

HP Operations Smart Plug-in for SAP

for HP Operations Manager for UNIX[®]

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Installation and Configuration Guide

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1 Introduction to the HP Operations Smart Plug-in for SAP

This chapter provides an overview of the basic concepts necessary to understand 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) for UNIX 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.

The SPI for SAP is a software package linking SAP NetWeaver to HPOM. The union offers a complementary 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:

- Collects 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.

Components of the SPI for SAP

The SPI for SAP components include tools and policies that allow you to configure and receive data in the form of service problem alerts, messages, and metric reports. The SPI for SAP service map alerts are shown in the HPOM service map, while SPI for SAP messages and automatic action reports are available through the HPOM message browser.

Tools

In conjunction with HPOM, the SPI for SAP offers centralized tools, that help you monitor and manage the SAP systems. The SPI for SAP tools enable you to configure the management server's connection to selected server instances on specific managed nodes. The SPI for SAP tools include the tools for administrating and operating the SPI for SAP.

To access the SPI for SAP tools, open the Tool Bank window and click **SPI for SAP:Tools**. The following are the SPI for SAP tools:

- **SAP R/3 Admin** - SAP R/3 Administration of Global Configuration.
- **SAP R/3 Admin Local** - The SAP R/3 Admin Local group includes tools for editing and distributing files for local configuration.
- **SAP R/3 NT** - Tools for Windows managed nodes. These are only a subset of the Tools available for UNIX nodes.
- **SAP R/3 UN*X** - Tools for UNIX managed nodes. Some tools are also available for Windows nodes.

For more information on tools, see [Using SPI for SAP Tools](#) on page 61

Policies

SPI for SAP consists of policies that monitor the SAP systems. The policies contain settings that enable incoming data to be measured against predefined rules. These rules generate useful information in the form of messages. The messages have color-coding to indicate the severity level. You can review these messages to analyze and resolve the problem. There are several pre-defined corrective actions for specific events or threshold violations. These corrective actions can be triggered automatically or operator-initiated. Monitoring comprises of generating alarms related to critical events of the tool, and logging important performance metrics of the application server.

The SPI for SAP creates the following policy groups/sub groups and configuration files under the *en* folder.

- **SAP NW Java Monitoring 7.0**
- **SAP NW Java Monitoring 7.1**
- **SAP R3 6.x 7.0AS 7.1kernel**
- **SAP R3 6.xCI**
- **SAP R3 7.0CI 7.1kernel**

For more information on policies, see [Customizing SPI for SAP Policies](#) on page 71

Reports

SPI for SAP reports are web-based reports that are produced by HP Reporter (Reporter) using the default templates and viewed using a web browser. You can request both scheduled and on-demand versions of reports using Reporter.

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. You can use these reports for trend analysis. For more information on Reports, see [Integrating the SPI for SAP with HP Reporter](#) on page 109.

Functions of the SPI for SAP

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.

Server Performance and Availability Information

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 administrators about such conditions and provides the following additional assistance in the alert message:

- Advice about corrective action that should be taken
- A pre-defined action that the administrator can initiate.

An automatic action, such as an e-mail message to a manager if a critical condition occurs.

Displaying Information

The SPI for SAP policies generate messages when a threshold is exceeded. These messages can appear as:

Messages in the Message Browser– HP Operations Agent software compares the values gathered for the performance and availability of SAP against the monitor policy related to those specific areas. The agent software then forwards appropriate messages to the HPOM console. These messages appear with color-coded severity levels in the HPOM message browser.

Instruction Text– Messages generated by the SPI for SAP programs contain instruction text to help analyze and solve problems. You can perform corrective actions preassigned to events or they can be triggered automatically.

Instruction text is present in the Message Properties window. To view the text, right-click the message, select Properties, and chose the Instructions tab.

Metric Reports– In addition to the instruction text, some messages cause automatic action reports to be generated. These reports show conditions of a specific SAP instance. If a report is available, you can view it by clicking the Annotations tab in the Message Properties window.

Generating Reports using HP Reporter

You can integrate the SPI for SAP with HP Reporter to provide you with management-ready, web-based reports. The SPI for SAP Report package includes the policies for generating these reports. You can install the Report package on the Reporter Windows system.

After you install the product and complete basic configuration, by default, Reporter generates reports of summarized, consolidated data every night. You can use these reports to assess the performance of the system over a period of time.

Customizing Policies and Metrics

You can use the SPI for SAP policies without customization, or modify them to suit the needs of your environment. Some of the modification and customization that you can do are the following:

- Modify the default policies - Within a policy, you can change the default settings for:
 - Collection interval
 - Threshold
 - Message text
 - Duration
 - Severity level of the condition
 - Actions assigned to the condition (operator-initiated or automatic)
- Create custom policy groups – You can create custom policy groups using default policies as base. For more information, see [Customizing SPI for SAP Policies](#) on page 71.
- Create custom metrics– You can define your own metrics or User Defined Metrics (UDMs) to expand the monitoring capabilities of the SPI for SAP. For more information about UDMs see the *HP Operations Smart Plug-in for User Defined Metrics User Guide*.

2 Installing or Upgrading the SPI for SAP

This chapter provides the information you need to check the suitability of your systems for the installation of the Smart Plug-in for SAP. For instructions on installing the SPI for SAP R/3 Performance Agent, see the *HP Operations Smart Plug-in for SAP Reference Guide*.

Installation Packages

The following are the SPI for SAP packages available in the *HP Operations Smart Plug-ins DVD*.

SPI Package

The *HP Operations Smart Plug-ins DVD* for HPOM for UNIX contains the following packages:

For HP-UX: `<SPI DVD>\HPUX\HP_Operations_Smart_Plug-ins_HPUX.depot`

For Solaris: `<SPI DVD>\SOLARIS\HP_Operations_Smart_Plug-ins_SOLARIS.sparc`

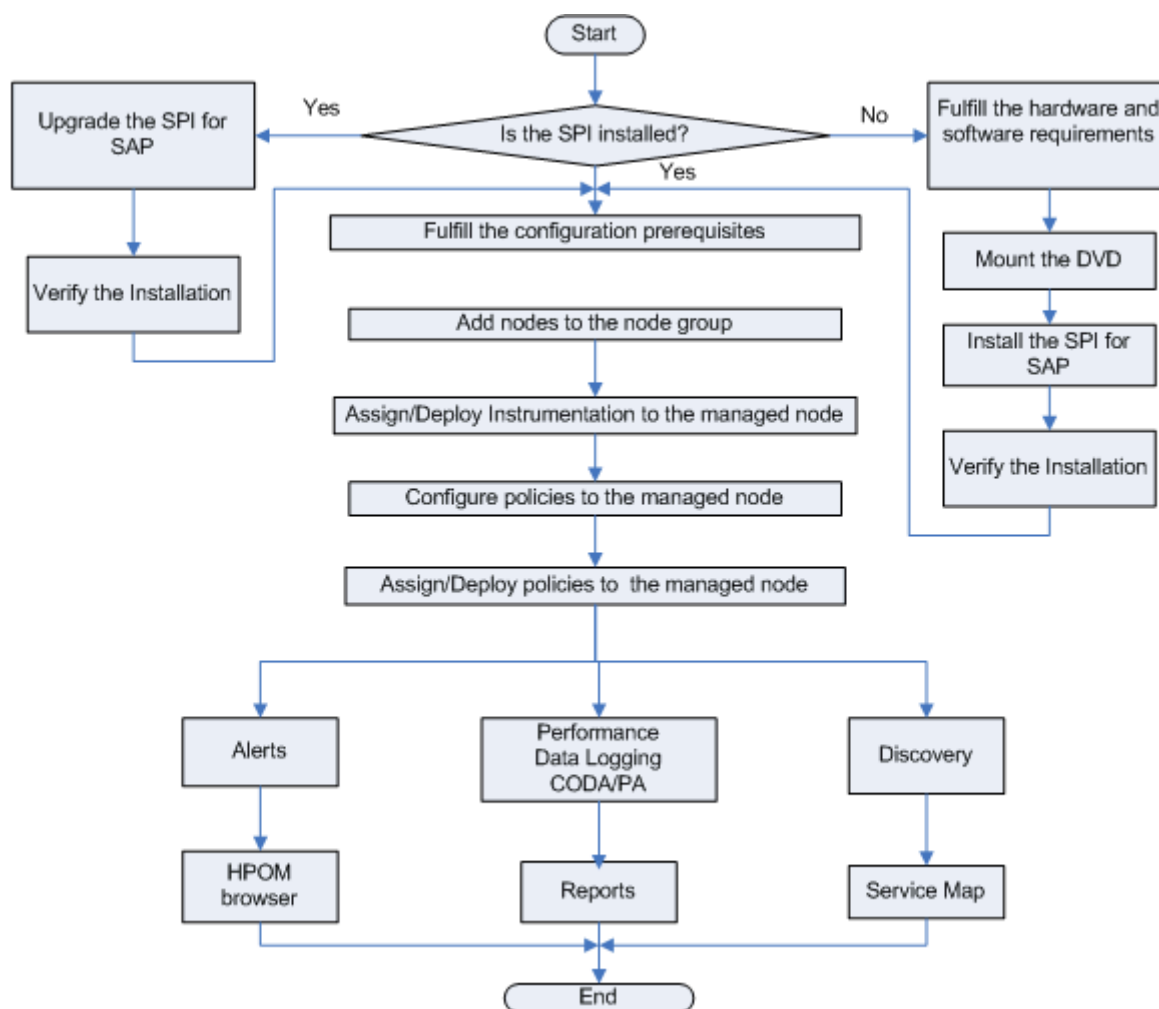
Reporter Package

The Reporter package contains the reports provided by the SPI. The Reporter gathers the data from the nodes managed by the SPI through HPOM, stores the data in its local database, and creates reports based on the default SPI report policies. The SPI for SAP reporter packages are available at the following location on the media:

`<SPI_DVD>\WINDOWS\OV_REPORTER\SAPSPI_REPORTER\sapspi_reporter.msi`

Installation Overview

The following flowchart summarizes the steps for installing, upgrading, and configuring the SPI for SAP.



Installation Prerequisites

Before starting to install or upgrade the SPI for SAP, you must perform the following tasks:

- Make sure that your system meets the requirements detailed in the following sections:
 - [System Requirements](#) on page 15
 - [Compatible Software Versions](#) on page 17
 - [Obsolete Software Versions](#) on page 18
- 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 (ABAP stack) to monitor. For each client, list the following data:
 - User ID and password
 - Hostname of the SAP application server
 - SAP system ID
 - SAP Instance number
 - SAP client number
 - Operating system platform (UNIX or Microsoft Windows)
- Create a list of all SAP clients (Java stack) to monitor. For each client, list the following data:
 - User ID and password
 - Hostname of the SAP application server
 - SAP system ID
 - SAP instance number
 - Cluster node ID
 - Operating system platform (UNIX or Microsoft Windows)

You will use this information to set up the environment configuration file for the SPI for SAP.



If you are upgrading from a previous version of the SPI for SAP, see [Upgrading the SPI for SAP](#) on page 24 for guidance on how to retain data and reduce or avoid the loss of existing customization, for example: configuration files or policies.

For more information, see the *HP Operations Smart Plug-in for SAP Reference Guide*.

Hardware Requirements

See the *HP Operations Manager for UNIX Installation Guide* for information on hardware requirements.

System Requirements

Before you install or upgrade the SPI for SAP, use the information provided in [Table 1](#) to ensure that your systems (management server and managed nodes) meet hardware, operating system, and disk space requirements.

[Table 1](#) lists the disk space requirements for both the management server and the managed node.

Table 1 Disk Space Requirements

Product	Version	Minimum Disk Space
SPI for SAP on the management server	9.00	1.4 GB ^a
SPI for SAP on managed nodes		Approximately 40 MB. ^b The disk-space requirement on the node will increase with the amount of data collected and logged by the SPI.
SPI for SAP Reporter Package		1 GB

- a. 300 MB for installation, 600MB for configuration, 200MB for uncompress action after first distribution
- b. Depends on the operation system installed

Table 2 lists the versions of HPOM for UNIX versions supported with this version of the SPI for SAP.

Table 2 Supported HPOM Management-Server Platforms

Product	Version	Operating System Platform
HPOM for UNIX	9.00	HP-UX, Solaris

Table 3 shows which combinations of the SAP NetWeaver kernel and (in brackets) the SAP NetWeaver Basis versions are supported by the SPI for SAP and, in addition, on which HPOM managed-node platforms the combination must be running. The third column of Table 3 reflects a change to the SAP NetWeaver version-numbering system and shows the SAP NetWeaver *basis* version and (in brackets) the SAP NetWeaver *kernel* version.

Table 3 Managed Node Platforms and SAP Kernel Versions

Managed Node Operating System	SAP NetWeaver Basis (<i>Kernel</i>)		
	6.40 (6.40)	7.0 (7.0)^a	7.1 (7.1)
AIX ^b	✓	✓	✓
HP-UX	✓	✓	✓
Linux	✓	✓	✓
Solaris	✓	✓	✓
Windows	✓	✓	✓

- a. Due to changes in SAP, the operation-mode monitor `r3monoms` is not supported.
- b. 64-bit OS runtime only



The SPI for SAP supports additional SAP application components, for example; BBP (Business-to-Business Procurement) and BW (Business Warehouse), *only* if the application component is compatible with one of the combinations of SAP NetWeaver Kernel/Basis versions specified in [Table 3](#). The SPI for SAP does *not* support specific SAP technology-components.

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

Compatible Software Versions

Before you install or upgrade the SPI for SAP, use the information provided in this section to ensure that the installation or upgrade process proceeds without problems. For example, note the following important points:

- Use [Table 2](#) to check that you are using a version of HPOM that is compatible with the current version of the SPI for SAP.
- Are both the HPOM server software and the HPOM agent software installed on the HPOM management server?
- Are the standard, HPOM, management-server templates assigned and distributed to the HPOM management server?
- Is HP Reporter available to view service reports for SAP NetWeaver, SAP NetWeaver performance data?

If you want to edit existing (or create new) Service Reports for the SPI for SAP, Crystal Reports version 9 must be running on the machine hosting the HP Reporter 3.80 (or higher).

- For Performance Agent functionality (see also the *HP Operations Smart Plug-in for SAP Reference Guide*):
 - HP Performance Manager must be available if you want to use performance graphing
 - HP Performance Agent software must be installed on all the SAP application servers you wish to monitor

The HP Operations Smart Plug-in's DSI-to-DDF wrapper utilities must be installed and running on the HPOM management server. You can check using the command;

```
swlist DSI2DDF
```

```
# DSI2DDF      2.40.110      HP Operations DSI2DDF
```

Note that the SPI for SAP currently works with DSI2DDF version 02.40 on supported versions of HP-UX and Solaris management server.

[Table 2](#) lists which versions of the HPOM management server software the SPI for SAP supports.

For information about the versions of other related software that is supported by the SPI for SAP, see the *HP Operations Smart Plug-in for SAP Software Release Notes*.

Obsolete Software Versions

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

- SAP R/3 4.6C kernel (4.6C with 4.6D kernel support is dropped)
- SAP ITS 4.6/6.10/6.20
- HP-UX 11.00
- `r3monsap`, the CCMS 3.x alert monitor used with SAP R/3 3.1- 4.5
- `r3monxmi`, the SAP System-log monitor (replaced by `r3monal` for 4.6C and later)
- `r3monits`, the SAP ITS 6.20 monitor

Installing the SPI for SAP Software

You can follow the instructions given below to install the SPI for SAP software.

Support Information: Detailed information on supported operating systems is available in the Support metrics available at <http://support.openview.hp.com/selfsolve/document/KM323488>.

Mounting the DVD on HP-UX

- 1 Log on as the user root.
- 2 Type the user's root unmask as:
`umask 027`
- 3 Create a directory to mount the DVD:
`mkdir /<mount_point>`

For example, `mkdir /DVDROM`

- 4 Insert the DVD into the disk drive and mount it as user root by entering:
`mount /dev/<dvdrom_drive_name>/<mount_point>`

For example, for a local DVD, you might enter:
`mount /dev/dsk/c0t2d0 /dvdrom`

You can also run SAM and mount the DVD to a specific path in the Disks and File Systems window.

Mounting the DVD on Solaris

Insert the DVD into the DVD drive. The DVD is automatically mounted (and unmounted) on Sun Solaris systems.

Installing the SPI for SAP Software on the HPOM Management Server

This section describes how to install the SPI for SAP software bundle from the DVD. To install the software:

- 1 Insert the DVD containing the SPI for SAP software in the DVD drive.
- 2 As user root, test the connection to the DVD drive to ensure that the Smart Plug-in for SAP product is accessible by using the following commands:

```
mkdir /DVDROM
mount /dev/dsk/c1t2d0 /DVDROM
```

On HP-UX:

```
swlist -s /DVDROM/HPUX/HP_Operations_Smart_Plug-ins_HPUX.depot SAPSPI
```

On Solaris:

```
pkginfo -d /DVDROM/SOLARIS/HP_Operations_Smart_Plug-ins_SOLARIS.sparc
HPOvSpiSap
```

Note that `/dev/dsk/c1t2d0` is used here only as an example. You should replace `/dev/dsk/c1t2d0` with the path to and the name of the appropriate device file on your machine.

Ensure that the product `SAPSPI` or `HPOvSpiSap` is present in the list of software products that is displayed. If it is not, check to make sure that the path to the drive is correct, and that the correct media is in the drive.

- 3 Install the software product.

To install the SPI for SAP software product on an HPOM management server on HP-UX, enter:

```
swinstall -s /DVDROM/HPUX/HP_Operations_Smart_Plug-ins_HPUX.depot  
SAPSPI
```

To install the SPI for SAP software product on an HPOM management server version 8.30 on Solaris, enter:

```
pkgadd -d /DVDROM/SOLARIS/HP_Operations_Smart_Plug-ins_SOLARIS.sparc  
HPOvSpiSap
```

- 4 If you are installing the SPI for SAP on an HPOM management server running in a high-availability cluster, no special customization is required. However, you need to keep in mind the following points:
 - a Use the `swinstall` command to install the SPI for SAP bits on *all* nodes in the high-availability cluster, where the HPOM management server is configured.
 - b On the node in the high-availability cluster where the HPOM management-server package is up and running, use the `r3itoins` command to configure the SPI for SAP. You only need to configure the SPI for SAP *once* in the high-availability cluster: you do not need to configure the SPI for SAP on the nodes in the high-availability cluster where the HPOM management server package is not running.
 - c On each *secondary* or *backup* node in the high-availability cluster (where the HPOM management-server package is not running), use the `r3itoins` command to specify the ports which SAP will use to access the HPOM management server on the *backup* node in the event of a fail over:

```
r3itoins -services
```

You can accept the port range proposed by default or specify the ports manually. In either case, note that you must specify the same ports for all nodes in the high-availability cluster.

Verifying the SPI for SAP Installation

To verify that the installation of the SPI for SAP completed successfully, follow these steps:

- 1 Launch the HPOM GUI as the HPOM administrator. To launch the console, select **Integrations** → **HPOM for Unix Operational UI**.

The User Login dialog box opens. You can log on with the following default administrative credentials:

User name: `opc_adm`

Password: `opc_adm`

- 2 Click **Browse** → **All Node Groups**. The All Node Groups window opens.

Check that the SPI for SAP node group `sap` is present. The `sap` node group must be empty at this point in time.

- 3 Click **Browse** → **Tool Bank**. The Tool Bank window opens.

Check that the SPI for SAP tool groups—SAP R/3 Admin, SAP R/3 Admin Local, SAP R/3 NT, and SAP R/3 UN*X—are present under the SPI for SAP group. You must also make sure that each of the SPI for SAP tool groups contains tools.

- 4 Click **Browse** → **All Message Groups**. The All Message Group window opens.

Check that the SPI for SAP message groups are present. SPI for SAP message groups start with R3_, for example; R3_CCMS.

- 5 Click **Browse** → **All User Profiles**. The All User Profiles window opens.

Check that the SPI for SAP User Profiles—SAP Administrator, SAP Backup, SAP Database, and SAP Operator—are all present.

- 6 Click **Browse** → **All Policy Groups**. The All Policy Groups window opens.

Check that the top-level SPI for SAP policy group SPI for SAP is present in the list of policy groups in the left pane and, by clicking it, contains the main SPI for SAP policy groups, for example; SAP NW Java Monitoring 7.0, SAP NW Java Monitoring 7.1, SAP R3 6.x7.0AS7.1kernel, SAP R3 6.xCI, SAP R3 7.0 CI7.1kernel.

Selecting the Performance Data Source

By default, HPOM for UNIX deploys the HP Performance Agent with all HPOM 8.x agents. HPOM Smart Plug-ins use the HP Performance Agent as the default source for the performance data required for graphing in HP Performance Manager and for reporting with the Reporter. Previously installed HP Operations products that use the HP Performance Agent will continue to use Performance Agent as the data source.

The information in this section explains what to do if you are using the Embedded Performance Component (also known as CODA) as the data source on the managed node and wish to switch to the Performance Agent. You can override the use of the Embedded Performance Component by setting up a small text file, `nocoda.opt`, which changes the data source from CODA to the Performance Agent.

Once configured, the `nocoda.opt` file must be stored in a specific location on each managed node, whose performance-data source you want to change from the Embedded Performance Component to Performance Agent. 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 4 shows the location of the `nocoda.opt` file on nodes managed by an HPOM for UNIX management server.

Table 4 HPOM 9.00 for UNIX Management Servers

Managed Node Operating System	Location of the nocoda.opt File
AIX	<code>https: /var/opt/OV/conf/dsi2ddf/nocoda.opt</code>
HP-UX, Linux, and Solaris	<code>https: /var/opt/OV/conf/dsi2ddf/nocoda.opt</code>
Microsoft Windows	<code>https: %OvDataDir%\conf\dsi2ddf\nocoda.opt</code>

To change the default setting for the data source from the Embedded Performance Component to Performance Agent, open the `nocoda.opt` file in a text editor and manually enter the appropriate information using the format and syntax illustrated in [An Example of the nocoda.opt File](#).

- 1 To designate Performance Agent as the agent for all data sources, enter the key word ALL at the top of the file.
- 2 To designate Performance Agent as the agent for a data source tied to a specific SAP NetWeaver instance, include a reference to each instance on a separate line of the `nocoda.opt` file, as shown in [An Example of the nocoda.opt File](#) and using the following format:

For... **Use the following format...**

SAP R3_<SAP_Hostname>_<SAPSID>_<SAP_Instance_ Number>_ DATA
NetWeaver:


- 3 Restart the HPOM agent on the managed node where the `nocoda.opt` file has been modified

An Example of the `nocoda.opt` File

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

Installing the SAP GUI on the HPOM Management Server

In this step, you install the SAP GUI on the HPOM management server using your SAP NetWeaver installation DVD; the SAP NetWeaver installation media contains all the instructions and information about pre-requisites that you need to perform the installation process. You should use the most recent version of the SAP GUI available for your environment. Note that most of the operator-initiated actions and applications included in the SPI for SAP have to start the SAP GUI. For this reason, a SAP GUI binary *must* be installed on the HPOM management server or the remote console.

 SAP does not support the SAP GUI on HP-UX/Itanium. The SPI for SAP functionality that depends on an SAP GUI being installed on the HPOM management server is not available when installing the HPOM management server on Itanium. Instructions and pre-requisites for installing the Java GUI for SAP may be found on the SAP installation DVD.

Make sure the SAP GUI on the HPOM server connects to the SAP system with the necessary authentication.

After installing the SAP GUI from your SAP NetWeaver installation media, you need to make the location of the SAP GUI binaries known to the SPI for SAP by running the following commands as user root on the HPOM management server:

- 1 Set the umask. Enter: `umask 22`
- 2 Set up a link to the SAP GUI. Enter:

```
ln -s <your_install_path_to_the_SAPGUI>/sapgui \  
/opt/OV/lbin/sapspi/sapgui/sapgui
```

```
ln -s <your_install_path_to_the_SAPGUI>/guilogon \  
/opt/OV/lbin/sapspi/sapgui/javaguilogon
```

- 3 Start the SAP GUI using the following command:

```
/opt/OV/lbin/sapspi/sapgui/sapgui \  
/H/<hostname>/S/<port_nr>
```

where *<hostname>* is the name of the server on which the SAP NetWeaver instance you want to connect to is running, and *<port_nr>* is the port number allocated to the SAP process as defined in */etc/services*.

- 4 Configure your SAP GUI to use the SPI for SAP application Java R/3 Frontend. For example, you need to create a *platin.ini* file in the home directory of the user calling the application. The *platin.ini* file lists the SAP hosts and instances which are available for login. Refer to the SAP GUI installation instructions on the SAP NetWeaver installation media for more details.

Upgrading the SPI for SAP

The SPI for SAP 12.00 supports HPOM for UNIX 9.00. If you want to upgrade from SPI for SAP 11.00 to the current version, perform the following tasks:

- Upgrade the management server from HPOM for UNIX 8.3x to HPOM for UNIX 9.00
- Migrate SPI for SAP from HPOM for UNIX 8.3x to HPOM for UNIX 9.00
- Upgrade SPI for SAP 11.00 on HPOM for UNIX 9.00 to SPI for SAP 12.00

Upgrade the Management Server from HPOM for UNIX 8.3x to HPOM for UNIX 9.00

Read and follow the steps provided in *HP Operations Manager for UNIX 9.00 Installation Guide* for migrating or upgrading HPOM for UNIX 8.x to HPOM for UNIX 9.00.

Migrate SPI for SAP from HPOM for UNIX 8.3x to HPOM for UNIX 9.00

The instrumentation files and other SPI specific data are migrated while migrating or upgrading HPOM 8.x server (where SPI for SAP 11.00 is installed) to HPOM 9.00. Some SPI specific data, however, must be migrated manually.

There are two types of migration:

- Migrating HPOM from one system to another
- Upgrading HPOM on the same system

Migrating HPOM from One System to Another

Install the HPOM for UNIX 9.00 on a new system. To perform the migration from one system to another, follow these steps:

- 1 After completing migrating HPOM for UNIX 8.xx to HPOM for UNIX 9.00, create the following directories on the target HPOM for UNIX 9.00 server:

```
/opt/OV/sbin/sapspi/  
/opt/OV/license-agreements/sapspi/  
/opt/OV/paperdocs/sapspi/  
/var/opt/OV/share/conf/sapspi/
```

- 2 Copy the files present in the folders created in the above step from HPOM for UNIX 8.xx to HPOM for UNIX 9.00 server at their respective folders.
- 3 Copy the following files from HPOM for UNIX 8.xx to HPOM for UNIX 9.00 server at their respective folders.

Upgrading HPOM on the Same System

To upgrade HPOM for UNIX 8.x to HPOM for UNIX 9.00 on the same system, follow these steps:

- 1 After downloading the current HPOM for UNIX 8.x configuration (That is, after performing the step “Downloading the current HPOM 8.x configuration” mentioned in *Chapter 8, Upgrading HPOM to version 9.00, of the HP Operations Manager for UNIX*

9.00 *Installation Guide*), copy the contents of the following directories:

```
/opt/OV/lbin/sapspi/  
/opt/OV/license-agreements/sapspi/  
/opt/OV/paperdocs/sapspi/  
/var/opt/OV/share/conf/sapspi/
```

- 2 Copy the files into respective folders in HPOM for UNIX 9.00.
- 3 Proceed with the rest of the steps for upgrading HPOM for UNIX 8.x to HPOM for UNIX 9.00 as mentioned in *HP Operations Manager for UNIX 9.00 Installation Guide*.

Limitations and Workarounds

These are the following limitations for the SPI for SAP support on HPOM for UNIX 9.00:

- You must complete the migration process from HPOM 8.xx to HPOM 9.00 before upgrading the SPI for SAP to version 12.00. Once the SPI for SAP 12.00 is installed, migrating from HPOM 8.xx is not supported.
- Having the SPI for SAP 11.00 (migrated from HPOM 8.xx) and SPI for SAP version 12.00 (newly installed from SPI DVD 2009) on HPOM 9.00 is an intermediate mode and you must move all managed nodes to the SPI for SAP 12.00 as soon as possible.
- If you have multiple SPIs deployed on a managed node, the node can be monitored either by SPI DVD 2008 SPIs or SPI DVD 2009 SPIs. Monitoring a node by combination of SPIs from SPI DVD 2008 and SPI DVD 2009 is not supported.
- If you have the SPI for SAP 12.00 installed on HPOM 9.00 systems, which also has the SPI for SAP 11.00 as well, the following points are true.
 - You must configure newly added managed nodes using the SPI for SAP 12.00.
 - No configuration is possible on the existing or old managed nodes monitored by the SPI for SAP 11.00.

This is because the SPI for SAP 11.00 configuration tools are overwritten by the SPI for SAP 12.00 tools and these tools are incompatible.

- Patches for the SPI for SAP 11.00 must be installed before you start the HPOM migration process. Once the SPI for SAP 12.00 is installed, no patches or hot-fixes pertaining to the SPI for SAP 11.00 could be installed on the HPOM server.
- To invoke the GUIs related to SPI for SAP 12.00, you must install X-windows client software on the machine from which you will launch the HPOM for UNIX 9.00 server Operator GUI.
- Installing patches that would be released in the future for the SPI for SAP 11.00 are not supported on HPOM for UNIX 9.00 after migration. However, patch can be installed on the HPOM for UNIX 8.xx server and migrated to HPOM for UNIX 9.00 environment.
- After migration from HPOM 8.xx to HPOM 9.00, when you run license reporting tool from HPOM 9.00, errors would be reported. This is an expected behavior. You can ignore the error.

Upgrade the SPI for SAP 11.00 to SPI for SAP 12.00 on HPOM for UNIX 9.00

You can upgrade the SPI for SAP from HPOM for UNIX 8.3x to HPOM for UNIX 9.00 by using either of the following:

- HP Operations Smart Plug-in Toolkit
- HPOM for UNIX console

Upgrading the SPI for SAP from Smart Plug-in Upgrade Toolkit

The HP Operations Smart Plug-in Upgrade Toolkit (SPI Upgrade Toolkit) helps you upgrade HP Operations Smart Plug-ins to a higher version while retaining the customizations done on policies. During the SPI for SAP upgrade process, the SPI Upgrade Toolkit enables you to store the modifications done on the customer version of policies. For a specific policy, the SPI Upgrade Toolkit analyzes and compares three versions—base, customer, and factory. It helps you select the settings of the base, customer, or factory version of the policy—depending on your requirement.

To upgrade the SPI for SAP using the SPI Upgrade Toolkit, follow the instructions in the *HP Operations Smart Plug-in Upgrade Toolkit UNIX User Guide*.

Upgrading the SPI for SAP from HPOM for UNIX Console

This section describes how to upgrade the SPI for SAP software from a previous version to the current version. Once you have upgraded the SPI for SAP software on the HPOM management server, you will need to use the information in [Verifying the SPI for SAP Installation](#) on page 20 to ensure that the software upgrade completed successfully.

To migrate the SPI for SAP from an older version to the latest version, follow these steps:

- 1 Ensure you have read and understood the requirements in [System Requirements](#) on page 15 and [Compatible Software Versions](#) on page 17.
- 2 Use the `opc_backup` command to save the complete, current configuration. This enables you to restore the configuration in the event that the upgrade is unsuccessful:
 - a It is recommended but not *absolutely* necessary that you download all configuration data using the HPOM GUI (and the All option) before you back up the HPOM installation. You can also use the command `opccfgdwn(1m)`, which downloads *all* configuration data by default.

You should also consider downloading history messages and audit entries using the `opchistdwn(1m)` and `opcauddwn(1m)` commands, respectively.

- b Exit all running HPOM GUIs.
- c Make a full backup of the current installation. Enter:

```
/opt/OV/bin/OpC/opc_backup
```

When prompted:

```
Do you want to use the full or configuration backup?  
(f | c) ==>
```

Enter: **f** for a *full* backup that includes the HPOM binaries and the configuration data.

- d Make safety copies of any configuration files that contain modifications you made to the original configurations. [Table 5](#) shows the directories where configuration files can be found. Note that the configuration has changed from the previous SPI for SAP

version to the current version, for example; message conditions. In addition, although the configuration files from the older version are compatible with the current version, the default configuration has changed for some of the monitors.

- ▶ It is not recommended to overwrite newly installed configuration files with old ones. Rather, you should carefully incorporate into the new configurations files any changes that were made to the old configuration files

Table 5 Locating SPI for SAP Configuration Files

Configuration Files	Directory Location
Originals ^a	/opt/OV/newconfig/var/opt/OV/share/conf/sapspi
Global ^b	/var/opt/OV/share/conf/sapspi/global
Local	/var/opt/OV/share/conf/sapspi/local

- a. Originals: placed here during installation of the SPI for SAP software. Note that older versions of the SPI for SAP installed the configuration files to: /opt/hpitosap/config/[cmds|monitors], a directory which is not removed as part of the upgrade to 11.00.
- b. Working copies of the originals, which are placed here during configuration of the SPI for SAP.

- 3 If you have modified any of the SPI for SAP policy groups, create a safety copy of the SPI for SAP policy group and all the policies it contains. For instructions concerning how to copy policies, refer to the *HP Operations Smart Plug-in for SAP Reference Guide*.

- ▶ You cannot simply overwrite the new policies delivered as part of SPI for SAP version 12.00 with the backup copy of the previous policy version. You have to merge any changes you made to the old policies into the new policies. Since some of the new policies have been revised and improved, overwriting them with an older version will result in unmatched messages.

- 4 If you are using the SPI for SAP performance-monitor sub-agent version 11.00, please read the section about upgrading the SPI for SAP R/3 Performance Agent in the *HP Operations Smart Plug-in for SAP Reference Guide* before continuing with the next step, which concerns the removal of the old SPI for SAP software.

- ▶ You need to remove the old SPI for SAP performance monitor subagent before you remove and upgrade the SPI for SAP.

- 5 Remove the old SPI for SAP software from the management server and the managed nodes:
 - a Remove the SPI for SAP components and the agent software from the managed nodes using the HPOM GUI.
 - b Remove the SPI for SAP performance-monitor sub-agent components from the managed nodes using the HPOM GUI.
- 6 Remove the old SPI for SAP software from the management server and the managed nodes:
 - a Do *not*, even if prompted, delete any HPOM UI-integration elements: most elements remain unchanged between the previous and current versions of the SPI for SAP.

- b Before removing the existing SPI for SAP software from the HPOM management server, remember to run the command `r3itoinis -u`, which removes the SPI for SAP binaries from the HPOM database. The following message is displayed:

Removing SPI for SAP instrumentation from OVO instrumentation directory tree.

- c Use the `swremove(1M)` command to remove the SPI for SAP software from the management server. On the management server, as user `root`, enter:

```
swremove SAPSPI
```

- 7 Install and configure the new SPI for SAP software according to the instructions provided in [Installing the SPI for SAP Software](#) on page 18.

Answer “No” when SPI for SAP’s `r3itoinis` script asks whether to overwrite the existing version of the configuration-file with the new SPI for SAP factory defaults, as follows:

```
A set of SPI for SAP configuration files is already in use. Uploading the
factory defaults now will overwrite the configuration files already in
use. Overwrite the existing configuration files with the factory defaults?
<y,n> No
```

- 8 HPOM provides a number of tools to help you cross check duplications and changes, which result from the upgrade. For example the `opcdbidx` command checks for any duplication of applications. For information about what tools are available with HPOM to help you merge old and new configurations *after* the upgrade, see the upgrade section in the *HP Operations Manager for UNIX Installation Guide for the Management Server*.

- 9 Upgrade the SPI for SAP R/3 Performance Agent.

Read carefully the instructions in the section about upgrading the SPI for SAP R/3 Performance Agent in the *HP Operations Smart Plug-in for SAP Reference Guide* before converting any data.

- 10 To remove the old directory structure, enter:

```
rm -r /opt/hpitosap
```



When you upgrade SPI for SAP from a previous version to the 12.00 version, you must deploy the instrumentation and deploy all the configuration files except `r3itosap.cfg` file. You must then deploy the scheduled policies.

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 directory on the management server:

```
sapRFCLibSrc=/tmp/Sap_RFC_Downloads/Libraries
```

- 2 Inside the newly created `Libraries` directory, create the following directory structure:

```
/Libraries
  /Windows
    /32bit
    /x64
  /Linux
    /x64
    /IPF64
  /Sun
    /sparc
  /HPUX
    /IPF64
    /PA
  /Aix
    /x64
```

- a Create the `Libraries` directory under the `/tmp/Sap_RFC_Downloads` directory.
 - b Under the `Libraries` directory, create the `Windows`, `Linux`, `Sun`, `HPUX`, and `Aix` directories.
 - c Under the `Windows` directory, create the `32bit` and `x64` directories.
 - d Under the `Linux` directory, create the `x64` and `ipf64` directories.
 - e Under the `Sun` directory, create the `sparc` directory.
 - f Under the `Aix` directory, create the `x64` directory.
 - g Under the `HPUX` directory, create the `IPF64` and `PA` directories.
- 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:

Table 6 SAP Libraries

Node Platform	Library File	Copy into the Folder
Windows 32-bit	librfc32.dll	/Windows/32bit
Windows X64	librfc32.dll	/Windows/x64
Linux	librfccm.so	/Linux

Table 6 SAP Libraries

Node Platform	Library File	Copy into the Folder
Linux	librfccm.so	/Linux/x64
Linux	librfccm.so	/Linux/ipf64
Solaris	librfccm.so	/Sun/sparc
HP-UX IA-64 64-bit	librfccm.so	/HPUX/IPF64
HP-UX PA-RISC	librfccm.sl	/HPUX/PA
Aix ^a	librfccm.so	/AIX/x64

a. 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 directories, run the Install the RFC Library application on the management server from the **SPI for SAP > SAP R/3 Admin** tool group.

3 Configuring SAP-Specific Tasks

This chapter provides the information you need to configure SAP NetWeaver to recognize and work with the Smart Plug-in for SAP.

Customization in SAP

- Enable or disable SAP NetWeaver client groups so that these are tracked or not tracked in the CCMS alert monitor. This method is discussed in the *HP Operations Smart Plug-in for SAP Reference Guide*.
 - Enabled messages cause a CCMS alert to be created, which can then be identified by the SPI for SAP CCMS alert monitor and forwarded to the HPOM management server.
 - If a message is disabled in the CCMS alert monitor, there will be no internal SAP NetWeaver CCMS alert, so there will also be no HPOM message.
- Set thresholds for the inclusion of alert messages in the SAP NetWeaver CCMS alert monitor. This method is discussed in the *HP Operations Smart Plug-in for SAP Reference Guide*.
- Set up selected alert messages so that they are included in the SAP NetWeaver system log file. This method is discussed in the *HP Operations Smart Plug-in for SAP Reference Guide*.

In this Section

The tasks in this phase require knowledge of SAP transactions and specific monitoring requirements. You will be working with the HPOM GUI as well as on the SAP system application servers. You will need to log in to HPOM as an operator and to the SAP clients as a user with sufficient authority to perform the SAP tasks included in this phase. These tasks are summarized as follows:

- 1 [Applying the SAP Transport](#) on page 32.

In this step, you copy the SPI for SAP transport files to the SAP transport directories on each SAP NetWeaver central instance and apply them. These files are placed temporarily in the HPOM directory to facilitate the HPOM administrator task of distribution of SPI for SAP components to SAP nodes.

- 2 [Setting Up an SAP User for HPOM](#) on page 35.

This is necessary so that the SPI for SAP can log on to SAP whenever SPI for SAP applications, monitors, or actions need access to SAP.

- 3 [Configuration Values for SPI for SAP Monitors](#) on page 37. For more information, see the *HP Operations Smart Plug-in for SAP Reference Guide*.

➤ After you have set up and distributed the configuration values, the SPI policies must be distributed to the SAP nodes. See [Configuring HPOM Administration Tasks](#) on page 41.

- 4 [Modifying Configuration-File Templates](#) on page 38.

The SPI for SAP validates the contents of r3moncol-based configuration files when you attempt to save them and will not allow you to save a file that contains a configuration error.

Applying the SAP Transport

In this step, you copy the transport files that are delivered with the SPI for SAP to the SAP transport directories on each SAP central instance. The transport that you import in this step contains SAP roles and authorization profiles, which are required to complete the configuration of the SAP user later in this section.

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.

➤ 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 already exist.

The SPI for SAP includes the following transport files:

- **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 the SAP's central monitoring system (CEN) which monitors all the satellite systems connected to it through the r3monal monitor.

- **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.

The naming conventions used for the transport objects are as follows:

Objects in SPI for SAP

Development Class: /HPOV/SAPSPI

Function Groups: /HPOV/ZLPO
 /HPOV/ZSPA
 /HPOV/ZSPB

/HPOV/ZSPY
 /HPOV/WEBAS
 /HPOV/WEBAS70
 /HPOV/SOLMAN

Function modules: /HPOV/OV_*

Programs: /HPOV/YSPI*
 /HPOV/ZHPSPI*

Roles: /HPOV/SAPSPI_MONITORING*
 Roles: /HPOV/SAPSPI_SECURITY_MON



The following procedure requires the CAR/SAPCAR command, which you can find on the SAP Kernel CD.

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

- 1 In the HPOM All Tool Groups window, open the **SPI for SAP > SAP R/3 Admin** tool group.

Type	Label	Name	Description
<input type="checkbox"/>	ABAP Dispatcher	SAP_SPITools:Admin:ABAP_Dispatcher	Configure ABAP Dispatcher Monitoring
<input type="checkbox"/>	ABAP/4 Dump	SAP_SPITools:Admin:ABAP/4_Dump	Configure ABAP/4 Dump Monitoring
<input type="checkbox"/>	ALE	SAP_SPITools:Admin:ALE_Monitor	Configure ALE Monitoring
<input type="checkbox"/>	Alert Collector	SAP_SPITools:Admin:Alert_Collector	Configure Alert Collector Monitoring
<input type="checkbox"/>	CCMS 4.x	SAP_SPITools:Admin:CCMS_4.x	Configure CCMS Monitor for SAP R/3 4.x Mo
<input type="checkbox"/>	Create SPI SAP NetWeaver Config	SAP_SPITools:Admin:CreateSPISAPNetweaverConfig	Creates the configurations for SPI SAP to m
<input type="checkbox"/>	CTS	SAP_SPITools:Admin:CTS	Configure Correction & Transport System M
<input type="checkbox"/>	Delete Config	SAP_SPITools:Admin>Delete_Config	Delete global configuration files on selected
<input type="checkbox"/>	Install Config	SAP_SPITools:Admin:Install_Config	Install configuration on selected nodes
<input type="checkbox"/>	Job	SAP_SPITools:Admin:Job	Configure Job Monitoring
<input type="checkbox"/>	Lock Check	SAP_SPITools:Admin:Lock_Check	Configure Lock Check Monitoring
<input type="checkbox"/>	Move SAP Transport	SAP_SPITools:Admin:Move_SAP_Transport	Transfer the SAP R/3 transport to the selec
<input type="checkbox"/>	R/3 Service Discovery	SAP_SPITools:Admin:OvR3ServiceDiscovery	Trigger SAP R/3 Service Discovery
<input type="checkbox"/>	Install Performance Package (Windows)	SAP_SPITools:Admin:PerfInsNT	Install Performance Package on Windows n
<input type="checkbox"/>	Install Performance Package (UNIX)	SAP_SPITools:Admin:PerfInsUNIX	Install Performance Package on UNIX node
<input type="checkbox"/>	PerfAgt	SAP_SPITools:Admin:Performance_Agent	Configure Performance Agent Monitoring
<input type="checkbox"/>	Remove Performance Package (Windows)	SAP_SPITools:Admin:PerfRmNT	Remove Performance Package from Windo

- 2 Select one or more SAP nodes.
- 3 In the SAP R/3 Admin tool group, click the Move SAP Transport icon. A message appears in the message browser indicating that the transport has been moved to the specified directory.



The copy operation fails if the operating-system user executing the Move SAP Transport application does not have write permission in the transport directory (/usr/sap/trans) on the managed node (SAP server). Either enable write access to the transport directory or copy the files manually.

- 4 As an SAP administrator (<SID>adm) on the HPOM managed node, use the CAR (or SAPCAR) command to unpack the transport files to /usr/sap/trans. Enter:

CAR -xvf R3Trans.car

The SPI for SAP transport package contains a number of different transport files, for example: the main SPI for SAP transport, test programs, user-roles, and special localized text symbols. Some transports are mandatory; some are optional. Which transports you need to import depends on the version of SAP running in the System you want to monitor with the SPI for SAP. For more information about the SPI for SAP transports, their contents, and whether they are mandatory, see the transport read-me file on the management server: `/usr/sap/trans/readme`.

- 5 You can import the SPI for SAP transport either by using command line or SAP GUI.

To import SPI for SAP transport using command prompt, follow these steps:

Import the SPI for SAP-related transport to your SAP application servers. Enter the following commands as SAP administrator (`<SID>adm`) on the managed node:

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

Where the `<SID>` is the SAP System ID on the HPOM managed node and `<transport_file_name>` is the name of the transport file, which corresponds to the version of SAP NetWeaver 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 NetWeaver versions, see the following file on the HPOM management server after installation of the SPI for SAP bits: `/opt/OV/lbin/sapspi/trans/readme`.

If, when running the `tp addtobuffer` or `tp import` commands with versions of SAP NetWeaver up to and including SAP 4.5, the `tp` command indicates that it cannot find files or required information, you can use the `pf=<path>/TPPARAM` option to show the location of the `tp`-parameters file:

```
pf=/usr/sap/trans/bin/TPPARAM
```

The `TPPARAM` file contains the configuration parameters, which the `tp` command uses. The configuration parameters include such things as the `SAPSID`, the database hostname, and the database configuration paths. Note that, from SAP 4.6 onwards, the name and format of the `TPPARAM` file has been changed as follows:

```
pf=/usr/sap/trans/bin/TP_DOMAIN_<SID>.PFL
```

If you encounter errors when using the `tp addtobuffer` command, you can clean the `tp` buffer using the following command:

```
tp cleanbuffer <SID>
```

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

- a 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.

- b In the SAP GUI, enter the following transaction ID to display the SAP Transport Management System (SMTS) login page: **STMS**
- c In the SAP Transport Management System login page, click the **Transport** icon (or press the **F5** function key).

- d Select the SID of the SAP System into which you want to import the SPI for SAP transport.
 - e In the file menu, click **Extras > Other requests > Add**.
 - f 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`
 - ▶ 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.
 - g Select the **Check [✓]** icon or use the **Enter** key to add transaction requests.
 - h Highlight the desired transport.
 - ▶ If you do not select any transport, SAP assumes you want to select *all* transports in the list.
 - i Select **Request > Import**. The Import Request dialog box opens.
 - j Enter the target client number (000 is the default client number).
 - k Check items in the Option tab that are appropriate for your system.
 - l Click the **Check [✓]** icon or press **Enter**.
- 6 Repeat this procedure for each SAP System you want to manage with HPOM.

Setting Up an SAP User for HPOM

For every SAP SID where you want to allow the automated log on of HPOM operators:

- 1 Log on to SAP.
- 2 Call the following transaction: `/nsu01`
- 3 Create a new user named ITOUSER using the parameters specified in the following list:
 - ▶ Since user-role transports are client dependent, the SAP user "ITOUSER" must be created in the same SAP client as the import client of the SPI for SAP user-role transport. Otherwise it is not possible to assign user role `/hpoov/sapspi_monitoring*` to the new "ITOUSER".

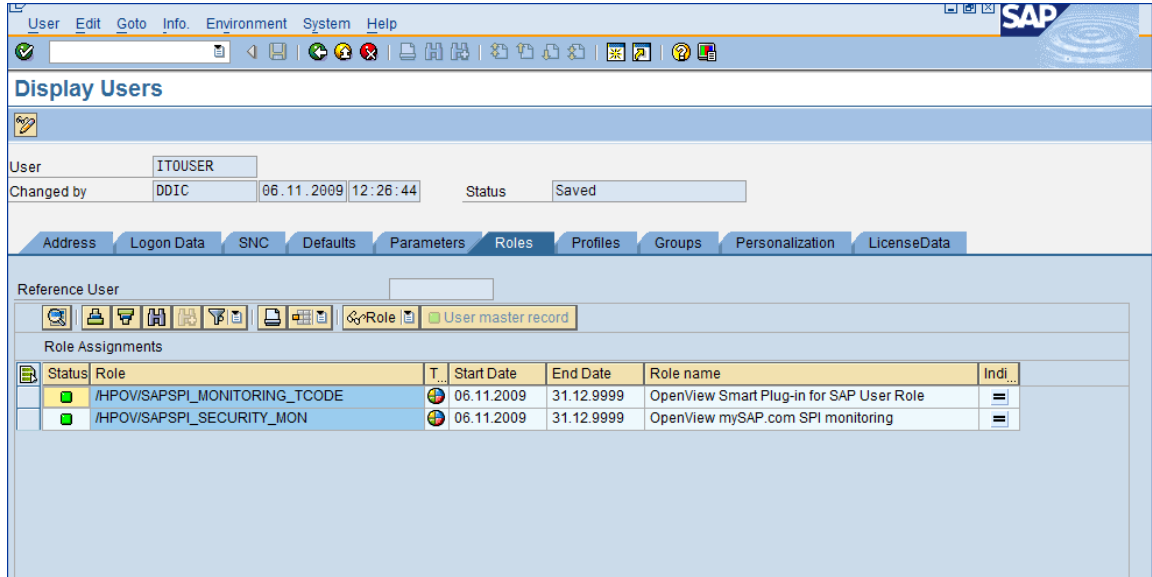
User Type	DIALOG If you do <i>not</i> set the <code>User type</code> to DIALOG and do not <i>define</i> a corresponding password, the SAP GUI will not work and many of the operator-initiated actions and applications within HPOM will be unavailable. However, performance and event monitoring do work with the CPIC/SYSTEM user.
Initial password	any SAP-allowed value <i>except</i> <code>HPSAP_30</code> The password <code>HPSAP_30</code> is associated with the use of the =default value in the SPI for SAP's central, monitor-configuration file, <code>r3itosap.cfg</code> . If you intend to use the =default value, you cannot enter <code>HPSAP_30</code> 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.
User Roles	SAP User Roles need to be defined from SAP version 4.6C onwards. Use transaction <code>/nsu01</code> , as shown in Figure 1 on page 37. Note that ITOUSER requires authorizations to be able to execute SPI for SAP ABAP functions. Select the following user role: <ul style="list-style-type: none"> • <code>/HPOV/SAPSPI_MONITORING_TCODE</code> This user role enables the use of certain SAP transactions and does not place any restrictions on the SPI for SAP functionality. • <code>/HPOV/SAPSPI_MONITORING_NO_TCD</code> This user 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. • <code>/HPOV/SAPSPI_SECURITY_MON</code> If you plan to use the <code>r3monsec</code> monitor to monitor SAP System security, you must also assign to ITOUSER (or the user under which <code>r3monsec</code> runs) the authorizations defined in <code>/HPOV/SAPSPI_SECURITY_MON</code>, the SPI for SAP-security user role

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

When assigning SPI for SAP roles, it is important to verify that all required authorization objects are active and the user comparison completed successfully. SAP uses the color green to indicate that user-authorization objects are active or that user comparisons completed successfully; the color red indicates that you need to activate user-authorization objects or complete a user comparison. Transaction SU01 displays details of SAP user roles.

- 5 Log on to SAP as user ITOUSER.
- 6 SAP NetWeaver prompts you to change the password initially specified for ITOUSER. If you have not specified 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 1 SAP User Roles for ITOUSER



Configuration Values for SPI for SAP Monitors

To conclude the SAP-specific tasks, you have to set up initial configuration values for the SPI for SAP monitors *before* you distribute the configuration files to the managed nodes. Note that this step requires detailed and expert knowledge of SAP and the SAP Systems, which you intend to monitor with the SPI for SAP. For example, when setting up the `r3monale` monitor to check the status of incoming and outgoing iDOCs, you need to understand the iDOC system to be able to decide what information is important and how you want the SPI for SAP to monitor it. The SPI for SAP includes the monitors listed in [Table 7](#).

Table 7 SPI for SAP Monitors

Monitor Name	Description
<code>r3monaco</code>	Alert collector for TemSe calls
<code>r3monale</code>	iDOC status monitor
<code>r3monal</code>	CCMS monitor
<code>r3monchg</code>	System change monitor
<code>r3moncts</code>	Correction and Transport system monitor
<code>r3mondev</code>	Trace monitor of the SAP logfile: <SID> / <INSTANCE> /work/dev*
<code>r3mondisp</code>	ABAP dispatcher monitor
<code>r3mondmp</code>	ABAP/4 Dump monitor
<code>r3monjob</code>	Job monitor
<code>r3monlck</code>	Lock check monitor

Table 7 SPI for SAP Monitors (cont'd)

Monitor Name	Description
r3monoms ^a	Operation mode switch monitor
r3monpro	Operating system process monitor
r3monrfc	SAP RFC-destination monitor
r3monsec	SAP-security monitor
r3monspl	Spool monitor
r3status	SAP NetWeaver status monitor
r3montra	Transport monitor
r3monupd	Update monitor
r3monusr	User monitor
r3monwpa	Work-process availability monitor

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

The SPI for SAP provides two sets of applications to help you configure and distribute monitors:

- **Global Applications**

For the configuration of monitors which apply to *all* managed nodes. For more information about which applications open which monitor-configuration files, see [The SAP R/3 Admin Tool Group](#) on page 61.

- **Local Applications**

For the configuration of monitors which apply only to a *specified* managed node. For more information about which applications open which monitor-configuration files, see [The SAP R/3 Admin Tool Group](#) on page 61.

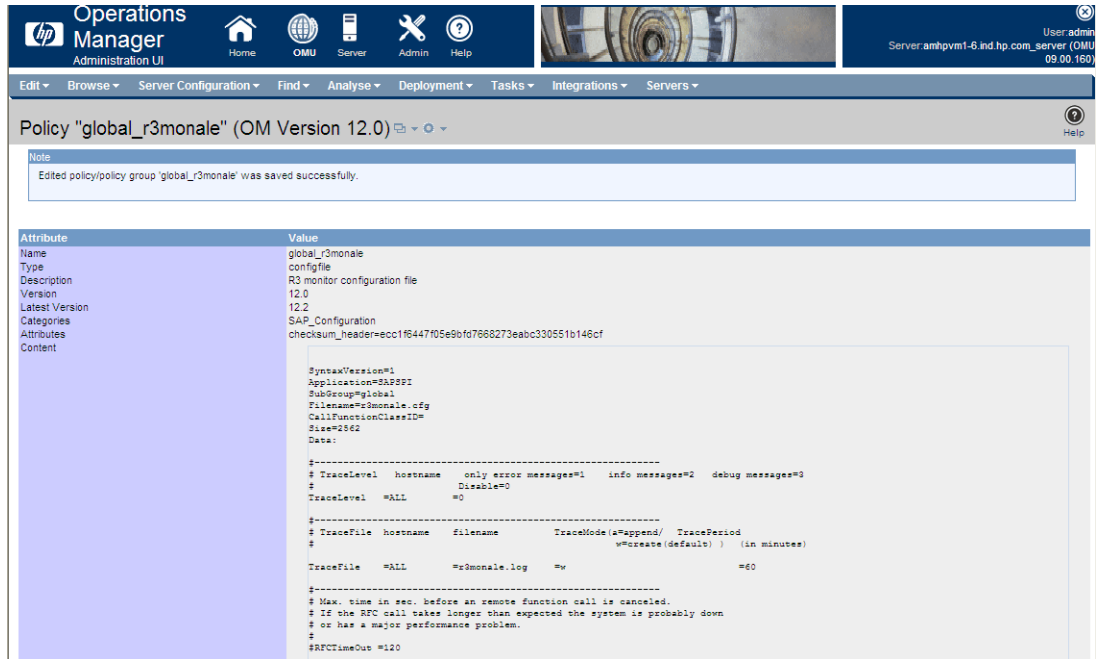
For more detailed information about (and instructions for) configuring the SPI for SAP monitors and installing Performance Agent agent-related functionality, refer to the *HP Operations Smart Plug-in for SAP Reference Guide*.

Modifying Configuration-File Templates

If you use HPOM tools to edit a SPI for SAP monitor-configuration file that 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, refer to the *HP Operations Smart Plug-in for SAP Reference Guide*.

[Figure 2](#) on page 39 shows the information the SPI for SAP displays if the configuration parser discovers that an error exists in the monitor-configuration file when you try to save it.

Figure 2 Parsing Monitor-Configuration Files



If the monitor-configuration file you want to save does not contain any errors, the SPI for SAP displays a message similar to the one illustrated in [Saving Valid Monitor-Configuration Files](#) on page 39, which indicates that the modified configuration file for the SAP iDOC-status monitor r3monale is valid and reminds you to activate the new configuration and distribute it to the managed nodes.

Saving Valid Monitor-Configuration Files

```

"/var/opt/OV/share/conf/sapspi/global/r3monale.cfg" 62 lines, 2422 characters
*** parsing configuration file ***
**** parsing completed ****
Use the 'Install Config' application to activate and distribute
the configuration to the managed node(s).
Press <return> to continue
    
```


4 Configuring HPOM Administration Tasks

This chapter provides the information you need to configure HPOM to recognize and work with the Smart Plug-in for SAP.

Customization in HPOM

- Use powerful monitors to tune the control of your distributed SAP NetWeaver environment. For details see, the *HP Operations Smart Plug-in for SAP Reference Guide*.
- Apply filters to display only the relevant types of messages. This method is discussed in the *HP Operations Smart Plug-in for SAP Reference Guide*.
- Change the severity of messages in accordance with your specific requirements. This method is discussed in the *HP Operations Smart Plug-in for SAP Reference Guide*.

Configuration Prerequisites

On the HPOM management server, you must complete the following tasks before configuring SPI for SAP.

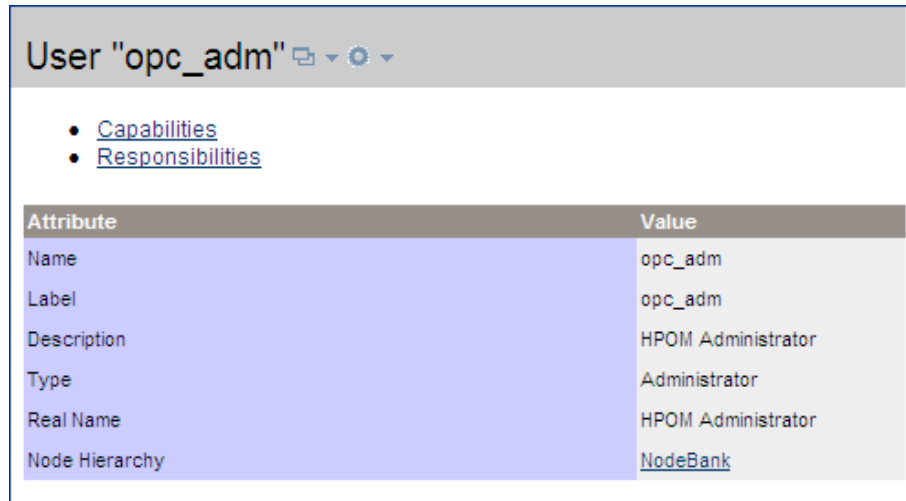
- Assign Operator Responsibilities for `opc_adm`
- Assign Tools

Assign Operator Responsibilities

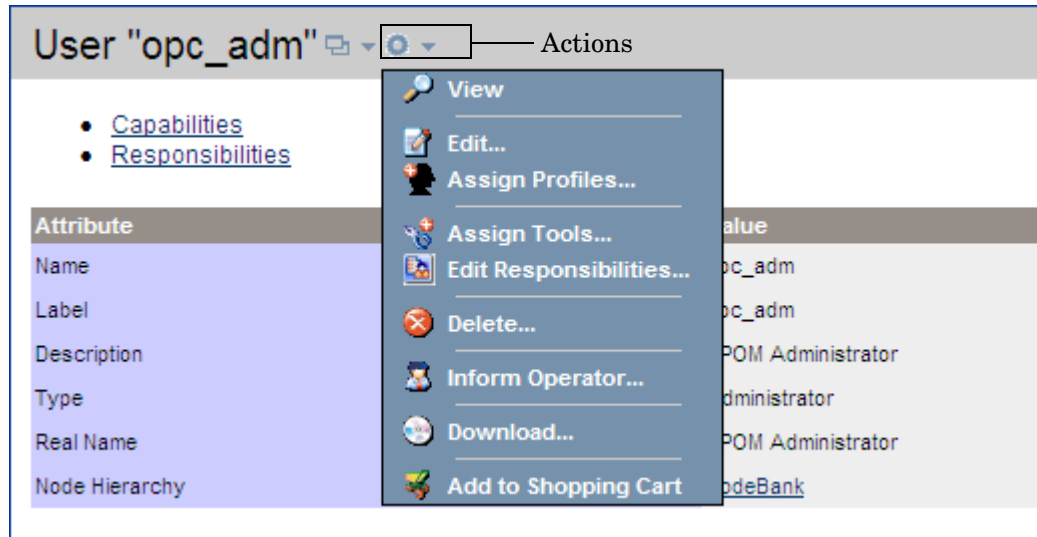
To assign operator responsibilities, follow these steps:

- 1 Log on to HPOM as administrator. For example, as `opc_adm`.

- 2 Select **All Users** → *<Operator_Name>*. For example, select the user `opc_adm`. The User `opc_adm` screen appears.



- 3 To change a user's responsibility, select **Edit Responsibilities** from the Actions menu.




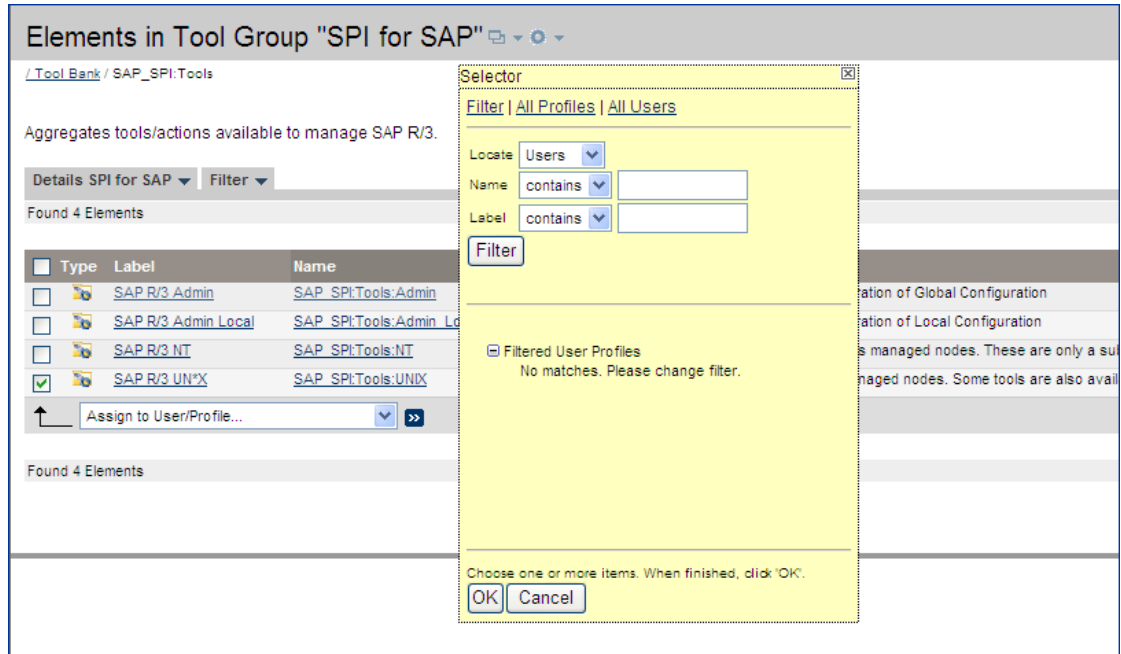
- 4 For SPI for SAP message groups, make sure all the check boxes are selected.
- 5 Assign the SPI for SAP for appropriate operators.
- 6 Click **Save**.

Assign Tools to the Operator

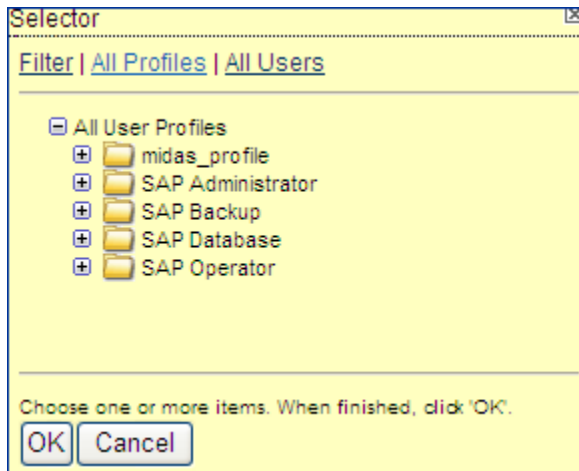
To assign SPI for SAP tools to the operator, follow these steps:

- 1 Open the Tool Bank window and select the **SPI for SAP** tool group.

- 2 Select **Assign to User/Profile...** from the **Choose an action** drop-down box and click **Submit** . The Selector window opens.



- 3 Click **All Profiles**.




- 4 Select the operator to which you want to assign the profiles.
- 5 Click **OK**. The SPI for SAP tools are assigned to the operator.

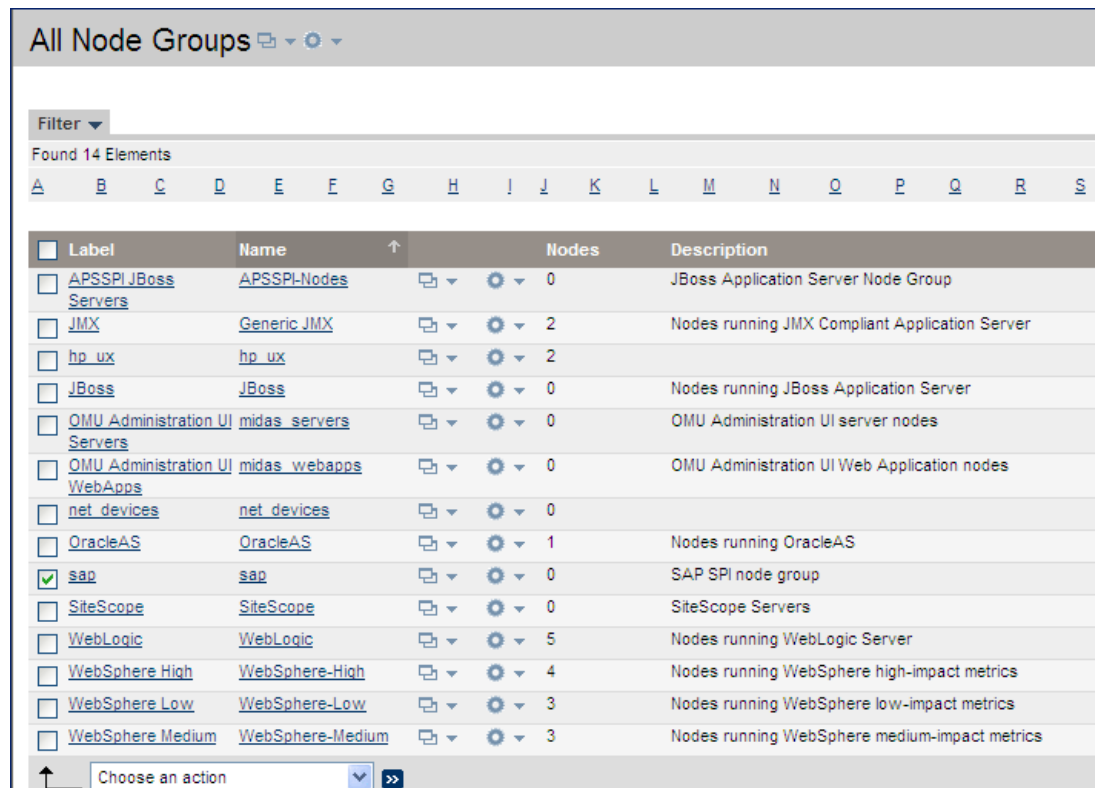
Configuring the SPI for SAP from the Management Server

To configure the SPI for SAP from the Management Server, complete the following tasks:

Add Nodes to the SPI for SAP Node Group

To assign nodes to SPI for SAP node group, follow these steps:

- 1 Open All Node Groups window and select SPI for SAP nodes.
- 2 Select **Assign Nodes...** from the **Choose an action** drop-down box and click **Submit** . The Selector window appears.

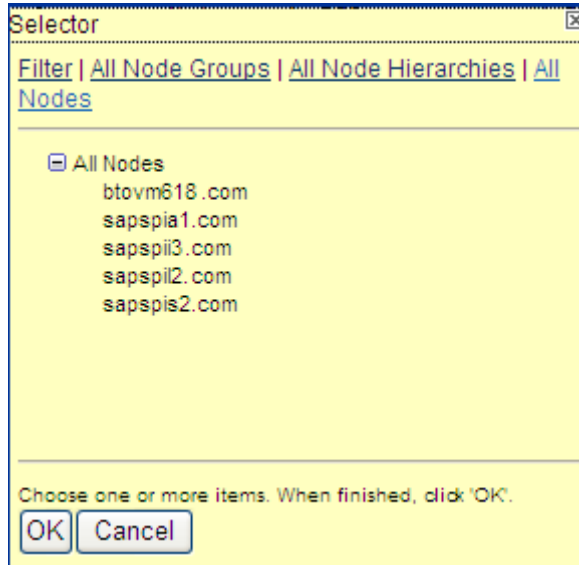


The screenshot shows the 'All Node Groups' window with a table of node groups. The 'sap' node group is selected, indicated by a checkmark in the 'Label' column. The table has columns for Label, Name, Nodes, and Description.

Label	Name	Nodes	Description
<input type="checkbox"/> APSSPI JBoss Servers	APSSPI-Nodes	0	JBoss Application Server Node Group
<input type="checkbox"/> JMX	Generic JMX	2	Nodes running JMX Compliant Application Server
<input type="checkbox"/> hp_ux	hp_ux	2	
<input type="checkbox"/> JBoss	JBoss	0	Nodes running JBoss Application Server
<input type="checkbox"/> OMU Administration UI Servers	midas_servers	0	OMU Administration UI server nodes
<input type="checkbox"/> OMU Administration UI WebApps	midas_webapps	0	OMU Administration UI Web Application nodes
<input type="checkbox"/> net_devices	net_devices	0	
<input type="checkbox"/> OracleAS	OracleAS	1	Nodes running OracleAS
<input checked="" type="checkbox"/> sap	sap	0	SAP SPI node group
<input type="checkbox"/> SiteScope	SiteScope	0	SiteScope Servers
<input type="checkbox"/> WebLogic	WebLogic	5	Nodes running WebLogic Server
<input type="checkbox"/> WebSphere High	WebSphere-High	4	Nodes running WebSphere high-impact metrics
<input type="checkbox"/> WebSphere Low	WebSphere-Low	3	Nodes running WebSphere low-impact metrics
<input type="checkbox"/> WebSphere Medium	WebSphere-Medium	3	Nodes running WebSphere medium-impact metrics

- 3 Click **All Nodes**.

- 4 Select the nodes running SPI for SAP nodes.




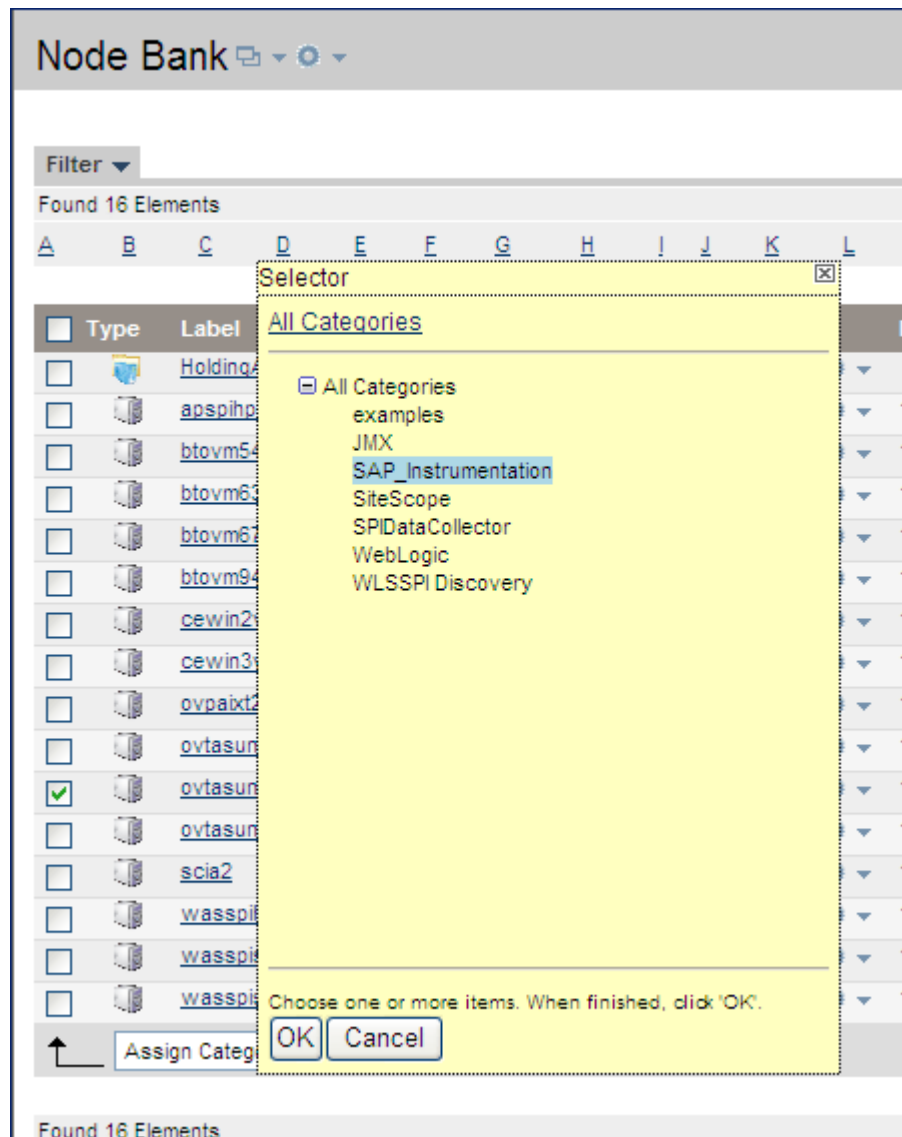
- 5 Click **OK**.

Assigning Categories to the Managed Nodes

To assign the Categories to the Managed nodes, follow these steps:

- 1 Open the Node Bank window and select the managed nodes.


- 2 Select **Assign Categories...** from the **Choose an action** drop-down box and click **Submit** .



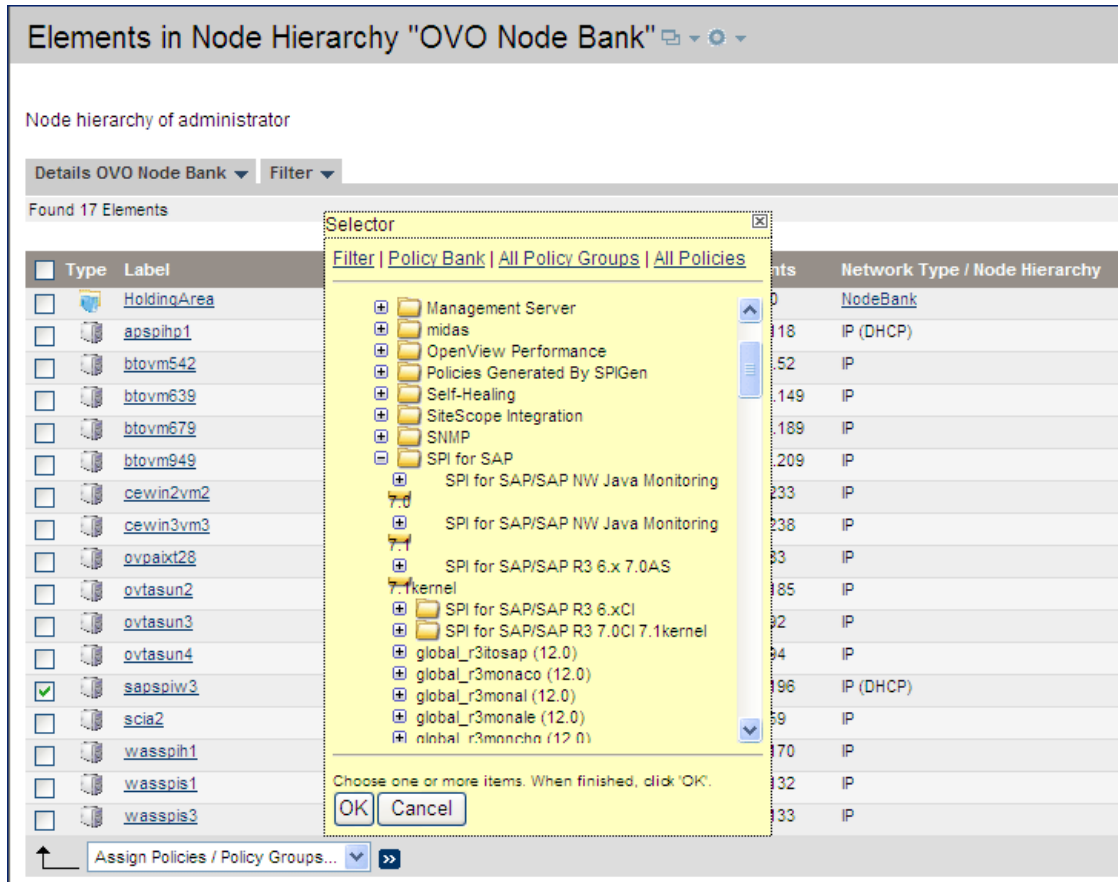
- 3 Select the required categories.
- 4 Click **OK**.

Assigning the SPI for SAP Policies to Managed Node

To assign the SPI for SAP policies to the managed nodes, follow these steps:

- 1 Open the Node Bank window and select the managed nodes.
- 2 Select **Assign Policies/Policy Groups...** from the **Choose an action** drop-down box and click **Submit** . The Selector window appears.


- 3 Click **Policy Bank**.



- 4 Select the SPI for SAP policies.
- 5 Click **OK**.

Deploying the SPI for SAP Categories and Policies to Managed Nodes

To deploy the SPI for SAP categories and policies, follow these steps:

- 1 Open the Node Bank window and select the managed nodes.
- 2 Select **Deploy Configuration...** from the **Choose an action** drop-down and click **Submit** .

- 3 Select **Distribute Policies** and **Distribute Instrumentation**.

Comment	<input type="text"/>	
Distribute Policies	<input checked="" type="checkbox"/>	*
Distribute Actions	<input type="checkbox"/>	*
Distribute Monitors	<input type="checkbox"/>	*
Distribute Commands	<input type="checkbox"/>	*
Distribute Instrumentation	<input checked="" type="checkbox"/>	*
Distribute Subagents	<input type="checkbox"/>	*
Force	<input type="checkbox"/>	
Purge	<input type="checkbox"/>	

OK Cancel

- 4 Click **OK**.

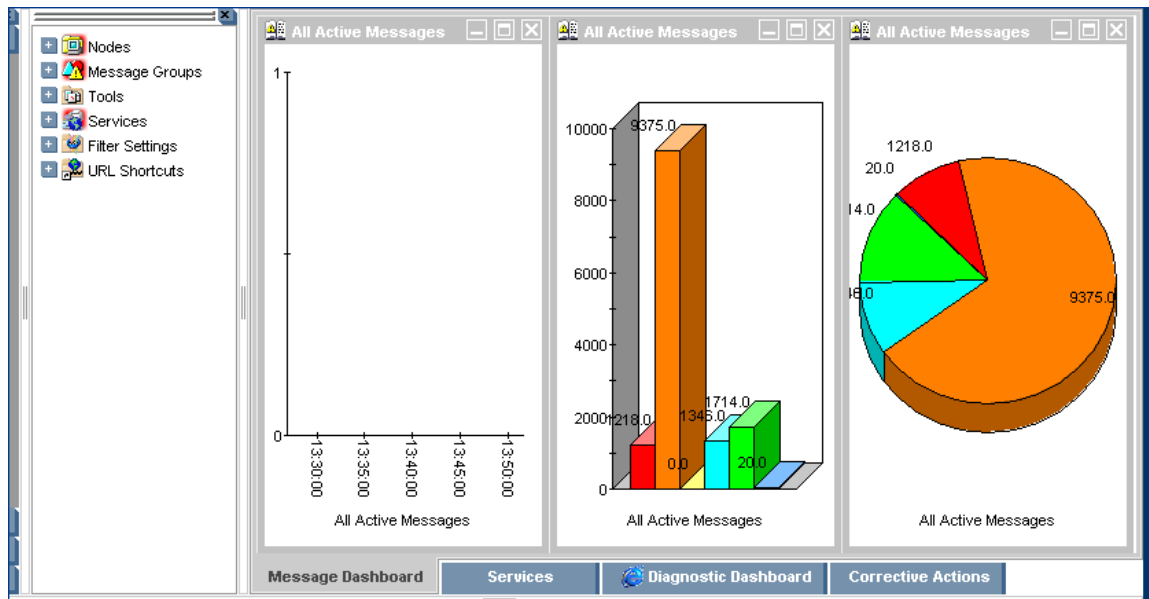
Launching Discovery

To launch the SPI for SAP discovery:

- 1 Select **Integrations** → **HPOM for Unix Operational UI**.

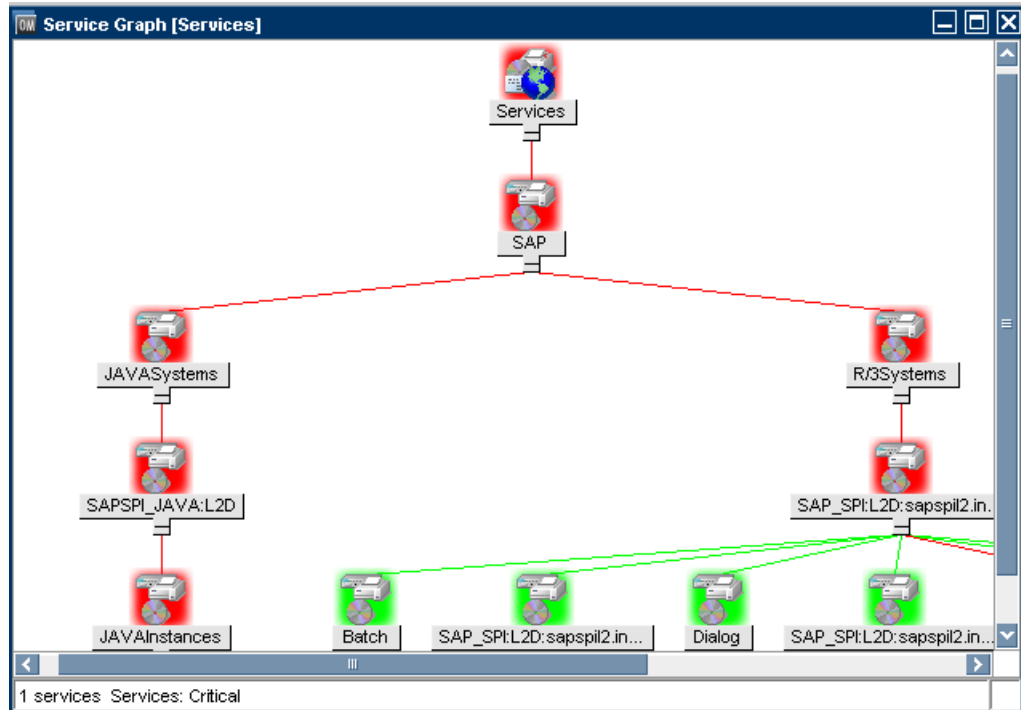
- 2 Log on with the default administrative credentials:
 User name: **opc_adm**
 Password: **opc_adm**

The HP Operations Manager for UNIX appears.



- 3 Deploy the discovery policies on the managed node.
- 4 From the management server, run the following command:
`opcservice -assign <operator> <service>`
 For example, `/usr/bin/opcservice -assign opc_adm SAP_SPI:SAP`

To view the Service Map, click the Services tab in the message browser. Using the Service Map, you can find out the application/services that have a problem (if any). The lines in the Service Map are color coded to show various levels of severity. For example, red lines show that the application has critical problems.



Specifying SAP Clients to Monitor

This section describes how to provide HPOM users and applications with automatic access to the SAP GUI and, in addition, tell the HPOM monitors which SAP Systems to monitor. The SPI for SAP application SAP R/3 GUI allows you to enter all the information that is required to complete this task.

- 1 In the HPOM GUI, open the Tool Bank window and locate the SAP R/3 GUI application, which you can find in the tool group, **SPI for SAP > SAP R/3 Admin**. The SAP R/3 GUI application opens the `r3itosap.cfg` configuration file in a text editor so that you can enter the required information concerning the SAP Systems you want to monitor with the SPI for SAP. Examples entries in the `r3itosap.cfg` file (commented out by default) illustrate the required content and syntax of a configuration line.
 - ▶ SAP users must be set up for each SAP client and have permission to display and maintain CCMS. The list of SAP clients you made in [Installation Prerequisites](#) on page 14 includes the information you need for each configuration line. For more information on how to set up SAP users for HPOM, see [Setting Up an SAP User for HPOM](#) on page 35.
- 2 Using the pattern 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`, keep in mind the following important points:

- Make sure you use fully qualified host names for all the host names you specify in the `r3itosap.cfg` file.
- 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 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 SPI for SAP application R/3 SAP GUI to edit the `r3itosap.cfg` file, the password is encrypted automatically when you save the file.

Non-ASCII characters are not allowed in SAP-login names or passwords that you specify in the `r3itosap.cfg` file; the SPI for SAP is currently able to resolve only ASCII characters in configuration files.

- 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`.
 - You must add an entry to the `r3itosap.cfg` file for each SAP instance running on a node that you want to monitor remotely from a managed node. For more information about remote monitoring with the SPI for SAP, refer to the *HP Operations Smart Plug-in for SAP Reference Guide*.
- 3 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. If the hosts you add to the `r3itosap.cfg` file are *not* configured in a high-availability cluster, you can skip this step and proceed to the next step in the configuration process.

The information in the host-mapping section of the `r3itosap.cfg` file maps the names in the list of nodes after the third “=” delimiter (typically are the physical nodes in the high-availability cluster, and also the name of the node defined in the SAP variable, `SAPLOCALHOST`) to the single node name mentioned after the fourth “=?” delimiter. This is the name of the virtual SAP node, from which the messages from the clustered SAP instance appears in the HPOM message browser or the Navigator as from the virtual SAP node.

The “physical” nodes are the hosts in the high-availability cluster on which you install and configure the SPI for SAP. 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.

- ▶ 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 for your high-availability cluster in the host-mapping section of the `r3itosap.cfg` file.

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>
```

In [Mapping physical and relocatable host names](#), CTO and 11 are the SID and number of the SAP instance running in the high-availability cluster. [Mapping physical and relocatable host names](#) also shows the entry you add to the HostMapping 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”.

Mapping physical and relocatable host names

```
# cluster host mapping
HostMapping =CTO =11 =true.hp,false.hp,maybe.hp =example.hp
```

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 cluster nodes, for example:
`=ClusterHostA,ClusterHostB =<HPOM_Msg_Node>`
- If `SAPLOCALHOST` and `<HPOM_Msg_Node>` are *not* the same host, an entry for `SAPLOCALHOST` *is* required in 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 Node Bank. You also need to add to the HPOM Node Bank as node type “Message allowed” the host which you define in `<OVO_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 High-availability Environment](#) on page 88.

To ensure that automatic or operator-initiated actions are always able to open a 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`.

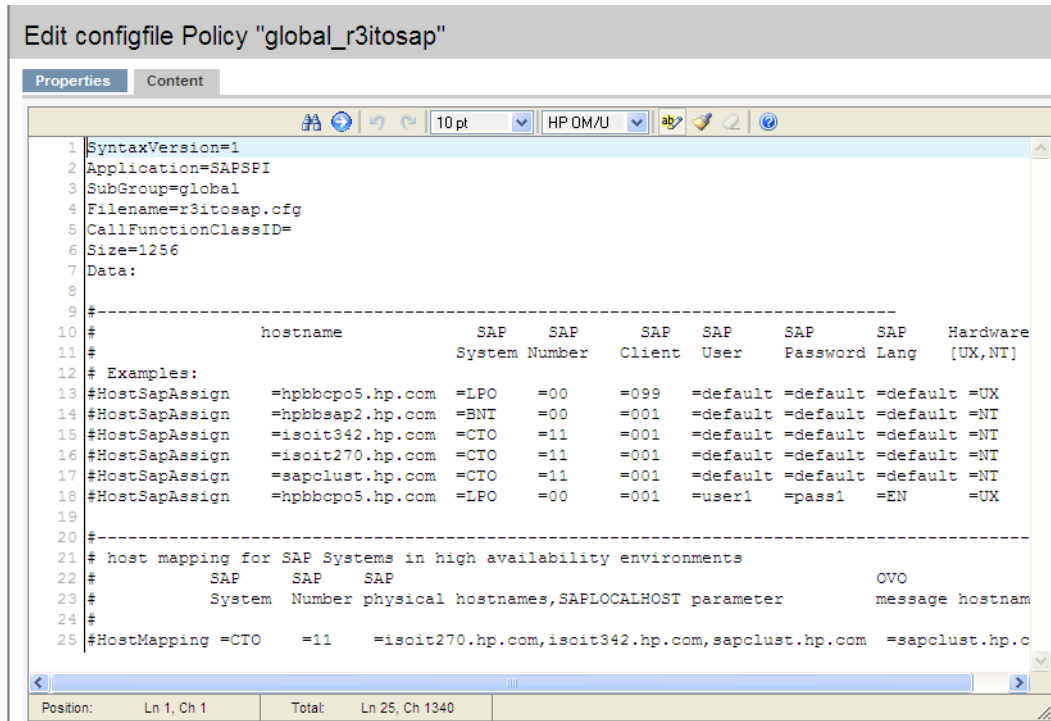
To avoid problems with HPOM agent settings for host names and IP addresses overriding settings defined in the host-mapping section of the SPI for SAP’s central configuration file, `r3itosap.cfg`, which could cause the wrong host name to be displayed in messages coming from the cluster, see [Host Mapping on Cluster Nodes](#) on page 89.

4 Save your changes and exit.

To ensure that any new passwords you enter in the monitor configuration files are encrypted, use the SPI for SAP application R/3 SAP GUI to edit the `r3itosap.cfg` configuration file. If you use a text editor such as `vi` or `emacs` to enter passwords in the monitor configuration file, any new passwords you enter are *not* automatically encrypted when you save the file and exit.

Check that the SAP systems have been correctly added by watching the bottom of the screen for output similar to [Adding SAP SIDs to the r3itosap.cfg File](#):

Figure 3 Example r3itosap.cfg File



Adding SAP SIDs to the r3itosap.cfg File

```

"/var/opt/OV/share/conf/sapspi/r3itosap.cfg" 15 lines,1175 char
>>> Encoding passwords in file
>>> /var/opt/OV/share/conf/sapspi/r3itosap.cfg started
>>> Encoding of passwords done
>>> Scanning SAP systems for existing front-end done
>>> Symbolic link /usr/sap/SP6/SYS/exe/run -> /opt/OV/lbin/sapspi/sapgui
created
>>> Directory /usr/sap/SP6/D0/work created

```

In order to activate this configuration, execute "Install Config" and distribute the Monitors and Commands to the SAP R/3 managed node

Press return to continue

The information in the r3itosap.cfg file is used by the service- discovery application, R/3 Service Discovery, to generate a service view of your SAP Landscape. If you intend to use the Service-Views feature, make sure that you assign and distribute the r3itosap.cfg file to the managed nodes for which you want to generate service views before you run the service-discovery. The Host mapping entry in the r3itosap.cfg file should have the host name details as:

HostMapping <SID> =<NR> =<system_name>.true.hp.com =<system_name>.hp.com

where,

SID - system ID for the server

NR - the NR number of the server

For more information about running service-discovery and setting up service views, see the *HP Operations Smart Plug-in for SAP Reference Guide*.

Assigning the SAP Servers to the SAP Node Group


Installing SPI for SAP automatically creates a new node group called `sap`, to which you assign your SAP servers. Note that this step is mandatory; if you do not perform this step, you will not see any messages from the SAP servers in the HPOM message browser.



Before you start adding the nodes, make sure that the latest version of the Microsoft .NET framework is installed on all nodes with the Windows operating system.

- 1 In the `Node Bank` window, select the `sap` node group.
- 2 Assign all the SAP servers you wish to monitor to the `sap` node group, following the instructions given in [Table 8](#).

Table 8 Assigning Managed Nodes to Node Groups

IF...	THEN...
the node <i>already</i> exists in HPOM node bank	<ol style="list-style-type: none"> 1 Open the <code>Node Bank</code> window. 2 Select the SAP node. 3 Select Assign Node to Node Group from the <code>Chose an action item</code> drop-down and click Submit . 4 Select the SAP node group and click OK.
the node does <i>not</i> already exist in the HPOM node bank	<ol style="list-style-type: none"> 1 Click Edit → Add Node. 2 Assign the Node to the SAP node group. 3 Install the HPOM agent software on the new managed node before continuing.

Assigning SAP Responsibilities



In HPOM, you can assign operator responsibilities by means of user profiles. The SPI for SAP creates four new operator profiles, which may be used as a basis for creating your own SAP operators. The four SAP-specific user profiles appear in the `All User Profiles` window, as follows:

- SAP Administrator
- SAP Backup
- SAP Database
- SAP Operator

The easiest way to add a new HPOM user is to copy an existing user, change the new user's name, and modify the responsibilities of the new user appropriately.

- 1 Open the All Users window.
- 2 In the All Users window, click Actions Menu for an existing user, for example `opc_op`, and click the Copy . . . menu item. The Copy User window appears.

Change the User Name and Label fields, for example, to: `SAP_op` and `SAP_op`

- 3 Assign default responsibilities and tools to the new user. Select the **Assign Profiles...** from the **Choose an action...** drop-down box and click **Submit** .
- 4 Click **All Profiles** and select the appropriate profiles for the new user.
- 5 Select **Assign Tools...** from the **Choose an action...** drop-down box and click **Submit** .
- 6 Click **Tool Bank** and select appropriate tools for the new user.

➤ The responsibilities assigned in a user profile are *global* and, as a result, *not* immediately visible in the responsibilities matrix of the individual user you create. Similarly, the responsibilities of the new user you create are *local* and only visible in the new user's own responsibilities matrix. However, if you assign the SAP Operator user profile to the `SAP_op` user, *all* the message and node groups included by default in the SAP Operator user profile are indeed assigned to the `SAP_op` user even if it does not initially appear so.

To change or modify the responsibilities and applications for any given operator:

- 1 In the All Users window, select an existing user, for example `SAP_op`, and click Edit Responsibilities from the Actions menu. The Edit Responsibilities window appears.

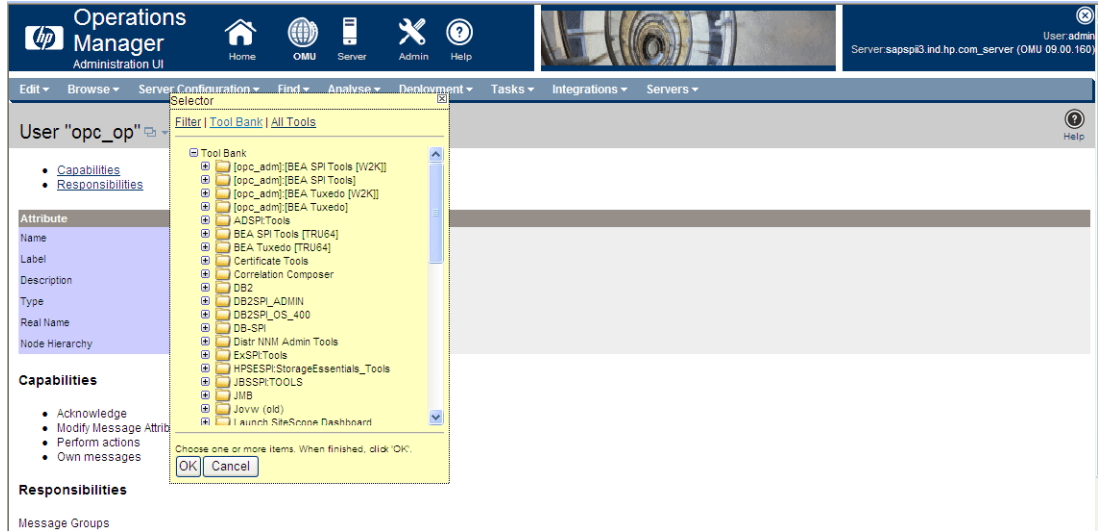
- 2 Select the appropriate responsibilities for the selected user. [Table 9](#) lists the standard user profiles included with the SPI for SAP and indicates which message groups are assigned by default to which SAP operator profiles.

Table 9 Message-Group Assignments for SPI for SAP User Profiles

Message Group	Default SPI for SAP User Profiles			
	SAP Admin.	SAP Backup	SAP Database	SAP Operator
R3 ABAP-4	✓			✓
R3 ALE	✓			✓
R3_Buffers	✓			✓
R3_Backup	✓			✓
R3 CCMS	✓			✓
R3_CTS	✓			
R3_DB	✓	✓	✓	✓
R3_Dispatch	✓			✓
R3_Enqueue	✓		✓	✓
R3_General	✓			✓
R3_Jobs	✓			✓
R3_MON_ERROR	✓			✓
R3_Performance	✓			✓
R3_Roll-Paging	✓			✓
R3_RFC	✓			✓
R3_Security	✓			✓
R3_Spooler	✓			✓
R3_State	✓			✓
R3_Syslog	✓	✓	✓	✓
R3_Trace	✓			✓
R3_Transport	✓			
R3_Update	✓		✓	✓
R3_User	✓			✓
R3_WP	✓			✓
R3_XMI	✓	✓	✓	✓

- 3 Click **Assign Tools** from the Actions menu to modify default tool assignments for an existing user.

- Select the tools from the Tool Bank window.



- Table 10 lists the standard user profiles included with the SPI for SAP and indicates which application groups are assigned by default to which SAP operator profiles.

Table 10 Tool-Group Assignments for SPI for SAP User Profiles

Tool Group	Default SPI for SAP User Profiles			
	SAP Admin.	SAP Backup	SAP Database	SAP Operator
SAP R/3 Admin	✓			
SAP R/3 Admin Local	✓			
SAP R/3 NT	✓			✓
SAP R/3 UN*X	✓			✓

- When you have finished making your modifications, save the changes and click **OK**.

Assigning SPI for SAP Policies to SAP Nodes

The policies for SPI for SAP 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 NW Java Monitoring 7.0
- SAP NW Java Monitoring 7.1
- SAP R3 6.x/7.0AS/7.1kernel
- SAP R3 6.xCI
- SAP R3 7.0CI/7.1kernel

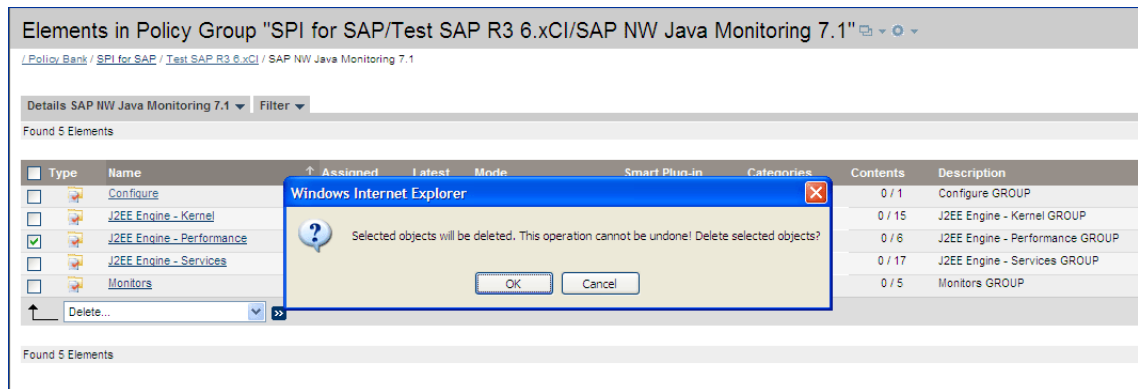
Only one policy group should be assigned to any one managed node. Which policy group you assign is determined by the SAP version running on the node and whether the node is a central instance or an application server.




The SPI for SAP's default policy groups contain policies for *all* the SAP NetWeaver monitors supplied with the SPI for SAP. Assigning and distributing a policy group automatically activates the monitors, which the group contains. To avoid receiving messages from unnecessary monitors, we recommend you use the default policy groups as a basis to create your own policy groups, which contain only those monitors and policies you need. We also recommend that you tune the monitors and policies to suit the requirements of your environment *before* assigning and distributing them to the nodes you want to manage with the SPI for SAP. This will prevent additional unwanted messages.

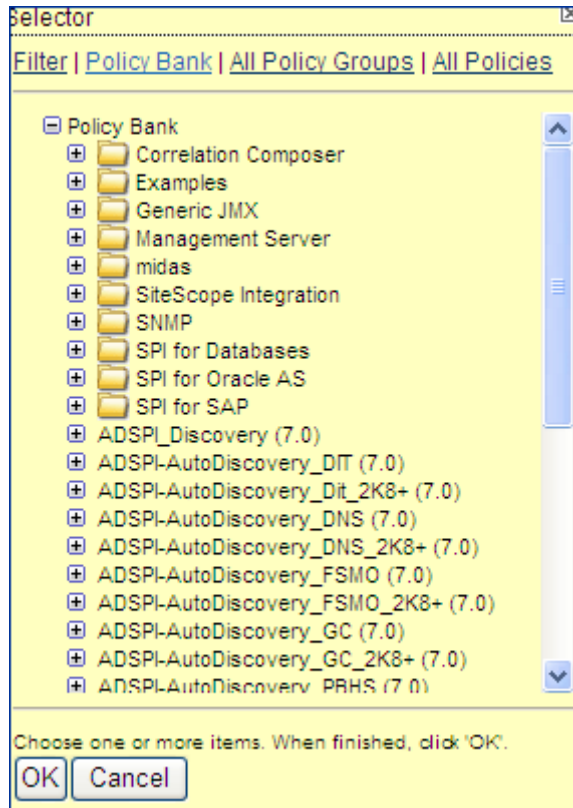
To create your own policy group, copy an existing policy group and modify the contents of the new group as follows:

- 1 Open the All Policy Groups window, select the policy group you want to copy, and click Copy from  Actions menu. The Copy Policy Group window appears.
- 2 Enter a name and description for the new policy group and assign the policy group to a Parent Group. Click **Save** to save the changes.
- 3 Click the new policy group from the Policy Bank window.
- 4 Select the policies and monitors you do *not* need and remove them using **Delete** from the **Chose an action** drop-down box and click **Submit** .



- 5 In the Node Bank window, select the SAP nodes to which you want to assign the policies. Nodes selected together must:
 - all run the same SAP version, for example: 6.x
 - all have the same usage—application server or central instance

- 6 Select **Assign Policies/Policy Groups** from the **Choose an action** drop-down box and click **Submit** .



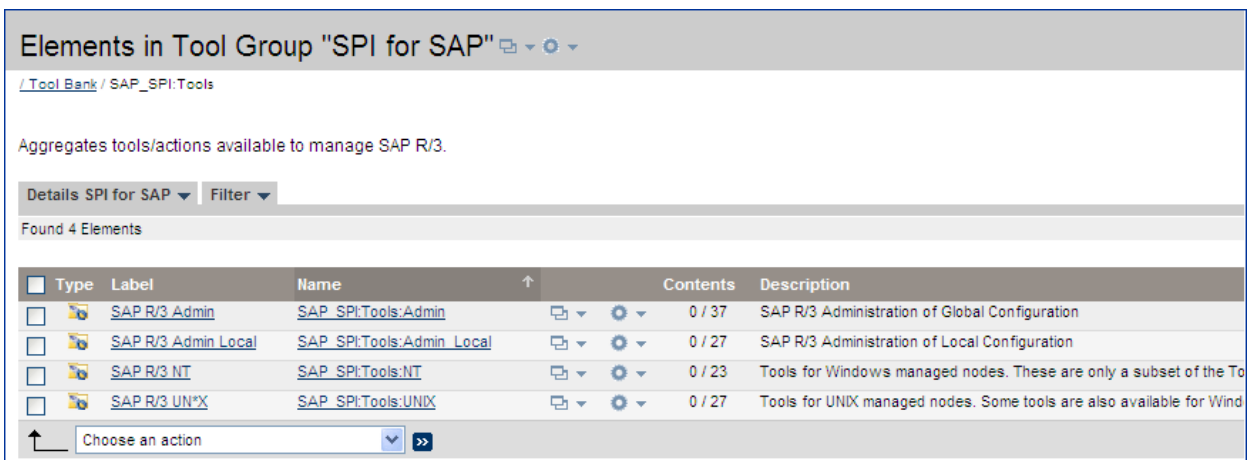
- 7 Expand the SPI for SAP policy group and select the policy group or groups you have created (containing the monitors you need) depending on which SAP version is installed on the managed nodes and whether the nodes are central instances or application servers. For example: SAP R/3 6.x CI COPY.
- 8 The newly assigned policy is displayed in the Policy Bank list.
- 9 Click **OK** to assign the policies.

5 Using SPI for SAP Tools

The Tool Bank window displays the tools which you can use to manage your SAP NetWeaver environment. You can do the following:

- Start tools
- Broadcast commands on selected nodes

Figure 4 The Tool Bank



SPI for SAP Tool Groups

The Tool Bank window represents a group of tools. You can click a group to open a second-level desktop containing the tools of the group. The following tool groups are added to the Tool Bank under the SPI for SAP group when the SPI for SAP is installed:

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

The SAP R/3 Admin Tool Group

The SAP R/3 Admin tool group includes tools for editing and distributing files for global configuration, as well as other administrative functions such as moving the SAP transport to the SAP transport directories on managed nodes.

Figure 5 SAP R/3 Admin Tool Group

Type	Label	Name	Description
<input type="checkbox"/>	ABAP Dispatcher	SAP_SPl:Tools:Admin:ABAP_Dispatcher	Configure ABAP Dispatcher Monitoring
<input type="checkbox"/>	ABAP/4 Dump	SAP_SPl:Tools:Admin:ABAP/4_Dump	Configure ABAP/4 Dump Monitoring
<input type="checkbox"/>	ALE	SAP_SPl:Tools:Admin:ALE_Monitor	Configure ALE Monitoring
<input type="checkbox"/>	Alert Collector	SAP_SPl:Tools:Admin:Alert_Collector	Configure Alert Collector Monitoring
<input type="checkbox"/>	CCMS 4.x	SAP_SPl:Tools:Admin:CCMS_4.x	Configure CCMS Monitor for SAP R/3 4.x Monitoring
<input type="checkbox"/>	Create SPI SAP NetWeaver Config	SAP_SPl:Tools:Admin:CreateSPISAPNetweaverConfig	Creates the configurations for SPI SAP to monitor NW stack in the node level
<input type="checkbox"/>	CTS	SAP_SPl:Tools:Admin:CTS	Configure Correction & Transport System Monitoring
<input type="checkbox"/>	Delete Config	SAP_SPl:Tools:Admin>Delete_Config	Delete global configuration files on selected nodes
<input type="checkbox"/>	Install Config	SAP_SPl:Tools:Admin:Install_Config	Install configuration on selected nodes
<input type="checkbox"/>	Job	SAP_SPl:Tools:Admin:Job	Configure Job Monitoring
<input type="checkbox"/>	Lock Check	SAP_SPl:Tools:Admin:Lock_Check	Configure Lock Check Monitoring
<input type="checkbox"/>	Move SAP Transport	SAP_SPl:Tools:Admin:Move_SAP_Transport	Transfer the SAP R/3 transport to the selected nodes
<input type="checkbox"/>	R/3 Service Discovery	SAP_SPl:Tools:Admin:OvR3ServiceDiscovery	Trigger SAP R/3 Service Discovery
<input type="checkbox"/>	Install Performance Package (Windows)	SAP_SPl:Tools:Admin:PerfInsNT	Install Performance Package on Windows node
<input type="checkbox"/>	Install Performance Package (UNIX)	SAP_SPl:Tools:Admin:PerfInsUX	Install Performance Package on UNIX node
<input type="checkbox"/>	PerfAgt	SAP_SPl:Tools:Admin:Performance_Agent	Configure Performance Agent Monitoring
<input type="checkbox"/>	Remove Performance Package (Windows)	SAP_SPl:Tools:Admin:PerfRmNT	Remove Performance Package from Windows node

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 11 SAP R/3 Admin Tools

Tools	Description
ABAP Dispatcher	Opens the global <code>r3mondisp.cfg</code> configuration file for the Dispatcher monitor
ABAP/4 Dump	Opens the global <code>r3mondmp.cfg</code> configuration file for the ABAP-dump monitor
ALE	Opens the global <code>r3monale.cfg</code> configuration file for the iDOC-status monitor
Alert Collector	Opens the global <code>r3monaco.cfg</code> configuration file
CCMS 4.x	Opens the global <code>r3monal.cfg</code> configuration file of the central SAP R/3 CCMS alert monitor
Create SPI SAP NetWeaver Config	Helps you configure the monitoring environment for the SAP NetWeaver Web Application Server (J2EE)
CTS	Opens the global <code>r3moncts.cfg</code> configuration file
Delete Config	Removes global configuration files from selected managed nodes. This should only be used when de-installing the product
Install Config	Installs global configurations on selected managed nodes. This is the recommended way to distribute monitor-configuration files to the managed nodes
Job	Opens the global <code>r3monjob.cfg</code> configuration file of the job monitor

Table 11 SAP R/3 Admin Tools

Tools	Description
Lock Check	Opens the global <code>r3monlck.cfg</code> configuration file for the lock-check monitor
Move SAP Transport	Moves the RFC Transport to the directory: <code>/usr/sap/trans</code> . The OS user starting the tool must have write access to the directory
R/3 Service Discovery	Automatically creates a service-configuration file that defines a service view of the SAP NetWeaver services on the selected managed node(s)
Install Performance Package (Windows)	Installs performance package on the Windows nodes
Install Performance Package (UNIX)	Installs Performance package on the UNIX nodes
PerfAgt	Opens the performance agent's global configuration file <code>r3perfact.cfg</code>
Remove Performance Package (Windows)	Removes performance package on the Windows nodes
Remove Performance Package (UNIX)	Removes performance package on the UNIX nodes
Process	Opens the process monitor's global configuration file <code>r3monpro.cfg</code>
R/3 Security	Opens the SAP security monitor's global configuration file <code>r3monsec.cfg</code>
Check the SAP NetWeaver Connection	Checks if a successful connection was established between the SPI for SAP and the SAP NetWeaver Web Application Server
Install the RFC Library	Installs the downloaded RFC libraries into appropriate directories on the management server
RFC Dest.	Opens the RFC monitor's global configuration file the <code>r3monrfc</code>
SAP Availability	Opens the SAP status monitor's global configuration file, <code>r3status.cfg</code>
SAP R/3 GUI	Opens the SPI for SAP's central configuration file <code>r3itosap.cfg</code>
SAP Trace	Opens the SAP trace monitor's global configuration file <code>r3mondev.cfg</code>
SiteConfig	Opens the siteconfig file
Spool	Opens the SAP spooler monitor's global configuration file <code>r3monspl.cfg</code>
Statistical Records	Opens the performance monitor's configuration file <code>r3perfstat.cfg</code>
System Change	Opens the change-system monitor's global configuration file <code>r3monchg.cfg</code>

Table 11 SAP R/3 Admin Tools

Tools	Description
Transport	Opens the Transport monitor's global configuration file r3montra.cfg
Update	Opens the update monitor's global configuration file r3monupd.cfg
User	Opens the SAP user monitor's global configuration file r3monusr.cfg
Work Process	Opens the work-process monitor's global configuration file r3monwpa.cfg
Write Statistical Records	Write statistical records in SAP
OM Switch	Opens the global r3monoms.cfg configuration file for the operation-mode switch monitor

If you use a SPI for SAP tool to check or modify a configuration file, r3conf uses the text editor defined by the environment variable `$EDITOR`. If the variable `$EDITOR` is *not* set, r3conf uses vi to edit the SPI for SAP configuration files. For more information about editing and distributing monitor configurations, see the *HP Operations Smart Plug-in for SAP Reference Guide*.

The SAP R/3 Admin Local Tool Group

The SAP R/3 Admin Local group includes tools for editing and distributing files for local configuration.

Table 12 SAP R/3 Admin Local Tools

Tools	Description
Delete Local Config	Deletes the <i>local</i> SPI for SAP configuration files on the selected managed nodes and, in addition, any files related to the selected managed nodes, which reside on the HPOM management server.
Distribute Local Config	Distributes and installs the local SPI for SAP configurations on the selected managed node(s)

The contents of the SAP R/3 Admin and SAP R/3 Admin Local tool groups are very similar. [Table 12](#) lists *only* those tools in the SAP R/3 Admin Local tool group that have not already been described in [Table 11](#) on page 62 and indicates what each tools does.

[Figure 6](#) on page 65 shows the tools available in the SAP R/3 Admin Local tool group.

Figure 6 SAP R/3 Admin Local Tool Group

Type	Label	Name	Description
<input type="checkbox"/>	ABAP Dispatcher	SAP_SPlTools:Admin_Local:ABAP_Dispatcher	Configure ABAP Dispatcher Monitoring
<input type="checkbox"/>	ABAP/4 Dump	SAP_SPlTools:Admin_Local:ABAP/4_Dump	Configure ABAP/4 Dump Monitoring
<input type="checkbox"/>	ALE	SAP_SPlTools:Admin_Local:ALE	Configure ALE Monitoring
<input type="checkbox"/>	Alert Collector	SAP_SPlTools:Admin_Local:Alert_Collector	Configure Alert Collector Monitoring
<input type="checkbox"/>	CCMS 4.x	SAP_SPlTools:Admin_Local:CCMS_4.x	Configure CCMS Monitor for SAP R/3 4.x Monitoring
<input type="checkbox"/>	CTS	SAP_SPlTools:Admin_Local:CTS	Configure Correction & Transport System Monitoring
<input type="checkbox"/>	Delete Local Config	SAP_SPlTools:Admin_Local>Delete_Local_Config	Delete the local configuration on the selected nodes
<input type="checkbox"/>	Distribute Local Config	SAP_SPlTools:Admin_Local:Distribute_Local_Configs	Distribute the local configuration to the selected nodes
<input type="checkbox"/>	Job	SAP_SPlTools:Admin_Local:Job	Configure Job Monitoring
<input type="checkbox"/>	Lock Check	SAP_SPlTools:Admin_Local:Lock_Check	Configure Lock Check Monitoring
<input type="checkbox"/>	OM Switch	SAP_SPlTools:Admin_Local:Operation_Mode_Switch	Configure Operation Mode Switch Monitoring
<input type="checkbox"/>	PerfAgt	SAP_SPlTools:Admin_Local:Performance_Agent	Configure Performance Agent Monitoring
<input type="checkbox"/>	Process	SAP_SPlTools:Admin_Local:Process	Configure Operating system Process Monitoring
<input type="checkbox"/>	R/3 Security	SAP_SPlTools:Admin_Local:R/3_Security	Configure R/3 Security Monitoring
<input type="checkbox"/>	RFC Dest.	SAP_SPlTools:Admin_Local:RFC_DEST.	Configure RFC Destination Monitoring
<input type="checkbox"/>	SAP Availability	SAP_SPlTools:Admin_Local:SAP_Availability	Configure SAP Availability Monitor
<input type="checkbox"/>	SAP R/3 GUI	SAP_SPlTools:Admin_Local:SAP_R/3_GUI	Configure SAP R/3 login information for GUI sessions

For more information about editing and distributing monitor configurations, see the *HP Operations Smart Plug-in for SAP Reference Guide*. *HP Operations Smart Plug-in for SAP Reference Guide*.

The SAP R/3 UN*X and SAP R/3 NT Tool Groups

These two groups include tools that provide direct, context-sensitive startup of the SAP front-end on UNIX and Microsoft Windows platforms respectively. For instance, if you receive a performance alert, you can click the Performance icon and open the SAP performance analysis tool.

In addition, the SAP R/3 UN*X group includes a number of tools that involve interactive actions with terminal output, for example: Check R/3 Database, Status R/3 Config, or Version Verify. These tools are not supported on the Microsoft Windows platform.

Before you select a tool from one of these groups, you must select the managed node on which you want the tool to run. Make sure that you select the tool from the tool group that corresponds to the managed node’s platform, for example: UNIX or Microsoft Windows.

Table 13 lists the tools, available in both tool groups, that open a SAP GUI session.

Table 13 SPI for SAP Tools that Call SAP Transactions

Tool	Description	SAP Transaction code
Control Panel	CCMS control panel	RZ03
DB Performance	Shows database performance through tables and indexes.	DB02
Gateway	Gateway monitor	SMGW
Job Maintain	Define background jobs	SM36

Table 13 SPI for SAP Tools that Call SAP Transactions (cont'd)

Tool	Description	SAP Transaction code
Job Overview	Status of background jobs	SMX
Job Performance	Job performance	SM39
Maintain Thresholds	Maintenance thresholds	RZ06
Operation Modes	Maintain operation modes	RZ04
Operation Sets	Maintain operation sets	SM63
Performance	Workload analysis	ST03
Process	Process overview	SM50
Profile Maintain	Profile maintain	RZ10
Servers	Server overview	SM51
Syslog	System log, local analysis	SM21
Syslog Msg	System log message maintenance	SE92
Users	User overview	AL08

The Version Verify tool allows you to compare the installed base version of the SPI for SAP with the version of any SPI for SAP components that have been added subsequently.

Accessing Data on a Managed Node

The following tools allow quick access to SAP NetWeaver related information from the selected managed node.

Table 14 SAP Information and Platform Availability

SPI for SAP Tool Name	SAP R/3 UN*X	SAP R/3 NT
Check R/3 database	✓	
R/3 Info	✓	✓
R/3 Process Logs	✓	
Java R/3 Frontend	✓	
Status R/3 Config	✓	

Checking the SAP NetWeaver Database

The Check R/3 Database tool establishes a connection to the database server and thus provides a rapid way of checking the database connection.

SAP NetWeaver Information

The R/3 Info tool provides the following information for SAP NetWeaver instances that are installed on a selected node:

- Hostname
- SAP system name
- Instance name
- Instance number
- SAP release number
- List of processes for the selected instance

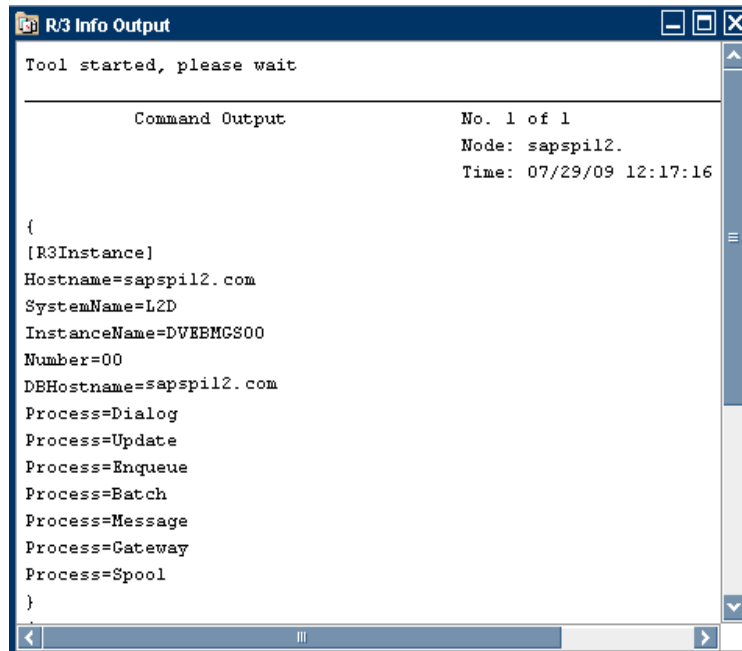


The R/3 Info tool is available for both UNIX and Windows nodes and present in both the SAP R/3 UNIX and SAP R/3 NT tool groups.

To display information for a selected managed node:

- 1 In the Node Bank window, select the UNIX or Microsoft Windows node for which you want to display an information about SAP NetWeaver.
- 2 In the SAP R/3 UNIX or SAP R/3 NT Tool Group window, click the R/3 Info icon. The requested information is displayed, as shown in [Figure 7](#).

Figure 7 Output from the R/3 Info Tool



```
Tool started, please wait

Command Output                               No. 1 of 1
                                               Node: sapsp12.
                                               Time: 07/29/09 12:17:16

{
[R3Instance]
Hostname=sapsp12.com
SystemName=L2D
InstanceName=DVEEMGS00
Number=00
DEHostname=sapsp12.com
Process=Dialog
Process=Update
Process=Enqueue
Process=Batch
Process=Message
Process=Gateway
Process=Spool
}
```

Starting the SAP NetWeaver Front-End

The Java R/3 Frontend tool makes full use of the distributed architecture of SAP NetWeaver. It uses the local `sapgui` utility (running on the HPOM management server) and profile to connect to the desired SAP system. Because multiple SAP systems may be installed on a selected managed node, you are prompted with a list of installed SAP systems and functional modules.

To start the SAP NetWeaver front-end:

- 1 In the `Node Bank` window, select the UNIX node on which you want to start an SAP session.
- 2 In the `SAP R/3 UN*X Tool Group`, click the `Java R/3 Frontend` icon. The local `sapgui` starts, connects to the selected SAP component, and displays the SAP NetWeaver login screen.



Using the SAP NetWeaver front-end locally improves application performance by decreasing the data flow across the network.

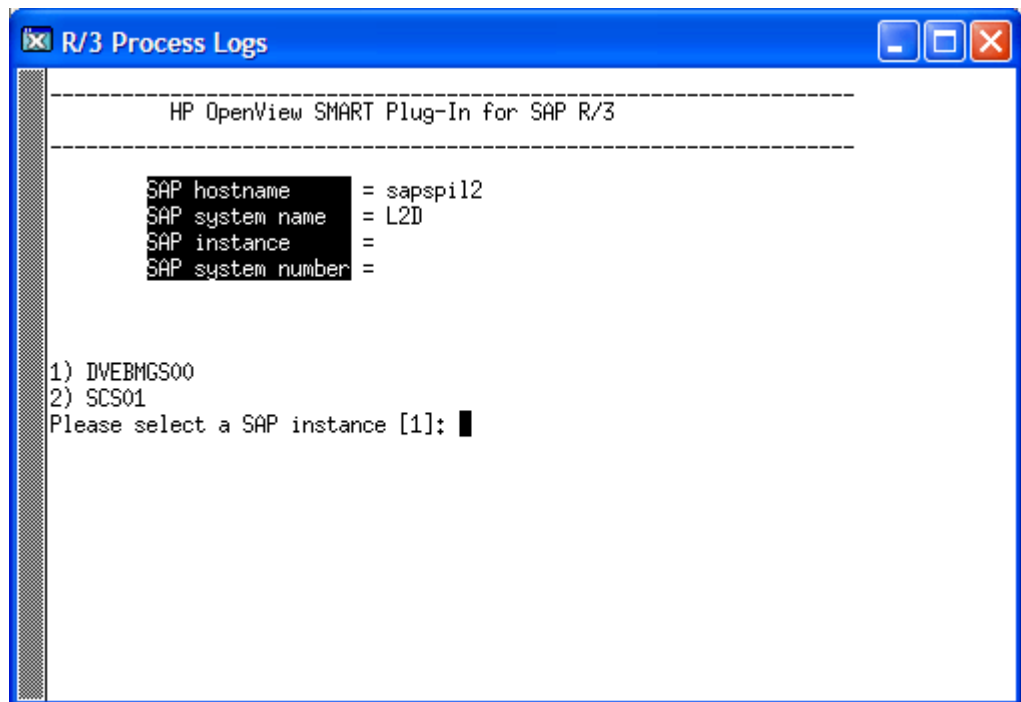
R/3 Process Logs

The `R/3 Process Logs` tool reports all error conditions in a specific file structure. Also, all SAP NetWeaver standard output and standard error information is stored on disk. The log analyzer extracts relevant `ERROR` information for all functional modules of each SAP system and displays this information for the selected managed node.

To display the SAP NetWeaver process log for a selected managed node:

- 1 In the `Node Bank` window, select the UNIX node for which you want to display a process log.
- 2 In the `SAP R/3 UN*X Tool Group`, click the `R/3 Process Logs` icon.
- 3 Press **Enter**. The system displays an output file selection window (see [Figure 8](#)).

Figure 8 Logfile-Output Selection Window



- 4 Enter the number associated with the output log file you want to view. For example, if you enter 17 for the `dev_w0` file, the system displays a log file such as that shown in [Figure](#) .



`stdout1-5` and `stderr1-5` are always displayed, even if the associated files do not contain an error message.

- 5 To access additional process logs, return to the process logs selection window by entering the command:

q!

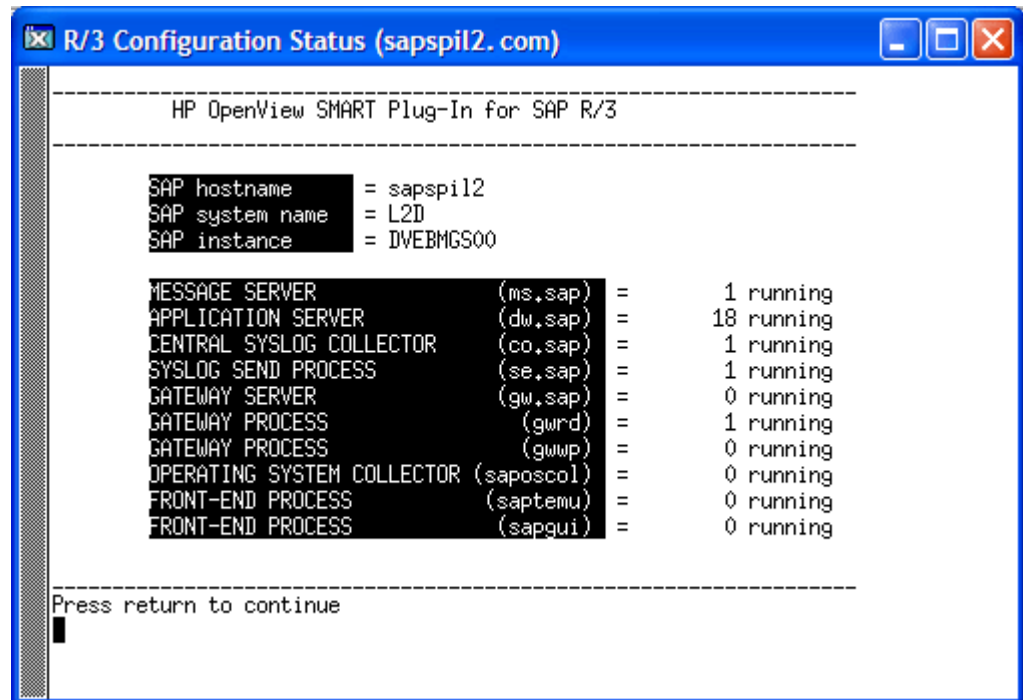
In order to use commands related to the vi editor your editor environment variable must be set to vi.

The Status R/3 Config Tool

The Status R/3 Config tool runs on the selected managed node and provides an ASCII representation of the current local SAP NetWeaver configuration. Status R/3 Config lists all SAP systems installed on the selected managed node and, in addition, the functional modules per system. The SAP NetWeaver process status also provides a list of all established SAP NetWeaver processes and their current status.

Select a managed node, then click the Status R/3 Config icon to display the R/3 Configuration Status window.

Figure 9 R/3 Configuration Status Window

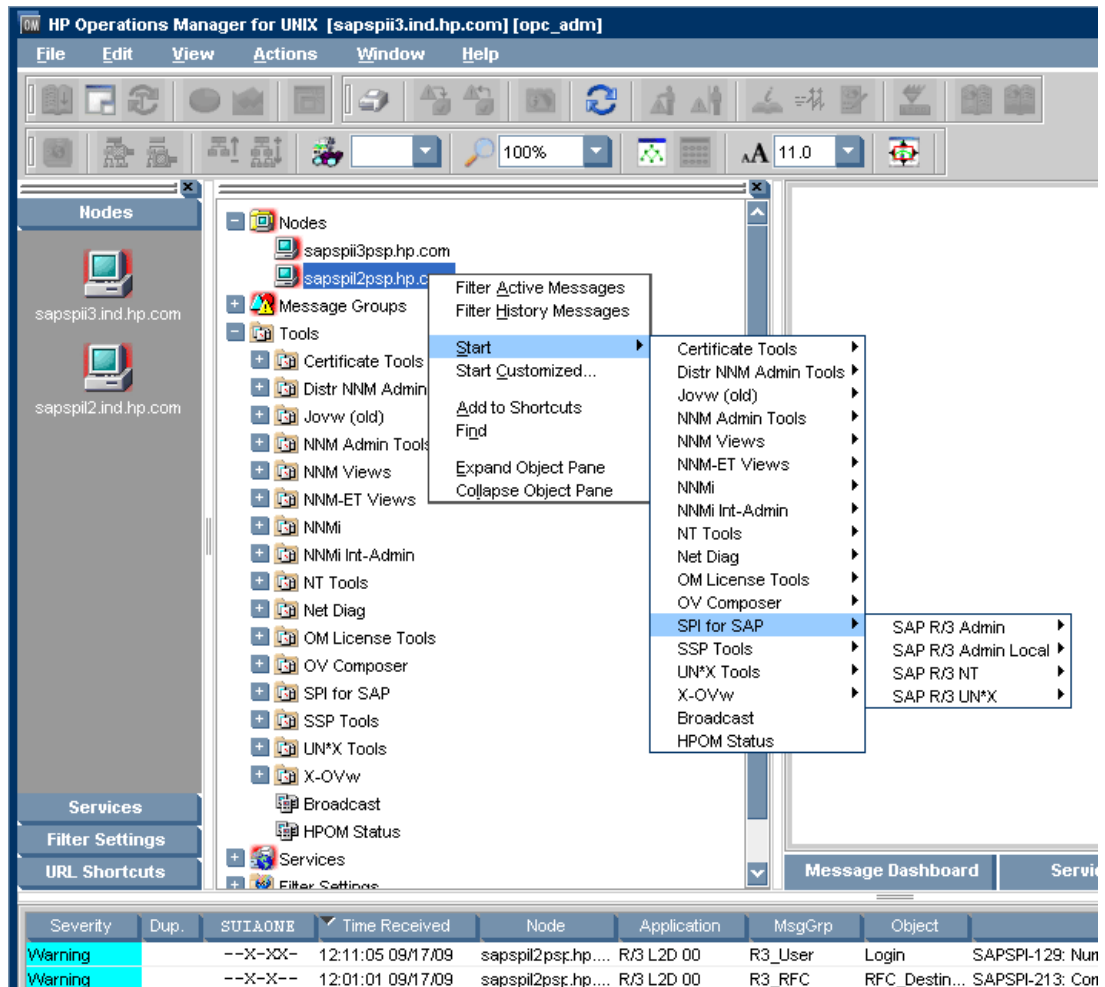


Launching Tools

This section provides information on how to launch tools on a node or node groups.

To launch a tool, follow these steps:

- 1 Click **Integrations** → **HPOM for Unix Operational UI** and log on to HPOM as the HPOM Administrator.
- 2 In the Nodes list, right-click on the desired managed node or node group and select **Start** → **SPI for SAP** → **<Tools>**



6 Customizing SPI for SAP Policies

The SPI for SAP policies help you monitor the SAP Application servers. You can customize these policies depending on the requirements of your IT environment. This chapter includes general guidelines about the SPI for SAP policies and explains how you can customize them. For more information see the policies section in the *HP Operations Smart Plug-in for SAP Reference Guide*.

SPI for SAP Policy Group and Policy Types

You can customize the SPI for SAP policies to suit the needs of your IT environment. However, you can use these policies without any modifications.



SPI for SAP Policy Groups

The SPI for SAP policies are organized under the SPI for SAP policy group.




















































Elements in Policy Group "SPI for SAP"



[/ Policy Bank / SPI for SAP](#)

SPI for SAP GROUP

Details SPI for SAP  Filter 

Showing 1 - 20 of 31 ([Show all](#))

<input type="checkbox"/>	Type	Name	↑	Assigned	Latest	Mode		
<input type="checkbox"/>		SAP NW Java Monitoring 7.0						
<input type="checkbox"/>		SAP NW Java Monitoring 7.1						
<input type="checkbox"/>		SAP R3 6.x 7.0AS 7.1kernel						
<input type="checkbox"/>		SAP R3 6.xCI						
<input type="checkbox"/>		SAP R3 7.0CI 7.1kernel						
<input type="checkbox"/>		global_r3itosap		12.0	12.0	Fixed		
<input type="checkbox"/>		global_r3monaco		12.0	12.0	Fixed		
<input type="checkbox"/>		global_r3monal		12.0	12.0	Fixed		
<input type="checkbox"/>		global_r3monale		12.0	12.0	Fixed		
<input type="checkbox"/>		global_r3monchg		12.0	12.0	Fixed		
<input type="checkbox"/>		global_r3moncts		12.0	12.0	Fixed		
<input type="checkbox"/>		global_r3mondev		12.0	12.0	Fixed		
<input type="checkbox"/>		global_r3mondisp		12.0	12.0	Fixed		
<input type="checkbox"/>		global_r3mondmp		12.0	12.0	Fixed		
<input type="checkbox"/>		global_r3moniob		12.0	12.0	Fixed		
<input type="checkbox"/>		global_r3monlck		12.0	12.0	Fixed		
<input type="checkbox"/>		global_r3monoms		12.0	12.0	Fixed		
<input type="checkbox"/>		global_r3monpro		12.0	12.0	Fixed		
<input type="checkbox"/>		global_r3monrfc		12.0	12.0	Fixed		
<input type="checkbox"/>		global_r3monsec		12.0	12.0	Fixed		

↑ Choose an action  

The SPI for SAP contains the following policy groups:

SAP NW Java Monitoring 7.0 - This group monitors the health of the J2EE engine of the SAP NetWeaver Web Application Server. With the help of a series of policies, you can collect metrics indicating the health, availability, and performance of the J2EE engine of an SAP NetWeaver Web Application Server.

SAP NW Java Monitoring 7.1 - This group monitors the health of the J2EE engine of the SAP NetWeaver Web Application Server. With the help of a series of policies, you can collect metrics indicating the health, availability, and performance of the J2EE engine of an SAP NetWeaver Web Application Server.

SAP R3 6.x 7.0AS 7.1kernel - This group contains the policies for monitoring the availability and health of the Web Application server ABAP on the application server of the SAP versions 6.40, 7.0, and 7.1. This includes metrics related to trace files, dispatcher, and work processes.

SAP R3 6.xCI - This group contains the policies for monitoring the health and availability of the Web Application server ABAP for the Central instance of the SAP version 6.40. It includes metrics related to Idocs, CTS, ABAP dumps, locks, jobs, rfc destinations, spool, security, update, users, work processes.

SAP R3 7.0CI 7.1kernel - This group contains the policies for monitoring the health and availability of the Web Application server ABAP for the central instance of the SAP versions 7.0 and 7.1. It includes metrics related to Idocs, CTS, ABAP dumps, locks, jobs, rfc destinations, spool, security, update, users, work processes.

SPI for SAP Policy Types

The SPI for SAP policies are of two types:

- *Measurement Threshold* policies pertain only to individual metrics
- *Scheduled Task* policies pertain to all metrics collected in a specific interval

Measurement Threshold and Scheduled Task Policies

Measurement threshold policies define how the collected data is interpreted for the individual metric. The rules it contains pertain to threshold values and actions that occur when those values are met or exceeded. In general an exceeded threshold generates alerts/messages in the HPOM message browser. In HPOM, you can change the threshold within a measurement threshold policy by double-clicking the policy and selecting the **Threshold** levels tabbed page.

Scheduled Task policies define what metrics are collected in the specified collection interval. You can see how this works by double-clicking a Scheduled Task policy. On the policy's Task tabbed page a list of targeted metrics appear in the Command text box.

The screenshot shows the 'Edit Measurement_Threshold Policy' window for policy 'SPISAP_0231'. The 'Thresholds' tab is active, showing a list of instance filters on the left and configuration options on the right. The 'Monitoring Type' is set to 'Maximum'. Under 'Threshold 2', there are fields for 'Description', 'Threshold', 'Short term peak behaviour' (set to 'No special treatment'), and 'Reset' (set to 'Use same as threshold value'). A note at the bottom reads: 'Please do not use the browser BACK button, while editing. To quit the editor, use the "Cancel" button.' Buttons for 'Save', 'Restore', and 'Cancel' are located at the bottom right.

Incoming values for metric SPISAP_0231 are compared against its threshold limits.

Monitor policies define all metrics for the SPI for SAP application that are scheduled for collection at specified interval. Within the name of each monitor policy is its collection interval (for example, SPISAP-71-High_1h, where collection interval is one hour). When you open any monitor policy, you can see all metrics listed as number and collected within the interval following the -m option.

Basic Policy Customizations

This section covers basic policy customizations like changing threshold values, scheduling or deleting a metric from data collection, opening a metric policy or collector policy and so on.

Before you begin to customize any of the policies, you must make copies of the original policies so that the default policies remain intact.

Modifying Metric Policies

You can modify the metric attributes for all monitored instances of SPI for SAP.

Threshold Level and Actions

To modify the threshold level and actions, follow these steps:

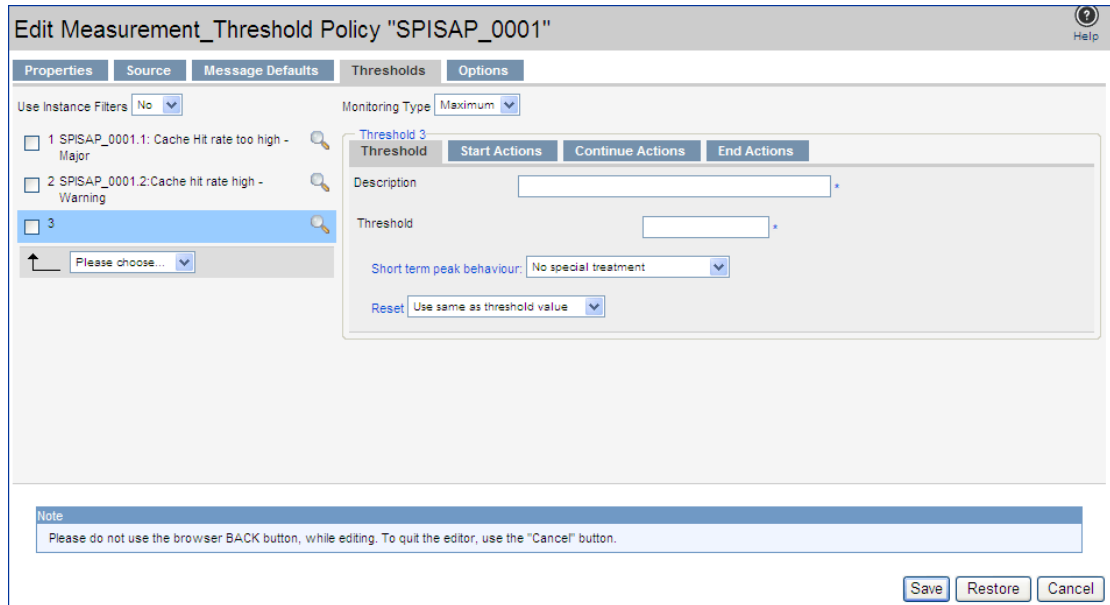
- 1 Open the Policy Bank window.
- 2 Click **SPI for SAP** → **<SAP_Policy_Group>**.
- 3 Select a metric and click **Edit** from the Actions drop-down list. The Edit Measurement Threshold Policy window opens.

The screenshot shows a web-based configuration window titled "Edit Measurement_Threshold Policy 'SPISAP_0001'". The window has a tabbed interface with tabs for "Properties", "Source", "Message Defaults", "Thresholds", and "Options". The "Properties" tab is active, showing the following fields:

- Name:** SPISAP_0001
- Type:** advmonitor
- Version:** 12.0
- Auto-increment on save:** (checked)
- Description:** Cache Hit rate
- Information:** (empty)

At the bottom of the window, there is a "Note" box with the text: "Please do not use the browser BACK button, while editing. To quit the editor, use the 'Cancel' button." Below the note are three buttons: "Save", "Restore", and "Cancel".

- Click the **Thresholds** tab.



- Click the condition you want to modify.
- Click the different tabs (Threshold, Start Actions, Continue Actions, and End Actions) and modify the attributes.
- Click **Save** to save the changes.
- Deploy the modified policies as described in [Deploying the SPI for SAP Categories and Policies to Managed Nodes](#) on page 47.

Table 1 Metric Attributes

Attributes	Description
Threshold	Enter a value for the metric data, which when exceeded would signify a problem either about to occur or already occurring.
Duration	Enter a value for the length of time that the incoming data values for a metric can exceed the established threshold before an alarm is generated.
Severity	Click the Start Actions tab and then the Message tab. Select the desired severity setting from the Severity drop-down list.
Message Text	Do not modify any of the parameters that are enclosed within <> brackets and beginning with \$, in a message.
Actions	This field provides the ability to add custom programs. Operator initiated: These actions are performed only upon the initiation of an operator. Automatic: These actions are performed automatically when the metric alarms.

An alarm can be generated once or multiple times, depending on its Message Generation setting in the Modify Threshold Monitor window. You can click the Thresholds settings and modify the settings.

- **Specify a special reset value:** Enter the reset value in the text box displayed. Alarms are generated once when the threshold value is exceeded. At the same time, a reset threshold value is activated. Only when the reset threshold value is exceeded, does the original threshold value become active again. Then when the threshold value is again exceeded, another alarm is generated and the process starts all over again.
- **Use same as threshold value:** Alarms are generated once when the monitoring threshold value is exceeded. Alarms reset automatically when metric values are no longer in violation of the thresholds and are generated again when the threshold is exceeded.

Message Severity

To modify the message and severity of a policy, follow these steps:

- 1 Open the Policy Bank window.
- 2 Click **SPI for SAP** → **<SAP_Policy_Group>**.
- 3 Select a metric and click **Edit** from the Actions drop-down list. From the Edit Threshold window click **Thresholds**.
- 4 Click **Start Actions** tab and click **Message**.

The screenshot shows the 'Edit Threshold' window with the 'Start Actions' tab selected. Under the 'Message' sub-tab, the following fields are visible:

- Monitoring Type: Maximum
- Threshold 2: Threshold
- Severity: unchanged (dropdown menu with a help icon) [As Default]
- Node: [text box] [As Default]
- Application: [text box] [As Default]
- Message Group: [text box] [As Default]
- Object: [text box] [As Default]
- Message Text: [text area] [As Default]
- Service ID: [text box] [As Default]
- Service hosted on: [text box] [As Default]
- Message type: [text box]

You can modify the following attributes:

Severity: Indicates the importance of the event that triggers this message.


Message Text: You can modify the text of the message but do not modify any of the parameters—beginning with \$ and surrounded by <> brackets—in a message.

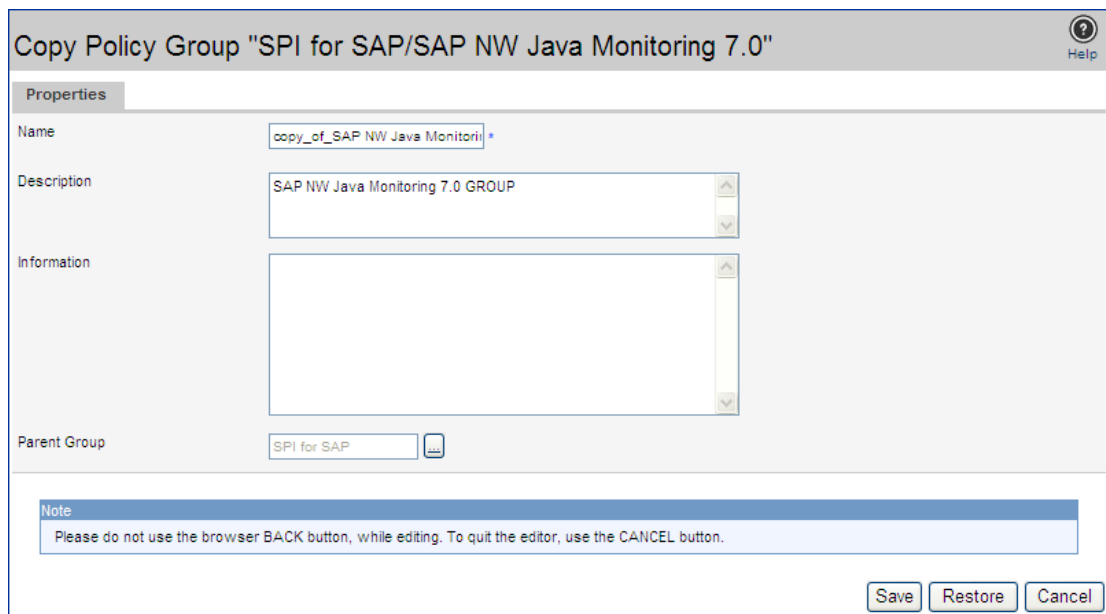
Advanced Policy Customization

Advanced policy customizations include making copies of default policy groups to customize a few settings and deleting whole groups of metrics within a policy's command line.

Creating New Policy Groups

You can separate the custom policies that you create from the original default policies by creating new policy groups. Before you create a new policy group you must first determine the metrics and policies you want to modify. To create a new policy group, follow these steps:

- 1 Create a new policy group:
 - a Open the **Policy Bank** window and click **SPI for SAP**.
 - b Select the policy group you want to use and click **Edit**  from the drop-down list. The Copy Policy Group window opens.
 - c Rename the group.
 - d Select a Parent Group.
- 2 Click **Save**. The new policy group is saved.



Copy Policy Group "SPI for SAP/SAP NW Java Monitoring 7.0"

Properties

Name: copy_of_SAP NW Java Monitori *

Description: SAP NW Java Monitoring 7.0 GROUP

Information:

Parent Group: SPI for SAP

Note: Please do not use the browser BACK button, while editing. To quit the editor, use the CANCEL button.

Save Restore Cancel

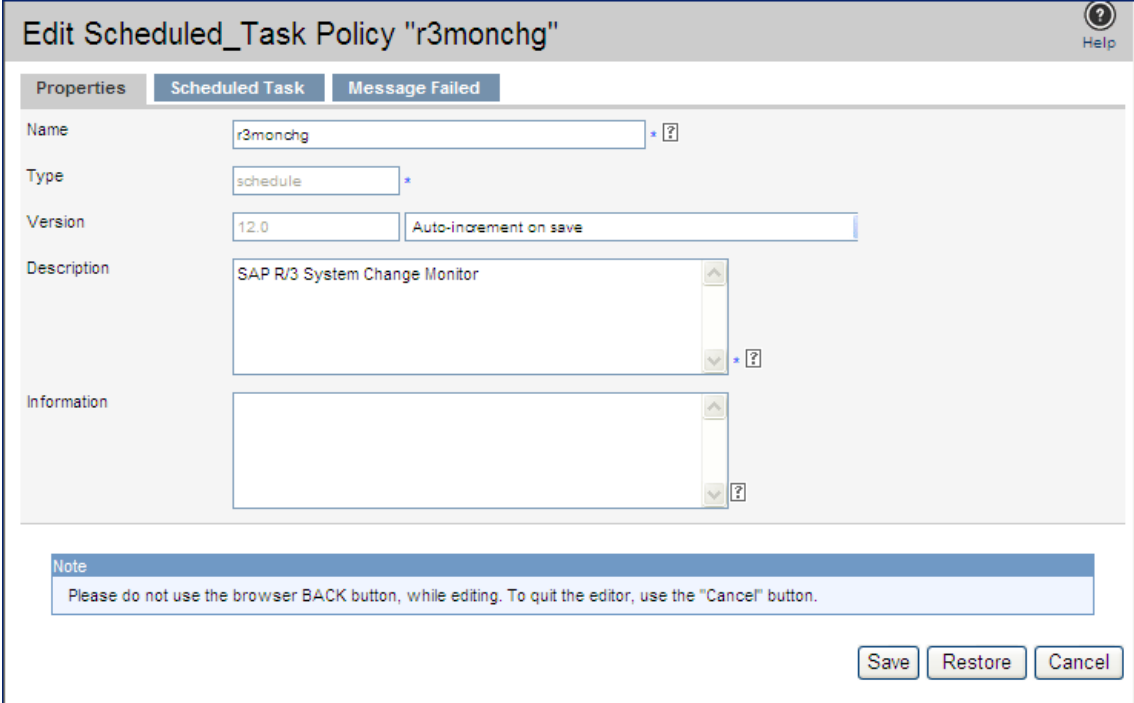
- 3 Copy the required policies to the newly created policies and rename it.
- 4 Click **Save**.

Changing the Collection Interval

To change the metric collection interval, simply change the Polling Interval in the appropriate collector policy. For example, to change the collection of default metrics from 5 minutes to 10 minutes for the SPI for SAP policy group, follow these steps:

- 1 Open the Policy Bank window and click **SPI for SAP** policy group.

- 2 Select a scheduled policy and click **Edit**  from the drop-down list. The Edit Policy window opens.



Edit Scheduled_Task Policy "r3monchg"

Properties | **Scheduled Task** | Message Failed

Name: r3monchg

Type: schedule

Version: 12.0 | Auto-increment on save

Description: SAP R/3 System Change Monitor

Information:

Note: Please do not use the browser BACK button, while editing. To quit the editor, use the "Cancel" button.


Save | Restore | Cancel

- 3 Click the **Scheduled Task** tab.
- 4 Change the values accordingly in the fields.
- 5 Click the **Message Failed** tab.
- 6 Change the severity, message text, and object.
- 7 Click **Save**.
- 8 Distribute the new policies as described in [Deploying the SPI for SAP Categories and Policies to Managed Nodes](#) on page 47.

Changing the Collection Interval for Selected Metrics

To change the collection interval for selected metrics, copy the appropriate collector policy. Rename the policy with a name reflecting the new interval, deleting all but the metrics you are changing. Set the new interval. Edit the original policy to remove the changing metrics.

For example, to change the collection interval to 10 minutes for metrics 5-8, follow these steps:

- 1 Open the Policy Bank window and click **SPI for SAP** policy group.
- 2 Click **SPI for SAP** → **SAP R3 6.xCI** → **r3mondmp**.
- 3 Click **Edit**  from the drop-down list.
- 4 Click the **Scheduled Task** tab.
- 5 In the Minute box, change the polling interval from 5 minute to 10 minutes. For example, 0, 10, 20....
- 6 Click **Save**.

- 7 Re-distribute the modified policies as described [Deploying the SPI for SAP Categories and Policies to Managed Nodes](#) on page 47.

7 The SPI for SAP in a high-availability Cluster

This chapter explains how to install the SPI for SAP in a high-availability environment such as an MC/ServiceGuard cluster.

In this Section

The information in this section helps you to understand the process of installing and configuring the SPI for SAP on SAP servers running in a high-availability environment such as an MC/ServiceGuard cluster. For information about installing the SPI for SAP on an HPOM management server running in a high-availability cluster, see [Installing the SPI for SAP Software](#) on page 18.

Although the information provided in this section uses MC/ServiceGuard to explain cluster configurations, the basic concepts are the same for any high-availability environment as far as the SPI for SAP is concerned.

Cluster Configurations

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

- **single package**

The SAP database and central instance are located on the *same* server and included in the same MC/ServiceGuard package. The combined package can be switched temporarily to the *secondary* node in the event of problems.

- **twin package**

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 *primary (physical host 1)* or *secondary (physical host 2 or backup)* node.

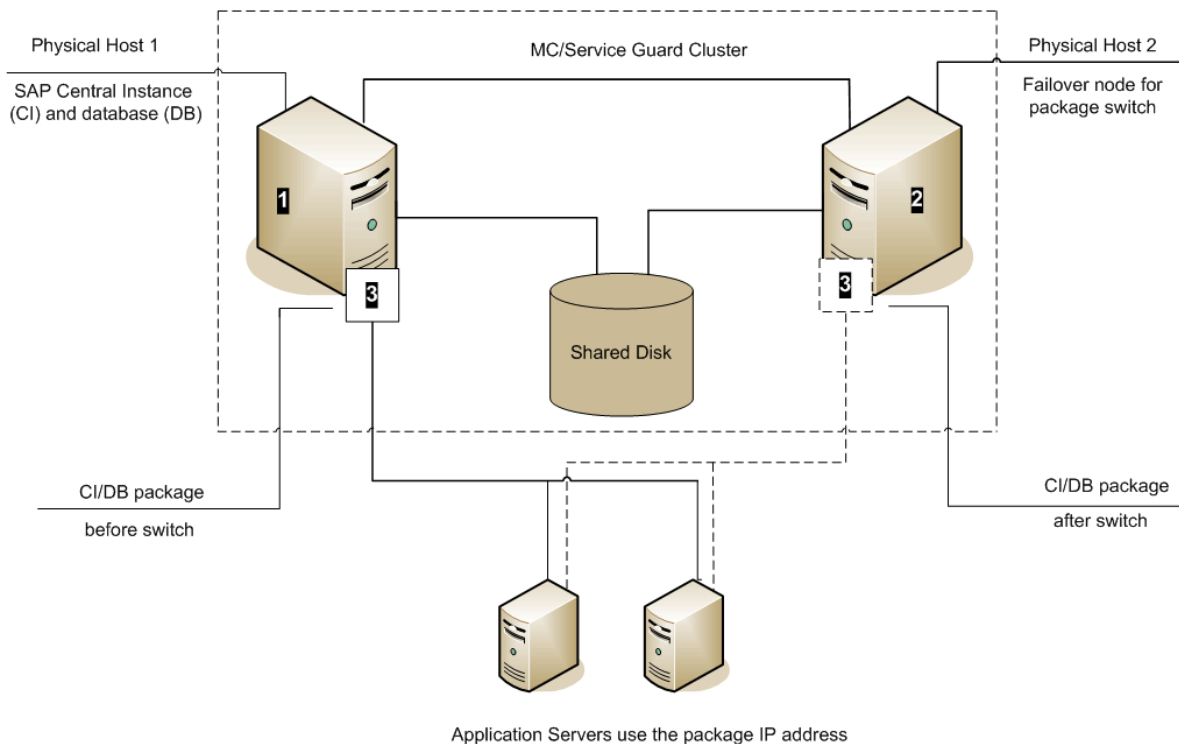
The Single-Package Configuration

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 *secondary* node in the event of a package switch. The *secondary* node can perform any one of the following roles:

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

The application servers, which are not included in the cluster, reference the MC/ServiceGuard package (③) by means of its relocatable IP address, not by reference to the fixed IP address of the node on which the MC/ServiceGuard package is running. If a problem occurs, the central instance and database are taken down on the *primary or physical host 1* node (cluster node ①), and then brought up again on the *secondary or physical host 2* node (cluster node ②). At the same time, the shared disks are deactivated on the *primary* node and reactivated on the *secondary* node.

Figure 1 The Single-Package Configuration

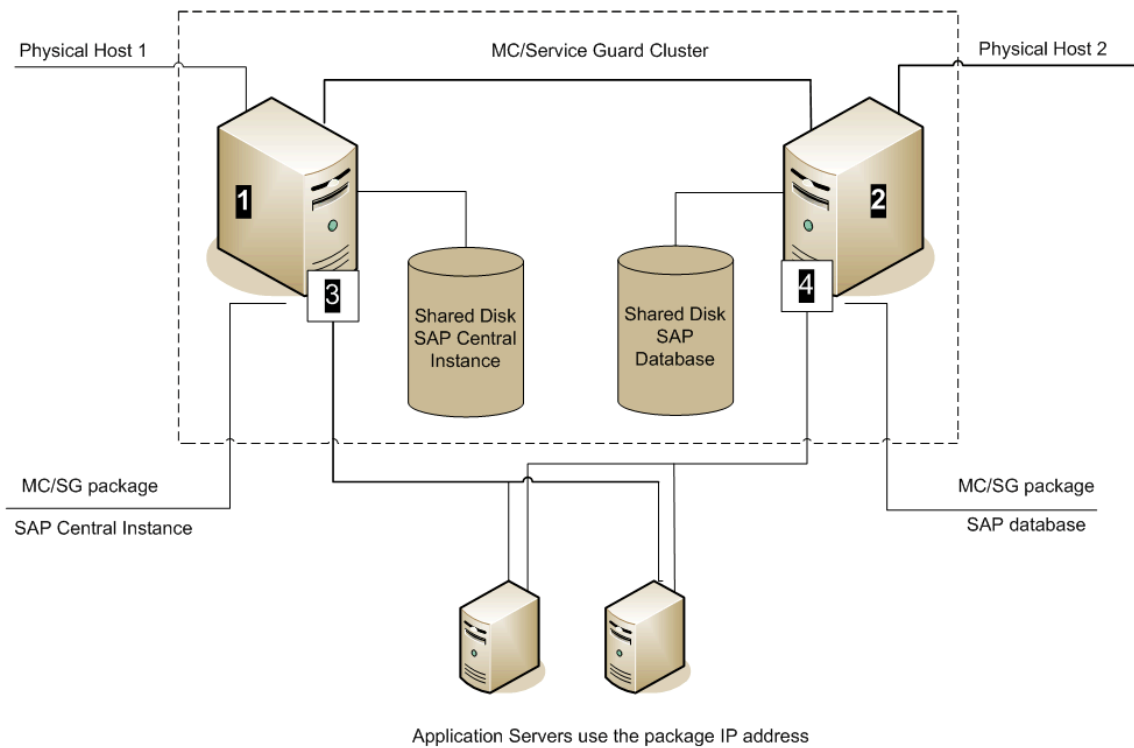


Once these actions have been completed by MC/ServiceGuard, the application servers can reconnect to the central instance and database (③ in Figure 1 on page 82) using the same relocatable IP address, which, as the name suggests, moves with the package.

The Twin-Package Configuration

In the two-package concept, the central instance and the database are installed on different servers, which for the sake of convenience we can call cluster nodes ① and ② respectively, as illustrated in Figure 2. The central-instance server and the database server form a high-availability cluster, where each server can act as the *secondary* node for the other in the event of a package switch.

Figure 2 The Twin-Package Configuration before a Package Switch

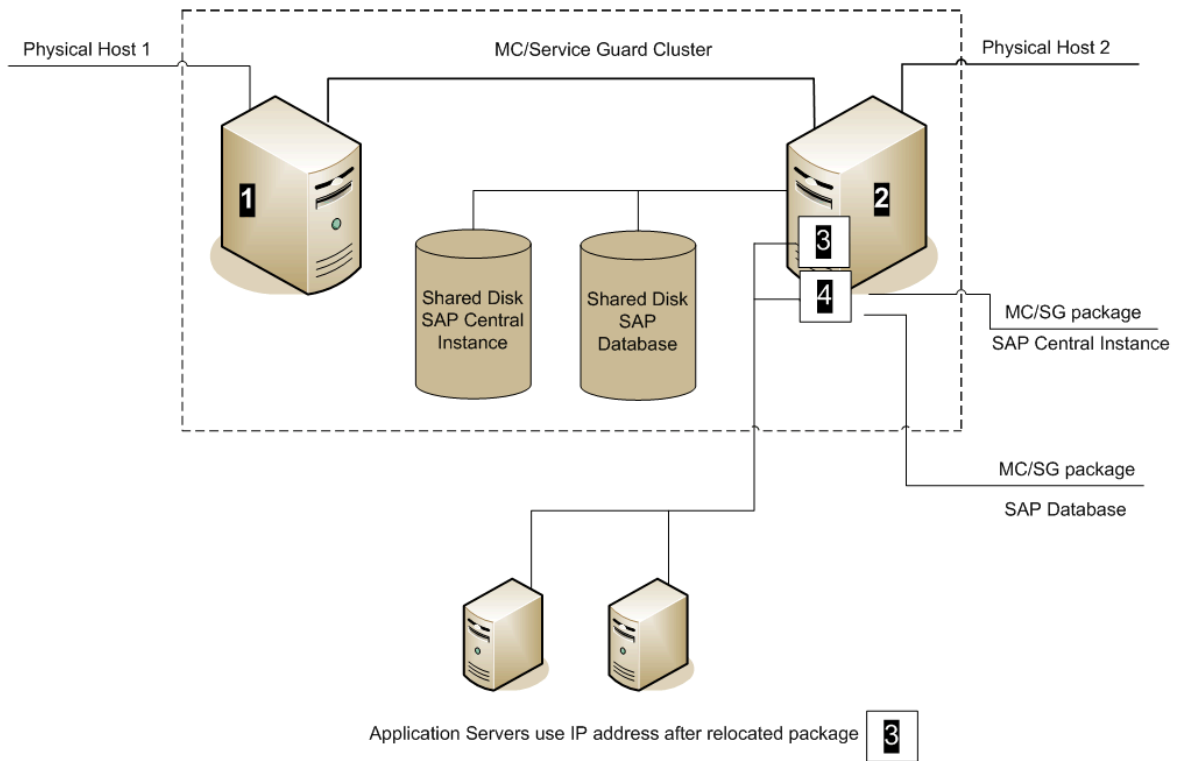


The application servers are not included in the cluster and it refers each package by means of each package's own relocatable IP address—not the fixed IP addresses of cluster-nodes ❶ and ❷.

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 *primary* node and reactivated on the *secondary* node.

Figure 3 shows the situation *after* the switch of the SAP central- instance package (❸). Once 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 fail over, namely; the central-instance package's relocatable IP address, which moves along with the package at the time the fail over occurs.

Figure 3 Twin-Package Configuration after a Package Switch



Pre-requisites

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 HP Operations Manager. 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 84
- [Configuration Requirements](#) on page 85
- [Service Reports and Performance Graphs](#) on page 85
- [Service Views](#) on page 85

Software Requirements

High-availability 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 MC/ServiceGuard 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 Node Bank window. You also need to add to the HPOM Node Bank window (as node type "Other"-Message only) to the host you define as the HPOM-message host name in the host-mapping section of the `r3itosap.cfg` file. For more information about defining HPOM-message host name, see [Specifying SAP Clients to Monitor](#) on page 50.

Service Reports and Performance Graphs

If you want to generate SPI for SAP service reports and performance graphs for all the nodes in the MC/ServiceGuard cluster, make sure that:

- the appropriate performance-agent functionality (Embedded Performance Component or the HP Performance Agent) is installed, configured, and available on all the nodes in the MC/ServiceGuard cluster.
- the appropriate SPI for SAP R/3 Performance Agent integration functionality is installed, configured, and available on all the nodes in the MC/ServiceGuard cluster. For more information about installing and configuring the SPI for SAP R/3 Performance Agent, see the *HP Operations Smart Plug-in for SAP Reference Guide*.
- both HP Performance Manager and Reporter, are installed, correctly configured, and available on a system, which can see the cluster nodes. 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 install the Navigator and set it up to see the services you want the SPI for SAP monitor in the SAP environment. You will also have to ensure that the SPI for SAP performance integration is installed and configured to collect the appropriate performance-related data.

- ▶ 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 High-availability Environment](#) on page 88.

Installing the SPI for SAP in a High-availability Environment

To use the SPI for SAP in an MC/ServiceGuard environment, you have to install the HPOM agent and SPI for SAP actions, commands, monitors, and policies on *all* nodes in the cluster where the SAP package can run—both the *primary* node and *secondary* (or backup) node.

- ▶ It is always a good idea to ensure 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 distribute the SPI for SAP to the cluster nodes, you need to assign the appropriate SPI for SAP policy groups. For example, you have to assign a central-instance policy group such as `SAP R3 6.xCI` to all managed nodes where a package that includes a SAP R/3 6.x central instance can run, or `SAP R3 7.0CI/7.1kernel` to all managed nodes where a package that includes a SAP R/3 7.0 central instance can run.

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. Note that SPI for SAP applications 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.

- ▶ 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.

If an application-server instance is already running on the managed cluster-node, the monitors will run and generate messages relating to the application 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 91.

Installing the SPI for SAP Monitors

You install the SPI for SAP monitors in an MC/ServiceGuard environment in the same way as in a normal environment, that is; using the standard HPOM template-assignment and template-distribution mechanisms. The only difference is that you have to perform the operation for each physical node in the cluster, as follows:

1 Pre-requisites

Before you start the installation of the SPI for SAP monitors, make sure that you have completed *all* the steps described in the section [Configuring 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. For more information about the `r3itosap.cfg` file, see [Specifying SAP Clients to Monitor](#) on page 50.

3 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 MC/ServiceGuard cluster in order to avoid the generation of confusing messages and potentially misleading performance data after a package switch. For more information, see [Configuration Values for SPI for SAP Monitors](#) on page 37.

▶ The only exception to this rule is when the *secondary* node is already configured as an application server. For more information, see [Special-Case Scenarios](#) on page 91.

4 Assign and distribute components

Use the HPOM GUI to assign and distribute the appropriate SPI for SAP components to *each* physical node in the cluster. The policies you assign must match the version of SAP, which is running on the managed node. In addition, you must make sure that you assign exactly the same components (actions, commands, monitors, 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 in the high-availability cluster the SAP instance is running.

For more information about assigning and distributing SPI for SAP components to HPOM managed nodes, see [Configuring 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 MC/ServiceGuard cluster, ensure that each monitor can see its history file, `r3<monitor_name>.his`, both before and after a fail-over 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 configuration files and the options you need to set and change, see [Monitor History Files in a High-availability Cluster](#) on page 89.

Configuring the SPI for SAP in a High-availability Environment

In a “normal” high-availability cluster where the *primary* and *secondary* nodes are intended to have identical roles, you approach the process of installing the SPI for SAP in the same way as if you had to install the SPI for SAP twice, with the following cautions:

1 SAP logins and accounts for the SPI for SAP

Use the HostSapAssign section in the `r3itosap.cfg` file to set up the SAP logins, accounts and so on required by the SPI for SAP on *all* physical nodes in the cluster. For more information, see [Defining SAP Logins in a High-Availability Cluster](#) on page 91.

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 message browser.

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. 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 Clients to Monitor](#) on page 50.

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

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 *HP Operations Smart Plug-in for SAP Reference Guide*.

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 91 describes one or two exceptions to this rule.

4 Assign and distribute 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 assigning and distributing components to the managed nodes, see [Assigning SPI for SAP Policies to SAP Nodes](#) on page 57.

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 fail-over package switch. For more information, see [Monitor History Files in a High-availability Cluster](#) on page 89.

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 91.



If the *secondary* node in the cluster has the additional role of application server, make sure you read the instructions in [Special-Case Scenarios](#) on page 91 before you start the configuration process.

Host Mapping on Cluster Nodes

If the HPOM HTTPS 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 HTTPS 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 message browser. To ensure that the host-mapping feature works as intended and the correct hostname is displayed in SPI for SAP messages coming from the high-availability cluster, you must disable the HPOM HTTPS agent feature on the managed node, as follows:

- 1 Log on as a user with administrative privileges to each physical node in the high-availability cluster where an HPOM HTTPS agent is running and open a command shell.
- 2 On HTTPS agents managed by HPOM for UNIX:

```
ovconfchg -ns eaagt -set OPC_SET_PROXY_FLAG_FOR_IP_ADDRESSES  
'<IP_Address, IP_Address, . . .>'
```

Use the `ovconfchg` command 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 message browser. If multiple packages are running in the cluster (for example, for HPOM and for Oracle), use commas "," to separate multiple IP addresses in the list.



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.

- 3 Restart the agent with the new configuration using the following commands:

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

Monitor History Files in a High-availability Cluster

The SPI for SAP alert monitors `r3monal`, `r3mondev`, `r3monpro`, and `r3status` have their own history files 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 its history file only if the SAP System it is monitoring is available and the SPI for SAP monitors can connect. If the SAP System being monitored is *not* available, `r3monal` only updates 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 the SAP System they are monitoring is available or not.

History File `r3monal.his` for the `r3monal` Monitor

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

The history files for the SPI for SAP monitors are usually stored 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 `/var/opt/OV/conf/sapspi` for all UNIX managed nodes except AIX, which uses the directory `/var/lpp/OV/conf/sapspi`, and `%OVAGENTDIR%\conf\sapspi` for Microsoft Windows managed nodes. However, 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 *HP Operations Smart Plug-in for SAP Reference Guide* 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 a new, 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 Smart Plug-in for SAP Reference Guide*. 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 message browser.

- 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 message browser. Note that the monitor-set feature can be only used with the XMI/XAL interface.

Defining SAP Logins in a High-Availability Cluster

When setting up the SPI for SAP in a high-availability environment, remember to include references to SAP instances on all *physical* nodes in the `r3itosap.cfg` file, the file which the SPI for SAP uses to define all SAP logins. If you make any changes or additions to 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.



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 High-availability Environment](#) on page 88.

If the *secondary* node in the high-availability cluster is already configured as an SAP application server, then the logins for both the SAP 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 91.

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 *secondary* (or backup) node in a high-availability cluster might already be in use as an application server. If this in the case in your environment and regular high loads mean that you need the central instance to maintain the same performance level after the fail-over package switch as before, you have the option of shutting down the application server on the *secondary* node after the fail-over 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 *secondary* node even after the fail-over 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 NetWeaver 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 Smart Plug-in*

for *SAP Reference Guide* 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 *secondary* node cannot be the same as the SAP instance number associated with the SAP central instance, which starts on the *secondary* node after the fail-over package switch.

Table 2 shows which monitors apply to which SAP instance.

Table 2 SPI for SAP Monitors

SPI for SAP Monitor Name	Central Instance	Application Server
r3monaco	✓	
r3monale	✓	
r3monal ^a	✓	
r3monchg	✓	
r3moncts	✓	
r3mondev	✓	✓
r3mondisp	✓	✓
r3mondmp	✓	
r3monjob	✓	
r3monlck	✓	
r3monoms ^b	✓	
r3monpro	✓	✓
r3monrfc	✓	
r3monspl	✓	
r3monsec	✓	
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 monitors such as, for example; `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 *secondary* 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 *secondary* node after the fail-over 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 fail over, you need to ensure that each of the monitors which the `r3moncol` starts when the central instance comes up on the *secondary* 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 2](#) on page 92 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](#) on page 93 illustrates how the configuration file for the `r3monale` monitor on the *secondary* node would look if you configured `r3monale` to monitor only the central instance (for example=00) on the *secondary* 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.

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 *secondary* 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 fail-over 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 Number=`) is linked to the appropriate process name, 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   Process  (...)
#                  System Number name      =1      =1      number  (...)
#-----
AlertInstMonPro   =T11    =00      =saposcol =1      =Exact =1      (...)
AlertInstMonPro   =T11    =01      =saposcol =1      =Exact =1      (...)
```

Performance Tools in a High-availability Environment

If you are using the Performance Agent (or Embedded Performance Component) to monitor SAP NetWeaver in an MC/ServiceGuard environment, you must install the performance agents on both nodes in the cluster, namely; the *primary* and *secondary* nodes, and then configure the performance agent to monitor the same SAP System and Instance 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 node name.

In the event of a fail over 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 *secondary* node, starts to monitor and report the appropriate SAP metrics on the *secondary* 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 *primary* node to the *secondary* (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 High-availability 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 Reporter, are installed, correctly configured, and available on a machine that is visible to the cluster nodes. You will also have to ensure that the appropriate performance-agent functionality (Embedded Performance Component or the HP Performance Agent) is installed, configured, and available on all the 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 reports are tied to the individual physical nodes in the cluster. This means that the SPI for SAP monitors are collecting operating system data even when the SAP package is not running, for example; on the *secondary* (backup) 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 Agent 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 *secondary* node *before* a package switch and on the *primary* 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 High-Availability 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 install the Navigator and set it up to see the services you want the SPI for SAP to monitor in the SAP landscape. You will also have to ensure that the SPI for SAP performance integration is installed and configured to collect the appropriate performance-related data.

The service-discovery template 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 High-availability Environment](#) on page 88 and [Specifying SAP Clients to Monitor](#) on page 50.

- ▶ 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 in a High-availability Environment

The SPI for SAP software and functionality has to be removed from each individual physical node in the MC/ServiceGuard 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 MC/ServiceGuard cluster before you proceed to step two. For more information, see [Removing SAP R/3 Performance Agent from SAP Managed Nodes](#) on page 130.
- 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 MC/ServiceGuard cluster. For more information, see [Removing the SPI for SAP from HPOM Managed Nodes](#) on page 131.

8 Using the Smart Plug-in for SAP

This chapter introduces the SPI for SAP integration with HPOM and describes a typical SPI for SAP session.

Introduction

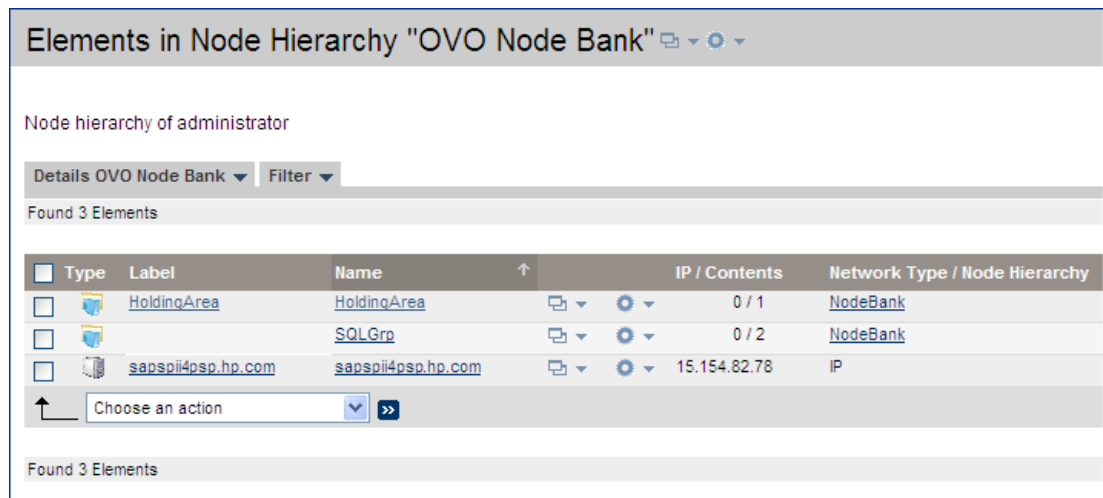
After you have installed and configured the SPI for SAP you can begin to use it to monitor your SAP NetWeaver system environment.

When you log on to HPOM using the user name and password of an operator with SAP responsibilities, you will see additional SAP-specific components in the Node Bank, Message Group windows. You will also see SAP related messages in the HPOM message browser.

The HPOM Node Bank Window

The Node Bank window contains all the nodes for which the operator is responsible. The nodes list the basic information like IP address, system type, and policies.

Figure 4 HPOM Managed Nodes Window



Before you can use any of the application functions with a particular managed node, you need to select the node in the Node Bank window.

The HPOM Message Groups Window

The All Message Groups window contains all the message groups for which a particular operator is responsible. In this window you can review the status of each group and select specific groups for message review. HPOM uses message groups to combine management information about similar or related managed objects under a chosen name and provide status information on a group level.

Figure 5 HPOM Message Groups

The screenshot shows the 'Filtered Message Groups' window. At the top, there is a 'Filter' dropdown and a status bar indicating 'Showing 1 - 20 of 26 (Show all)'. Below this is a grid of message groups with columns for Label, Name, and Description. Each row includes a checkbox for selection, a name link, a status icon (a circle with a dot), and a description.

Label	Name	Description
<input type="checkbox"/> R3_ABAP-4	R3_ABAP-4	SAP R/3 ABAP/4
<input type="checkbox"/> R3_ALE	R3_ALE	SAP R/3 ALE
<input type="checkbox"/> R3_Backup	R3_Backup	SAP R/3 backup messages
<input type="checkbox"/> R3_Buffers	R3_Buffers	SAP R/3 Buffers
<input type="checkbox"/> R3_CCMS	R3_CCMS	Messages from the XI/MXAL monitor (r3monal)
<input type="checkbox"/> R3_CTS	R3_CTS	SAP R/3 Correction and Transport System
<input type="checkbox"/> R3_DB	R3_DB	SAP R/3 Database
<input type="checkbox"/> R3_DISPATCH	R3_DISPATCH	SAP R/3 dispatcher monitoring
<input type="checkbox"/> R3_Enqueue	R3_Enqueue	SAP R/3 Enqueue
<input type="checkbox"/> R3_General	R3_General	SAP R/3 General
<input type="checkbox"/> R3_ITS	R3_ITS	mySAP.com ITS Group
<input type="checkbox"/> R3_Jobs	R3_Jobs	SAP R/3 Jobs
<input type="checkbox"/> R3_MON_ERROR	R3_MON_ERROR	SAP Smart Plug-In specific error messages
<input type="checkbox"/> R3_Performance	R3_Performance	SAP R/3 Performance
<input type="checkbox"/> R3_RFC	R3_RFC	SAP RFC related messages
<input type="checkbox"/> R3_Roll-Paging	R3_Roll-Paging	SAP R/3 Rolling and Paging
<input type="checkbox"/> R3_Security	R3_Security	SAP R/3 Security Status
<input type="checkbox"/> R3_Spooler	R3_Spooler	SAP R/3 Spooler

When you are logged on as an operator with SAP responsibilities, your Message Groups window contains some or all of the SAP-specific message groups listed in Table 3 depending on the responsibilities assigned to you by the HPOM administrator.

Table 3 SPI for SAP Message Groups

Message Group	Contents/Purpose
R3_ABAP-4	ABAP/4 database events
R3_ALE	Events concerning the status of iDOCs in the NetWeaver System
R3_Buffers	SAP NetWeaver instance buffer problems
R3_Backup	SAP NetWeaver backup messages

Table 3 SPI for SAP Message Groups (cont'd)

Message Group	Contents/Purpose
R3_CCMS	CMMS alert messages from r3monal when it is configured to use the XMI/XAL interface
R3_CTS	Correction and transport-system alert messages
R3_DB	Internal SAP NetWeaver database events
R3_Dispatch	ABAP dispatcher events
R3_Enqueue	Enqueue server messages
R3_General	General and SAP NetWeaver collector messages
R3_Jobs	SAP NetWeaver jobs
R3_MON_ERROR	SPI for SAP monitor-specific error messages
R3_Performance	SAP NetWeaver performance messages
R3_RFC	Messages from r3monrfc, the RFC-destination monitor.
R3_Roll-Paging	Rolling and paging activities
R3_Security	Events relating to the security of SAP NetWeaver systems
R3_Spooler	Spooler events
R3_State	Configuration status information
R3_Syslog	SAP NetWeaver entries in the syslog log files
R3_Trace	Tracing information if trace is switched on
R3_Transport	Transport related messages
R3_Update	Update error messages
R3_User	User and usage messages
R3_WP	Work process events
R3_XMI	Special syslog XMI messages

Changing Default Message-Group Settings

For the sake of convenience, the SPI for SAP automatically assigns messages generated by its monitors to particular message groups. For example, messages relating to the database are assigned to the R3_DB message group. This makes it easier to understand the general theme of a problem when browsing through messages in the HPOM message browser. However, you can change these default settings to suit the demands of your environment.

For example, if you configure `r3monal`, the SPI for SAP's CCMS Alert monitor, to use the XMI/XAL interface in SAP, the SPI for SAP automatically assigns any messages generated by `r3monal` to the `R3_CCMS` message group. However, there are a large number of messages from this source, and it can be helpful to re-assign the messages to sub-groups, which more accurately reflect the nature of the problem that the message describes.

If you want to change the message group to which individual messages are assigned, you can change the attributes of the message condition which generates the message in the first place. Note that messages generated by SAP's database are originally assigned to the message group `R3_CCMS` but are then re-assigned to the message group `R3_DB` if a defined condition matches which shows that the message originates from a problem in an Oracle, DB2, or SQLServer database.

The HPOM Message Browser Window

The `Message Browser` window is your unique view of all active messages received at your display station from the managed nodes of the message groups assigned to you.

You can use this window to review and manage messages and to guide problem resolution. Incoming messages are displayed with pre-configured attributes and status information. You can:

- Look at all the details about a single message and, to resolve the message-triggering event:
 - execute an operator-initiated action, or
 - have HPOM perform an automatic action for you
- Restart actions at any time or even stop the execution of an action
- Print messages and prepare message reports
- Document your actions and read through previously performed actions using HPOM's annotation facility
- Acknowledge messages in the `Message Browser` window after actions are completed

Figure 6 HPOM Message Browser

The screenshot displays the HPOM Message Browser application. The main window contains a table of messages with the following columns: Severity, Dup, SUTIAONE, Time Received, Node, Application, MsgGrp, Object, and Message Text. The messages are color-coded by severity: Warning (yellow), Major (orange), Critical (red), and Unknown (blue). The status bar at the bottom shows 50 of 2794 messages, with 10475 filtered. There are also buttons for 'All Active Messages' and 'Filtered Active Messages', and a 'Lock' checkbox.

Severity	Dup	SUTIAONE	Time Received	Node	Application	MsgGrp	Object	Message Text
Warning	--X----		16:02:44 07/29/09	sapspil2.hp...	R/3 L2D 00	R3_Trace	r3mondev	SAPSPI-188: DVEBMGS00: ERROR in dev_w0 above line 26...
Warning	--X----		15:52:42 07/29/09	sapspil2.hp...	R/3 L2D 00	R3_Trace	r3mondev	SAPSPI-188: DVEBMGS00: ERROR in dev_w0 above line 26...
Major	--X--X-		15:50:48 07/29/09	sapspil2.hp...	SAP	SAPSPI	sapspil2.ind...	SAPSPI-172: SPISAP_0230: Average message processing t...
Major	--X--X-		15:50:02 07/29/09	sapspil2.hp...	SAP	SAPSPI	sapspil2.ind...	SAPSPI-118: SPISAP_2231: Byte array cache size of JNDI ...
Major	--X--X-		15:50:01 07/29/09	sapspil2.hp...	SAP	SAPSPI	sapspil2.ind...	SAPSPI-118: SPISAP_2231: Byte array cache size of JNDI ...
Major	--X--X-		15:48:25 07/29/09	sapspil2.hp...	SAP	SAPSPI	sapspil2.ind...	SAPSPI-154: SPISAP_2226: Transaction success rate (0.0...
Major	--X--X-		15:48:19 07/29/09	sapspil2.hp...	SAP	SAPSPI	sapspil2.ind...	SAPSPI-154: SPISAP_2226: Transaction success rate (0.0...
Critical	--X----		14:16:17 07/29/09	sapspil3.hp...	HP Operations ...	OpC	ovoareqsdr ...	Number of 257357 messages in history-message-table reac...
Unknown	-----		13:40:30 07/29/09	sapspil2.hp...	OpenView	OpenView	ovlogmsg	Agent System Detection Error[2]: ovoidetect: Error - Executi...
Unknown	-----		13:40:30 07/29/09	sapspil2.hp...	OpenView	OpenView	ovlogmsg	Agent System Detection Error[2]: ovoidetect: Error - Executi...
Critical	--X----		12:16:17 07/29/09	sapspil3.hp...	HP Operations ...	OpC	ovoareqsdr ...	Number of 256817 messages in history-message-table reac...
Warning	--X----		11:17:45 07/29/09	sapspil2.hp...	R/3 L2D 00	R3_Trace	r3mondev	SAPSPI-188: DVEBMGS00: ERROR in dev_w0 above line 26...
Warning	--X----		10:47:46 07/29/09	sapspil2.hp...	R/3 L2D 00	R3_Trace	r3mondev	SAPSPI-188: DVEBMGS00: ERROR in dev_w0 above line 26...
Warning	--X----		10:37:46 07/29/09	sapspil2.hp...	R/3 L2D 00	R3_Trace	r3mondev	SAPSPI-188: DVEBMGS00: ERROR in dev_w0 above line 26...
Warning	--X----		10:02:44 07/29/09	sapspil2.hp...	R/3 L2D 00	R3_Trace	r3mondev	SAPSPI-188: DVEBMGS00: ERROR in dev_w0 above line 25...
Warning	--X----		09:47:43 07/29/09	sapspil2.hp...	R/3 L2D 00	R3_Trace	r3mondev	SAPSPI-188: DVEBMGS00: ERROR in dev_w0 above line 25...
Warning	--X----		06:17:46 07/29/09	sapspil2.hp...	R/3 L2D 00	R3_Trace	r3mondev	SAPSPI-188: DVEBMGS00: ERROR in dev_w0 above line 25...
Warning	--X----		05:02:44 07/29/09	sapspil2.hp...	R/3 L2D 00	R3_Trace	r3mondev	SAPSPI-188: DVEBMGS00: ERROR in dev_w0 above line 25...
Warning	--X----		04:57:46 07/29/09	sapspil2.hp...	R/3 L2D 00	R3_Trace	r3mondev	SAPSPI-188: DVEBMGS00: ERROR in dev_w0 above line 25...
Warning	--X----		01:47:46 07/29/09	sapspil2.hp...	R/3 L2D 00	R3_Trace	r3mondev	SAPSPI-188: DVEBMGS00: ERROR in dev_w0 above line 24...
Critical	--X----		05:05:50 07/28/09	sapspil2.hp...	R/3 XXX XX	R3_State	msg_server	SAPSPI-167: Process 'msg_server' is running 0 times instea...
Critical	--X----		05:03:48 07/28/09	sapspil2.hp...	R/3 XXX XX	R3_State	msg_server	SAPSPI-167: Process 'msg_server' is running 0 times instea...
Critical	--X----		05:01:46 07/28/09	sapspil2.hp...	R/3 XXX XX	R3_State	msg_server	SAPSPI-167: Process 'msg_server' is running 0 times instea...
Critical	--X----		03:25:46 07/28/09	sapspil2.hp...	R/3 XXX XX	R3_State	msg_server	SAPSPI-167: Process 'msg_server' is running 0 times instea...
Critical	--X----		03:23:50 07/28/09	sapspil2.hp...	R/3 XXX XX	R3_State	msg_server	SAPSPI-167: Process 'msg_server' is running 0 times instea...
Critical	--X----		03:21:49 07/28/09	sapspil2.hp...	R/3 XXX XX	R3_State	msg_server	SAPSPI-167: Process 'msg_server' is running 0 times instea...
Critical	--X----		03:19:49 07/28/09	sapspil2.hp...	R/3 XXX XX	R3_State	msg_server	SAPSPI-167: Process 'msg_server' is running 0 times instea...
Critical	--X----		03:17:51 07/28/09	sapspil2.hp...	R/3 XXX XX	R3_State	msg_server	SAPSPI-167: Process 'msg_server' is running 0 times instea...
Critical	--X----		03:15:48 07/28/09	sapspil2.hp...	R/3 XXX XX	R3_State	msg_server	SAPSPI-167: Process 'msg_server' is running 0 times instea...
Critical	--X----		03:13:49 07/28/09	sapspil2.hp...	R/3 XXX XX	R3_State	msg_server	SAPSPI-167: Process 'msg_server' is running 0 times instea...
Critical	--X----		03:11:48 07/28/09	sapspil2.hp...	R/3 XXX XX	R3_State	msg_server	SAPSPI-167: Process 'msg_server' is running 0 times instea...

50 of 2794 10475 0 1945 1774 49 0 0 Lock

All Active Messages Filtered Active Messages

Select Map View Browser displays max 50 messages.

Understanding SAP-related Messages

Incoming messages are displayed with pre-configured attributes and status information, which can be particularly useful in identifying and understanding SAP-related messages. [Table 4](#) summarizes the message attributes you can use to identify a message in your browser as an SAP NetWeaver-related message.

Table 4 SAP-related Message Attributes

Message Attribute	Description
Application	Identifies the application which was affected or detected the message cause. For the SPI for SAP, the application is always R/3, followed by a SAP system name and number.
Message Group	Identifies the message group to which the message belongs. For SPI message groups see Table 3 on page 100.
Object	Identifies the object which was affected by, detected, or caused the message.

Working with SAP Messages in HPOM

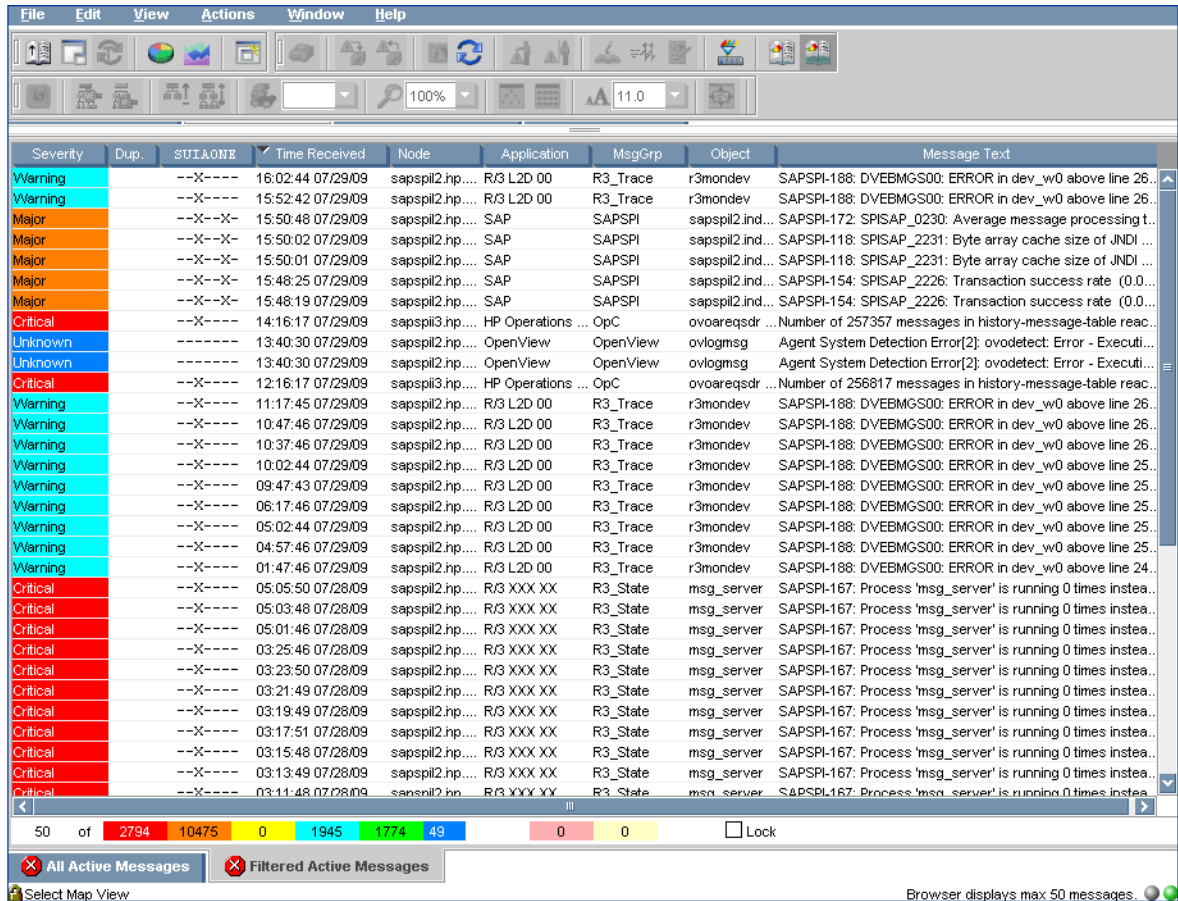
The `Message Browser` window is your most important source of information about the status of the managed nodes for which you are responsible. If you are logged on to HPOM as a user with SAP responsibilities, your `Message Browser` window will include messages from SAP NetWeaver managed nodes.

When you select a message in the `Message Browser` window you can:

- view a detailed description of a problem.
- view instructions of how to deal with the problem.
- initiate a pre-defined action.
- add an annotation to document your actions.
- acknowledge the message so that it is moved to the `History Message Browser` window.

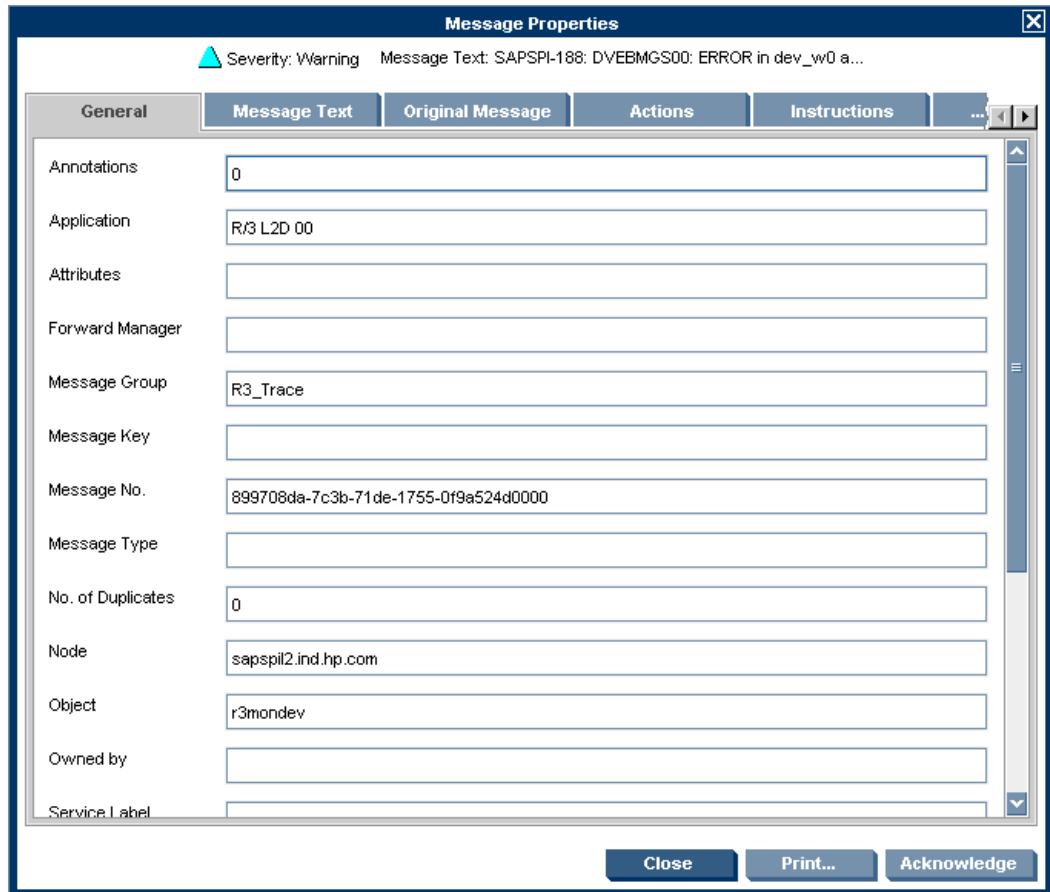
The example that follows shows a typical sequence of events when a critical message appears in the message browser.

Figure 7 Selecting a Message in the Message Browser



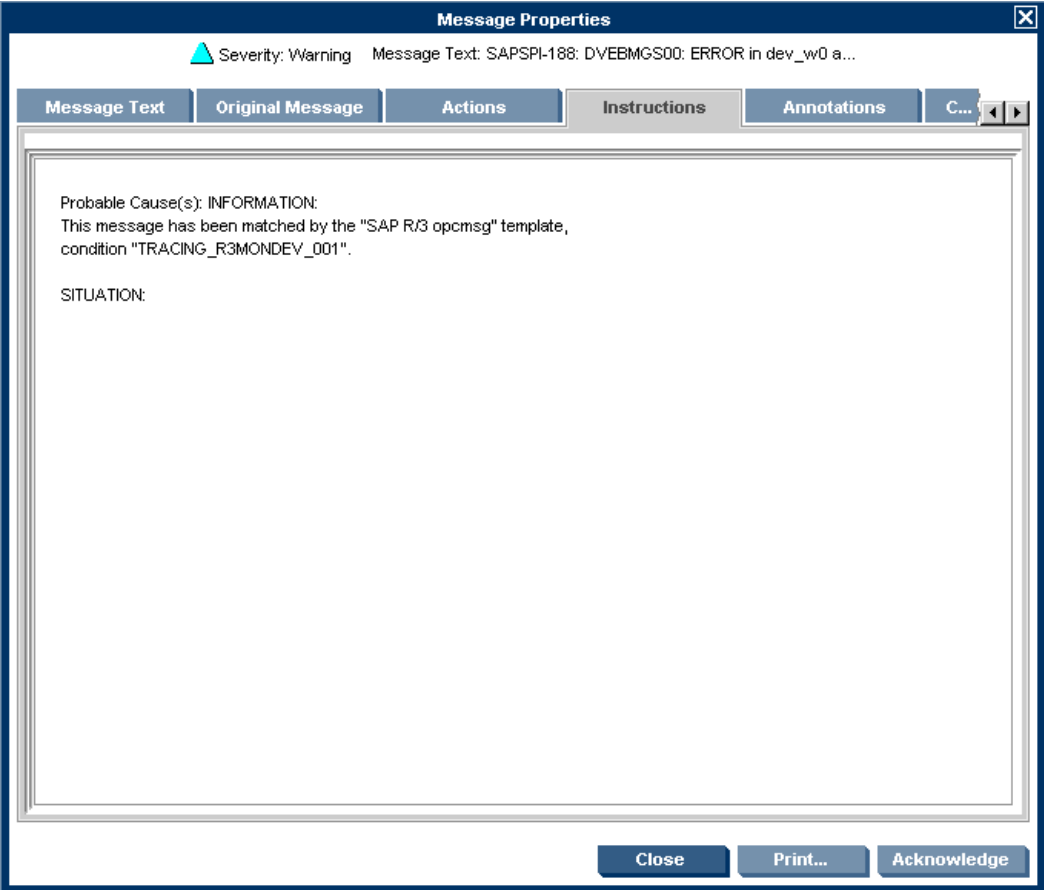
- 1 Select the message in the Message Browser window.
- 2 Click the Details... button in the Message Browser window. The system returns detailed information for the selected message.

Figure 8 Message Details



- 3 Click the Instructions . . . button to read the instructions provided by the system.
- 4 Once you have read and understood the instructions displayed in [Figure 9](#) on page 107, click the Perform Actions button. The SPI for SAP automatically provides context-dependent access to the associated transaction.
- 5 In this window, Use standard SAP methods to fix the problem.
- 6 Return to the Message Details window shown in [Figure 9](#) on page 107.
- 7 Click the Acknowledge button to confirm your awareness of the message to which you just responded. Once you have acknowledged the message, the message is moved from the Message Browser window to the History Message Browser window.

Figure 9 Message Instructions



9 Integrating the SPI for SAP with HP Reporter

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.

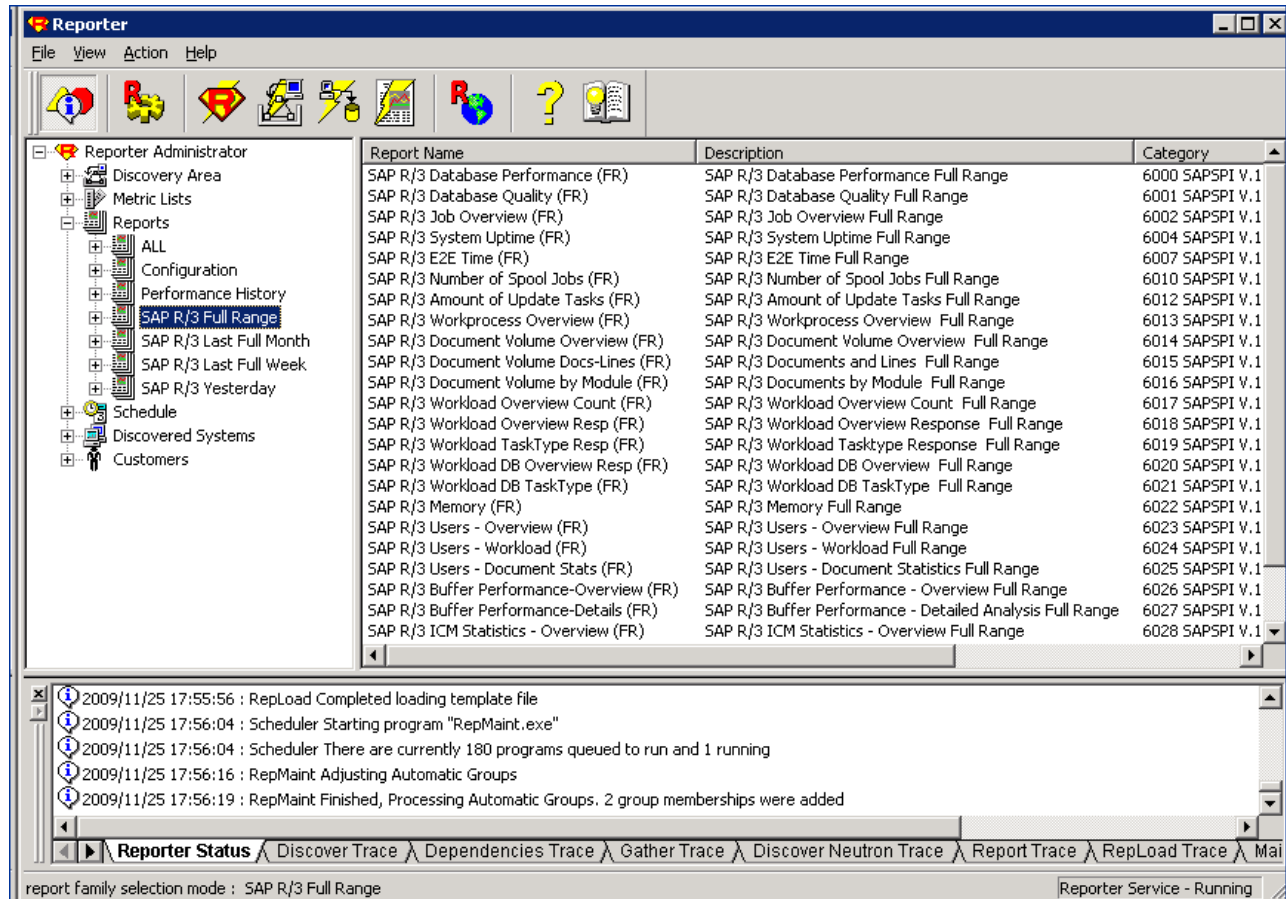
What Are Service Reports?

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 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 10 SPI for SAP Service Reports



Upgrading the SPI for SAP Reports

If you are upgrading to version 11.00 from earlier versions, you can continue to use existing data and monitors.



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 111.

Installing the SPI for SAP Reports

This section explains how to install the SAP service report which come with the SPI for SAP and, in addition, provides information designed to help you prepare for the installation.

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 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 R/3 Performance Agent is 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.

Installing SAP Service Reports

The SPI for SAP inserts the SAP 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 5](#). All directory paths are relative to the Reporter common-installation path.

Table 5 Locations of SPI for SAP Service-Reports Components

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

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.



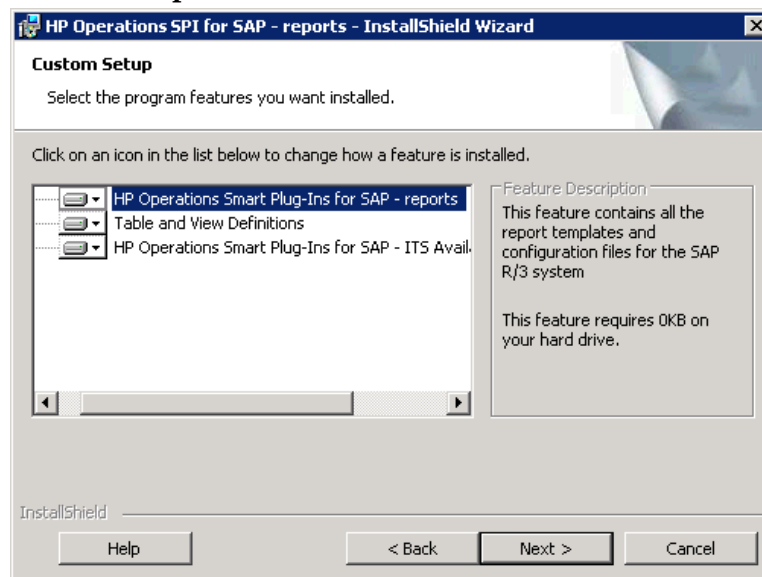
If you install the HP Reporter on a machine which is *not* the HPOM management server, make sure the machine on which you install the HP Reporter can see the HPOM managed nodes, for which you want to generate service reports.

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 11: 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 new report group: SAP_R3
- Assigns new *metric list* to the new SAP_R3 group
- Assigns new group *report* to the SAP_R3 group
- Assigns new *system reports* to the SAP_R3 group

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 113.
- 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 package is present in the list of installed packages.

- SPI for SAP

- 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:

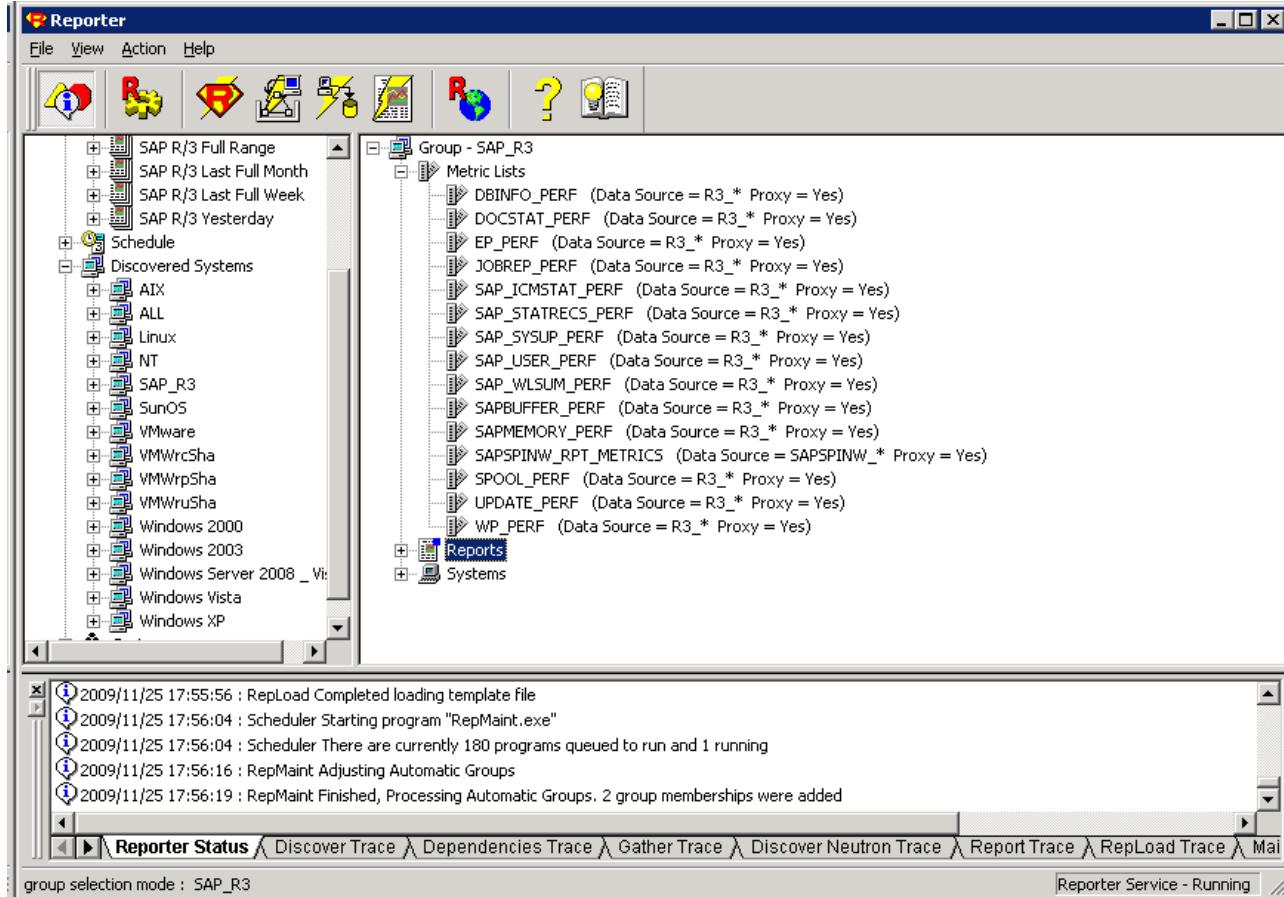
System	host.name.com
Network	SAP
Domain	"SAP" as appropriate

Check that the set-up process added your SAP NetWeaver host to the appropriate Reporter group, namely; SAP_R3. The set-up process automatically assigns hosts to a report group according to the kind of data source (SAP NetWeaver), 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 in [Figure 12](#) on page 114:

Actions > Run > Generate Reports

Figure 12 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.

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
- 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 Troubleshooting

All Smart Plug-ins and the add-on module now have access to improved SPI troubleshooting capabilities. Troubleshooting information can be obtained through the following method:

Self-Healing Info application: This application can be run on any managed node supported by the SPI for SAP. When run, the application gathers data that you can send to HP support to diagnose the SPI problem.

Self-Healing Info Application

The Self-Healing Info application included with SPI for SAP can be run on the managed node to gather error message-specific and other relevant data. This data is stored on a compressed file that you can send to HP support for assistance.

Selective Distribution of Files

The SPI for SAP have been updated to allow selective distribution of their files. You can use the configuration file (`seldist`) on the HPOM management server to specify which node/node groups receive the named SPI files. By using this capability you can reduce the number of irrelevant files on nodes irrelevant to the SPI for SAP.

Common SPI for SAP Problems

Cannot launch the SAP GUI

Problem: Cannot launch the SAP GUI tools from SPI for SAP remote console.

Solution: Make sure the port 3330 is not blocked by the firewall.

How to reinstall the SPI for SAP transports?

Problem: If you want to install a SPI for SAP transport which is already installed, the transport will not work because SAP would prevent overwriting an already loaded transport.

Solution:

- 1 Start the SAP GUI as SAP* (in the client where the itouser is to be installed), and enter the transaction STMS (/nstms).
 - a Click on the truck icon from **Overview** -> **Imports (F5)** to open the import queue list.
 - b Double-click or mark the line for the system where the transport will be imported.
 - c Go to **Import Queue** -> **Display (F8)**.

- 2 Select **Extras -> Other Requests -> Add**. A new window is displayed where the Transport name can be entered.
 - a Select the "Import again" check box, if the transport was already installed and if you need to reinstall it.
 - b Check and confirm the name and the import queue.
 - c In the Import Queue window, the new request will be shown with Status (St column) "Request waiting to be imported" with a green square icon.
- 3 Mark the next transport to be installed, and click on the second truck icon (for single installation, **Request -> Import (Ctrl+F11)**). A new dialog window will open with several tabs.
 - a In the header line there is a target client field. Enter the client number of the itouser, or where it will be created.
 - b If the transport has to be reinstalled, select the "Options" tab, and mark the options "Import Request Again" and "Overwrite Originals". You can ignore these options when the transport is imported for the first time.
 - c Click on the green checkmark icon, and the transport will be installed. The Status will change to "Import running" (a truck icon). A refresh will later show the status as "Request is already imported" (a green checkmark icon).
- 4 Repeat steps 2 and 3 for all other transports to be installed. You can also perform step 2 on all required transports, and then step 3 on all required transports.

SPI for SAP restrictions with different SAP user types and SPI user roles


The SPI for SAP provides two different SAP user roles:

- 1 `/HPOV/SAPSPI_MONITORING_TCODE`
- 2 `/HPOV/SAPSPI_MONITORING_NO_TCD`

For more information on Setting Up an SAP User, see [Configuring SAP-Specific Tasks](#) in the SPI for SAP Install Guide for UNIX.

You can also set the user type of the SAP user (typically called ITOUSER, but may be called differently) to either DIALOG or SYSTEM. In many SAP environments it is mandatory that each interactive SAP user changes the password regularly.

For a SYSTEM user such a requirement normally does not exist. Therefore there would be no additional maintenance necessary for the ITOUSER.

-  It is possible to assign both user roles `/HPOV/SAPSPI_MONITORING_TCODE` and `/HPOV/SAPSPI_MONITORING_NO_TCD` to the ITOUSER.

SPI for SAP also provides one additional user role: `/HPOV/SAPSPI_SECURITY_MON`. The role `/HPOV/SAPSPI_SECURITY_MON` is used only to allow the r3monsec monitors to read the relevant SAP objects for monitoring.

So that is independent from the user type (DIALOG/SYSTEM) and also independent from the choice of the user roles between `/HPOV/SAPSPI_MONITORING_TCODE` and `/HPOV/SAPSPI_MONITORING_NO_TCD`.

User type: DIALOG; **User role:** `/HPOV/SAPSPI_MONITORING_TCODE`

In this combination there are no restrictions in the SPI for SAP functionality.

User type: DIALOG; **User role:** `/HPOV/SAPSPI_MONITORING_NO_TCD`

In this combination the interactive login as ITOUSER is still possible but there are these restrictions in the SPI for SAP functionality:

"Any SPI for SAP tools will not work that start a SAP GUI, login as ITOUSER, and start a certain transaction. These tools use the r3itogui executable to start a SAP GUI.

"Any operator-initiated actions will not work that start a SAP GUI on the message host, login as ITOUSER, and start a certain transaction. These operator-initiated actions are defined in conditions of the "SAP R3 opcmsg" policy, and use the r3itogui executable to start a SAP GUI.

How to prevent multiple same SPI for SAP monitors running

Problem: If a SAP system is monitored by the SPI for SAP, and the SAP system has long response time due to being overloaded, then it may happen that the SPI for SAP monitors do not get completed before the next monitoring cycle.

The SPI for SAP 09.xx versions implemented the templates/policies as MONITOR policies, whereas since 10.xx they are done as SCHEDULED policies.

The MONITOR policies expected an opcmon command back from the called executable with the name of the policy. When a policy was due for execution, this was used to check whether the previous monitoring cycle did in fact finish. If the previous opcmon call had not been received, an error was logged to System.txt on the agent, and this monitoring cycle was skipped.

Starting with SPI for SAP 10.xx, the executables do not send back such an opcmon command anymore, and the policies are done as SCHEDULED policies, which do not expect an opcmon call either.

Solution: It is possible to create own policies as MONITOR policies, For example, OWN_r3monal, OWN_r3monjob.

These policies first call the SPI for SAP executable and then call opcmon. The policy name is given as the parameter with any value.

If the managed node is UN*X, then the monitor call can simply be enhanced by appending the opcmon call. For example.

OWN_r3monal:

```
r3monal; opcmon OWN_r3monal=0
```

OWN_r3monjob:

```
r3moncol -cfgfile r3monjob.cfg; opcmon OWN_r3monjob=0
```

If the managed node is Windows, then the monitor has to call a script, For example,

OWN_r3monal:

```
OWN_r3monal
```

OWN_r3monjob:

```
OWN_r3monjob
```

And the scripts look like:

OWN_r3monal:

```
r3monal
```

```
opcmon OWN_r3monal=0
```

OWN_r3monjob:

```
r3moncol -cfgfile r3monjob.cfg
opcmon OWN_r3monjob=0
```

No SAP login defined for hostname in r3itosap.cfg file

Problem: r3status can not login to the SAP system but instead sends a message:

No SAP login is defined for hostname in r3itosap. The r3itosap.cfg file however contains a correct HostSapAssign entry.

Cause: r3status scans the r3itosap.cfg file and compares the hostname provided in each HostSapAssign entry with its own hostname, thereby using name resolution.

Example of a failing r3status: r3status.log (can be obtained with TraceLevel set to 3 in r3status.cfg) starts with:

```
080918-11:02:19 Info : -----
080918-11:02:19 Info : Begin monitor run
080918-11:02:19 Info : -----
080918-11:02:19 METHOD ENTRY: int CReadConfig::iGetSapLogonData(CObArray
*mySAPLogonData, CObArray *myHostSapLogOnData)
080918-11:02:19 Info : MyHostname - abcdef02
080918-11:02:19 Info : Number of SAP Logon data in r3itosap.cfg 2
080918-11:02:19 Info : Number of remote monitored machines 1
080918-11:02:19 Info : sMyHostname: - abcdef02
080918-11:02:19 METHOD ENTRY: int CTools::iIPCompare("abcdef01.mydom.com",
"abcdef02")
080918-11:02:19 METHOD EXIT: int CTools::iIPCompare() = 0
080918-11:02:19 METHOD ENTRY: int CTools::iIPCompare("abcdef02.mydom.com",
"abcdef02")
080918-11:02:19 METHOD EXIT: int CTools::iIPCompare() = 0
080918-11:02:19 Info : Found SAP Login data for the Hostname: - abcdef02
080918-11:02:19 METHOD EXIT: int CReadConfig::iGetSapLogonData(CObArray
*mySAPLogonData, CObArray *myHostSapLogOnData) = 0
080918-11:02:19 ERROR: No SAP R/3 Login found for host: - abcdef02
080918-11:02:19 METHOD ENTRY: bool OvItoMessage::Send()
080918-11:02:19 Info : Nodename: - abcdef02
080918-11:02:19 Info : OpcMessage send: - msg_text: No SAP login in r3itosap defined for
hostname ; application: OpC/SAP; msg_grp: R3_State; object: SAPSystem; optionvar:
MONITOR=; nodename: abcdef02
```

The 1st comparison abcdef01.mydom.com fails because even the truncated hostname abcdef01 is not equal to the actual hostname on this system.

For the 2nd comparison the short hostnames match, so it does a nslookup (actually it uses the standard gethostbyname(3N) function) of both "abcdef02.mydom.com" and "abcdef02" and checks whether the results point to the same system.

In the above example the comparison fails (return code of CTools::iIPCompare() is 0 instead of 1) which hints to a inconsistent name resolution.

Solution:

After fixing the name resolution this step should work fine:

```
080922-12:24:01 METHOD ENTRY: int CTools::iIPCompare("abcdef02.mydom.com",
"abcdef02")
```

```
080922-12:24:01 Info : int CTools::iIPCompare() List of IP Addresses of -
abcdef02.mydom.com
```

```
080922-12:24:01 Info : IP: - 10.11.12.13
```

```
080922-12:24:01 METHOD EXIT: int CTools::iIPCompare() = 1
```

```
080922-12:24:01 Info : Add new SAP Logon Entry for host - abcdef02.mydom.com
```

So it is necessary to have a consistent name resolution on the SAP system. The actual hostname and the name provided in the HostSapAssign entry (after name resolution) must result in the same system.

SPI for SAP sends messages with application field R/3 XXX XX

Problem: A message appears in the browser from the SPI for SAP with:

Application: R/3 XXX XX

Message Text: OS_Collector : State : The OS collector (saposcol) is not running
status=AL_STAT_ACTIVE severity=50

The application field does not give the SAP SID and Instance Number?

Solution: The application field normally has the SAP SID and Instance Number, For example, R/3 R70 00. This is done for SPI for SAP messages that can be attributed to a single SAP instance.

There are some SPI for SAP messages that refer not to a specific SAP instance. Other examples of these are:

1 Tool: R/3 R70 XX

Message Text : Process 'oracleR70
(DESCRIPTION=(LOCAL=YES)(ADDRESS=(PROTOCOL=beq)))' is running 1 times
instead of minimum 8 times

Only the information about the SID can be extracted from the name of the database process.

2 Tool: R/3 XXX XX

Message Text : Process 'oracleSID' is running 0 times instead of minimum 8 times

The specification in r3monpro.cfg was:

```
AlertMonPro =ALL =oracleSID =1 =Min =8 =CRITICAL =orasrv =R3_State
```

As none of the names of the running processes matched the pattern oracleSID, no SID can be extracted from the name of the database process.

3 Tool: R/3 XXX XX

Message Text : Process 'gwrdd' is running 0 times instead of 1

No information can be extracted from the name of the database process.

4 Tool: R/3 XXX XX

Message Text : Process 'se.sapSID*' is running 0 times instead of 1

The specification in r3monpro.cfg was:

```
AlertMonPro =ALL =se.sapSID* =1 =Exact =1 =CRITICAL =se.sap =R3_State
```

As none of the names of the running processes matched the pattern se.sapSID*, no SID or Instance number is available.

5 Tool: R/3 R70 XX

Message Text : Process '/usr/sap/R70/SYS/exe/run/saposcol' is running 2 times instead of 1

The SID can be extracted from the path of the process name, but no instance number.

6 Tool: R/3 XXX XX

Message Text : Process 'saposcol' is running 0 times instead of 1

The specification in r3monpro.cfg was:

```
AlertMonPro =ALL =saposcol =1 =Exact =1 =CRITICAL =saposcol =R3_State
```

As no saposcol process is running, no SID can be extracted from the path of the process name.

DSI2DDF Error, did not find a datasource using the specified logfile set

Problem: The following was seen on a Solaris 10 system with SPI for SAP for SAP installed:

On the terminal window where the SPI for SAP r3perfagent was started, the following errors were displayed:

```
/var/opt/OV/bin/R3PerfAgent/data/R3_myhost_TST_00_DATA: No such file or directory
```

DSI2DDF Error, Did not find a datasource using the specified logfile set.

Logfile Set Name: /var/opt/OV/bin/R3PerfAgent/data/R3_myhost_TST_00_DATA

Cause: The nocoda.opt which is used for storing the database file is empty.

```
# ls -l /var/opt/OV/conf/dsi2ddf/nocoda.opt
```

```
-rw-r--r-- 1 root root 0 Oct 15 14:45 /var/opt/OV/conf/dsi2ddf/nocoda.opt
```

The datasource was created with r3perfconfig:

```
# ./r3perfconfig
```

Installed SAP Instances:

```
SID SapNr HostName
```

```
-----
```

```
(0) TST 00 MYHOST
```

Choose:

(x) to configure shown system

888 to manual configure a SAP system

999 to quit

0

Creating new datasource: R3_MYHOST_TST_00_DATA

..... Datasource successfully created

The datasource has been setup in Coda, as can be seen with ovcodautl:

```
# /opt/OV/bin/ovcodautl -obj
```

Object Model

NumDataSources = 2

CODA

R3_MYHOST_TST_00_DATA

...

The utility ovcodautl shows that no performance data has been stored yet:

```
# /opt/OV/bin/ovcodautl -dumpds R3_MYHOST_TST_00_DATA
```

==

Empty instance list for R3_MYHOST_TST_00_DATA:DBINFO_PERF.

Empty instance list for R3_MYHOST_TST_00_DATA:JOBREP_PERF.

Empty instance list for R3_MYHOST_TST_00_DATA:SPOOL_PERF.

Empty instance list for R3_MYHOST_TST_00_DATA:UPDATE_PERF.

Empty instance list for R3_MYHOST_TST_00_DATA:WP_PERF.

Empty instance list for R3_MYHOST_TST_00_DATA:SYSUP_PERF.

Empty instance list for R3_MYHOST_TST_00_DATA:STATRECS_PERF.

Empty instance list for R3_MYHOST_TST_00_DATA:DOCSTAT_PERF.

Empty instance list for R3_MYHOST_TST_00_DATA:SAP_WLSUM_PERF.

Empty instance list for R3_MYHOST_TST_00_DATA:USER_PERF.

Empty instance list for R3_MYHOST_TST_00_DATA:SAPMEMORY_PERF.

Empty instance list for R3_MYHOST_TST_00_DATA:SAPBUFFER_PERF.

Empty instance list for R3_MYHOST_TST_00_DATA:ICMSTAT_PERF.

#

The ddflbd.rc file shows:

```
# cat /var/opt/OV/conf/dsi2ddf/ddflbd.rc
```

```
DATASOURCE=R3_MYHOST_TST_00_DATA LOGFILE=/var/opt/OV/bin/R3PerfAgent/data/  
R3_MYHOST_TST_00_DATA
```

So there is a discrepancy of upper/lower case characters here:

```
ddflbd.rc: LOGFILE=/var/opt/OV/bin/R3PerfAgent/data/  
R3_MYHOST_TST_00_DATA
```

error text: Logfile Set Name:

```
/var/opt/OV/bin/R3PerfAgent/data/R3_myhost_TST_00_DATA
```

In this case, the hostname is specified in upper case ('MYHOST') but 'nslookup MYHOST' returns the first name as 'myhost.mydom.com'.

During `r3perfconfig` the hostname is taken to offer SAP systems for configuration, whereas during `r3perfagent` the result from the name lookup is used to construct the file name.

Solution:

The name lookup should return the name in the same upper/lower case as the hostname itself.

If fixing this inconsistency is not desired, or would create problems with other applications, then there are two alternatives:

- a Create the datasource manually using the 888 option in `r3perfconfig` file.
This then prompts for hostname, SID, Instance Number. The hostname then has to be given in the same upper/lower case as it is returned by `nslookup`, in this example as 'myhost'.
- b If the datasource has already been created, then a simple change of the `ddflbd.rc` file also fixes the problem:

Edit `/var/opt/OV/conf/dsi2ddf/ddflbd.rc` and change from:

```
DATASOURCE=R3_MYHOST_TST_00_DATA LOGFILE=/var/opt/OV/bin/  
R3PerfAgent/data/R3_MYHOST_TST_00_DATA
```

to:

```
DATASOURCE=R3_MYHOST_TST_00_DATA LOGFILE=/var/opt/OV/bin/  
R3PerfAgent/data/R3_myhost_TST_00_DATA
```

Note that the `DATASOURCE` name always is in upper case.

Then stop and restart `r3perfagent`, and verify that the errors do not occur anymore.

SYSUP_PERF collected around full minute, causing unwanted averaging in the Reporter

The `SYSUP_PERF` within the `r3perfagent` is collecting its data once per minute.

But the interval is not always exactly 60 seconds but varies from around 57 to 63 seconds. For example,

```
03/17/2009 22:01:59
```

```
03/17/2009 22:02:59
```

```
03/17/2009 22:04:01
```

```
03/17/2009 22:04:59
```

```
03/17/2009 22:06:01
```

So it may happen that within one minute there are two values present, whereas in the other minute there is no value at all. This variation is due to CPU load and other external effects, and thus is outside the control of `r3perfagent`.

When the Reporter collects the data, it averages them to the full minute.

Typically this means that the single available value of that minute is taken. If there are two values present, then they are averaged to obtain the value of that minute. If there is no value present, then there will be no value stored into the Reporter database for that minute.

The result then is (empty lines were inserted as placeholders for the missing entries):

```
80564834 R3_MYHOST_TST_00_DATA 17.03.2009 22:01:00 17.03.2009
```

```
21:01:00 Swing
```

80564843 R3_MYHOST_TST_00_DATA 17.03.2009 22:02:00 17.03.2009 21:02:00 Swing
80564854 R3_MYHOST_TST_00_DATA 17.03.2009 22:04:00 17.03.2009 21:04:00 Swing
80564864 R3_MYHOST_TST_00_DATA 17.03.2009 22:06:00 17.03.2009 21:06:00 Swing
80564873 R3_MYHOST_TST_00_DATA 17.03.2009 22:07:00 17.03.2009 21:07:00 Swing
80564881 R3_MYHOST_TST_00_DATA 17.03.2009 22:08:00 17.03.2009 21:08:00 Swing
80564887 R3_MYHOST_TST_00_DATA 17.03.2009 22:09:00 17.03.2009 21:09:00 Swing
80564896 R3_MYHOST_TST_00_DATA 17.03.2009 22:10:00 17.03.2009 21:10:00 Swing
80564906 R3_MYHOST_TST_00_DATA 17.03.2009 22:11:00 17.03.2009 21:11:00 Swing
80564916 R3_MYHOST_TST_00_DATA 17.03.2009 22:12:00 17.03.2009 21:12:00 Swing
80564925 R3_MYHOST_TST_00_DATA 17.03.2009 22:13:00 17.03.2009 21:13:00 Swing
80564931 R3_MYHOST_TST_00_DATA 17.03.2009 22:14:00 17.03.2009 21:14:00 Swing
80564941 R3_MYHOST_TST_00_DATA 17.03.2009 22:16:00 17.03.2009 21:16:00 Swing
80564949 R3_MYHOST_TST_00_DATA 17.03.2009 22:17:00 17.03.2009 21:17:00 Swing
80564957 R3_MYHOST_TST_00_DATA 17.03.2009 22:19:00 17.03.2009 21:19:00 Swing
80564965 R3_MYHOST_TST_00_DATA 17.03.2009 22:21:00 17.03.2009 21:21:00 Swing
80564972 R3_MYHOST_TST_00_DATA 17.03.2009 22:22:00 17.03.2009 21:22:00 Swing
80564980 R3_MYHOST_TST_00_DATA 17.03.2009 22:23:00 17.03.2009 21:23:00 Swing
80564991 R3_MYHOST_TST_00_DATA 17.03.2009 22:24:00 17.03.2009 21:24:00 Swing

If there are too many of these occurrences per hour, this will be noted as unavailability by the Reporter. To overcome this effect, it has to be ensured that r3perfagent is started well away from a full minute. The initialization of r3perfagent takes a few seconds. So, if r3perfagent is started at 20 seconds past a full minute, then the SYSUP_PERF always occurs around 25-30 seconds after the full minute, even if there are several SAP systems monitored on the same host.

For a UN*X type system, the r3perfagent.sh wrapper script can be copied to /var/opt/OV/bin/R3PerfAgent/bin on the managed node, and then used instead of the r3perfagent binary.

You can also rename the original /var/opt/OV/bin/R3PerfAgent/bin/r3perfagent executable to r3perfagent.orig, and call r3perfagent.orig instead of r3perfagent within the script, and then name the script itself to "r3perfagent".

Disclaimer: The r3perfagent.sh script is a contributed utility without support by HP.

r3perfconfig says: Valid datasource already exists

Problem: During migration to SPI for SAP 11.xx, it is necessary to first:

- uninstall the SPI for SAP R/3 Performance Agent before installing SPI for SAP 11.00 (OMU) or 11.10 (OMW).
- install/configure the new SPI Performance Agent.

The uninstallation deletes the executables, but leaves the datasources with the previously collected SPI for SAP performance data intact. This is correct.

When configuring the new SPI for SAP R/3 Performance Agent with r3perfconfig, after selecting the SAP system to configure:

```
# ./r3perfconfig
```

```
...
```

```
Valid datasource already exists: R3_grcdg515_R70_00_DATA
```

```
#####
```

The message "Valid datasource already exists" is displayed.

Checking the currently existing data sources reveals that the new Netweaver datasource has not been created.

Cause: The currently existing datasources can be checked either with 'ovcodutil -obj', or by checking the names of the dsilog files in /var/opt/OV/bin/R3PerfAgent/data, depending on where the performance data is stored. If this shows that there still exists a datasource for that SAP system (from the previous SPI for SAP version), then r3perfconfig will not add the new Netweaver datasource.

The workaround is to delete the old SPI for SAP datasource. This means that the previously collected SPI for SAP performance data is removed from this node.

The old datasource can be deleted with the ddfutil command, which needs the logfile as parameter. This logfile name can be retrieved from the /var/opt/OV/conf/dsi2ddf/ddflbd.rc file:

```
# cat /var/opt/OV/conf/dsi2ddf/ddflbd.rc
```

```
DATASOURCE=R3_GRCDG515_R70_00_DATA LOGFILE=/var/opt/OV/bin/R3PerfAgent/  
data/R3_grcdg515_R70_00_DATA
```

```
# /var/opt/OV/bin/instrumentation/ddfutil /var/opt/OV/bin/R3PerfAgent/data/  
R3_grcdg515_R70_00_DATA -rm all
```

Then repeat the r3perfconfig. It then will create the old datasource again (but the previously collected SAP SPI performance data of course can't be restored), plus the new Netweaver datasource. The new ddflbd.rc file will then show e.g.:

```
DATASOURCE=R3_GRCDG515_R70_00_DATA LOGFILE=/var/opt/OV/bin/R3PerfAgent/  
data/R3_grcdg515_R70_00_DATA
```

```
DATASOURCE=SAPSPINW_RPT_METRICS LOGFILE=/var/opt/OV/conf/sapspi/datalog/  
data/SAPSPINW_RPT_METRICS.log
```

If the performance data is stored in Coda, this can be seen with:

```
# ovcodutil -obj
```

```
Object Model
```

```
NumDataSources = 10
```

```
...
```

```
R3_GRCDG515_R70_00_DATA
```

```
SAPSPINW_RPT_METRICS
```

```
NumObjects = 33
```

```
...
```

```
R3_GRCDG515_R70_00_DATA DBINFO_PERF
```

```
R3_GRCDG515_R70_00_DATA JOBREP_PERF
```

```
R3_GRCDG515_R70_00_DATA SPOOL_PERF
```

```
R3_GRCDG515_R70_00_DATA UPDATE_PERF
```

```

R3_GRCDG515_R70_00_DATA WP_PERF
R3_GRCDG515_R70_00_DATA SYSUP_PERF
R3_GRCDG515_R70_00_DATA SAP_STATRECS_PERF
R3_GRCDG515_R70_00_DATA DOCSTAT_PERF
R3_GRCDG515_R70_00_DATA SAP_WLSUM_PERF
R3_GRCDG515_R70_00_DATA USER_PERF
R3_GRCDG515_R70_00_DATA SAPMEMORY_PERF
R3_GRCDG515_R70_00_DATA SAPBUFFER_PERF
R3_GRCDG515_R70_00_DATA EP_PERF
R3_GRCDG515_R70_00_DATA ICMSTAT_PERF
SAPSPINW_RPT_METRICS SAPSPINW_RPT_METRICS
...
Data source: SAPSPINW_RPT_METRICS
NumMetrics = 6
SAPSPINW_RPT_METRICS KEY I32 METRICID
SAPSPINW_RPT_METRICS KEY I32 VALUEID
SAPSPINW_RPT_METRICS GGE R64 VALUE
SAPSPINW_RPT_METRICS KEY UTF8 SORTID
SAPSPINW_RPT_METRICS KEY UTF8 SERVERNAME
SAPSPINW_RPT_METRICS KEY UTF8 OBJECTNAME
#

```

"DATA_LENGTH_0" dumps when r3mondmp monitor is enabled in SPI for SAP.

Problem: If the SAP table 'SNAP' contains corrupt entries, a "DATA_LENGTH_0" dump is reported on SAP when SPI for SAP r3mondmp monitor is called.

In SPI for SAP, the error is reported in r3mondmp.log (when trace is enabled):

```

> 080929-16:41:22 ERROR: RFC CALL ERROR.KEY :
> 080929-16:41:22 ERROR: RFC CALL ERROR.STATUS :
> 080929-16:41:22 ERROR: RFC CALL ERROR.MESSAGE: - Invalid partial field access:
Length 0
> 080929-16:41:22 ERROR: RFC CALL ERROR.INTSTAT:

```

Cause: The r3mondmp monitor gets the ABAP dump event from the SNAP table. This table contains ABAP dump data.

The r3mondmp monitor seeks the SNAP table when the monitor is called. If the SNAP table has a corrupt entry, the r3mondmp monitor cannot seek correctly, and causes itself an ABAP dump.

Solution: This problem cannot be resolved on the SPI for SAP side. The corrupt entry needs to be removed from the SNAP table in SAP. Please refer to SAP Support in order to do this.

How r3monupd checks the database

Problem: If in r3monupd.cfg the UPDATE_ERRORS_EXIST monitor is used, then r3monupd may send a message like:

```
HOST=myhost:SID=TST:INSTNO=00:CLIENT=000:MONITOR=UPDATE:ATYPE=UPDAT
E_ERRORS_EXIST:9 Update errors occurred;application: OpC/SAP;msg_grp:
R3_Update;object: UpdError; optionvar:MONITOR=r3monupd
```

How can this "9 Update errors occurred" be verified in the SAP instance itself?

Solution:

UPDATE_ACTIVE

For alert type UPDATE_ACTIVE, whatever is displayed in the SM13 transaction under update system, the same is displayed in r3monupd transaction. This happens through the call to an SAP internal program.

UPDATE_ERRORS_EXIST

The results of r3monupd can be directly compared with the "Cancelled" update requests of the SM13 transaction for a particular date,time,client and user.

r3monupd collects all the records from table VBHDR where VBRC (the update return code in table VBHDR) is between 2 and 201.

To get a dump of the VBHDR table:

On UN*X systems login as user ora<sid>

```
$ sqlplus "/" as sysdba"
```

```
SQL> select owner from dba_tables where table_name = 'VBHDR';
```

The resulting owner has to be used in the next statement to specify the tablename vbhdr.

The output from the SQL command will be logged in a file /tmp/vbhdr.txt. This file must not exist when the spool command is executed.

For example, If the owner is reported as sapsr3, then the info from table vbhdr can be obtained with:

```
SQL> select count(*) from sapsr3.vbhdr where vbrc >= 2 and vbrc <= 201;
```

```
SQL> spool /tmp/vbhdr.txt;
```

```
SQL> select vbmandt,vbusr,vbacnt,vbreport,vbrc,vbname,vbstate,vbdate from sapsr3.vbhdr
where vbrc >= 2 and vbrc <= 201;
```

```
SQL> spool off;
```

```
SQL> exit
```

Check the file /tmp/vbhdr.txt for the entries. The vbdate is the date, vbmandt is the client id.

11 Uninstalling the SPI for SAP

This chapter provides information on uninstalling the SPI for SAP software and the corresponding components. To completely uninstall the SPI for SAP, you must first remove from the HPOM managed nodes and then from the HPOM management server.

Removing SAP R/3 Performance Agent from SAP Managed Nodes

To remove the SAP R/3 Performance Agent from the managed node, you need to perform the following steps in the order indicated:

- 1 Before starting the process of removing the SAP R/3 Performance Agent from the managed node, make sure that you *stop* the SAP R/3 Performance Agent, for example;
 - Use the SPI for SAP tool, **PerfAgt Stop**, which resides in the **SPI for SAP > SAP R/3 UN*X** or **SPI for SAP > SAP R/3 NT** tool group.
 - Use the following command as user root on the command line:

```
r3perfagent stop
```
- 2 From the Tool Bank window, go to the SPI for SAP group, and then run the following tools:
 - Run the Remove Performance Package (UNIX) tool on UNIX nodes
 - Run the Remove Performance Package (Windows) tool on Windows nodes


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 the [Applying the SAP Transport](#) on page 32 section for information on applying an SAP transport.

Removing the SPI for SAP from HPOM Managed Nodes

To de-assign and remove SPI for SAP management functionality from HPOM managed nodes:

- 1 Open the All Policy Assignments window and select SPI for SAP nodes.

- 2 Select **Deploy Configuration** from the **Choose an action** drop-down box and click **Submit** . The Selector window appears.
- 3 Select **Policies** and **Force Update** and click **OK**.
- 4 Use the `Delete Config` tool to remove any global- configuration files that exist for any SPI for SAP managed nodes, for example; by selecting in the `Node Bank` window all the managed nodes from which you want to remove the SPI for SAP, select the `Delete Config` tool icon from `SAP R/3 Admin` tool group.

Removing the SPI for SAP components

To remove the SPI for SAP components:

- 1 Open a terminal window and log on with root privileges.
- 2 In the terminal window, enter the following:
 - For HP-UX servers:



```
/usr/sbin/swremove SPISAP
```
 - For Solaris servers:


```
/usr/sbin/pkgrm HPOvSpiSap
```

The `swremove` commands remove the files from the software list, directories in `/var/opt/OV/share/databases/OpC/mdg_node/instrumentation/`, directories in `/opt/OV/lbin/sapspi`.


Deleting SPI for SAP Message Groups

To delete SPI for SAP message groups:

- 1 Open the `All Message Groups` window.
- 2 Select SAP SPI message groups.
- 3 Select **Delete...** from the **Chose an Action** drop-down box and click **Submit** .

Deleting SPI for SAP User Profiles

To delete SPI for SAP user profiles:

- 1 Open the `All User Profiles` window.
- 2 Select SAP SPI users.
- 3 Select **Delete...** from the **Chose an Action** drop-down box and click **Submit** .

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 HPOM while adding the SAP node to the management server. If you use the 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.
- 2 Change the default agent user (Local System) to a non-privileged user.



Refer to the *HTTPS Agent Concepts and Configuration Guide* for more information on changing the default agent user.

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 SPI for SAP R/3 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 SPI for SAP R/3 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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