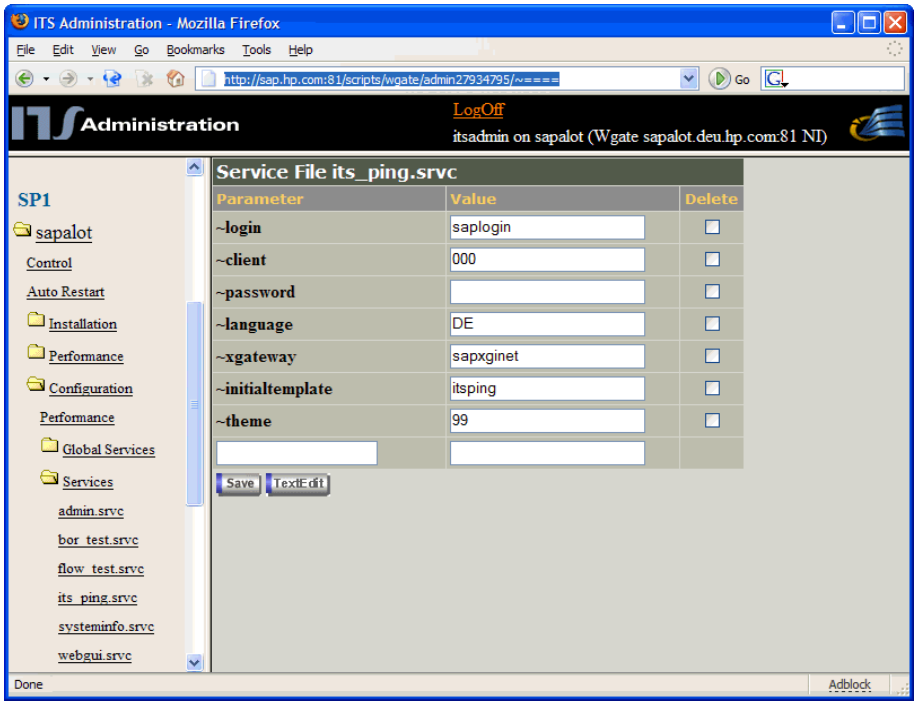
- `~client`, for example: `000`
- `~language`, for example: `EN`
- `~login`, for example: *`<valid_SAP_user>`*
- `~password`, for example: *`<password_for_valid_SAP_user>`*

3 Check that the configuration of the `its_ping` service completed successfully; open a web browser and enter the following URL:

http://<WGateHost>:<WGatePort>/scripts/wgate/its_ping/!?~agate_routing=<AGateHost>:0

If you have configured the `its_ping` service correctly, the browser displays a page indicating the status of the SAP System you want to access. Figure 11 on page 69 shows you how to set up the `its_ping` service using the ITS 6.20 administrator GUI.

Figure 11 Configuring its_ping with the ITS 6.20 Administrator GUI



Deploying the ITS Performance Monitor Instrumentation

1. In the HPOM console, select and right-click the SAP ITS server (managed node) where the ITS components will be deployed, and browse to the following menu option:

   All Tasks > Deploy instrumentation

2. From the Deploy Instrumentation window select the following components:
   - SPI Data Collector
   - SPI for SAP Instrumentation
3. Select **OK** to deploy the instrumentation; you can monitor the deployment in real time in the Deployment Jobs window.

Deploying the ITS Configuration-file Policies

1. In the HPOM console, browse to the following:

   Policy management > Policy groups> SPI for SAP

2. Select and right click the following policy: `global_r3monits`
3. Deploy the `r3monits` configuration-file policy to the ITS server, which you want to manage with the SPI for SAP:
4. **All Tasks > Deploy on...**
5. Select the HPOM managed node (ITS server) to which you want to deploy the policy and click **OK**.

6 Verify that HPOM deployed the ITS configuration-file policy successfully to the managed node:

a In the HPOM console, right click the managed node whose policy inventory you want to check and select the following menu option:

View > Policy Inventory

b Ensure that the following item is present in the list that is displayed:

`global_r3monits.cfg`

Deploying ITS Policies on the ITS Node

1 In the HPOM console, browse to the following policy group:

Policy management > Policy groups > SPI for SAP > en > SAP ITS 6.20

2 Select and right-click the following items:

- `r3monits` (Scheduled Task)
- `SAP R3 opcmsg` (Open Message Interface)

3 Browse to the following item in the menu that pops up:

All Tasks > Deploy on...

4 Select the SAP-ITS server to which you want to deploy the policies

5 Click **OK**.

6 Verify that HPOM successfully deployed the ITS policies to the managed node as follows:

a In the HPOM console, right click the managed node whose policy inventory you want to check and select the following menu option:

View > Policy Inventory

b Ensure that the following items are present in the list that is displayed:

— `r3monits`

— `SAP R3 opcmsg`

Verifying Deployment of the ITS Configuration-file Policies

1 In the HPOM console, select and right-click the ITS Server in the list of managed nodes displayed in the console tree and browse to the following item in the menu that pops up:

View > Policy Inventory

2 The items displayed in Table 7 should appear in the right-hand pane of the HPOM console.

Table 7 ITS Policy-inventory Verification Files

Policy Name	Policy Type
`r3monits`	Scheduled task
`SAP R3 opcmsg`	Open message interface
`global_r3monits`	Configuration-file policy

For more information about what information is copied where during the installation of the ITS Performance Monitor, see *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help*.

7 Smart Plug-in for SAP Performance Monitors

This section describes how to install and configure the SPI for SAP performance-integration package. It also provides information about how to put the performance monitors to best use and supplement the information provided by the SPI for SAP performance monitors with information supplied by the Performance Agent. The section includes the following topics:

Performance Monitors Overview

The SPI for SAP performance monitors collect SAP performance data which can then be used to compare trends between SAP business transactions and other system metrics. The performance monitors can be used to monitor, manage, and correlate the collected data centrally along with any other application, database, system and network data.

The SPI for SAP accesses ABAP-function modules inside SAP by using an RFC-call. The performance monitors gather a snapshot of SAP runtime performance data. Including the SAP-performance alert monitor (**rz03**) which is part of the SAP CCMS subsystem, the SPI for SAP Performance Agent is able to collect over 100 additional metrics.

The new SPI for SAP Performance Agent can be configured to specify which performance monitors should be run on which SAP instances and how frequently. The Performance Agent or HP Software Embedded Performance Component send an alert to the HPOM management server when they detect the violation of a defined performance threshold.

The SPI for SAP Performance Agent runs under Windows as a service and under Unix as a daemon process that runs independently of the HPOM agent processes. In order to start or stop the SPI for SAP performance-agent processes, use the appropriate HPOM tools, which you can find in the HPOM console.

Upgrading the Performance Monitor

You cannot always use the data sources you defined in previous versions of the SAP/Performance subagent with the latest version of the SPI for SAP SAP/Performance subagent: sometimes you have to migrate the data to the new format required by the current release of the SPI for SAP. Whether you can or cannot use existing data-sources with the current

version of the SPI for SAP depends on whether you are upgrading from a recent or (much) older version of the SPI for SAP. However, HP Reporter can still use the *data* collected by the old performance agents in the generation of new service reports.

Note, too, that if you want to upgrade the SAP/Performance subagent, you cannot do it in isolation. To upgrade the SAP/Performance subagent, you will have to perform the following high-level steps:

1. Remove the existing SAP/Performance subagent

   For more information about de-installing the SAP/Performance subagent, see Installing/ De-installing the Performance Monitor on page 75.

2. Remove existing SAP/Performance subagent data and data sources

   - SPI for SAP 10.70/10.50

     If you are upgrading from version 10.50 to the current version of the SPI for SAP, you do not need to perform this step; existing data and data sources can continue to be used.

   - SPI for SAP 09.01

     If you are upgrading from version 09.01 to the current version of the SPI for SAP, you do not need to perform this step; existing data and data sources can continue to be used.

   - SPI for SAP 10.10, 08.70, or 08.70 Edition 2

     If you are upgrading to the current version of the SPI for SAP from 10.10, 08.70, or 08.70 Edition 2, existing data and data sources can continue to be used with the new SPI for SAP performance agent, but need to be migrated, first. The configuration of the new SPI for SAP performance agent guides you through the migration process while automatically locating and updating the old data for you.

   - SPI for SAP 08.11 or earlier

     If you are upgrading from version 08.11 or earlier of the SPI for SAP, see the section about upgrading the performance agent in the *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help* for more information about cleaning up old data sources.

3. Upgrade the SPI for SAP software

4. Install the new SAP/Performance subagent software

   For more information about installing the SAP/Performance subagent, see Installing/ De-installing the Performance Monitor on page 75.

5. Configure the new SAP/Performance subagent

   For more information about installing the SAP/Performance subagent, see Configuring the Performance Monitor on page 81.

6. Upgrade the SPI for SAP/HP Reporter Integration

   For more information about upgrading the SPI for SAP Reporter integration, see the *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help*.

Installing/De-installing the Performance Monitor

The information in this section walks you through the steps required to install and configure the SPI for SAP performance integration and covers the following topics:

- Selecting the Performance Data Source on page 75.
- Changing Default Settings for the Performance Data Source on page 76
- Deploying the Performance Monitor Packages on page 76
- Installing the SPI for SAP Performance Packages on page 77
- De-Installing the SPI for SAP Performance Packages on page 78

The instructions in this section assume the following are true:

— Either the Performance Agent or the HP Software Embedded Performance Component is installed.

— The supported SAP version is installed, as listed in Table 3 on page 21.

— The HPOM Enterprise Message/Action Agent is already installed and running on the SAP servers, which you want to manage with HPOM.

Selecting the Performance Data Source

The HP Software Embedded Performance Component is, as the name suggests, embedded in the HPOM software and available, by default, in any HPOM installation. However, you can use the HPOM console to deploy the HP Performance Agent to the managed nodes, too.

If you prefer to use the HP Performance Agent as the agent for newly installed HP software products rather than the HP Software Embedded Performance Component (for example, to be able to use Performance Manager, which does not support the HP Software Embedded Performance Component), you can override the default use of the HP Software Embedded Performance Component by setting up a small text file, `nocoda.opt`, which changes the default data source from the HP Software Embedded Performance Component to the HP Performance Agent.

After configuring the `nocoda.opt` file, you must store it in a specific location on each managed node, whose performance-data source you want to change. The location of the `nocoda.opt` file on the managed node varies according to the operating system running on the HPOM management server and managed node. Table 8 on page 75 displays the location of the `nocoda.opt` files on nodes managed by an HPOM management server.

Table 8 HPOM 7.x/8.x for Windows Management Servers

Managed-Node Operating System	Location of the nocoda.opt file
AIX {DCE | HTTPS]	`/var/[lpp | opt]/OV/conf/dsi2ddf/nocoda.opt`
HP-UX/Linux/Solaris	`/var/opt/OV/conf/dsi2ddf/nocoda.opt`
Windows	`%OvDataDir%\conf\dsi2ddf\nocoda.opt`

Changing Default Settings for the Performance Data Source

To change the default setting for the data source, use your favorite text editor to open the `nocoda.opt` file on the managed node whose data source you want to modify and follow the instructions below. You will need to enter the appropriate information manually using the format and syntax illustrated in Table 9 and Excerpt from the nocoda.opt File on page 76. If a `nocoda.opt` file does not already exist, you will need to create a new one.

1. To designate the HP Performance Agent as the agent for all data sources, enter the key word **`ALL`** at the top of the file.
2. To designate the HP Performance Agent as the agent for a data source tied to a specific SAP (or SAP ITS) instance, include a reference to each instance on a separate line of the `nocoda.opt` file, using the format and syntax indicated in Table 9 and illustrated in Excerpt from the nocoda.opt File:

Table 9 nocoda.opt File Syntax

For...	Use the following format...
SAP NetWeaver	**R3**_<*SAP_hostname*>_<*SAPSID*>_<*SAP_instance_number*>_**DATA**
SAP R/3 ITS	**R3ITS**_<*virtual_SAPITS_instance_name*>_<*SAPITS_hostname*>_**DATA**

3. Save the changes to the `nocoda.opt` file.
4. Restart the HPOM agent on the managed node where the `nocoda.opt` file has been modified.

Excerpt from the nocoda.opt File

```
##########################################
# Add to (or modify) the contents of this file to change the
# data-source from the default Coda to MeasureWare
##########################################
# All hosts:
# ALL
# SAP R/3 hosts/instances:
R3_ovsdsap_DEV_00_DATA
# SAP R/3 ITS hosts/instances:
R3ITS_SP6_00_ovspi_DATA
```

Deploying the Performance Monitor Packages

The instructions in this section describe how to deploy the SPI for SAP performance-monitor instrumentation from the HPOM management server to the HPOM managed node systems.

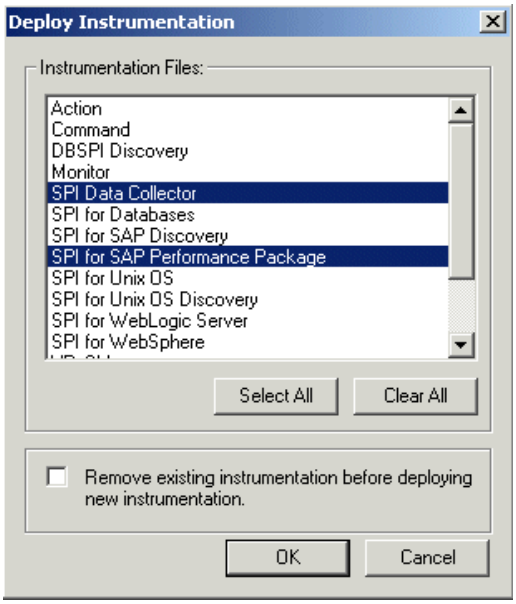
1. From the HPOM console, select and right-click the SAP managed (s) where you want to deploy the instrumentation.
2. Browse to the following menu option:

   All tasks > Deploy instrumentation
3. Select the following files as illustrated in Figure 12:
   - SPI Data Collector

- SPI for SAP Performance Package

4 Select **OK**.

Figure 12 Deployment Package Selection



Installing the SPI for SAP Performance Packages

After you successfully complete the deployment of the SPI for SAP performance packages as described in the previous step, follow the instructions in this section to *install* the SPI for SAP performance packages on the HPOM managed nodes:

1 From the HPOM console, browse to the following tools folder:

Tools > SPI for SAP > SAP R/3 Admin

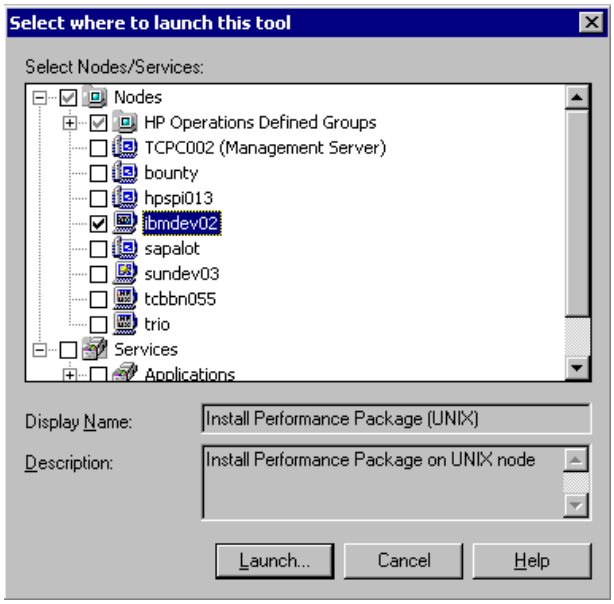
2 Select and right click the tool corresponding to your operating system (Unix or Windows), for example; Install Performance Package (UNIX), and select the following option from the menu that pops up:

All Tasks > Launch Tool...

3 Select the SAP managed node(s) where you want to start the SPI for SAP performance package installation, as illustrated in Figure 13 below. Remember to ensure that the nodes you select correspond to the operating system associated with the chosen tool (UNIX or Microsoft Windows).

4 Click **Launch...** to start the installation.

Figure 13 Installing the Performance Package



De-Installing the SPI for SAP Performance Packages

The procedure for removing the SPI for SAP performance package from a managed node is very similar to the procedure described in Installing the SPI for SAP Performance Packages on page 77 except that, at the appropriate moment, you select and launch the *removal* tool rather than the installation tool.

Note that you must stop the performance agent before removing the SPI for SAP performance package and, after the removal is complete, you need to remove the SPI for SAP performance monitor from the managed nodes, too. For more information about stopping and starting the performance agent, see SPI for SAP Tools on page 87 and Command-Line Options on page 87.

To remove SPI for SAP performance packages from SAP managed nodes:

1. Stop the SPI for SAP performance agent. You can do this either with a SPI for SAP tool, or on the command line:
   - Use the SPI for SAP application, PerfAgt Stop, which you can find in the SAP R/3 UN*X or SAP R/3 NT tools group.
   - Login to the SAP server (managed node) and run the following command on the command line: `r3perfagent stop`
2. From the HPOM console, browse to the following tools folder:

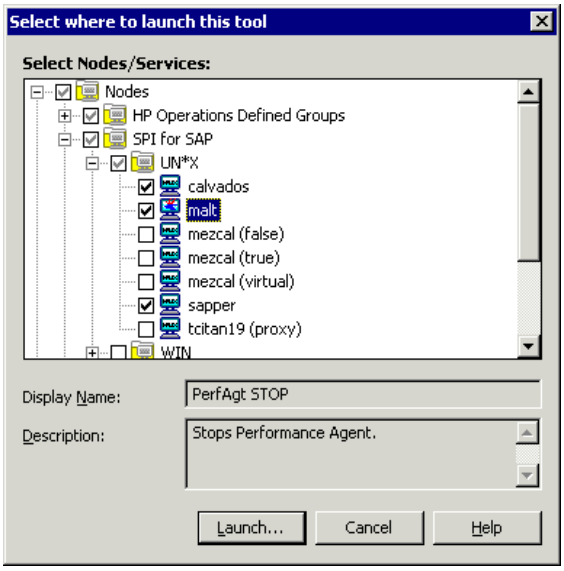
   Tools > SPI for SAP > SAP R/3 Admin
3. Select and right click the tool corresponding to your operating system (Unix/Linux or Microsoft Windows), for example:
   - **Remove Performance Package (UN*X)**
   - **Remove Performance Package (Windows)**
4. Start the Remove Performance Package tool you have selected using the following menu option:

All tasks > Launch Tool...

5 Select the SAP managed node(s) from which you want to remove the performance package. Remember to ensure that the nodes you select correspond to the operating system for the chosen tool (UNIX/Linux or Microsoft Windows).

6 Click **Launch...** to start the removal process.

Figure 14 Stopping the Performance Agent



Locating the Performance Monitor Files

The information in this section describes the files installed as part of the SPI for SAP performance package for the following platforms, for example:

- Performance Monitor Files on AIX on page 79
- Performance Monitor Files on HP-UX, Solaris, and Linux on page 80
- Performance Monitor Files on Windows on page 81

The performance-related files listed in this section belong to the following categories: binaries and executable files, configuration files, the `dsilog` files required by the HP Performance Agent, and templates.

The `dsilog` files are only required by the HP Performance Agent; the HP Software Embedded Performance Component does not require or make use of the dsi-log files.

Performance Monitor Files on AIX

This section lists the files installed as part of the SPI for SAP performance package for AIX. The paths distinguish between [DCE | HTTPS] managed nodes:

- Binaries: `/var/[lpp | opt]/OV/bin/R3PerfAgent/bin`
  - `r3perfconfig`

    SPI for SAP performance-monitor configuration tool.
  - `r3perfagent`

SPI for SAP performance-monitor agent.

- Configuration files:
  `/var/[lpp | opt]/OV/conf/sapspi/[local | global]`
  - `r3perfagent.cfg`

    Global and local configuration file for the various performance monitors.
- `Dsilog` files: `/var/[lpp | opt]/OV/bin/R3PerfAgent/data`
  - `R3_<`***`HOSTNAME`***`>_<`***`SID`***`>_...`:

    Immediately after installation, this directory is empty; the SPI for SAP uses the directory to store the `dsilog` files, which `r3perfconfig` and `compdsifile.sh` compile for the HP Performance Agent.
- Templates: `/var/[lpp | opt]/OV/bin/R3PerfAgent/template`
  - `R3statistics.<`***`PERF-MONITOR`***`>`

    Files the SPI for SAP uses to compile the dsi log files.
  - `Parm.UX`:

    Template for the performance-agent parameter file.

Performance Monitor Files on HP-UX, Solaris, and Linux

This section lists the files installed as part of the SPI for SAP performance package for HP-UX, Solaris, and Linux operating systems:

- Binaries: `/var/opt/OV/bin/R3PerfAgent/bin`
  - `r3perfconfig`

    SPI for SAP performance-monitor configuration tool.
  - `r3perfagent`

    SPI for SAP performance-monitor agent.
- Configuration files: `/var/opt/OV/conf/sapspi/[local | global]`
  - `r3perfagent.cfg`

    Configuration file for the various performance monitors. Note that the SPI for SAP creates this directory after you deploy the SPI for SAP performance-agent policies for the first time.
- `Dsilog` files: `/var/opt/OV/bin/R3PerfAgent/data`
  - `R3_<HOSTNAME>_<SID>_...`:

    Immediately after installation, this directory is empty; the SPI for SAP uses the directory to store the `dsilog` files, which `r3perfconfig` and `compdsifile.sh` compile for the HP Performance Agent.
- Templates: `/var/opt/OV/bin/R3PerfAgent/template`
  - `R3statistics.<`***`PERF-MONITOR`***`>`:

    Files which the SPI for SAP uses to compile the dsi log files.
  - `Parm.UX`

    Template for the performance-agent parameter file.

Performance Monitor Files on Windows

This section lists the files installed as part of the SPI for SAP performance package for Windows:

- Binaries: `%OvDataDir%\bin\R3PerfAgent\bin`
  - `r3perfconfig`

    SPI for SAP performance-monitor configuration tool.
  - `r3perfagent`

    SPI for SAP performance-monitor agent.
  - `r3perfagent_service`

    Starts the SPI for SAP performance-monitor agent as a service in Microsoft Windows.
- Configuration files: `%OvAgentDir%\conf\sapspi\global`
  - `r3perfagent.cfg`

    Configuration file for the various SPI for SAP performance monitors. Note that the SPI for SAP creates this directory after you deploy the SPI for SAP performance-agent policies for the first time.
- `Dsilog` files: `%OvDataDir%\bin\R3PerfAgent\data`
  - `R3_<HOSTNAME>_<SID>_...`

  Immediately after installation, this directory is empty; the SPI for SAP uses the directory to store the `dsilog` files, which `r3perfconfig.bat` and `compdsifile.bat` compile for the HP Performance Agent.
- Templates: `%OVDATADIR%\bin\R3PerfAgent\template`
  - `R3statistics.<`***PERF-MONITOR***`>`

    Files which the SPI for SAP uses to compile the dsi log files.
  - `Parm.NT`

    Template for the performance-agent parameter file.

Configuring the Performance Monitor

Before starting to configure the performance monitor note that if the Performance Agent is used instead of HP Software Embedded Performance Component, then you need to stop the Performance Agent on the managed node using the commands listed in Table 10 appropriate to your system environment:

Table 10 Stopping the Performance Agent

Platform	Command
AIX	**`/usr/lpp/perf/bin/mwa stop`**
HP-UX/Solaris/Linux	**`/opt/perf/bin/mwa stop`**
Microsoft Windows	**`mwacmd stop`**

After you stop the HP Performance Agent, you can proceed with the configuration of the performance monitor. Note that if you are using the HP Software Embedded Performance Component, you do not need to perform any special action before you start configuring the performance monitor.

This section also includes information about using the SPI for SAP to monitor performance thresholds on remote machines, where the SPI for SAP in not installed. The information in this section also explains the concepts underlying the Performance-monitor scheduler, which ensures that the performance monitors run according to the defined schedule:

- Monitoring System-Performance Remotely on page 86
- The Performance-Monitor Scheduler on page 86

To Configure the Performance Monitor, follow these steps:

1. On the node where you installed the SPI for SAP performance monitor, locate and enter the following command to run the configuration script:
   - Microsoft Windows operating systems: **`r3perfconfig`**
   - UNIX and Linux operating systems: **`./r3perfconfig`**

   Follow the instructions which appear on screen. Installed SAP Instances shows how the script lists the SIDs it finds together with a number (`SapNr`), and prompts you to select the SAP NetWeaver instance to be configured.

Installed SAP Instances

```
       SID   SapNr    HostName
       -----------------------
(0)    AST    45       sapper
(1)    DEV    50       sapper
(2)    SP1    80       sapper


Choose:
(x) to configure shown system
888 to manually configure a SAP system
999 to quit
-----------------------------------------
```

   Enter the appropriate identification number, for example; **`0`** for AST, or **`1`** for DEV, **`2`** for SP1, or **`888`** to configure a new SAP System.

   a. If a valid data source already exists for the given SAP System ID, `r3perfconfig` lists the data source and prompts you to select an option, as follows:

   ```
   Choose:
   (x) to configure shown system
   888 to manually configure a SAP system
   999 to quit
   0
   Valid datasource already exists: R3_sapper_AST_45_DATA
   ```

   b. If `r3perfconfig` finds an existing data source, which it can migrate to the required *new* format, it lists the old data source and asks you what to do:

   ```
   Choose:
   (x) to configure shown system
   888 to manually configure a SAP system
   999 to quit
   ```

```
1
Found an old datasource: R3_sapper_DEV_50_DATA
Should the existing datasource be migrated <yes/no>?
```

Note the following before you respond to the prompt:

yes automatically migrates the old data source to the format required by the new version of the SPI for SAP performance agent

no leaves the existing data source unchanged: the old data source *cannot* be used with the new version of the SPI for SAP performance agent

c If `r3perfconfig` finds an existing data source which *cannot* be migrated to the new format, for example; because it belongs to a version of the SPI for SAP that is older than 08.70, it lists the old, *invalid* data source and prompts you to select an option, as follows:

```
Choose:
(x) to configure shown system
888 to manually configure a SAP system
999 to quit
2
Found an invalid datasource: R3_sapper_SP1_80_DATA
Existing datasource cannot be migrated
```

d If you choose **888** to configure an SAP SID manually, you have to answer a series of questions concerning the SAP SID you want to configure. To answer these questions, you might need to talk to an SAP administrator.

After you finish migrating the performance data, the `dsilog` files are compiled and the data sources added to the HP Performance Agent configuration file, namely:

— `perflbd.rc` for UNIX and Linux operating systems

— `perflbd.mwc` for Microsoft Windows operating systems

If you are using the HP Software Embedded Performance Component, the names of the configuration files are `ddflbd.rc` for UNIX and Linux operating systems and `ddflbd.mwc` for Microsoft Windows operating systems.

After completing the data migration, the `r3perfconfig` script prompts you to restart the Performance Agent. However, it makes sense to update the `parm.mwc` file as described in the next step *before* you start the Performance Agent.

2 Update the Performance-agent parameter file

This step does *not* apply to the HP Software Embedded Performance Component.

If you are using the Performance agent, append the template file `parm.NT` (or `Parm.UX`, depending on the installed operating system on the managed node) to the `parm` file of the Performance agent, as follows:

- UNIX and Linux operating systems: **`cat parm.UX >> parm`**

  The parm file is located in: `/var/opt/perf/parm`

- Microsoft Windows operating systems: **`type parm.NT >> parm.mwc`**

  The parm file is located in the following directory:

<*drive_letter*>\rpmtools\data\parm.mwc

You can represent several SAP NetWeaver instances in the parm file by using the asterisk (*) wild card.

3 On the HPOM management server, you configure the SPI for SAP performance monitors in the r3perfagent.cfg file. If you do not complete this task, all monitors run with the default settings illustrated in Figure 15 on page 85, which could lead to a large number of unwanted messages appearing in the HPOM console.

There are two possible configurations:

- **Global:** global_r3perfagent.cfg

  SPI for SAP performance-monitor settings for all SAP servers

- **Local:** local_r3perfagent.cfg

  SPI for SAP local performance-monitor settings for individual SAP servers

The settings in the *global* configuration files are used for all nodes which do not have local configuration settings. Where both files are present, *local* settings override global settings.

You should use the configuration-file policy editor to create a new (or modify an existing) r3perfagent.cfg file.

4 To modify an existing configuration file:

a Select the policy view and, in the details pane, select and right-click the appropriate r3perfagent.cfg file, and click the following menu option:

All Tasks > Edit...

b The r3perfagent.cfg file is displayed as illustrated in Figure 15 on page 85.

5 To create a new configuration-file

a In the HPOM console tree, expand the Policy Management policy group, select and right-click the SPI for SAP policy group, and add a new configuration file by selecting the following option from the pop-up menu that appears:

New > ConfigFile

b Load the default global_r3perfagent.cfg file, change any values as required, and save the file. If you want to create a *local* configuration file, we recommend you include the name of the machine for which the local configuration is intended in the local-configuration file name as outlined below:

<*machine_name*>_r3perfagent.cfg

You have to deploy the modified policy to the managed node (<*machine_name*>) and restart both the Performance Agent and the SPI for SAP performance monitor in order to upload and apply the modified configuration. Note that, by default:

- all SPI for SAP performance monitors are enabled for all SAP hostnames, systems, numbers, and clients
- the polling intervals are set for each monitor in minutes
- the Hold-Connections option is disabled
- the Performance-monitor Scheduler sends a message if it is 10 minutes behind schedule

– the Performance-monitor Scheduler is set to restart if it is 13 minutes behind schedule

6 Deploy the modified policies:

a Select and right click the policies you want to deploy

b Select the Deploy option from the menu which pops up

7 Start (or stop and restart) the Performance Agent on the managed node by entering the following command in a shell or by using the menu options in the appropriate SPI for SAP tools group.

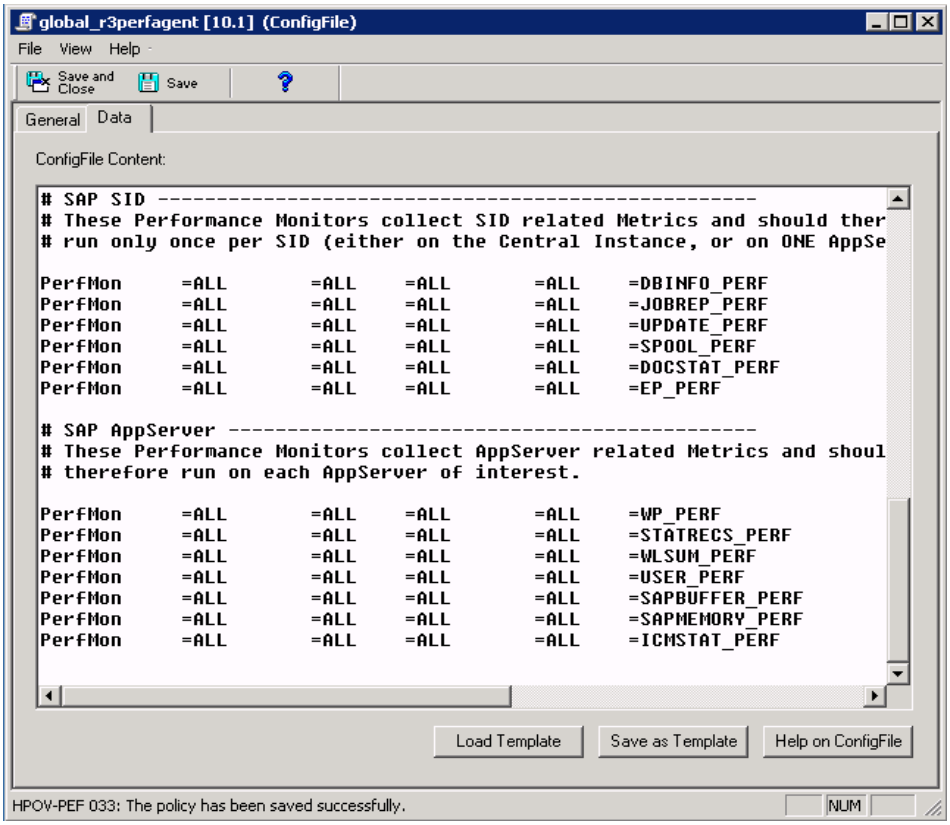
- UNIX and Linux operating systems:

  `mwa [stop | start]`

- Microsoft Windows operating systems:

  `mwacmd [stop | start]`

Figure 15 The Default Global r3perfagent.cfg File



8 On the managed node, locate the `r3perfagent` command and start (or stop and restart) the SPI for SAP performance monitor. For information about locating the SPI for SAP performance monitor files, see Locating the Performance Monitor Files on page 79). You can control the SPI for SAP performance monitor by using the SPI for SAP tools or entering the following commands in a shell on the managed node:

- UNIX and Linux operating systems:

  `./r3perfagent [stop | start]`

- Microsoft Windows operating systems:

  `r3perfagent_service [-e | -s]`

Monitoring System-Performance Remotely

The SPI for SAP includes a feature which allows you to extend the scope of the SPI for SAP performance monitor to monitor the health of additional, remote SAP servers (which are *not* managed nodes) from an SAP server, which *is* already configured as an HPOM managed node.

Although the remote host is *not* an HPOM managed node, it must still be present in the HPOM node list. If you do not add the remote host to the HPOM node list, HPOM cannot resolve the host name associated with the remote host and, as a consequence, messages from the remote host do not appear in the HPOM console.

To make use of the remote-monitoring feature provided by the SPI for SAP, for example; to collect SAP performance metrics from an SAP System running an operating system that is not supported by the SPI for SAP, you need to use the `r3perfconfig` command to manually add an additional datasource for each SAP System you plan to monitor remotely and then activate the `RemoteMonitoring` keyword (by removing the leading hash symbol "#") in the `r3perfagent.cfg` file on the local managed node, where the performance monitor runs. Activating Remote Performance Monitoring shows an excerpt from the *global* `r3perfagent.cfg` file with the remote-monitoring feature enabled; the *local* `r3perfagent.cfg` file, if present, would only contain references to the managed node on which the local configuration file is located.

Activating Remote Performance Monitoring

```
#-------------------------------------------------------------
# Remote            LocalHost    RemoteHost
# Monitoring

RemoteMonitoring    =sapwolf2    =sapprod1
RemoteMonitoring    =sapwolf3    =sapprod2
RemoteMonitoring    =sapper      =sapprod3
#-------------------------------------------------------------
```

For more information about remote performance monitoring, see the section about performance monitors in the *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help*.

The Performance-Monitor Scheduler

The performance agent uses an internal scheduler to ensure that the performance monitors run according to the desired schedule. The scheduler keeps track of time and the number of runs that have been completed and uses this information to ensure that the performance monitors run at the correct time and collect the appropriate performance-related data.

For more information about the Performance-monitor scheduler, see the section about performance monitors in the *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help*.

Managing the Performance Agent

The SPI for SAP performance monitor can be controlled either by using command-line options which differ according to the platform and operating system, or the tools that are installed by the SPI for SAP. For more information on either of these topics, see the following sections:

Command-Line Options

On UNIX and Linux operating systems, you can use the `r3perfagent` command to manage the SPI for SAP performance monitor. The `r3perfagent` command accepts the following command-line options:

```
r3perfagent [start | status | stop]
```

- **`start`** - to *start* the SPI for SAP performance monitor
- **`stop`** - to *stop* the SPI for SAP performance monitor
- **`status`** - to determine the current *status* of the SPI for SAP performance monitor

On Microsoft Windows operating systems, you can manage the SPI for SAP performance monitor with the `r3perfagent_service` command, which accepts the following command-line options:

```
r3perfagent_service -e -i -s -u
```

`-e` stops the service

`-i` registers the service

`-s` starts the service

`-u` de-registers the service

Note that on Microsoft Windows operating systems, you can control the `r3perfagent` services from the services dialog, which you can access in the Microsoft Windows control panel.

SPI for SAP Tools

Table 11 lists the tools that are available for the SPI for SAP performance monitor and shows which tools appear in which SPI for SAP tool group, for example: SAP R/3 NT or SAP R/3 UN*X.

Table 11 Performance Monitor Tools

Application Name	SAP R/3 NT	SAP R/3 UN*X
PerfAgt Start	•	•
PerfAgt Stop	•	•
PerfAgt Status		•

8 Using the Smart Plug-in for SAP

After you install and configure the Smart Plug-in for SAP you can begin to use it to monitor your SAP environment. As soon as you deploy the SPI for SAP policies and instrumentation, you begin to see SAP-related messages in the HPOM console.

This chapter provides an overview of the components which the SPI for SAP integrates into HPOM and describes the steps and procedures that you need to perform if you want to run a typical SPI for SAP session. In this chapter, you can find information about the following topics:

SAP Administration Tools

The SAP R/3 Admin group includes tools for administrative functions such as writing SAP R/3 statistical records and activating alerts. The following table lists the tools which appear in the SAP R/3 Admin tool group and describes briefly what each of the tools does.

Table 12 SAP Admin Tools

Tool	Description
`Write STAT Rec Config`	Write statistical records in SAP

`Deploy...`
`Install...`
`Remove...`
	Tools for deploying, installing and removing the SPI for SAP performance monitor packages

For more information about editing and distributing monitor configurations, see the *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help*.

SPI for SAP Tools for SAP Managed Nodes

The SPI for SAP provides a wide range of tools for administrators of HPOM managed nodes which host SAP Systems running on either UNIX or Microsoft Windows operating systems. Some of the tools included in the SAP R/3 UN*X and SAP R/3 NT tools groups allow direct, context-sensitive access to SAP via SAP's native graphical user interface. For example, if you want to investigate a performance alert, you can run the Performance tool, which starts the SAP GUI and displays an SAP performance-analysis window.

Task 13 on page 90 lists the tools that are available for managed nodes, indicates in which group (UNIX/Linux or Microsoft Windows) they reside and, in addition, shows which SAP transaction (Tcode) the tools call after the SAP GUI session starts.

First select the SAP managed node(s) on which you want the tool to run. Make sure you select the tool from the tools group that corresponds to the managed node's operating system, for example; UNIX. Note that SPI for SAP tools cannot start a SAP GUI on an SAP System, which is monitored remotely from an HPOM managed node.

Table 13 The SAP R/3 UN*X and SAP R/3 NT Tools

Tool Name	UX	NT	Description	SAP Tcode
Check R/3 Database	•		Connect to the R/3 database to check availability *	n/a
Control Panel	•	•	Starts the SAP GUI and displays the CCMS control panel	RZ03
DB Performance	•	•	Shows database performance through tables and indexes	DB02
Gateway	•	•	SAP R/3 gateway monitor	SMGW
Job Maintain	•	•	Defines background jobs	SM36
Job Overview	•	•	Status of background jobs	SMX
Job Performance	•	•	Displays Job performance by Job/User name, time, or status	SM39
Maintain Thresholds	•	•	Maintenance of alert thresholds	RZ06
Operation Modes	•	•	CCMS: Maintain operation modes	RZ04
Operation Sets	•	•	Displays/Maintains operation-mode sets	SM63
PerfAgt START	•	•	Starts the Performance agent	n/a
PerfAgt STATUS	•		Displays the status of the Performance agent	n/a
PerfAgt STOP	•	•	Stop the Performance agent	n/a
Performance	•	•	Workload analysis	ST03
Process	•	•	Process overview	SM50

Table 13 The SAP R/3 UN*X and SAP R/3 NT Tools (cont'd)

Tool Name	UX	NT	Description	SAP Tcode
Profile Maintain	•	•	Profile maintain	RZ10
R/3 Info	•	•	Displays the installed R/3 version, instance, hostname. *	n/a
Servers	•	•	R/3 Server overview	SM51
Self-Healing Info	•	•	Collect data for troubleshooting services	n/a
Java R/3 Frontend	•	•	Starts the SAP GUI *	n/a
Status R/3 Config	•		Displays status details for any installed SAP R/3 instances *	n/a
Syslog	•	•	Shows analysis of local SAP System log	SM21
Users	•	•	Displays general information about logged-on SAP R/3 users	AL08

* For more information about the tools that access data on the managed nodes, see Accessing Data on SAP Managed Nodes on page 92.

Using the Smart Plug-in for SAP Tools

Expand the **`Tools > SPI for SAP`** item in the HPOM console to display in the details pane the tools and tools groups installed by the Smart Plug-in for SAP. During installation and setup, the Smart Plug-in for SAP adds the following tool groups to the HPOM console:

- SAP R/3 Admin
- SAP R/3 NT
- SAP R/3 UN*X

Since most SPI for SAP tools make use of the SAP GUI, make sure that the SAP GUI is available on the HPOM management server and, in addition, on any machine where an HPOM console runs. For more information, see Installing the SAP GUI on page 29. SPI for SAP tools cannot start an SAP GUI on an SAP System, which the SPI for SAP is monitoring remotely from an HPOM managed node.

To launch a Smart Plug-in for SAP tool

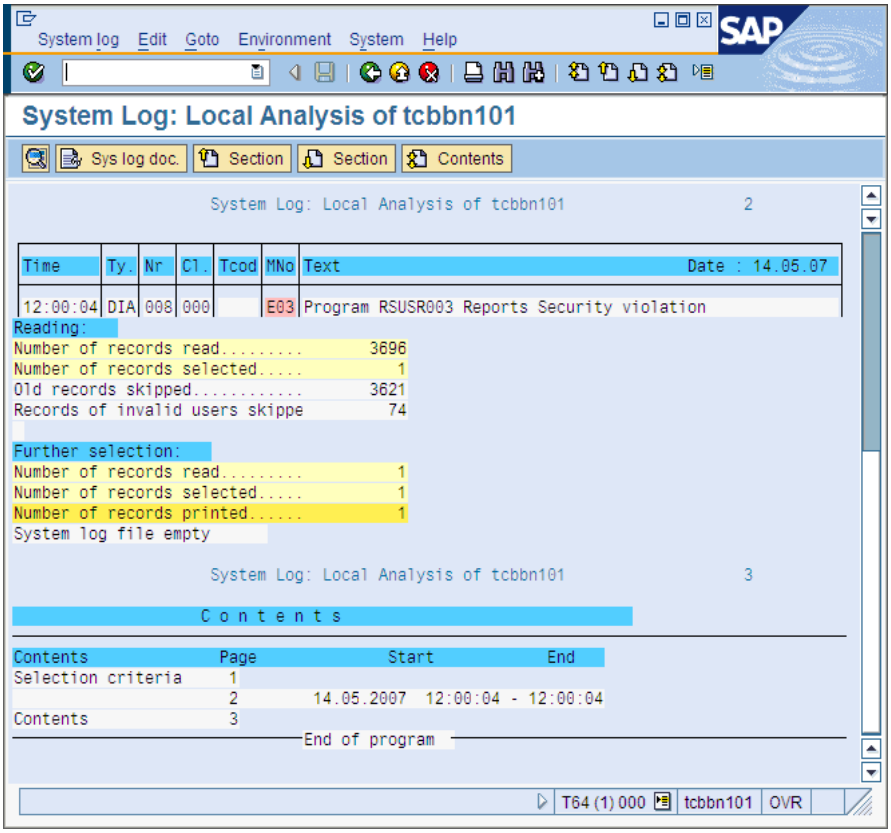
1. Expand the tool group containing the tool you want to launch
2. Right click the tool you want to launch and select the following option from the menu which pops up:

All Tasks > Launch Tool...

3 In the window which appears, select the SAP nodes on which you want to run the Smart Plug-in for SAP tool and click the **Launch...** button.

R/3 Info is one of a number of tools which display information in the Tool Output pane of the Tool Status dialog illustrated in Figure 17. For more information about the R/3 Info tool, see Accessing Data on SAP Managed Nodes on page 92.

Figure 16 Context-Sensitive Access to SAP



The majority of SPI for SAP tools provide context-sensitive access to SAP by starting the SAP GUI and calling the appropriate SAP transaction. For example, Figure 16 on page 92 shows the window that appears when you launch the Syslog tool, which you can find in the SAP R/3 UN*X and SAP R/3 NT tool groups.

Accessing Data on SAP Managed Nodes

The following SPI for SAP tools provide quick access to SAP-related information from the selected managed node. The R/3 Info and Java R/3 Frontend tools are available on both UNIX and Linux operating systems and Microsoft Windows operating systems, too; some other tools are available on UNIX and Linux operating systems only.

Each of the tools in the following list is explained in greater detail in the sections which follow. Where appropriate, real-life examples demonstrate the more important aspects

- Check R/3 Database

Establishes a connection to the SAP database server and provides a quick way of checking the database connection. If multiple instances are installed, the tool prompts you to enter the System ID in which the database you want to check resides.

- R/3 Info

  Returns the following information for SAP R/3 instances on a selected node.

  — host name

  — SAP System name

  — SAP instance name and number

  — list of processes for the selected instance

  The R/3 Info tool collects and uses the same information as `r3disc`, the SPI for SAP's service- discovery policy. However, note that the R/3 Info tool displays the information it collects; it does not use the information to generate a service tree. For more information about the `r3disc` policy and Service Views in general, see *HP Operations for Windows Smart Plug-in for SAP Administrator's Online Help*.

- Java R/3 Frontend

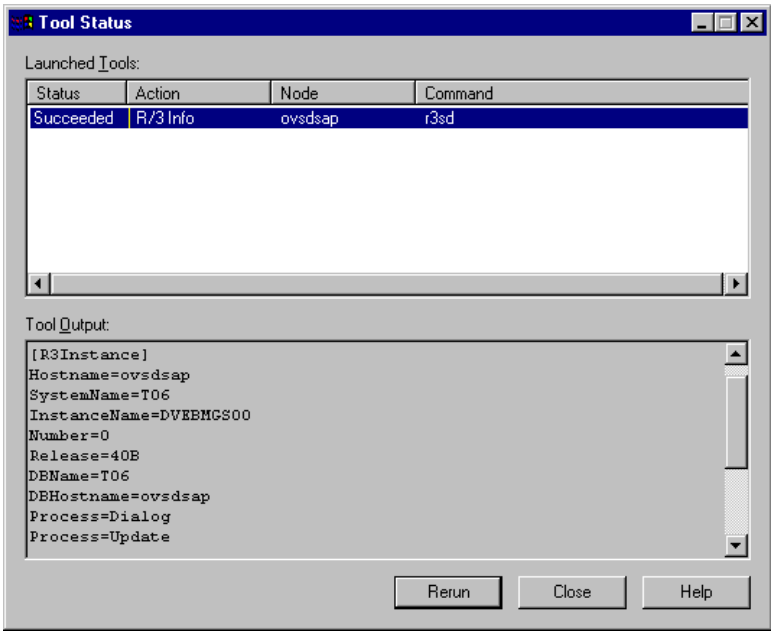
  Uses the local SAP GUI utility (running on the HPOM management server) and profile to connect to the desired SAP system

- Status R/3 Config

  Displays a list of all SAP NetWeaver Systems (and the functional modules per System) present on the selected managed node. In addition, it lists all established SAP processes and indicates their current status.

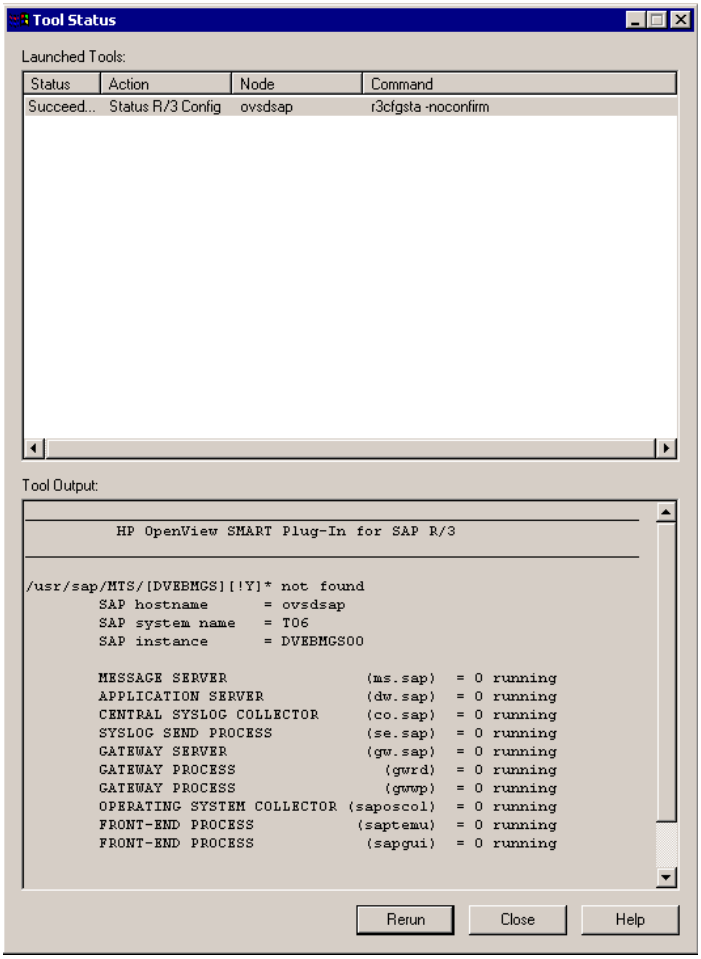
For example, launching the R/3 Info tool displays a dialog similar to the one illustrated in Figure 17. The Tool Status dialog indicates which command is being executed, on which node, and the command's current status.

Figure 17 Output from the R/3 Info Tool



The Status R/3 Config tool runs on the selected managed node and displays the current local SAP configuration. It lists all SAP systems installed on the selected node and the functional modules installed per SAP System. In addition, the R/3 process status provides a list of all established SAP processes and their current status.

Figure 18 R/3 Configuration Status Window



Working with SAP Messages

The message browser in the HPOM console is an important source of information about the status of the SAP servers, for which you are responsible. If you log in to HPOM as a user with SAP responsibilities, the message browser displays, among others, messages from SAP R/3 servers, which you are monitoring with the SPI for SAP.

You can use the SPI for SAP to monitor SAP instances running on a remote host, where the SPI for SAP is not available. Although the remote host is not an HPOM managed node, it must still be present in the HPOM console. If you do not add the remote host to the HPOM console, HPOM cannot resolve the host name associated with the remote host and, as a consequence, will not be able to display any messages from the remote host in the console.

Selecting and double-clicking a message in the message browser displays the selected message's properties and allows you to perform the following tasks:

- View a detailed description of a problem
- View instructions designed to help you solve the problem to which the message relates
- Initiate a pre-defined action, attached to a message
- Add an annotation to a message in order to document the actions you took to solve a problem
- Acknowledge a message so that it is moved to the acknowledged-messages database

The example that follows shows a typical sequence of events which occur when a critical message appears in the HPOM console.

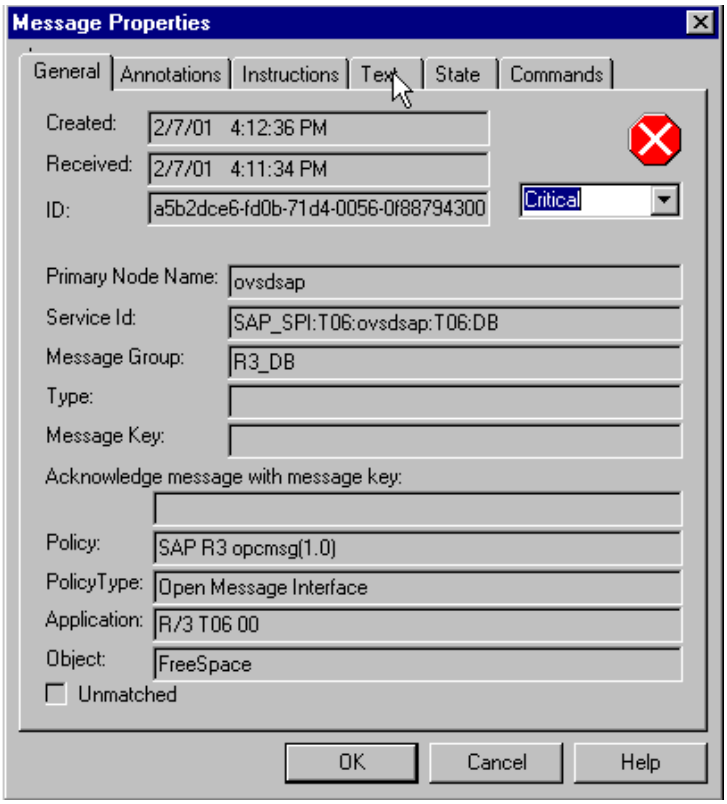
1 In the active-messages browser, locate and double-click the critical message sent by the SPI for SAP.

➤ HPOM displays the message's text property sheet by default.

2 Click the Instructions tab to see if any instructions have been provided to help you sort out the problem that has been reported.

3 After you have read and understood the information provided in the Instructions tab, click the Commands tab to see if an *automatic* or an *operator-initiated* action is available to help solve the problem reported by the incoming message. In many cases, the SPI for SAP uses these actions to provide context-sensitive access to SAP and automatically displays the appropriate SAP transaction window.

Figure 19 Message Details



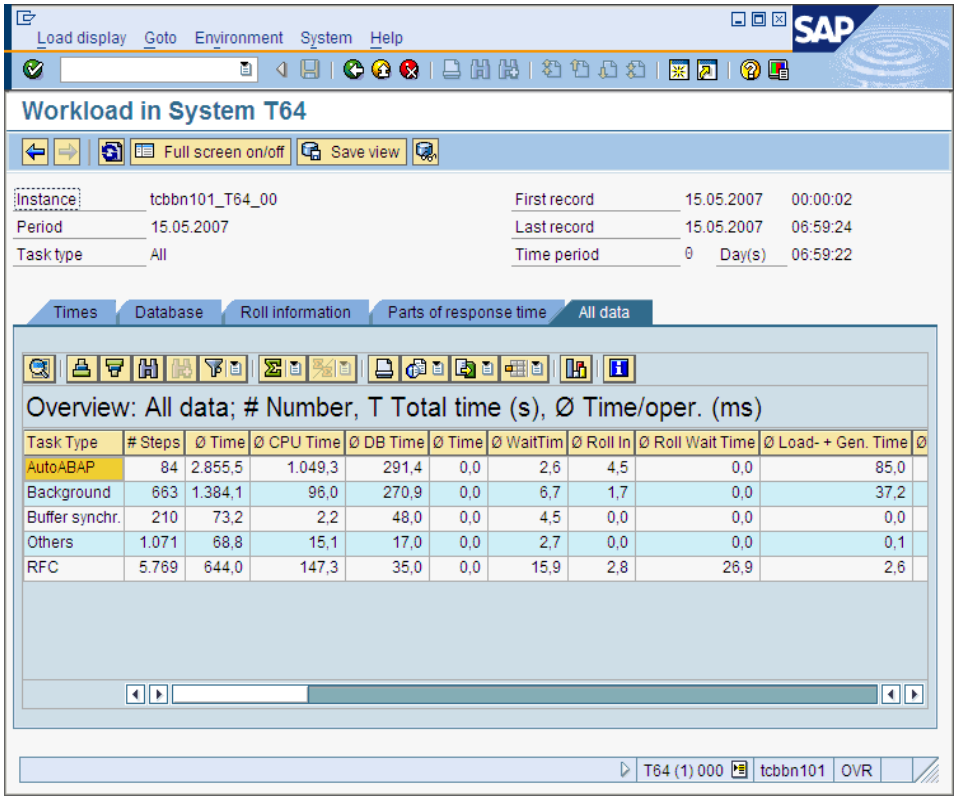
4 If an operator-initiated action is available, click the **`Start`** button in the Operator-initiated field of the `Commands` property sheet to launch it. You can watch the progress of the action in the Status field. In the message field, the action starts the SAP GUI and displays the Workload- analysis transaction illustrated in Figure 20.

5 Click the [<*server_name*>] button indicated in the This Application Server field and use the tools available with SAP to solve the problem.

6 When you have finished, log out of SAP and return to the Message Details window.

7 Click **`Acknowledge`** to confirm that you are aware of the message to which you just responded. As soon as you acknowledge the message, the message moves from the active-messages browser to the acknowledged-messages browser.

Figure 20 SAP Performance: Workload Analysis



Setting up Troubleshooting Services

The troubleshooting services feature provides tools that enables you to collect quickly and easily all the system and application data that you need to begin investigating problems that occur when using an HP software application.

To use the troubleshooting services with the Smart Plug-in for SAP, you need to trigger the collection of the data required for troubleshooting manually and save the collected data to a file. You can then review the contents of the file containing the collected data and, if necessary, send a copy of the file by e-mail to the support engineers.

The SPI for SAP provides the following troubleshooting tools:

- Self-Healing Info

  Use the Self-Healing Info tool to manually trigger the collection of the data required for troubleshooting. For more information about the data-collection process, see To trigger data collection for troubleshooting services on page 97.

- Version Verify

The Version-Verify tool compares the base version of the SPI for SAP installed with the version of any SPI for SAP components installed on the system. For more information about verifying installed software versions, see To check the version of the installed product components on page 98

To trigger data collection for troubleshooting services

1. In the HPOM console, expand the SPI for SAP tool group containing the tool you want to launch, for example for UNIX and Linux managed nodes:

   Tools > SPI for SAP > SAP R/3 UN*X

2. Locate and right click the Self-Healing Info tool and select the following option from the menu which pops up:

   All Tasks > Launch Tool...

3. In the window which appears, select the SAP nodes (or groups of nodes) on which you want to run the troubleshooting services data-collection tool and click **`Launch...`**

4. The collected data is stored in the following file, which you will need to forward to the support engineers for evaluation:

   - UNIX and Linux operating systems:

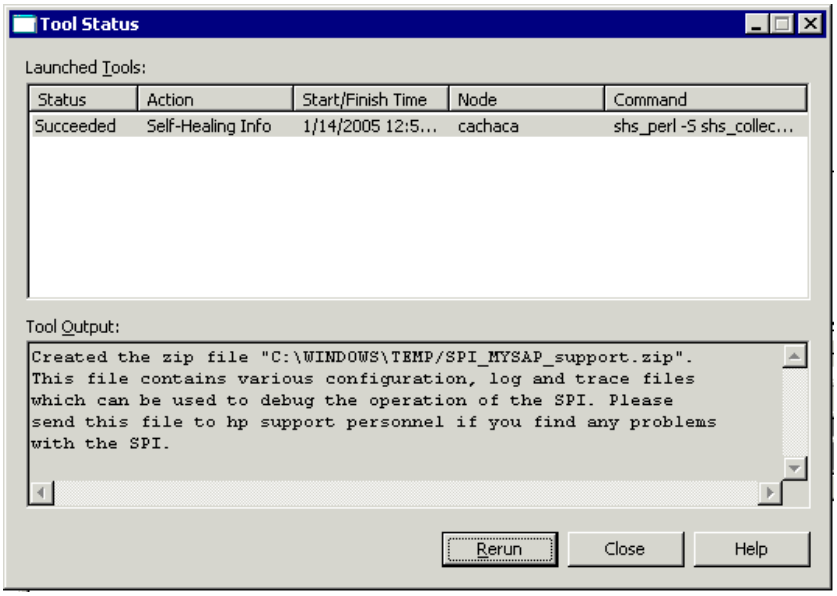
     `/tmp/SPI_MYSAP_support.tar`

   — Microsoft Windows operating systems:

     `C:\WINDOWS\TEMP\SPI_MYSAP_support.zip`

   You can follow the status of the data-collection progress by monitoring the output, which is displayed in the Tool-Output pane at the bottom of the Tool Status dialog, as illustrated in Figure 21 on page 97.

Figure 21 Collecting data for troubleshooting services



To check the version of the installed product components

1. In the HPOM console tree, expand the tool group containing the tool you want to use verify product version information:

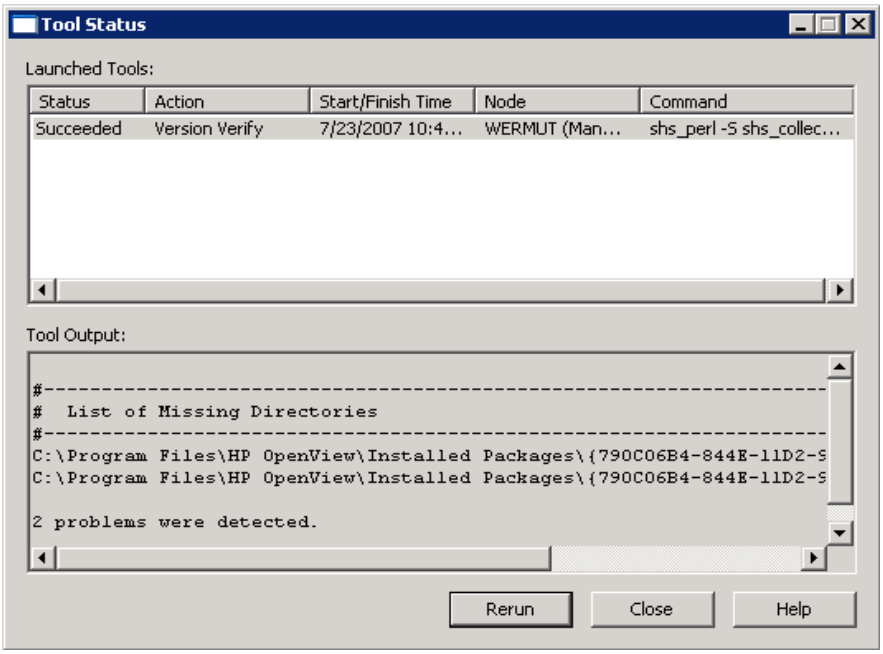
   Tools > Self Healing

2. Locate and right click the Version Verify tool and select the following option from the menu which pops up:

   All Tasks > Launch Tool...

3. In the dialog which appears, select the SAP nodes (or groups of nodes) on which you want to run the troubleshooting services, Version-Verify tool and click **`Launch...`** You can follow the status of the verification progress by monitoring the output, which is displayed in the tool-output pane, as illustrated in Checking the Installed Software Versions on page 98.

Figure 22 Checking the Installed Software Versions



9 Service Reports

This section introduces the concept of service reports and explains how to use them in conjunction with the SPI for SAP and HPOM. The information in this section is designed specifically to help you use the service reports to manage the SAP environment in an efficient and convenient manner. In this section, you can find detailed information about the following specific topic areas:

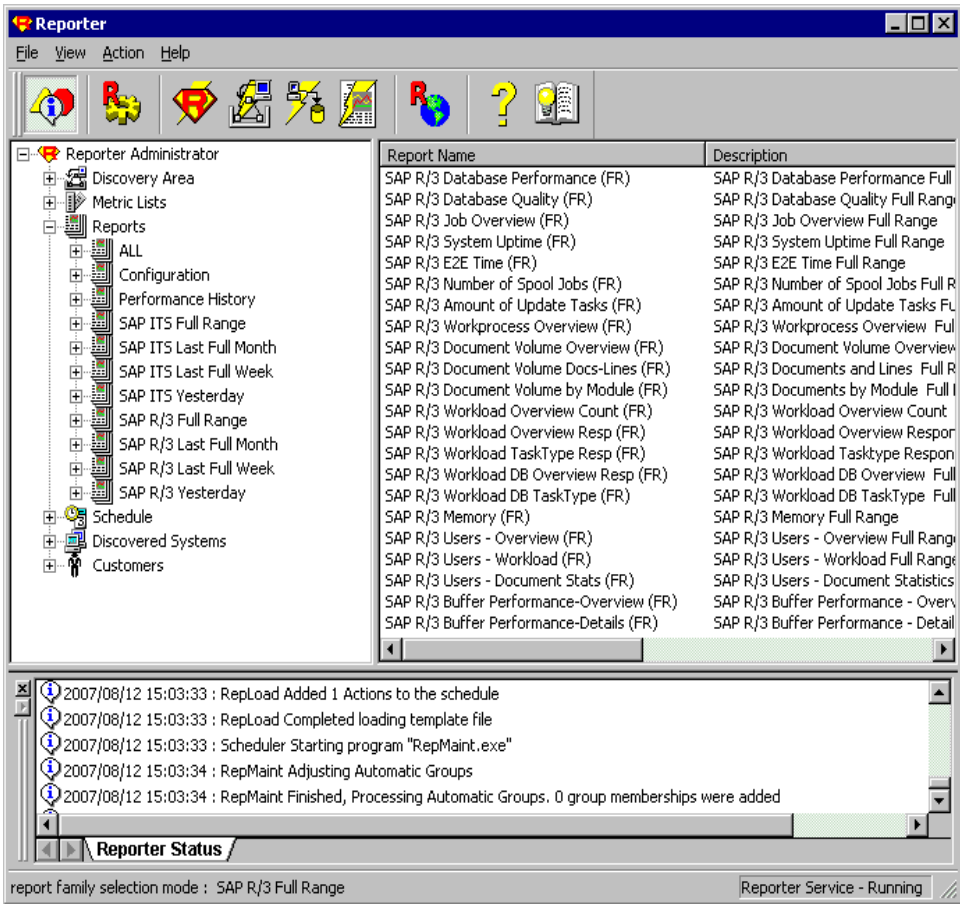
What Are Service Reports?

Service reports are web-based reports that are produced by HP Reporter (Reporter) using default templates and viewed using a web browser. Reporter allows you to request both scheduled and on-demand versions of reports.

SPI for SAP service reports correlate the data extracted from either the HP Software Embedded Performance Component (CODA) or the HP Performance Agent. You can use the correlated data to generate reports which display short-, medium-, or long-term views of your IT environment and supplement the detailed, real-time graphs that the Performance Manager provides. The combination of reports and graphs is a powerful tool for trend analysis. For example, you can:

- Identify potential bottlenecks in your IT system, so that you can take action before problems become acute.
- Use the information to help you to make accurate predictions for future upgrades.
- Collect accurate information to be used in measuring service levels.

Figure 23 SPI for SAP Service Reports



Upgrading the SPI for SAP Reports

If you are upgrading to version 10.70 from version B.09.01 or 09.01, you can continue to use existing data and monitors. However, versions 10.10, 08.11, and 08.71 of the SPI for SAP have different versions of the SAP/Performance monitor which require a version of the HP Reporter that is incompatible with the current version of the SPI for SAP. This means that you cannot use the current SPI for SAP reporter integration to view old reports prepared with versions 10.10, 08.11, and 08.71 of the SPI for SAP. In addition, 08.11 and 08.71 data must be removed from the Reporter database before you install the reporter integration package supplied with the version 10.10 of the SPI for SAP or later.

Upgrading the SPI for SAP reports in the manner described in this section removes from the Reporter system *all* old report data collected by the SPI for SAP. However, you can use database tools to preserve the tables containing information that you want to use after completing the upgrade process. For more information, see the documentation provided with the database product.

1 Remove the old SPI for SAP reporter-integration package using the standard Microsoft Windows software-removal method:

Start: Settings > Control Panel > Add/Remove Software

2 Install the new SPI for SAP reporter integration as described in Installing the SPI for SAP Reports on page 101.

Installing the SPI for SAP Reports

This section explains how to install the SAP and the SAP ITS service reports which come with the SPI for SAP and, in addition, provides information designed to help you prepare for the installation. This section covers the following topics:

Before You Begin

Before you install and set-up the SPI for SAP service reports, you must complete the following tasks:

1. Make sure either the HP Software Embedded Performance Component or the HP Performance Agent is running on all SAP managed nodes for which you want to generate service reports.
2. Make sure HP Reporter is available on an Microsoft Windows host.

   HP Reporter lite is no longer bundled with HP Operations Manager; you must install and use the *full* version of the HP Reporter to view SPI for SAP reports.

   You can install HP Reporter either on the HPOM management server or, to improve overall performance, on a separate system dedicated to the generation and display of service reports.
3. Make sure the SPI for SAP performance agent and the ITS monitor are available and configured on the machines for which you want to generate reports.
4. If you want to edit existing (or create new) service reports for the SPI for SAP, make sure that Crystal Reports is available on the machine hosting the HP Reporter. For more information about which software versions the SPI for SAP supports, see Compatible Software Versions on page 21.

Installing SAP Service Reports

The SPI for SAP inserts the SAP and SAP ITS service reports into the HP Reporter product as a snap-in package using InstallShield. This means that the HP Reporter must already be installed before you install the SPI for SAP service reports. During set-up of the SPI for SAP service reports you will be asked to confirm or specify the common application path for HP Reporter.

The common application path is the folder where HP Reporter is installed. The set-up attempts to discover this path automatically, and in most circumstances you should avoid changing it.

The set-up copies components to the directories listed in Table 14. All directory paths are relative to the Reporter common-installation path.

Table 14 Locations of SPI for SAP Service-Reports Components

Component	Directory
Installation script	`%OvInstallDir%\newconfig\`
Configuration files	
SAP report template files	`%OvReporter%\data\reports\SAP`
SAP ITS report template files	`%OvReporter%\data\reports\SAPITS`

To Install HP Reporter on the HPOM Management Server

To be able to generate and view service reports for the SAP Systems you are monitoring with the SPI for SAP, you first need to install the full version of the HP Reporter. You can install the HP Reporter either on the HPOM management server or, alternatively, on a separate machine, which is *not* the HPOM management server. For more information about installing the HP Reporter, see the HP Reporter product documentation. After you install and configure the HP Reporter, you need to install and configure the SPI for SAP reports package on the same machine.

If you install the HP Reporter on a machine which is *not* the HPOM management server, make sure the machine on which you install the HP Reporter can see the HPOM managed nodes, for which you want to generate service reports.

To Install the SPI for SAP Reports

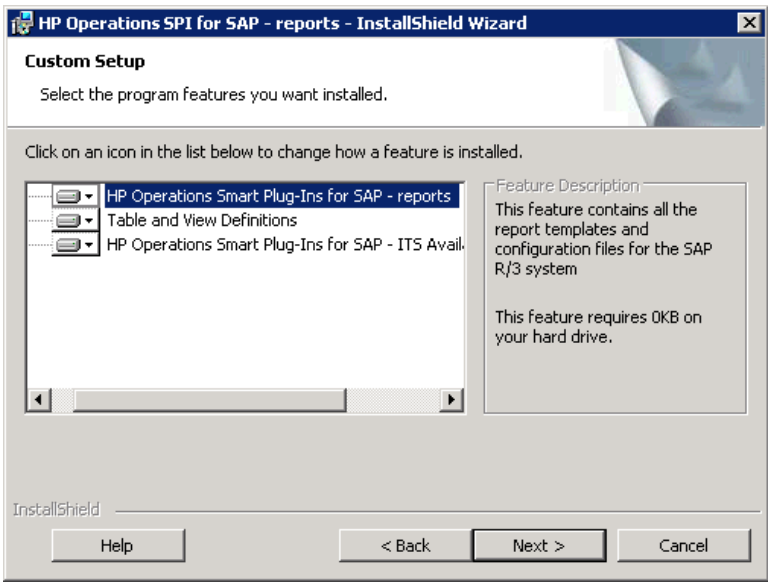
The information in this section describes the steps required to add the SPI for SAP service-reports to an existing HP Reporter installation. When you have completed this task, the SPI for SAP service reports will be available in the HP Reporter GUI, and you will be able to use them to generate SAP-specific service reports, which you can view in a web browser.

1. Make sure that the HP Reporter is installed and configured on the machine where you want to install the SPI for SAP service reports.
2. Insert the HP Operations Smart Plug-ins media into the DVD drive of the machine where you installed and configured the HP Reporter.
3. Browse to the following folder:

   `SPIs\SAP SPI Reporter Package`
4. Locate, select, and run the following file:

   `sapspi_reporter.msi`
5. Follow the instructions to complete the installation

Figure 24: SPI for SAP Reports InstallShield Wizard.



Configuring Report Packages

The set-up process of the SPI for SAP's service-report integration automatically performs the following tasks:

- Creates two new report groups: SAP_R3 and SAP_ITS_6.20
- Assigns new *metric lists* to the new SAP_R3 and SAP_ITS_6.20 groups
- Assigns new group *reports* to the SAP_R3 and SAP_ITS_6.20 groups
- Assigns new *system reports* to the SAP_R3 and SAP_ITS_6.20 groups

To Configure Report Packages

1. Verify that the installation of the SPI for SAP service reports completed successfully by confirming that the set-up process created the report and metrics groups listed in Configuring Report Packages on page 103.
2. In the Reporter console, browse to the Configure Report Packages window using the following menu option:

   File > Configure > Report Packages

   Check that the following packages are present in the list of installed packages.

   - SPI for SAP
   - SPI for SAP - ITS 6.20 Reports
3. If you choose to add SAP Systems manually to the HP Reporter, note that you can use the following values in the Add System window:

   ```
   System      host.name.com
   Network     SAP
   Domain      either "SAP" or "ITS" as appropriate
   ```

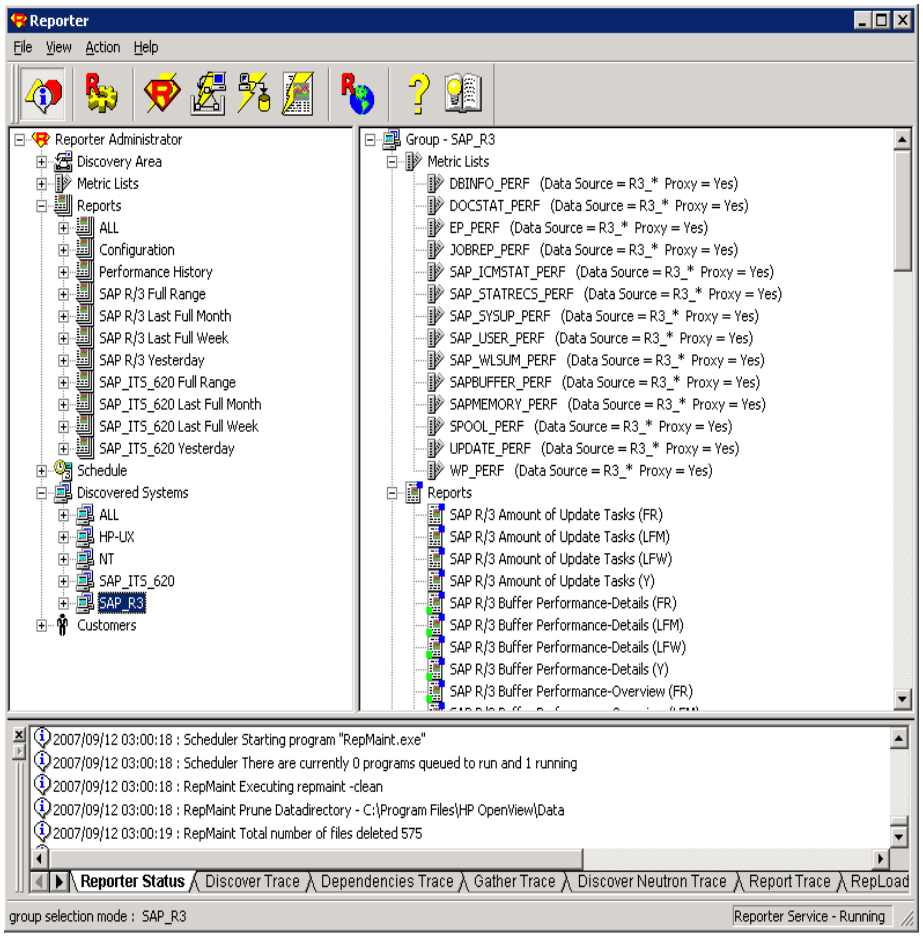
Check that the set-up process added your SAP NetWeaver and SAP ITS hosts to the appropriate Reporter group, namely; SAP_R3, SAP_ITS_620. The set-up process automatically assigns hosts to a report group according to the kind of data source (SAP NetWeaver, SAP ITS 6.20), which it discovers on the monitored host.

4 Click **OK**; the systems appear in the Reporter's details pane.

5 Use the Reporter GUI to schedule the generation of the SPI for SAP reports or generate them now using the option indicated below and illustrated inFigure 25 on page 104:

Actions > Run > Generate Reports

Figure 25 SPI for SAP Reports and Metrics



Removing the SPI for SAP Reports

In order to completely remove the SPI for SAP reports, you need to perform the following steps in the order specified:

- To Remove Reporter Snap-in Packages on page 105.
- Removing Binaries from the HP Reporter System on page 105.

To Remove Reporter Snap-in Packages

1. In Reporter, browse to:

   File > Configure > Reporter Packages

2. Select the following files from the Installed Packages window located in the right pane of the Configure Report Packages window:
   - SPI for SAP
   - SPI for SAP - ITS 6.20 Reports
3. Double-click the left arrow button to remove the selected packages from the Available Packages window: the selected packages appear in the list of Available Packages in the left pane of the Configure Report Packages window.
4. Click **OK** to finish.

Removing Binaries from the HP Reporter System

1. Go to the HP Reporter system.
2. Insert the HP Operations Smart Plug-ins media into the DVD drive of the machine where you installed and configured HP Reporter.
3. Run the HP Operations Smart Plug-ins wizard to remove programs.
4. Select **Remove Products**.
5. Select **Reports** under SAP SPI, and then follow the on-screen instructions to complete the deinstallation process.

10 Removing the SPI for SAP

This section describes how to remove the SPI for SAP software quickly and cleanly. You need to perform the following tasks, as appropriate, on either the SAP managed node(s) or the HPOM management server(s) on which you installed the SPI for SAP software.

To remove the SPI for SAP software, carry out the following high-level steps, which are described in greater detail in the corresponding sections that follow:

Removing the SPI for SAP Objects from Managed Nodes

Apply the removal transport from the R3Trans.car file on all the SAP nodes to remove all objects added by the SPI for SAP. See Applying the SAP Transports on page 31 for information on applying an SAP transport.

Removing SAP-management Functionality from Managed Nodes

To de-assign SAP management functionality from HPOM managed nodes:

1. On each managed node where you installed the SPI for SAP performance monitor, follow the corresponding deinstallation instructions in De-Installing the SPI for SAP Performance Packages on page 78.
2. Remove the SPI for SAP policies from the SAP NetWeaver and ITS managed nodes.
   a. In the HPOM console, locate and expand the following policy group:

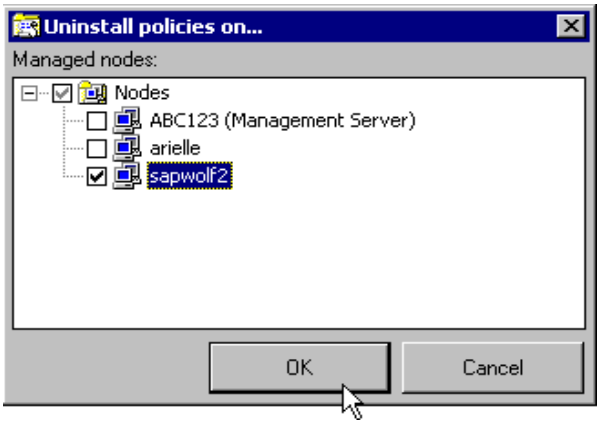
      Policy Management > Policy Group > SPI for SAP

   b. Select and right click the SPI for SAP policy group and remove the policies by using the following option in the pull-down menu:

      All tasks > Uninstall from...

   c. In the Uninstall Policies on... window which appears, select the managed nodes from which you want to remove the SPI for SAP policies as illustrated in Figure 26 and click **OK**.

Figure 26 Uninstalling SPI for SAP Policies



d Verify that the polices have indeed been removed from the SAP managed nodes by selecting and right-clicking the managed node in the console tree and using the following option in the pop-up menu, which appears:

View > Policy Inventory

Removing the SPI for SAP Software from the Management Server

To remove the SPI for SAP software from an HPOM management server:

1 On the HPOM management server, remove the SPI for SAP software as follows:

a In the Windows control panel, use the Add or Remove Programs tool to start the removal process; select HP Operations Smart Plug-ins from the list of installed programs and click **`Change`**.

b In the HP Operations Smart Plug-ins InstallShield Wizard which opens, click **`Next`** and read the instructions displayed.

c Click **`Next`** again to open the Program Maintenance dialog, which you can use to install and remove HP Operations programs.

d Check the Remove Products option and click **`Next`** to open a dialog which asks you to select the product you want to remove.

➤ The SPI for SAP does not appear on the first page of installed product components; click Next to scroll through the list of components to remove, as shown in Figure 27 on page 109.

2 Select SPI for SAP from the list of products in the Product Selection Uninstall screen, click **`Next`**, and follow the instructions displayed on screen.

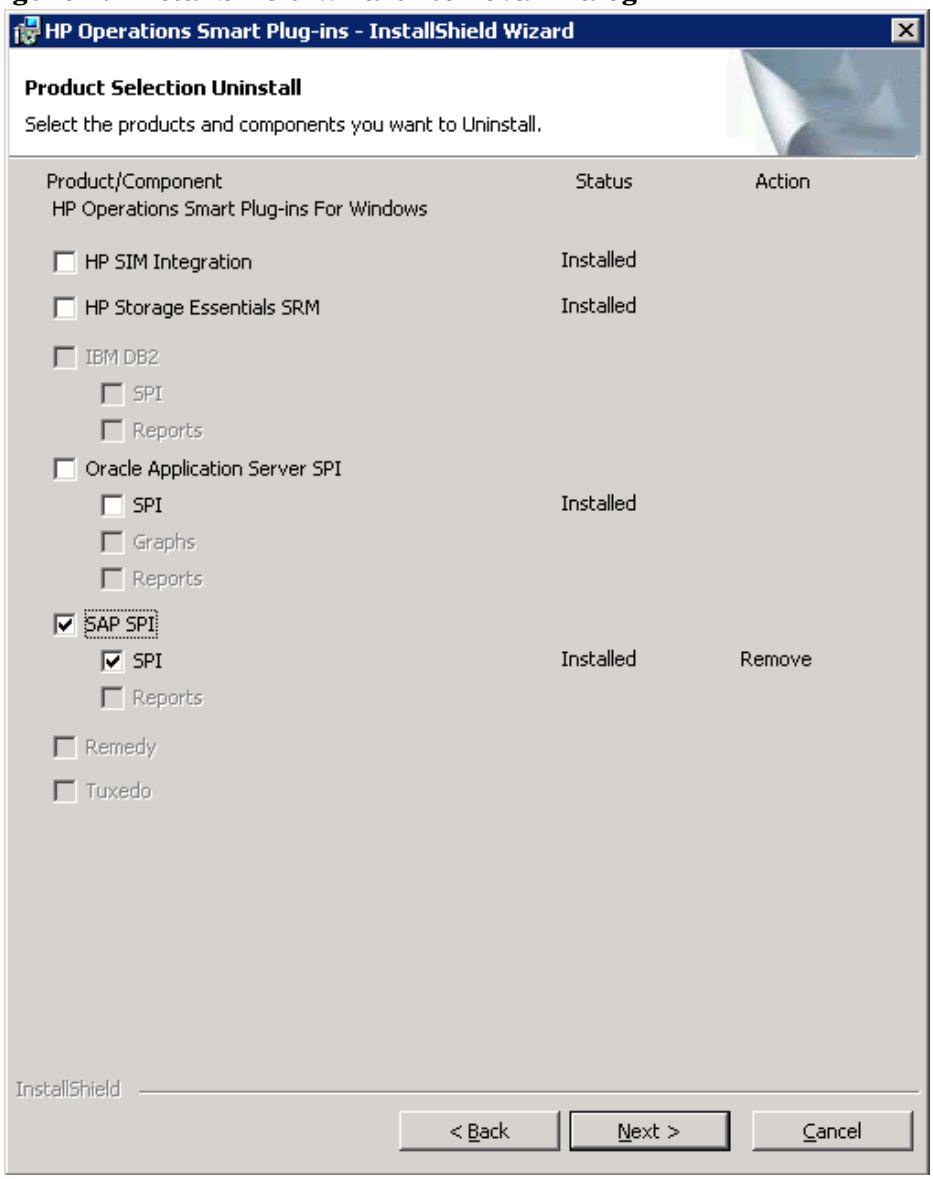
3 Click **`Finish`** when the product-removal operation completes.

4 In the HPOM console, remove manually any remaining SPI for SAP GUI components, for example:

- Remove any configuration-file policies you have added.
- Remove any policy groups you have created.

5 If you want to free the space occupied by the SPI for SAP monitor binaries on the HPOM managed nodes, you can redeploy the instrumentation to the managed nodes.

Figure 27 InstallShield Wizard Removal Dialog



A Using a Non-Privileged Windows User with the SPI for SAP

By default, the SPI for SAP tools and policies run under the $AGENT_USER account that has been configured with HP Operations Manager (HPOM) for Windows while adding the SAP node to the management server. If you use an HP Operations agent version that supports the use of a non-privileged user, $AGENT_USER does not need to be an administrative user.

To use a non-privileged Windows user with the SPI for SAP, follow these steps:

1. Install the HP Operations agent on the managed node. Refer to the *Manual Agent Installation* or *Remote Agent Installation* section in the HPOM online help for more information.
2. Change the default agent user (Local System) to a non-privileged user. Refer to the *Change the user of an HTTPS agent on a Windows node* section of the HPOM online help for more information.

Additional Requirements

While using a non-privileged user as $AGENT_USER with the SPI for SAP, the following policies and tools must be provided with the user credentials of a user with additional privileges:

- **PerfAgt START and PerfAgt STOP tools:** You must provide these tools with the rights to be able to start or stop the OV R3 Performance Agent service. Alternatively, you can enable the non-privileged user—which you plan to use as $AGENT_USER—to be able to start and stop the OV R3 Performance Agent service.
- **Install Performance Package (Windows) and Remove Performance Package (Windows) tools:** You must use the Install Performance Package (Windows) and Remove Performance Package (Windows) tools with an administrative user.

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