



SMART Plug-in for IBM's DB2 Universal Database

Version 03.80

Administrator's Guide

*For use with
HP Operations Manager for Windows, UNIX or Linux*



December 2009





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Revisions

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Print History

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Conventions

In this book, HP Operations Manager (HP OM) is used as a synonym for all versions of the management product otherwise known as

- HP OpenView IT/Operations (ITO) (obsolete)
- HP OpenView VantagePoint Operations (VPO) (obsolete)
- HP OpenView Operations for HP-UX or for Solaris (OVO for HP-UX, OVO for Solaris) and OVO for Windows (obsolete)
- HP Operations Manager for UNIX (HP OM for UNIX)
- HP Operations Manager for Linux (HP OM for Linux)
- HP Operations Manager for Windows (HP OM for Windows)

In essence, they are all the same product and can host the SMART Plug-in for IBM DB2 Universal database.

Table 1: Typographical Conventions shows the typographical conventions used in this book.

Table 1: Typographical Conventions

Font Type	What the Font Type Represents	Example
Italic	Book or manual titles, and main page names	Refer to the HP Smart Plug-In for HP-UX and Solaris: Administrator's Reference and the <code>opc(1M)</code> main page for more information.
	Provides emphasis	<i>You must follow these steps.</i>
	Specifies a variable that you must supply when entering a command	At the prompt type: <code>rlogin your_name</code> where you supply your login name.
	Parameters to a function	The <code>oper_name</code> parameter returns an integer response.
Bold	New terms	The monitor agent observes...
Computer	Text and items on the computer screen	The system replies: <code>Press Enter</code>
	Command names	Use the <code>grep</code> command...
	Function names	Use the <code>opc_connect()</code> function to connect ...
	File and directory names	<code>/opt/OV/bin/OpC/</code>
	Process names	Check to see if <code>opcmona</code> is running.
	Window/dialog box names	In the Add Logfile window...
Computer Bold	Text which you have to enter	At the prompt, type: <code>ls -l</code>
Keycap	Keyboard keys	Press Return .

[Button]	Buttons on the user interface.	Click [Operator]. Click the [Apply] button.
Menu Items	A menu name followed by a colon (:) means that you select the menu, then the item. When the item is followed by an arrow (->), a cascading menu follows.	Select Actions: Utilities-> Reports...

Documentation Road Map

This section illustrates what information is available for the NiCE DB2SPI and where you can find it. The following manuals come with the DB2SPI:

- **Installation Guide**
Explains installation and removal of the DB2SPI in HP Operations Manager environments (management server and managed nodes).
- **Administrator's Guide**
Explains the basic configuration, deployment and administrative tasks to keep the SPI up and running successfully in the management environment.
- **Operator's Guide**
Explains the tasks and applications for the HP OM operator that is responsible for DB2 server monitoring.
- **Concepts and Troubleshooting Guide**
Explains the architecture and components of the DB2SPI, the files and directories used and provides sample scenarios for efficient troubleshooting.
- **Reference Guide**
Explains the performance data collected, the rules they depend on and the collection characteristics.
- **Software Release Notes**
Gives the most recent information about the product and is updated with every patch released.

In addition to the documentation for the DB2SPI, related HP Software products also provide a comprehensive set of manuals, which aim to assist you in using the products and improving your understanding of the underlying concepts.

This Document

This document covers the following areas:

- Introduction
- Getting Started
- HP Operations Manager Administrator Regime
- DB2SPI Administrator Tasks

Introduction

This section describes what the DB2SPI is, what it can do, and how you can use it to improve the management of your DB2 environment. This section covers the following topics:

- What is DB2 UDB?
- What are HP Operations Manager and Smart Plug-ins?
- What is the DB2SPI?

What is DB2 UDB?

DB2 Universal Database (DB2 UDB) is a powerful relational database management system (RDBMS) from IBM. It is available on a number of different platforms, ranging from Windows, Linux to various UNIX platforms. DB2 is also available on mainframe computers (z/OS, IBM zSeries) and minicomputers (i5/OS, IBM iSeries). As of today the DB2 SPI supports DB2 UDB on Linux, UNIX, Windows and also on the minicomputer operating system i5/OS (previously known as OS/400)

All details related to DB2 on i5/OS are covered in a separate document, DBSPI Guide for i5/OS.

Scalability of DB2 for LUW platforms is provided by a range of different editions whose names reflect the product's scope and scale, for example, "Express", "Workgroup" and "Enterprise" Edition.

DB2 is also available for distributed DB2 environments. These setups are only supported by the "Enterprise" edition. The Database Partitioning Feature allows load and data distribution across a large number of physical and logical processing units.

What are HP Operations Manager and Smart Plug-ins?

HP Operations Manager (HP OM) is the market leading event processing system for IT management. It provides a wealth of functionality to collect operational statuses from various platforms in the network, saving and processing them at a central instance.

Smart Plug-ins (SPIs) are extensions of the HP Operations Manager that add application specific monitoring capabilities to the HP OM platform. This enhances the generic platform with very detailed information. There are about 40 different SPIs available, ranging from databases via middleware up to applications.

HP OM is a smart event collection and processing engine, which may act as the endpoint in pure operations management setups, but also as an entry point towards higher management levels like service or business management.

SPIs can benefit from this integration capability in an equivalent way, thus making the application monitoring an integral part of the IT management at all levels.

What is the DB2SPI?

The DB2SPI is designed to simplify the management and monitoring of DB2 databases by integrating specific DB2 components into HP Operations Manager. The integration of these two products allows you to use the powerful problem-management features of HP OM to manage and monitor the DB2 environment from one central location.

The DB2SPI provides the following high-level features:

- Monitoring of DB2 log files that relate to serious or critical issues in the DB2 environment
- Monitoring DB2 processes and proper alerting if essential processes are discovered to have died or run in excessive numbers
- Integrating DB2 applications into the HP OM GUI (DB2 administration capabilities)
- Collecting a large amount of performance data at various detail levels
- Threshold monitoring of selected performance data
- Definition and management of multiple DB2 instances and databases
- Integration of DB2 instances and databases into the HP Software Service Navigator (HP OM for UNIX or Linux) resp. the integrated service view (HP OM for Windows), thus treating them as services
- Graphing of collected performance data with HP Performance Manager Software
- Service reports are provided with the HP Reporter Software integration, enabling comprehensive reporting of the DB2 system status
- DB2SPI 03.80 is "OMi ready", i.e., the events can be forwarded to the OMi integration platform where additional event and status correlations may be executed

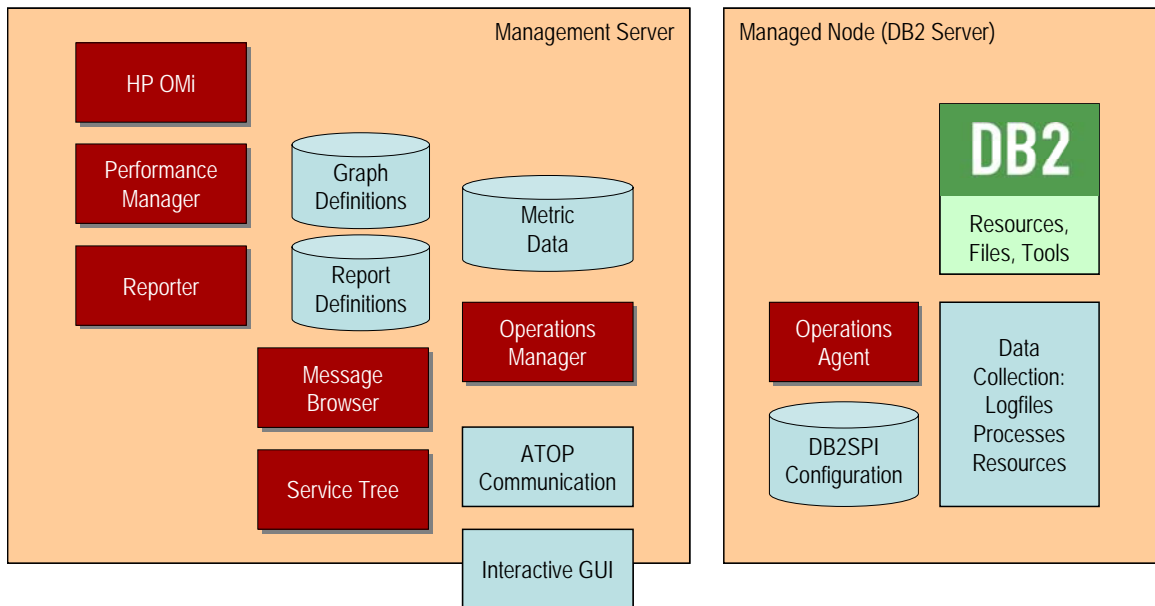
DB2SPI Integrations into HP Operations

The DB2SPI consists of various components that are installed or distributed in the managed environment:

- HP Operations Manager intrinsic components, for example policies
- Perl scripts, database access libraries and binary programs on the management server and the managed nodes
- A common communication interface for application interaction (ATOP, **A**pplication **T**unnel for **O**perations) on the management server, the managed nodes, HP OM for UNIX or Linux Java display stations and HP OM for Windows management consoles.
- Reports are provided for the HP Reporter to enable efficient service reporting of performance data and database availability. Note, that the HP Performance Agent (PA, formerly known as MWA) or the embedded performance agent (CODA) is required for that.

- Graphs are provided for the HP Performance Manager to enable the graphical display of current performance data and database availability. Note, that the HP Performance Agent (PA, formerly known as MWA) or the embedded performance agent (CODA) is required for that.

Figure 1: Components of the DB2SPI



Getting Started

This chapter gives a brief outline of the steps required to get the DB2SPI up and running quickly in most environments for the experienced Operations Manager user.

It is strongly recommended to register at the NiCE Customer Portal to obtain the latest news, patches, permanent licenses, contributed software etc. directly from the manufacturer of the product.

The link to the NiCE Customer Portal is: <https://portal.nice.de/Portal/login.jsp>

Assumptions, Prerequisites and Overview

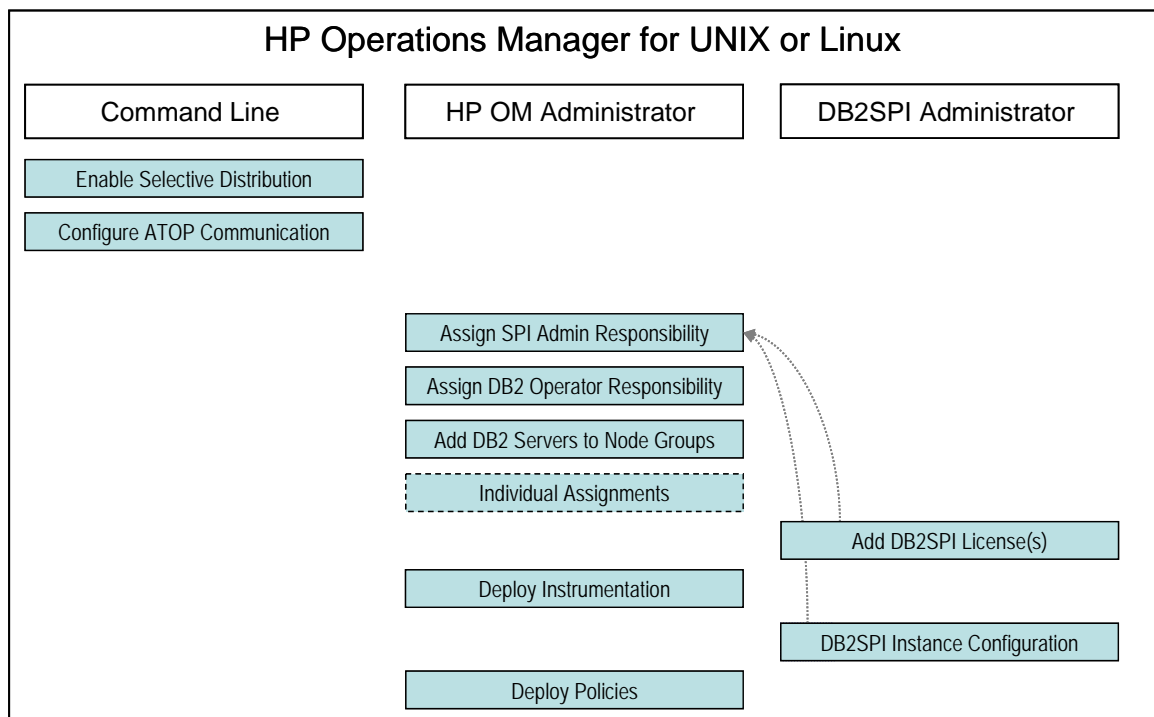
We assume that the DB2SPI has already been installed on the HP OM management server. If not, please refer to the DB2SPI Installation Guide how to do that.

We also assume that the HP OM user and the related account on the management server have appropriate administrative rights to perform the following actions.

To set up the DB2SPI and see the first messages in the message browser, you need to carry out the following high-level steps, each of which is described in detail in the sections that follow:

Setup Overview for HP OM for UNIX or Linux

Figure 2: Setup Steps Overview in OMU and OML



1) Configure selective distribution

The DB2SPI uses a common naming approach for all scripts and binaries that need to be deployed to the managed nodes in order to take advantage of the "selective distribution" methods in HP OM for UNIX or Linux.

Please see details and configuration steps at "Enable Selective Distribution (HP OM for UNIX or Linux only)" on page 19.

2) Configure ATOP Communication

ATOP uses specific ports for the cross-platform communication between the management server resp. its GUI and the managed nodes on the other hand.

Environments with high security requirements may need an adjustment of the communication ports before this configuration is deployed to the management domain. Please see details and tasks at "Upfront ATOP Configuration" on page 19.

3) Assigning DB2SPI Administrator Responsibility

In this step, you configure one or more Operations Manager operators in such a way as to allow them to see DB2SPI-related messages, typically used for the self-management of the DB2SPI, and use DB2SPI administration applications.

Details can be found in section "Assigning DB2SPI Administrator Responsibility" on page 22.

4) Assigning DB2 Operator Responsibility

In this step, you configure the appropriate Operations Manager operators in such a way as to allow them to see DB2-related messages generated by the DB2SPI.

Details can be found in section "Assigning DB2 Operator Responsibility" on page 23.

5) Adding Nodes to Node Groups

In this step, you add the DB2 servers you want to manage with HP OM to the appropriate DB2 node groups.

Details can be found in section "Adding Nodes to Node Groups" on page 23.

6) Assigning DB2SPI Policies to individual Nodes

In this step, you may assign the DB2SPI policies to individual DB2 servers you want to be monitored with HP OM rather than adding those nodes to the predefined node groups.

Details can be found in section "Assigning DB2SPI Policies to individual Nodes" on page 24.

7) Installing DB2SPI Licenses on the Management Server

Before deploying any DB2SPI components to the managed nodes, you need to install the DB2SPI licenses for your environment on the management server.

Although the DB2SPI will start with a 60-day trial license automatically on the managed nodes, it is wise to run with the regular licenses from the very start, if they are available already.

Details about the installation and handling of DB2SPI runtime licenses can be found "About DB2SPI Licensing" on page 30.

8) Deploying the DB2SPI Instrumentation and Configuration Items

In this step, you distribute the DB2 management instrumentation and configuration provided with the DB2SPI to the DB2 servers, which are now HP OM managed nodes.

This includes the ATOP configuration as well as the DB2SPI runtime licenses already installed.

Details can be found in section "Deploying the DB2SPI Instrumentation and Configuration" page 25.

9) Configuring DB2 Instances

In this step, you configure the DB2SPI to recognize the DB2 instances present on the DB2 servers you want to monitor with HP OM.

Details can be found in section "Initial Configuration of DB2 Instances to be monitored" on page 39.

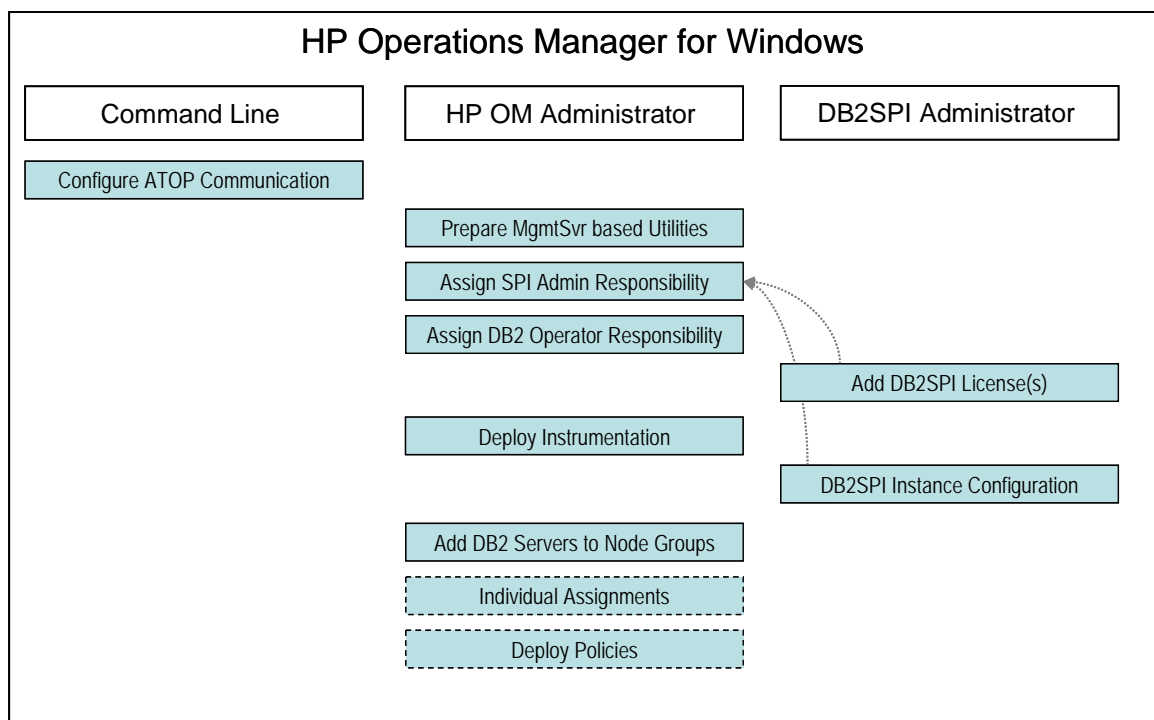
10) Distributing the DB2SPI Policies

In this step, you distribute the DB2SPI templates to the DB2 servers you want to manage with OVO.

Details can be found in section "Deployment of DB2SPI Policies" on page 25.

Setup Overview for HP OM for Windows

Figure 3: Setup Steps Overview in OMW



1) Configure ATOP Communication

ATOP uses specific ports for the cross-platform communication between the management server resp. its GUI and the managed nodes on the other hand.

Environments with high security requirements may need an adjustment of the communication ports before this configuration is deployed to the management domain. Please see details and tasks at "Upfront ATOP Configuration" on page 19.

2) Prepare management server based utilities

There are DB2SPI tools and policies that need to be processed manually during the setup.

Please see the details at "XXX" on page "XX".

3) Assigning DB2SPI Administrator Responsibility

In this step, you configure one or more Operations Manager operators in such a way as to allow them to see DB2SPI-related messages, typically used for the self-management of the DB2SPI, and use DB2SPI administration applications.

Details can be found in section "Assigning DB2SPI Administrator Responsibility" on page 22.

4) Assigning DB2 Operator Responsibility

In this step, you configure the appropriate Operations Manager operators in such a way as to allow them to see DB2-related messages generated by the DB2SPI.

Details can be found in section "Assigning DB2 Operator Responsibility" on page 23.

5) Installing DB2SPI Licenses on the Management Server

Before deploying any DB2SPI components to the managed nodes, you need to install the DB2SPI licenses for your environment on the management server.

Although the DB2SPI will start with a 60-day trial license automatically on the managed nodes, it is wise to run with the regular licenses from the very start, if they are available already.

Details about the installation and handling of DB2SPI runtime licenses can be found "About DB2SPI Licensing" on page 30.

6) Deploying the DB2SPI Instrumentation and Configuration Items

In this step, you distribute the DB2 management instrumentation and configuration provided with the DB2SPI to the DB2 servers, which are now HP OM managed nodes.

This includes the ATOP configuration as well as the licenses already installed.

Details can be found in section "Deploying the DB2SPI Instrumentation and Configuration" on page 25.

7) Configuring DB2 Instances

In this step, you configure the DB2SPI to recognize the DB2 instances present on the DB2 servers you want to monitor with HP OM.

Details can be found in section "Initial Configuration of DB2 Instances to be monitored" on page 39.

8) Adding Nodes to Node Groups

In this step, you add the DB2 servers you want to manage with HP OM to the appropriate DB2 node groups. If automatic deployment is enabled on the management server, policies will be deployed without user action.

Details can be found in section "Adding Nodes to Node Groups" on page 23.

9) Assigning DB2SPI Policies to individual Nodes (optional)

In this step, you may assign the DB2SPI policies to individual DB2 servers you want to be monitored with HP OM rather than adding those nodes to the predefined node groups.

Details can be found in section "Assigning DB2SPI Policies to individual Nodes" on page 24.

10) Deploying the DB2SPI Policies

In this step, you actively deploy the DB2SPI policies to the DB2 servers, which are now HP OM managed nodes. Most often, this deployment takes place automatically if HP OM for Windows is configured accordingly and this step is not required.

Details can be found in section "Deployment of DB2SPI Policies" on page 25.

Specific Setup Steps from the Command Line

Enable Selective Distribution (HP OM for UNIX or Linux only)

This (optional) step is to make sure that the "Selective Distribution" functionality in the HP Operations Manager for UNIX or Linux gets aware of the DB2SPI.

This step is required only if you are using the selective distribution configuration file `/etc/opt/OV/share/conf/OpC/mgmt_sv/seldist`

The DB2SPI automatically includes the proper definitions into the HP OM configuration file to make use of this functionality.

From the command line with proper permissions run the `opcseldist` utility to re-configure the distribution manager (`opcdistm`):

```
/opt/OV/bin/OpC/utills/opcseldist -reconfig
```

while HP OM is running. After a new start of HP OM this step is not necessary, because the `opcdistm` process reads the `seldist` configuration file during each startup.

Upfront ATOP Configuration

ATOP uses a separate IP connection between the managed nodes and the management server and from the management server to Java GUI stations / management consoles. This communication must be consistent throughout the management domain.

As a default, ATOP uses port 55551 for the server communication; this port must be open throughout all firewalls as well as on the managed nodes and the OM management server.

Changing the default Port

If this port should not be suitable, you may change it with the help of a command line tool, `db2s_atopcfg.pl`, available on the management server after installation of the DB2SPI:

```
db2s_start db2s_atopcfg.pl -sp <yourport>
```

This command simply changes the server port to the specified value in all ATOP configuration files that are being used on a DB2 server at a later time, including the management server.

Details can be found in the DB2SPI Concepts and Troubleshooting Guide.

Activating changed ATOP Configuration Data

ATOP configuration changes must be distributed within the managed environment to make sure communication can be committed, especially if port numbers should be changed.

Three areas therefore require the updated information.

- Management Server

The ATOP server executing there consumes the "master copy" of the ATOP configuration file and needs no special attention.

- In OM for UNIX or Linux, it is a registered OV service it needs to be restarted after the configuration file has been changed:

In a terminal session on the management server, enter

```
ovstop atop_server
```

```
ovstart atop_server
```

to achieve this. Make sure you have been successful by entering

```
ovstatus atop_server
```

- In OM for Windows, re-start the "ATOP2 Server" service set up during installation.

Note:

No ATOP application windows should be open at the time of re-starting the ATOP server; depending on the configuration changes that might lead to unpredictable results.

- Managed Nodes

These nodes get updated with the regular distribution mechanism of Operations Manager, i.e., via "Install & Update Software & Configuration" from the Operations Manager administrator GUI, and hence it consumes all data that are in the respective repository. So, in order to get the configuration data to the nodes we

must make sure that they are consistent, especially with regards to the port number, in those platform specific repositories. Edit the `atop.cfg` files there and do the "Install & Update Software & Configuration" from the Operations Manager administrator GUI afterwards to get the data distributed to all managed nodes.

- Java Display Stations of OM for UNIX or Linux and OM for Windows Consoles

For the Java Display Stations and OM for Windows consoles there is no intrinsic update method today.

So, when changes are done on the management server, the configuration file `/opt/OV/atop/bin/atopsvr.cfg` must be transferred manually to `%OvInstallDir%\bin\DB2SPI`

or these changes must be made locally in a consistent manner.

Do not forget to re-start the "ATOP2 Server" service on Windows systems after a change to the ATOP configuration file.

HP Operations Manager Administrator Regime

One-Time Tasks

Preparing the Management Server Utilities

Most of the DB2SPI functionality is implemented on the DB2 servers (our managed nodes), which is not surprising. But there are also components in the DB2SPI that reside on the HP OM management server, like the help processor or the service tree calculation and maintenance parts. Hence a DB2SPI log file on the management server may be monitored using a log file policy, if it is assigned and deployed.

However, to make use of this functionality, the management server must be a managed node itself.

It is not necessary to deploy DB2SPI related instrumentation to the management server for this monitoring.

To monitor the DB2SPI log file on the management server, the policy/template `DB2SPI_ownlog0` has to be deployed to the management server node.

- On HP OM for UNIX or Linux, this policy is automatically assigned to this node during installation of the SPI, it only needs to be deployed to it.
- On HP OM for Windows, this policy has to be deployed explicitly. It is available in the Policy Group `DB2SPI->DB2SPI MgmtSvr`. It is recommended to associate this policy group with the Management Server node.

General DB2SPI Configuration Tasks

Assigning DB2SPI Administrator Responsibility

Assignment in HP OM for UNIX or Linux

The installation of the DB2SPI on a HP OM for UNIX or Linux adds two new, DB2-specific user profiles to the HP OM user profile bank, the [DB2SPI Admin Profile](#) and the [DB2 Operator Profile](#).

You can use the DB2SPI Admin Profile to create a new HP OM user whose role it will be to manage the DB2SPI itself.

Alternatively, you can use the DB2SPI Admin Profile to expand an already existing operator's responsibilities to include the management of the DB2SPI. This HP OM user will then be able to see all messages from all nodes in any DB2 node group with the message group `DB2SPI`.

Note, that the management of the DB2 databases is performed via the DB2 operator profile described in "Assigning DB2 Operator Responsibility" on page 23.

The user with an DB2 operator profile will see all messages in any DB2 node group that are sent for the DB2 message group.

Creating a new DB2SPI Administrator in HP OM for Windows

To create a new DB2SPI administrator using the DB2SPI Administrator user role:

1. In the OM for Windows HP Operations Manager Console, open the "User Roles Editor".
2. Select the "DB2SPI Administrator Role" and click on "Properties".
3. In the "Users" tab you can now assign this role to certain users. Click on the "Add" button and select the user you want to assign this user role to. Click on "Add", then on "OK".

Note:

You can only assign a user role to users which are in the HP-OVE-OPERATORS user group (see also HP OM for Windows documentation).

Assigning DB2 Operator Responsibility

Assignment in HP OM for UNIX or Linux

You can now use the DB2-specific user profile to create a new HP OM user whose role it will be to manage the DB2 servers. Alternatively, you can use one of the DB2-specific profiles to expand an already existing operator's responsibilities to include the management of the DB2 servers. This enables the operator to see all messages from all nodes in any DB2 node group with the message group DB2.

Creating a new DB2 Operator on HP OM for Windows

To create a new DB2 operator using the DB2SPI Operator user role:

1. In the OM for HP Operations Manager Console, open the "User Roles Editor".
2. Select the "DB2SPI Operator" Role and click on "Properties".
3. In the "Users" tab you can now assign this role to certain users. Click on the "Add" button and select the user you want to assign this user role to. Click on "Add", then on "OK".

Note:

You can only assign a user role to users which are in the HP-OVE-OPERATORS user group (see also OM for Windows documentation).

Adding Nodes to Node Groups

The DB2SPI comes pre-configured with a set of platform-specific node groups for the DB2 servers. These node groups are automatically assigned to the appropriate DB2 policy groups during the installation and initial configuration of the DB2SPI. In this step, you only need to add the DB2 servers to the appropriate operating system specific nodes group, namely:

- DB2-UNIX

- DB2-WINDOWS
- DB2-OS400

The Operations Manager Administrator must make sure that the DB2 servers have been added to the appropriate platform-specific DB2SPI node groups created during the installation of the DB2SPI.

With HP Operations Manager for UNIX or Linux, you may do this assignment at any time, as this does not imply any deployment or other action.

Adding Nodes to DB2 Node Groups in HP OM for Windows

Make sure that you have set up the DB2SPI configuration on the DB2 node before you add the node to a DB2SPI node group. Otherwise, you will immediately see some error messages in the message browser for this node.

To add a DB2 server running on HP-UX to the correct node group:

1. In the OM for Windows Console, open the "Nodes Editor".
2. In the Node tree, drag and drop the node on the DB2-UNIX Node Group.
3. The appropriate DB2SPI policy groups are automatically deployed to the node, after it was added to the DB2SPI node group.

Maintaining DB2SPI Node Groups

The DB2SPI installation process automatically assigns the appropriate DB2SPI policies to the DB2SPI node groups and assigns the DB2SPI appropriate DB2SPI node groups to the default DB2SPI user profiles.

However, this default node-group configuration is not required by the DB2SPI. If you prefer to set up special assignments for your own environment, or need more limited management capabilities, or perhaps simply for test reasons, you can choose to do without the default DB2SPI node groups.

Assigning DB2SPI Policies to individual Nodes

Usually, you will have all your DB2 servers in the appropriate default node groups as described in "Adding Nodes to Node Groups" on page 23. However, you may also want to assign the policy groups (or even individual policies) to a specific DB2 server. If there is no need to add individual nodes, you may skip this chapter.

With HP Operations Manager for UNIX or Linux, you may do this assignment at any time, as this does not imply any deployment or other action.

Individual Assignment in HP OM for Windows

Make sure that you have set up the DB2SPI configuration on the DB2 node before you assign DB2SPI components to it in the OM configuration. Otherwise, you will immediately see some error messages in the message browser for this node.

Use the OM for Windows Console to assign the appropriate DB2SPI policies to the managed nodes (the DB2 servers), as follows:

1. In the "Policy deployment" section of the Console Tree, right-click the DB2 Policy group or specific policy you want to deploy and select "All Tasks → "Deploy on".
2. Select the node(s) you want to deploy the policies to and click on "OK".

Deploying the DB2SPI Instrumentation and Configuration

When working with DB2 installed in a cluster environment, you have to perform the following distribution for all nodes belonging to the cluster, regardless if DB2 or the DB2SPI is currently executing on them or not.

Deployment to Managed Nodes of HP OM for UNIX or Linux

In order to activate the functionality provided with the DB2SPI, you need to deploy the instrumentation to the managed nodes, which host the DB2 servers. Please refer to the "HP OM for UNIX or Linux Administrators Guide" how to distribute Commands and Monitors using HP OM for UNIX or Linux.

Deployment to Managed Nodes of HP OM for Windows

When using HP OM for Windows, right-click on the managed node (DB2 server) in the Console Tree and select "All Tasks → Deploy Instrumentation". You need to deploy

- DB2SPI (this includes ATOP)
- SHS Data Collector
- SPI Data Collector

Note:

You should **not** distribute the DB2SPI **policies** at this point in time to a DB2 server. This is because the DB2SPI is able to recognize and manage multiple DB2 instances and you need to configure DB2SPI components to recognize the multiple instances **before** you activate monitoring on the DB2 servers by distributing the DB2SPI policies.

If you accidentally distribute the DB2SPI policies using HP OM for UNIX or Linux, undo it. For this purpose, de-assign the node from the DB2SPI node group, re-distribute policies and then start over.

Alternatively, you may also launch the tool "DB2SPI Disable" to stop all HP OM agent related activities.

Deployment of DB2SPI Policies

After configuring the DB2SPI to recognize the DB2 instances running on the DB2 server you want to monitor with the HP Operations Manager and assigning the DB2SPI policies, you need to distribute the DB2SPI policies to the DB2 servers, as follows.

If the DB2 server is installed in a cluster environment, the policies must be deployed to all physical nodes belonging to the cluster. However, they are activated only when the DB2SPI (and DB2) is active on the respective system.

Deployment to Managed Nodes of HP OM for UNIX or Linux

In order to activate the functionality provided with the DB2SPI, you need to deploy the instrumentation to the managed nodes, which host the DB2 servers. Please refer to the "HP OM for UNIX or Linux Administrators Guide" how to distribute "Templates" using HP OM for UNIX or Linux.

Deployment to Managed Nodes of HP OM for Windows

You can deploy policies by doing one of the following:

- Add the DB2 server node to the appropriate DB2SPI node group. In this case the policies get automatically deployed to this managed node.
- Manually deploy the appropriate DB2SPI policy group or specific policies (depending on the managed node platform).

Deploying the DB2SPI policies to the DB2 server automatically activates monitoring on the DB2 server.

Other Operations Manager Adaptations (optional)

Specific Metric Thresholds with Template Name Spaces

By default, the DB2SPI uses fix names for the metric threshold monitor policies in OM for UNIX or Linux and OM for Windows. These names are hard coded in the `db2s_metrics.cfg` configuration and hence apply to all managed systems in a similar way.

The name space extension allows prefixing the names of these policies with a string freely definable, thus making it possible to maintain different sets of threshold monitors while still using the same `db2s_metrics.cfg`.

Call Syntax

Whenever calling `db2s_db2mon.pl`, you may pass a `-t <prefix>` parameter before the list of metrics in the command line like:

```
db2s_db2mon.pl -t MYDEV_ -i <metric_list>
```

or

```
db2s_fsize.pl -<logfile parameter> -t MYDEV_
```

This will forward all values determined for the metrics listed to respective threshold monitors which are named `MYDEV_<original_name>`.

Usage in the DB2SPI

This can be used in the DB2SPI easily by copying the schedule policies `DB2_10m_metrics_*` and `DB2_30m_metrics_*` and `DB2_60m_metrics_*` to new names and adapting the `db2s_db2mon.pl` call in them accordingly.

Make sure that you will deploy only one set of metric schedule policies to the nodes, according to their "threshold set" desired.

Note that all instances and databases on a given system will use the same policies; there is no instance or database specific distinction possible.

Suppressing Unwanted Messages from "su" Monitoring

The DB2SPI sometimes has to switch the user environment in order to be able to execute particular applications properly. Since the root-user on the DB2 server is involved in this action, entries are generated in the `syslog` log file, indicating that a "su" event has taken place.

The standard `Logfile:syslog` template on HP-UX managed nodes or the `Logfile:su` template on AIX managed nodes detect these `su` events and notify the user by sending a message (with an "unknown" or "normal" severity, respectively) to the message browser.

You can prevent these messages appearing in the message browser by adding a condition to the `Logfile:syslog` template on HP or the `Logfile:su` template on AIX. The new condition would suppress these (regular) messages, similar to the condition that Operations Manager uses on the management server itself to drop "su" events in the ORACLE environment.

Running the Agent in a non-root Account

The Operations Manager agent can be configured to run in a non-root account on a HTTPS agent managed node. This has quite some impact upon the DB2SPI, because this usually disables the direct "su" capability required to switch to the proper DB2 user environment. Non-root DCE agent setups are not supported by the DB2SPI.

However, a tool is available with the DB2SPI that can be executed to enable such functionality even for non-root HTTPS agents.

After the Operations Manager agent has been switched to a non-root account by the `ovswitchuser` command, the following steps need to be performed on the managed node.

Note:

These steps are required if the DB2SPI is freshly deployed to such a managed node before any DB2SPI activities including "Config Setup" are performed or immediately after the agent has been switched to non-root.

Steps:

1. Login on the managed node as user 'root'.
2. Change directory to the instrumentation directory (`/var/opt/OV/bin/instrumentation`)
3. Run `db2s_start db2s_root.pl`
4. Edit `/etc/db2spi.su` file to add allowed users.

To allow executions for any commands as instance user, please use '*'

For example, add your instance user to this file like this:

```
db2inst1:*
```

Now the SPI will operate with the necessary rights.

These steps must be performed every time when agent user was switched.

In the db2spi.su file, you have to enter the instance user names of all instances you want to monitor with the DB2SPI. Do not forget to update this file when adding new instances.

Executing the tool "Config Delete" to remove the DB2SPI configuration removes the file /var/opt/OV/db2spi/ db2s_sudo which is needed for the SPI to work on a non-root Agent system. "Config Delete" does not delete /etc/db2spi.su. It has to be removed manually using an account with appropriate rights (root).

DB2SPI Administrator Tasks

Overview and Notes

Many DB2SPI tools act upon a single DB2 instance. In case there are more than one currently being monitored on a DB2 server, the DB2SPI tool first asks which DB2 instance shall be taken. If only one DB2 instance is present, the application immediately carries out the task requested.

DB2SPI Admin Tools

In this section of the manual, tools are explained that the DB2SPI administrator has to perform. These tools are logically grouped by their context: Licensing, Initial Configuration, Instance Maintenance, General Tools.

The list shown next represents the "DB2SPI Admin" tools group, which by default contains the following tools:

- Licensing related:
 - License Add
 - License Check
 - License List
- Initial configuration of DB2 instances:
 - Config Setup
- Instance monitoring maintenance:
 - Discovery Filter
 - Entity Filter
 - DB2SPI Disable
 - DB2SPI Enable
 - ServiceTree Update
 - Config Delete
- Other operational configuration:
 - Datastore Delete
 - Datastore Setup
 - OPCMON Disable
 - OPCMON Enable
 - PerfRep Disable
 - PerfRep Enable
 - Self-Healing Info DB2 Server

- Self Healing Info OVO Server
- Show DB2SPI Log
- Snapshot Disable
- Snapshot Enable
- Trace Definition

A Note on GUI Requirements

The DB2SPI comes with an embedded communication component (ATOP) that enables cross-platform application execution on all operating systems.

- In HP OM for UNIX or Linux environments, all tools can be run from the HP OM operator Motif GUI or from the HP OM Operator Java GUI.

The Motif GUI interface to the DB2SPI tools is available without any other steps to take. The Java GUI interface must be enabled on the Java GUI station of the operator similar to the HP OM Java GUI itself.

- In HP OM for Windows environments, all tools can be run from any HP OM for Windows Console.

The OM Console on the management server can be used without any other steps to take. On any other console station, the DB2SPI console package has to be installed, before the DB2SPI tools can be executed from those consoles.

The installation and configuration of ATOP components on systems other than the HP OM management server might be necessary before those systems can be used. The steps to achieve this are described in the "DB2SPI Installation Guide".

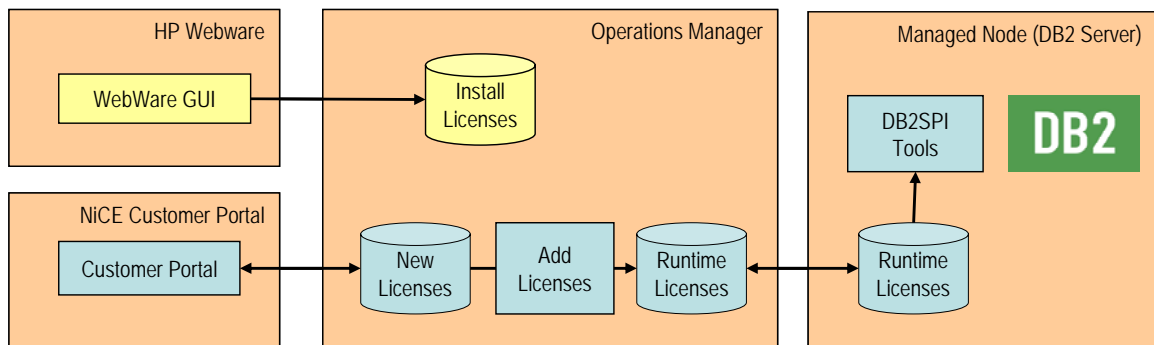
About DB2SPI Licensing

This section explains the basics and background of the DB2SPI licensing.

Other than many HP Operations products, the DB2SPI is fully protected with license enforcement on the managed DB2 servers. We therefore distinguish between installation licenses (obtained from HP) and runtime licenses (obtained from NiCE).

When delivered via HP's SPI DVD, two licenses are required – one in order to install it permanently on the HP OM management server and one per managed node for the execution of the SPI code. This is described graphically in the next picture:

Figure 4: DB2SPI License Types and Handling



The former is obtained from HP as for other HP Operations products, using the HP Webware server. Those licenses contain the management server as the node where the product may be installed and used from.

Note:

SPI licenses obtained from HP only serve as "installation licenses" on the management server, but not as "runtime licenses" on managed nodes.

Such HP installation licenses should not be entered into the "License Add" tool.

The latter are node-specific runtime licenses that must be obtained from the manufacturer of the product, NiCE GmbH in Germany. The installation is described next.

Key Attributes for Runtime Licenses

The DB2SPI requires a runtime license for each node where it is operated. Although some functions and policies may work also without a runtime license, all the critical functions and DB2 access is restricted by the license enforcement process.

The following elements are required for valid runtime license:

- Version of the DB2SPI
- Tier of the managed node (according to the HP Tiering Matrix)
- Name or IP address of the managed node or i5/OS systems

Three different kinds of runtime licenses are available:

- Evaluation licenses are not restricted in their name or IP space, hence can be operated on any node, but will expire at some time.
- A regular runtime license is restricted to the node name or IP address specified when requesting the license, but has no time limit.
- Instant-on licenses are enabled with the initial configuration of the DB2SPI on a managed in case there is no evaluation or regular license. This license lasts for 60 days. This allows every user to start with the DB2SPI right away. This license type is not available for i5/OS managed databases.

Note:

Instant-on licenses are created on managed nodes at runtime. There is no explicit question to accept the license terms as with regular licenses. However, the same rules apply. In addition instant-on licenses are meant for test and evaluation systems only and should not be used in production environments.

Note that the DB2SPI cannot be operated without a valid runtime license installed on each node. The process of obtaining, installing and maintaining licenses is simple and mostly automatic.

License Tool Overview

This section explains how licenses can be obtained from the manufacturer of the SPI and how the license keys are managed in your HP OM environment.

Downloading the licenses typically requires internet access, either from the management server or from any other system. In the latter case, the downloaded key files need to be transferred to the HP OM management server.

There are three tools in the DB2SPI that help to maintain the runtime licenses:

- **License Add:**
This tool allows the addition of new runtime licenses on the management server.
- **License List:**
Thus tool lists all runtime licenses currently available on the management server. However, they must be deployed to the managed nodes in order to be active.
- **License Check: (DB2 for LUW only)**
This tool verifies on a managed node if there are one or more valid runtime licenses for this node. Licenses may become invalid if time expires (only evaluation and test licenses) or if the node name has changed.

Obtaining valid DB2SPI Licenses

Note that obtaining and installing valid runtime licenses is essential, as the DB2SPI functionality on the managed nodes is available only if properly licensed, regardless if it is the original product obtained from NiCE or the OEM product sold by HP. When started for the first time, a 60-day trial period is granted by the SPI, but operation will terminate unless a valid runtime license has been added.

Install License Download from HP (HP OEMed DB2SPI only)

Details are described in the `SPI_CD_Install.pdf` document; section "How to Obtain a SPI License/Password".

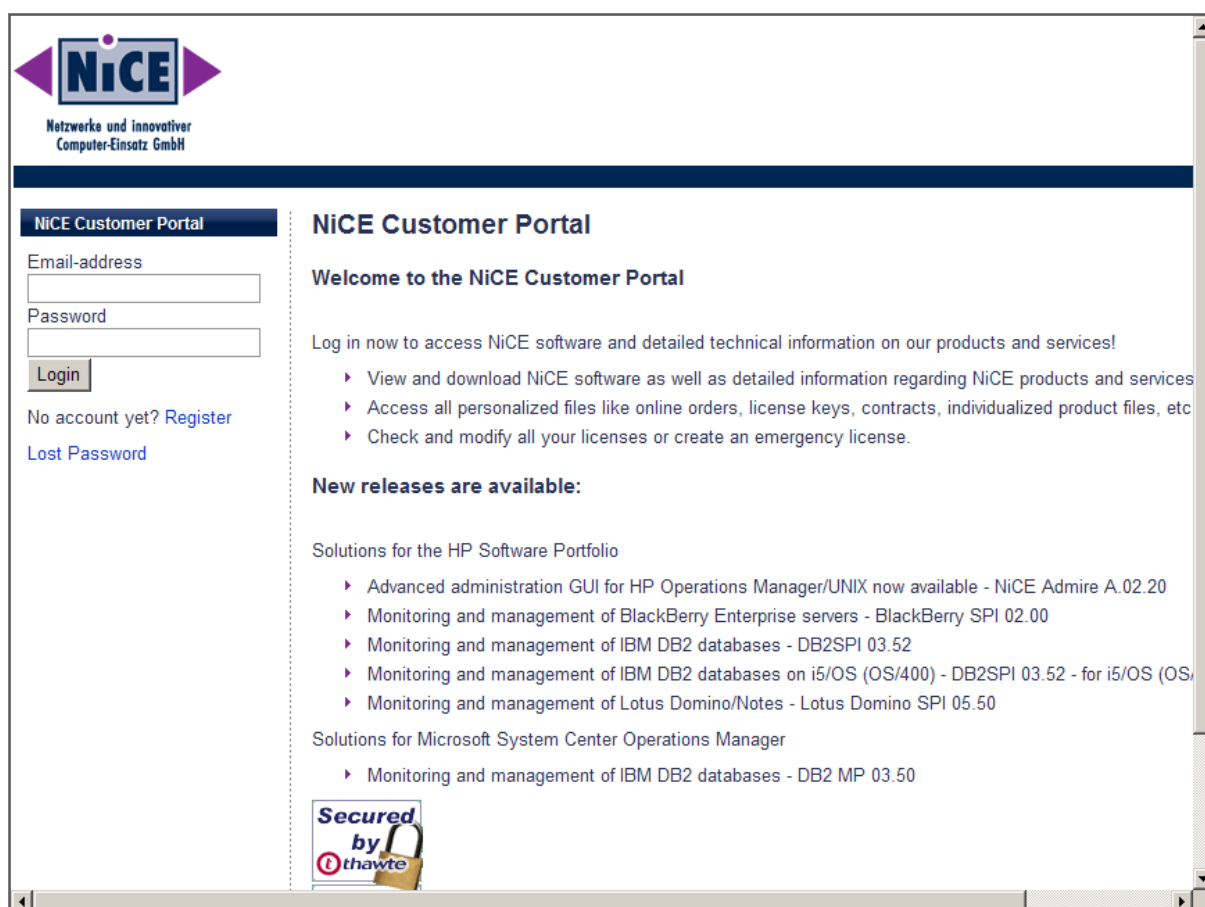
Note that the usage if the DB2SPI is independent from the installation of the HP license.

Runtime License Download from NiCE

Upon initial installation of the DB2SPI, no runtime licenses are installed as the license files are not part of the product. The DB2SPI binaries are delivered without any runtime license.

Runtime Licenses can be obtained very easily via the secure NiCE Customer Portal
<https://portal.nice.de/login.php>

Figure 5: NiCE Customer Portal



Please make sure that you create your account there as soon as you have acquired your DB2SPI.

In the "Licenses" area of your personalized view you can request evaluation and production runtime licenses, which are created automatically and then can be downloaded directly via your web browser.

When changing your system (moving the DB2SPI to another node), simply flag the former system and enter the new data to create an update.

Make sure that you place the DB2SPI License Update File in a common folder (directory) on the management server.

On OM for Windows systems, this will typically be the `C:\TEMP`; on OM for UNIX or Linux, it will most often be `/tmp`.

Adding DB2SPI Licenses

All DB2 servers monitored with the DB2SPI need to have an appropriate runtime license. This is a node-locked license, which is checked by the DB2SPI whenever access to DB2 is requested via the DB2SPI.

There is only one license file per management domain, holding all runtime licenses that have been obtained. This file is distributed to the managed nodes together with the "instrumentation" (HP OM for UNIX or Linux: "monitors") with standard HP OM means.

In order to add new runtime licenses to this common file, a tool is available in the DB2SPI Admin group, "License Add".

In order to install new runtime licenses, the following steps must be performed:

Adding Runtime Licenses in HP OM for UNIX or Linux GUI

1. Make sure you have placed the DB2SPI License Update File in a common folder (directory) on the management server.

On HP OM for UNIX or Linux systems, this will typically be the `/tmp` directory

In the HP OM for UNIX or Linux GUI, execute the "License Add" application from the "DB2SPI Tools" application group with the "Start Customized" option.

2. In the window popping up, you need to specify the name of the recently installed DB2SPI License Update File with full path information.
3. Then press "OK" to start the process.

An application output window will appear showing the progress of the license installation, as can be seen in Figure 7: "License Add" Output on page 37.

Adding Runtime Licenses in HP OM for Windows Environments

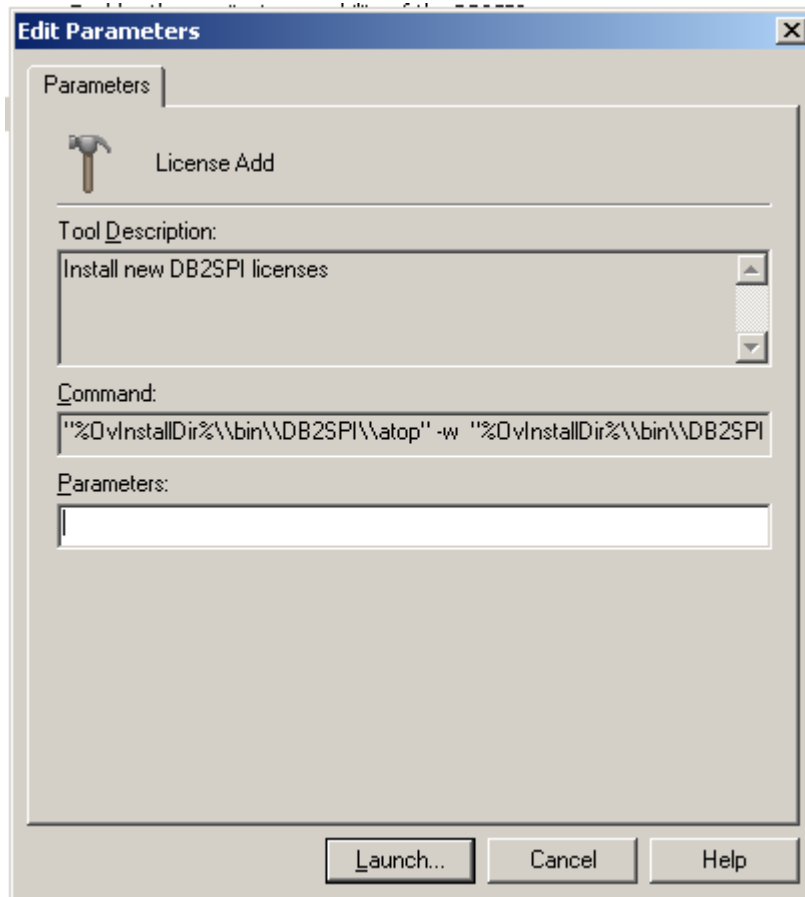
To put the runtime license in the proper directories for deployment:

1. Make sure you have placed the DB2SPI License Update File in a common folder (directory) on the management server.

On HP OM for Windows systems, this will typically be `C:\TEMP`.

2. In the OM for Windows GUI, execute the "License Add" tool from the "DB2SPI Admin" tools group.
3. In the window popping up, you need to specify the License Update file with full path information that you placed in a common folder on the management server.

Figure 6: Add DB2SPI License into OM for Windows



4. Then press "OK" to start the process.

An application output window will appear showing the progress of the license installation.

You may close that window when the installation has completed.

License Terms

It is mandatory to accept the license terms of the DB2SPI in order to install runtime licenses. Therefore these terms are provided in conjunction with the license installation and they can be viewed if desired.

When the question appears:

Do you want to read the license terms for the DB2SPI [yn]?

Answer "y" or "n".

If you selected to read the license terms, they will be shown in this window in a paged manner, with the option to abort reading at any time. The text is identical with the license terms signed with the purchase of the product.

License Term Acceptance

After the terms have been shown in their entirety (or this step has been skipped with an "n" given earlier, or aborted during the read process, the question appears:

Do you accept the license terms for the DB2SPI [yn]?

- If you say "n" (no), installation of the license(s) is terminated and the product will not be licensed and cannot be used with DB2 server.
- If you say "y" (yes) you indicate the acceptance of the terms and license installation will continue.

The license(s) can only be installed if the conditions are accepted. If you say "n" (no) when asked for the acceptance of the conditions, no license will be added to the instrumentation for later deployment.

A typical dialogue output for the "License Add" tool looks as follows (example given for OM for Windows):

Figure 7: "License Add" Output

```
ATOP Window - Press ^C to terminate the application
In order to install licenses you have to accept
the license terms for the DB2SPI.
Do you want to read the license terms for the DB2SPI [yn]? y
*****
* DB2SPI License Terms *
*****

This software end user license agreement is a legal agreement between
you and NiCE GmbH. It provides a license to use the software and
contains warranty information and liability disclaimers.
By installing the software and using the software, you are confirming
your acceptance of the software and agreeing to become bound by the
terms of this agreement. If you do not agree to be bound by these
terms, then uninstall the software from your computer.

1. Ownership
1.1. The license gives you limited license to use the Software.
    NiCE GmbH and its suppliers retain all right, title and interest,
    including all copyright and intellectual property rights, in and to,
    the Software and all copies thereof. All rights not specifically
    granted in this license agreement, including Federal and
    International Copyrights, are reserved by NiCE GmbH and its
    suppliers.

Press RETURN or Q to quit ...q
Do you accept the license terms for the DB2SPI [yn]? y
Done with ibm/rs6000/aix/monitor
Done with sun/sparc/solaris/monitor
Done with hp/s700/hp-ux10/monitor
Done with hp/s700/hp-ux11/monitor
Done with hp/s800/hp-ux10/monitor
Done with hp/s800/hp-ux11/monitor
Done with hp/pa-risc/hp-ux11/monitor
Done with linux/intel/linux24/monitor
Done with linux/intel/linux22/monitor
Done with ms/intel/nt/monitor
Done with hp/pa-risc/hpux1100/monitor
Done with hp/ia64/hp-ux11_32/monitor
Done with hp/ipf32/hpux1122/monitor
Done with sun/sparc/solaris7/monitor
Done with ms/x86/winnt/monitor
Done with linux/x86/linux24/monitor

Finished update of DB2SPI licenses. You need to deploy them to the managed nodes now.

Press any key to close the window ...

lassa.nicelab.de 15.250.250.26 /opt/OV/db2spi/bin/db2s_start db2s_nicelice.pl /tmp/beta_0300_200!
```

License Deployment

After installing the licenses on the management server, they need to be deployed to the managed nodes, as the check for valid licenses is performed there within the DB2 access section of the SPI.



To do so, deploy the "instrumentation" resp. "monitors" to all DB2SPI managed nodes.

The scripts and binaries on the managed nodes will scan the local license file db2s_licenses.dat for a matching, valid runtime license on the respective node.

List all installed DB2SPI Runtime Licenses

To verify the list of runtime licenses installed on the given HP OM management server the tool "License List" can be executed. When being executed it lists all runtime licenses with the related nodes and expiry dates in an ATOP window.

An example is given here:

```

=====
DB2SPI License Report on w134
=====
DB2SPI License Report on OVO Server w134:
=====
This report lists all licenses found in the license file
on the management server. No validation checks are performed
for this report

Type      Version      Expiry Date  Locked to
-----
Tier 2 == A.03.50  2008-03-31  * (not locked)
Do you want to preserve the output in 'C:\Documents and Settings\All
Users\Application Data\HP\HP BTO
Software\shared\log\db2spi\db2s_licrep.txt'? [y|n]:
=====

```

The keys preceding the version mean: "identical" ("==") or "up to" ("<=")

An expiry date of 2999-12-31 means an unlimited time frame.

License Check on the Managed Node

Executing the "License Check" tool can help finding out if there is a valid runtime license for this node. It is advisable to execute it if the DB2SPI cannot be configured at all with messages like "no license found", or if similar messages show up during normal operation.

As you know, the runtime licenses are node locked and / or time-restricted, so installed runtime licenses may become invalid when the "hostname" changes or the evaluation time frame expires.

The typical output of the "License Check" is shown here:

```

=====
DB2SPI License Report on a48
=====
DB2SPI License Report on managed node a48:
=====
This report lists all licenses found in the license file
on the managed node. Only licenses which were generated for
this node are listed

Type      Version      Expiry Date  Locked to      License is
-----

```



```
Tier 2 == A.03.50 2008-03-31 * (not locked) Valid
Do you want to preserve the output in '/tmp/db2s_licrep.txt'? [y|n]:
n
```

Press any key to close the window ...

Initial Configuration of DB2 Instances to be monitored

Any number of DB2 instances can be active on a DB2 server at any time. All or any combination of these instances might need to be monitored and maintained by HP Operations Manager.

In this section, you use the DB2SPI administrator's tool "Config Setup" to tell the DB2SPI, which subset of the DB2 database instances are to be monitored using DB2SPI and HP OM.

Due to the determination of the various DB2 entities and parameter during this configuration process, the database system must be up and running.

Before starting the configuration, make sure that DB2 is up and running.
For all instances to be monitored the "START DATABASE MANAGER" must have been given.

Configuration Setup Checklist

The following check list may be helpful to define the data that will be required during the initial configuration of the DB2SPI on the managed node.

Just print the next page and fill in the data for the DB2 server to be monitored.

You may keep this sheet as a reference then.

Table 2: Configuration Setup Checklist

For DB2 servers running on Windows:	
Localization of the DB2 installation:	US / DE / FR ?
Name of the DB2 admin user:	
Domain of the user account:	
Password of the DB2 admin user:	
For all DB2 server:	
Which instances should be monitored?	
Name	Verify that it has been started
Which databases should be monitored?	
Name	Excluded from monitoring? Y / n
	Yes / No
	Yes / No
	Yes / No
	Yes / No
	Yes / No
	Yes / No
	Yes / No
	Yes / No
	Yes / No
Global configuration for all instances and databases	
Monitor DB2 on i5/OS (OS400) systems?	Yes / No
Should DB2 be integrated into the HP Performance Agent for system resource utilization?	Yes / No
Should DB2 replication be monitored?	Yes / No
Define the time frame for the graphical data store: Required disk space is estimated after selection, with the option to change the selected range if the amount seems to be improper.	1 month 3 months 6 months 1 year

The next sections describe some additional preparatory steps in specific configurations of either DB2, the operating system or the OM agent. All these steps must be executed on the managed nodes, usually as an administrative user ("root") with appropriate permissions.

DB2 Servers in Clusters

If your DB2 server is operated in a cluster, read on.

For standalone configuration you may safely ignore this section and proceed to "Non-root HP OM Agent on UNIX Nodes" on page 42.

Running DB2 application packages (a.k.a. resource groups) under cluster control offers a great advantage with respect to the availability of DB2 for the applications and users.

The DB2SPI can support a DB2 cluster installation with little effort in preparing the managed node appropriately.

UNIX or Linux based Clusters

On UNIX clusters, the following preparations must be done:

- Log on with proper permissions on the managed node
- Create a directory `/var/opt/OV/db2spi` manually on the shared disk. This directory will later contain all the shared runtime data (log files, metric stores etc.)
- Create a directory `/etc/opt/OV/db2spi` on the shared disk. This directory will later contain all the configuration data for the DB2SPI operating.

If this preparation has been done, the configuration described next must be done on one node only. However, this node must currently host the DB2 server software package. Configuration data as well as runtime data are shared between the nodes of the cluster.

Microsoft Windows based Clusters

On Windows clusters, data disk sharing in the OV directory trees is currently not supported.

Therefore, the configuration described next must be done on each node of the cluster while the DB2 server resource group is currently active on it.

Please note that the DB2SPI must first be installed on the "first cluster node" of your OMW cluster. It is important that it owns the OMW cluster resources while the SPI installation is being performed.

Subsequent installation on "secondary cluster nodes" must be made after this step.

Integration into Switch-Over Process for DB2 Clusters

Note:

This section applies to the DB2 server being managed by "classical" means of Operations Manager, i.e., without applying the "Cluster Awareness" available with HTTPS agents and virtual nodes, as described in the OM for UNIX 8.x documentation.

At this place, we explain the integration of DB2SPI switch-over into the DB2 switch-over process.

When making use of the "virtual node" concept of OM for UNIX 8.x, switch-over is automatically provided by the Operations Manager platform and no specific actions need to be taken by the user.

The functionality of the DB2SPI must also be switched together with the DB2 server; otherwise, lots of error messages would be created on nodes where DB2 is currently not running, but the DB2SPI (and the HP OM agents) are.

The specific switch-over scripts for the respective cluster administration software therefore need to be extended by adding the following function calls:

- To enable the DB2SPI when a package activation takes place:
`db2s_start db2s_db2spi.pl ON`
- To disable the DB2SPI when a package de-activation takes place:
`db2s_start db2s_db2spi.pl OFF`

You need to make sure that the cluster administration software is aware of the paths of the Operations Manager agent to use this functionality.

Non-root HP OM Agent on UNIX Nodes

If you are applying a non-root agent approach on your DB2 server, read on. Otherwise, you may safely ignore this section and proceed to "DB2 Administration Accounts on UNIX and Windows Servers" on page 44.

If you are running the HP OM HTTPS agent on the managed in a non-root account (UNIX nodes only), you have to take an additional step before any DB2SPI tool can be executed.

This step consists in the definition of allowed users the DB2SPI may switch to, the setup of the proper environment. It is described in "Running the Agent in a non-root Account" on page 27.

Note that the DB2SPI can neither be configured nor operated in non-root agent environment without having executed this preparation.

Please note also that OV Performance Agents (OVPA) need to be restarted manually after the instance configuration has been created, and this is possible only from a "root" session. An integration between the DB2SPI and OVPA is only possible if the non-root Agent user has sufficient permissions to write to the file /var/opt/perf/parm. Otherwise the setup will fail.

When using OVPA 4.5 please verify that the file `/var/opt/OV/conf/perf/datasources` has sufficient permissions that the non-root Agent user can write to it. Otherwise the setup will fail.

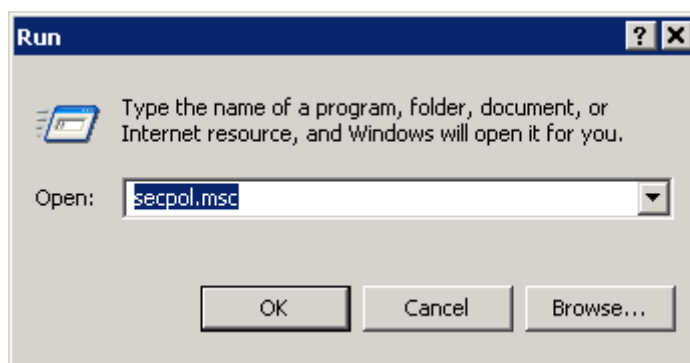
For older version of OVPA check the file `/var/opt/perf/perflbd.rc` for the same reason.

HP OM Agent Requirement on Windows Nodes

An issue may be related to Windows security policies and the configuration of the Operations Manager agent. The 'system' account and therefore the Operations Manager agent is unable to logon as the respective DB2 administrative user. As a result, DB2SPI's "Config Setup" tool cannot determine the information required from DB2 UDB. You need to check the following user rights assignments on the Windows managed node.

This can be done by the MMC snap-in secpol.msc – open up a 'Run' Dialog via Start-Menu and enter 'secpol.msc' here:

Figure 8: Open security Policy editor



On the left hand of the dialog you'll find the respective element under 'Local Policies → User Rights Assignment'.

Figure 9: Locate „User Rights Assignments“



Please verify that the 'System' account under which the agent is running is listed in the 'security setting' field.

Figure 10: Required Security Policies

Policy	Security Setting
Access this computer from the net...	Everyone, Administr...
Act as part of the operating system	
Add workstations to domain	
Adjust memory quotas for a process	LOCAL SERVICE, NE...
Allow logon through Terminal Servi...	Administrators, Rem...
Back up files and directories	Administrators, Back...
Bypass traverse checking	Everyone, Administr...
Change the system time	Administrators, Pow...
Create a pagefile	Administrators
Create a token object	
Log on as a batch job	SUPPORT_388945a0
Log on as a service	NETWORK SERVICE
Remove computer from docking st...	Administrators, User...
Replace a process level token	LOCAL SERVICE, NE...
Restore files and directories	Administrators, Back

The Operations Manager agent ('system') account should be allowed to:

- Act as part of the Operating System
- Bypass traverse checking
- Create a token object
- Replace a process level token

Additionally, the DB2 administrative user must have the right 'Log on as a service' assigned.

DB2 Administration Accounts on UNIX and Windows Servers

The DB2SPI can recognize and manage different DB2 instances running on a single DB2 server. In general, the setup is very similar on both platforms. However, due to the way how users are set up for DB2 in the UNIX and Windows world, some minor differences need to be considered.

DB2 on UNIX or Linux Servers

On UNIX managed nodes the DB2SPI switches to the instance user environment in order to perform all operations upon DB2; some of them require full control of the instance that can only be guaranteed by the instance owner, which usually has the same name as the instance itself.

The DB2SPI automatically uses the name of the instance as the instance owner for access to the database. This user may be set up in the operating system with any kind of command shell.

DB2 on Windows Servers

If you want to be able to access a DB2 instance running on Windows operating systems later, there is no special access information needed.

Instance Configuration

The configuration of the managed instances and databases is the most important step on each DB2 server to be monitored. Normally, this is executed only once after proper planning what is to be managed and what not.

We therefore describe all steps in great detail.

At the end of this section ("Instance Configuration Setup Example" on page 48) a log recorded during a setup session is available that may help to see the steps in overview.

Please note that although the DB2SPI provides an auto-discovery of the instances available on the DB2 server, there is no automatic monitoring enabled for them. The user has to decide about the instances that shall be monitored.

Note:

If the DB2 "Config Setup" is not executed correctly, errors or warning are displayed and you might be unable to execute any other DB2SPI applications on the DB2 servers.

In addition, the DB2SPI will not be able to monitor the different DB2-related log files and processes on the DB2 server or even collect performance data.

Also, strange message may appear in the log files and / or message browser.

To track any issue during this important phase, lots of information is collected in the log file and a separate trace file.

Upfront Checks and Preparations

When executing the "Config Setup" tool, it first checks if there are any DB2SPI policies active. If so, they are all disabled, because the configuration cannot be established or replaced while they are running.

It also checks if a DB2SPI license file is available. If no license file should be found on the managed node, the setup will install a 60-day trial license. Note that this type of license can only be extended by request to the manufacturer of the software as described in "Obtaining valid DB2SPI Licenses" on page 32.

Language Selection

The DB2SPI is equipped with message sets for different languages. As the very first step on Windows DB2 servers you have to decide about the language of your installation. A list is shown with the languages supported and you may select one of them.

Definition of the Instance Scope and managed Entities

The configuration of the DB2SPI, hence the definition of the DB2 entities that shall be monitored, consists of two steps, which are executed automatically during setup:

- Discovery and definition of the DB2SPI instance scope
- Selection and configuration of the DB2SPI managed environment

The instance scope contains the list of instances that shall be visible to the DB2SPI. It does not make any assumptions about entities that belong to these instances. So this is kind of a high-level filter for the highest DB2 entity available.

After definition of the instance scope, the included entities databases, tablespaces or other DB2 objects of visible instances are detected and added to the managed environment. The DB2SPI also determines the DB2 edition, version and patch level as well as the installation paths for all instances automatically.

All entities of the instance configuration may be modified at a later time. The DB2SPI administrative tools "Discovery Filter" and "Entity Filter" may be used. See "Maintaining DB2 Instance Configuration and the Service Tree" on page 50 for details.

Selection of visible Instances

After the instances have been discovered the "Config Setup" tool shows all available instances on the DB2 server as a numbered list and the user may decide which instances should be visible to the DB2SPI, hence discovery of subentities should be enabled.

By default the instances detected are not visible to the DB2SPI. This is represented by a '(-)' following the name of the instance. To monitor an instance it must be made visible to the DB2SPI. This can be achieved by the option "switch the visibility state of an existing instance".

After making the necessary visibility changes for all instances which should be monitored by the DB2SPI, the user may proceed with the setup by selecting "continue with DB2SPI setup".

Monitoring of Instances and their Subentities

The visible instances ("Instance Scope") are listed once more. Now their actual monitoring can be enabled or disabled.

By default, instances are not monitored; hence they must be enabled by the user.

All discovered subentities (databases, partitions, bufferpools, tablespaces and some processes) are set to "monitored". If any of these entities should not be monitored, use the DB2SPI Admin tool "Entity Filter" to switch off monitoring.

Please keep in mind the different statuses of an instance, their visibility status versus their monitoring status. Only visible ones can be monitored, but this can be switched on and off at any time.

i5/OS based Databases

After discovery and configuration of the local (or remote) LUW databases, you are asked to decide if DB2 on i5/OS400 systems should be monitored or not.

Do not select this if you do not have DB2 installations which should be monitored by the DB2SPI using this configuration setup.

Exclude Databases from Monitoring

By default, all databases of a monitored instance are enabled for monitoring.

However, you may select databases that shall be excluded from monitoring from the very start during the configuration setup. A question is asked if any such exclusion is to be performed.

In case you decided to exclude one or more databases by entering "y", each database available in the respective instance is shown and you may decide if this database shall be excluded or not.

- Answer "y" (yes) if you want exclusion from monitoring (no messages, no performance data from this database)
- Answer "n" (no) if you want it to be monitored.

Excluded databases as well as instances may be included later on easily with the help of the tool "Entity filter".

Performance Data Collection Setup

On most platforms, performance metrics can be collected with the OV Performance Agent (OVPA) or the embedded performance agent (CODA). For a proper integration during DB2SPI configuration setup, the OVPA should be up and running. On UNIX, you can select to integrate into OVPA standard collector SCOPEUX.

Make sure to have the DSI2DDF tools installed on the management server and deployed to the managed node before running "Config Setup".

The DB2SPI checks the existence of `ddfcomp` on the managed node. If it should not exist during setup, no metric data will be stored for reporting or graphing.

During the configuration of the instances to be monitored the following steps are taken automatically for the setup of performance data collection:

- Determination of the DDF-Tools availability (i.e. `ddfcomp`) on the managed node.
- If available, set up specific data source descriptions for all configured instances to collect data for both OVPM and OV Reporter analysis.
- Shutdown and restart OVPA (if configured) to make it aware of the new configuration. This is done automatically on UNIX like systems and has to be done manually on Windows systems.

If `ddfcomp` cannot be detected, no data collection will take place. Only OM based metric threshold monitoring (hence alarming) will be available, but no graphs, reports or history collection. A proper message about the omission of the metric collection setup is provided in this case.

The DB2SPI may collect a significant amount of data from tablespace monitoring in a so-called "drilldown" database. This is especially true for configurations that consist of a large number of DB2 tablespaces (more than 100). We have verified that the DB2SPI can collect data for as much as 3000 tablespaces!

In order to limit the file holding the collected data, the user is asked to select from a 1 / 3 / 6 / 12 month timeframe for the data collection in this drilldown database. As a guideline, take this and calculate your own need:

For 88 tablespaces, we have a disk space requirement of 256 Mb per month.

The space required for the actual configuration (i.e., considering the monitored databases and their entities, down to the tablespace level) is calculated by the "Config Setup" tool and is displayed for your convenience.

Note: The "Config Setup" tool tells you if the data sources for DB2SPI had already defined by previous setups. In this case they can be reused (if they have been created by DB2SPI Version 03.20 or later). . You will be informed by the following message:

```
Skipping datasource creation (already defined)
```

DB2 Replication Monitoring

The tool then asks if DB2 SQL Replication should also be monitored.

If answered "n", the respective DB2SPI component is disabled. Please note that it cannot be switched on at a later time without doing the complete configuration again.

If answered "y", a discovery is performed for all "Capture" schemata and "Apply" qualifiers defined on the node of our server. Configuration information is stored for the log file monitoring of DB2 Replication at a later time.

Discovery of DB2 Log Files and Finishing Setup

After these user actions, the DB2SPI continues to discover various additional configuration data automatically and directly from DB2:

- Location and name of administrative log files
- SQL capture and apply paths if SQL replication is setup and monitoring desired

After successful completion of DB2 instance setup, the tool "Config Setup" lists some additional activities that it has performed.

Note: Strange characters might appear at certain phases during the setup.

This happens if an instance user has a profile with 'Startup Screen' or alike. Since we switch into the instance user context, such user profile output may disturb the output of the tool.

Instance Configuration Setup Example

A typical "Config Setup" session is shown next. All user entries are printed in bold type.



This operation may take some time, because we must
synchronize this action with the OVO agent
Running preliminary DB2 instance discovery
INFO: No DB2SPI instance scope configuration file yet

The following DB2 instances are in DB2SPI's instance scope:

1. db2inst1 (-)
2. db2inst2 (-)

Please choose your action:

- 1 add instances to DB2SPI's scope
- 2 switch the visibility state of an existing instance
- 3 continue with DB2SPI setup

Enter one index: **2**

Please select the instance to switch the visibility state for

- 1 db2inst1
- 2 db2inst2
- 3 db2inst3

Enter one index: **1**

Visibility will be set to 'on' for instance 'db2inst1'

Is this correct? [y|n]: **y**

The following DB2 instances are in DB2SPI's instance scope:

1. db2inst1 (+)
2. db2inst2 (-)
3. db2inst3 (-)

Please choose your action:

- 1 add instances to DB2SPI's scope
- 2 switch the visibility state of an existing instance
- 3 continue with DB2SPI setup

Enter one index: **2**

Please select the instance to switch the visibility state for

- 1 db2inst1
- 2 db2inst2
- 3 db2inst3

Enter one index: **2**

Visibility will be set to 'on' for instance 'db2inst2'

Is this correct? [y|n]: **y**

The following DB2 instances are in DB2SPI's instance scope:

1. db2inst1 (+)
2. db2inst2 (+)
3. db2inst3 (-)

Please choose your action:

- 1 add instances to DB2SPI's scope
- 2 switch the visibility state of an existing instance
- 3 continue with DB2SPI setup

Enter one index: **3**

Searching for instances and databases (please be patient) ...

Please enter the numbers for the instances to be monitored
(separated by space)

- 1 db2inst1
- 2 db2inst2

Enter indexes: **1 2**

Do you want to monitor DB2 on i5/OS400 systems as well?

[y|n]: **n**



```
The following databases have been found for instance 'db2inst1':
SAMPLE

Do you want to exclude some databases from being monitored? [y|n]: n
The following databases have been found for instance 'db2inst2':
SAMPLE

Do you want to exclude some databases from being monitored? [y|n]: n
Do you want DB2 to be integrated into OVPA standard collector
SCOPEUX for system resource utilization? [y|n]: y
SCOPEUX integration has been established

Shutting down OVPA collection software
  Shutting down scopeux, pid(s) 13725
  Waiting on 13725 (10 more tries)
  The OVPA collector, scopeux has been shut down
successfully.
NOTE: The Transaction Tracking daemon, ttd will be left running.
pid 13701

The OVPA scope collector is being started.
  The Transaction Tracking daemon
  /opt/perf/bin/ttd, is already running.
  It will be signaled to reprocess its configuration file.

  The performance collection daemon
  /opt/perf/bin/scopeux has been started.

Do you want to monitor SQL replication? [y|n]: n
Adding performance measurement ...

Reporting Data Store 'DB2_SPI' will occupy 1.2881 MB of disk space
for the default buffering of 7 days.

Graphing Data Store will occupy 4.0303 MB of disk space for the
default buffering of 31 days.
Enter time frame for graphing data store [1M,3M,6M,1Y] >1M

Graphing Data Store will occupy 4.0303 MB of disk space for the
default buffering of 31 days.
Do you want to proceed with this selection? [y|n]: y
  Creating datasource 'DB2_SPI_GRAPH' ...
  Looking for all bufferpools and tablespaces now ...

Reporting Data Store 'DB2SPI_DrillDown' will occupy 8.3633 MB of
disk space for the default buffering of 7 days.

Thank you, initialization finished. Configuration is in
'/var/opt/OV/conf/db2spi/db2s_instances.cfg'

Message interface opcmgs(1) is unavailable / cannot be used

Press any key to close the window ...
```

Maintaining DB2 Instance Configuration and the Service Tree

This section contains information that how to maintain the DB2 instances you are monitoring after having executed the "Config Setup" successfully.

There are sections that explain:

- Extending and adjusting the instance scope of the DB2SPI
- Enabling and disabling the monitoring of specific entities
- Enabling DB2 replication monitoring on the managed node
- Enforcing an update of the service tree
- Dropping the instance configuration entirely

Changing the list of monitored instances in a DB2 environment that has already been configured with the DB2SPI can be achieved by using the "Discovery Filter" and "Entity Filter" tools.

Add or Drop DB2 Instances using the Discovery Filter

During setup of the SPI on the DB2 server with the aid the "Config Setup" tool all instances installed in the DB2 server have been discovered and displayed. The user then could decide which DB2 instances should be visible for the DB2SPI – the "instance scope". Only visible instances are used for in-depth discovery of other DB2 entities like databases and can thus be monitored by the SPI.

This list of visible (or invisible) instances for the DB2SPI may be modified with the use of the "Discovery Filter" tool, whereas their monitoring status may be changed with the "Entity Filter" tool explained in "Entity Filter" on page 52.

The DB2SPI tool "Discovery Filter" defines the instance scope in which the DB2 discovery of the DB2SPI should act. Instances, which are switched to invisible, are excluded entirely from the monitoring scope of the DB2SPI.

Furthermore the tool allows adding DB2 setups in non-standard installation paths, which cannot be discovered by the DB2SPI.

The tool must be executed whenever a DB2 instance is created that shall be monitored by the DB2SPI, or a DB2 instance formerly monitored has been dropped from the DB2 environment. Apply the tool "Entity Filter" to change the monitoring status of an instance,

Use Cases for the DB2SPI Tool "Discovery Filter"

- A new DB2 instance has been created:

In case a new DB2 UDB instance is created and monitoring is desired the "Discovery Filter" tool must be executed to add the instance to the DB2SPI scope.

By default, the DB2SPI discovery is executed every 60 minutes. Once it has completed, all database objects (databases, partitions, tablespaces, etc) have been discovered and are available in the DB2SPI tool "Entity Filter". Appropriate messages are forwarded to the message browser to inform the operators.

Do not forget to enable the new instance for monitoring by actively setting it to "managed" using the "Entity filter".

- A DB2 instance has been dropped:

In case a DB2 UDB instance, which has been monitored by the DB2SPI, is dropped from the DB2 V8 or V9 environment the "Discovery Filter" tool must be executed. Please select "invisible" for the instance that has been dropped.

- Upgrade from V8 to V9

Note that you must disable the DB2SPI before the upgrade starts. After the upgrade from V8 to V9 has been completed follow the procedure described in the first use case. The DB2SPI should then be re-enabled after the "Discovery Filter" tool has been executed to allow the DB2SPI Discovery to detect the database configuration.

Entity Filter

This tool can be used to enable or disable monitoring of any entity within the DB2 instance scope. Entities are DB2 instances, databases and underlying objects (like buffer pools, tablespaces, databases, etc.) and processes. These entities are discovered automatically in "visible instances" when configuring the DB2SPI on the DB2 server, or at a later time with the DB2SPI discovery component. The entities and their relations form a "configuration element tree" that is stored and maintained in the DB2SPI instance configuration file.

This interactive tool provides navigation through this tree. It basically comprises of two alternating choices, element selection and operation selection.

At any time the user is informed about the location in the configuration element tree.

Selection of an Element to deal with

Depending on the level in the element hierarchy, an appropriate list is shown:

Level	Element List
Server	List of instances
Instance	List of databases
Database	List of partitions
Partition	"Tablespace" or "Bufferpools" or "Processes"
Tablespaces	List of tablespaces within that partition
Bufferpools	List of bufferpools within that partition
Processes	List of processes within that partition

With each element the monitoring status the DB2SPI currently assumes for it is shown with a brief indicator to the left:

- + indicates that the element is monitored
- indicates that the element is not monitored

The tool displays all elements prefixed with a sequence number. Enter one of them to select an element for the subsequent operation. If you enter "0", no element is chosen and this level is left. Subsequently, the element list for next-higher level is shown.

Selection of an Operation to be performed

Depending on the type and level of the element chosen, a set of actions is offered to choose from. The following table lists all available actions:

- Cancel
- Open element
- Set element managed
- Set element unmanaged

As always, a number must be entered to select the desired action. Entering "0" leads you back to the latest element list for a new element selection.

Note, that setting an element "unmanaged" will also disable the monitoring of all its contained elements. Setting a previously "unmanaged" element to "managed" will restore the monitoring status the elements had earlier.

Freshly discovered elements are monitored ("managed") by default, unless they are of type "instance". However, enabling the monitoring for such a new instance will also turn on monitoring for all its databases and subsequent elements, as the defaults demand.

As an example, the dialogue that has been executed when disabling monitoring of a certain partition:

```
Current entity:      DB2
Chosen subentity:   DB2:DB2
Select a function (0 to cancel)
  1.   Open element
  2.   Set element managed
  3.   Set element unmanaged

>1
Current entity:      DB2:DB2
Chosen subentity:   DB2:DB2:SAMPLE
Select a function (0 to cancel)
  1.   Open element
  2.   Set element managed
  3.   Set element unmanaged

>1
Current entity:      DB2:DB2:SAMPLE
Choose a subentity (0 to go up)
  1.   + W130_0/W130/0
  2.   + W131_1/W131/1

>2
Chosen subentity:   DB2:DB2:SAMPLE:W131_1
Select a function (0 to cancel)
  1.   Open element
  2.   Set element managed
  3.   Set element unmanaged

>3
Current entity:      DB2:DB2:SAMPLE
Choose a subentity (0 to go up)
  1.   + 000(w131.nicelab.de)
```

```
2.      - 001(w131.nicelab.de)

>0
Current entity:      DB2:DB2
Chosen subentity:   DB2:DB2:SAMPLE
Select a function (0 to cancel)
  1.    Open element
  2.    Set element managed
  3.    Set element unmanaged

>0
Current entity:      DB2
Chosen subentity:   DB2:DB2
Select a function (0 to cancel)
  1.    Open element
  2.    Set element managed
  3.    Set element unmanaged

>0

Press any key to close the window ...
```

Whenever changing the monitoring status of any element, the DB2 service tree will be updated automatically.

Some special Operations with the Entity Filter

Maintaining remote Database Access

Local databases can always be accessed with the permissions obtained from the instance owner, which is used to connect to the instance and all local databases. By default, remote databases are discovered and entered into the DB2SPI instance configuration, but without any information about the user that is entitled to access those databases.

For each remote database, the entity filter allows the definition of a user and password as a function at the "database" entity level. The status of the database can be easily distinguished by the extension added to the database name, as can be seen in this dialogue screenshot:

```
... ..
Choose a subentity
  0    Go up one level
  1    > Databases
  2    > Others
Enter one index: 1
Chosen subentity:  DB2:db2inst2:Databases

Select a function
  0    Cancel
  1    Open element
Enter one index: 1
Current entity:    DB2:db2inst2:Databases

Choose a subentity
  0    Go up one level
  1    + SAMPLE/local/?/
```

```
2      + TEST17/remote/?/
3      + TEST18/remote/myboss/bosspwd
Enter one index: 2
Chosen subentity:  DB2:db2inst2:Databases:TEST17/remote/?/

Select a function
0      Cancel
1      Open element
2      Set element managed
3      Set element unmanaged
4      Modify element
Enter one index: 4
```

This enters a dialogue where the appropriate user information can be entered.

Note, that the user and password are stored in the instance configuration file in encrypted form, but are displayed unencrypted in the Entity Filter tool.

If you attempt to edit the user and password for a "local" database, the DB2SPI refuses this attempt with the message: "Not a remote database; editing access not needed".

Maintaining DB2 Process Monitoring

To maintain the list of monitored DB2 processes, you may drill down in the Entity Filter tool from the instance level across databases and partitions until you end up with processes, as show in the next dialogue screenshot:

```
... ..
Current entity:
DB2:db2inst1:Databases:SAMPLE/local/?/:000(a47.nicelab.de)

Choose a subentity
0      Go up one level
1      > Tablespaces
2      > Bufferpools
3      > Processes
Enter one index: 3
Chosen subentity:
DB2:db2inst1:Databases:SAMPLE:000(a47.nicelab.de):Processes

Select a function
0      Cancel
1      Open element
2      Set element managed
3      Set element unmanaged
Enter one index: 1
Current entity:
DB2:db2inst1:Databases:SAMPLE/local/?/:000(a47.nicelab.de):Processes

Choose a subentity
0      Go up one level
1      + db2sysc/NON/1200/1/1
2      - db2acd/NON/1200/1/1
3      + db2fmcd/NON/1200/1/1
4      - db2fmd/NON/1200/1/1
5      + db2ckpwd/NON/1200/1/1
6      + db2wdog/NON/1200/1/1
Enter one index:
```

At this point, you must select one element or leave the level with "0".

If you want to define a new process, you also have to select a process first in order to be offered the function of creating a new entry.

The workflow then continues as follows:

```
Enter one index: 5
Chosen subentity:
DB2:db2inst1:Databases:SAMPLE:000(a47.nicelab.de):Processes:db2ckpwd

Select a function
0   Cancel
1   Modify element
2   Set element managed
3   Set element unmanaged
4   Create a new element
Enter one index: 4
Define a new process to be monitored
Process name to be monitored:                db2anyproc
Select the affiliation for this process
1.   associated to a specific DB
2.   associated to the DB2 idle process pool
3.   no specific affiliation

>3
Allowed minimum number of processes running (-1 for no limit): -1
Allowed maximum number of processes running (-1 for no limit): 4
Current entity:
DB2:db2inst1:Databases:SAMPLE/local/?/:000(a47.nicelab.de):Processes

Choose a subentity
0   Go up one level
1   + db2sysc/NON/1200/1/1
2   - db2acd/NON/1200/1/1
3   + db2fmcd/NON/1200/1/1
4   - db2fmd/NON/1200/1/1
5   + db2ckpwd/NON/1200/1/1
6   + db2wdog/NON/1200/1/1
Enter one index:
```

Manual Replication Monitoring Setup

This section describes how to set up replication monitoring, even if it has not been configured during the initial "Config Setup". The following steps are necessary to enable replication monitoring:

- Enable Monitoring
 - Edit the file **db2s_spi.cfg**, which can be found in the configuration directory of the DB2SPI (Different locations on different platforms).
 - Look for the line: `DB2SPI_REPLICATION_MONITOR OFF`
 - Change this to "ON"
 - Save and close this file
- Register paths to replication log files

- Look for the configuration file **db2s_replicpath.cfg** in the same folder as **db2s_spi.cfg**
- If it does not exist, create an empty file **db2s_replicpath.cfg**
- Enter the paths to the directories where your capture and apply log files reside. Do not include the filenames or a trailing line!
- Save and close this file

After that the DB2SPI will automatically scan the directory for log files and add them for monitoring.

Note:

Expect the first messages after two log file scan cycles have been completed (typically 40 minutes).

Updating the Service Tree

Also note that the DB2 service tree display in the GUI only shows instances and its underlying components that are configured with the "Config Setup" or the "Discovery Filter" and "Entity Filter" tools to be visible and monitored.

The DB2 services available in the service tree are determined from the list of instances and their database exclusion lists, and the discovery process also takes into account the DB2 configuration itself. An update of the service tree is triggered internally whenever the "Config Setup" or "Entity Filter" tool is executed, and the DB2SPI periodically checks the DB2 instances if new databases should have been created or others have been deleted or filtered.

However, the periodic check might be inappropriate sometimes, and the user might want to enforce an update immediately. This can be achieved by using the "ServiceTree Update" tool. When applied to a managed DB2 server node, it immediately performs the discovery and cross-checks with the instance and database exclusion lists.

More details about the service tree data processing can be found the DB2SPI Concepts and Troubleshooting Guide.

Instance Configuration Deletion

If you want to delete the DB2SPI from a DB2 server, or if you entered data incorrectly during the instance setup, you can execute the "Config Delete" tool to remove all instance configuration settings. You can re-enter the new or corrected values by running "Config Setup" again.

When clearing the instance settings this way, the HP OM policies are still deployed, but disabled automatically.

If you want to disable DB2 monitoring permanently, you should also remove the node from the respective DB2SPI node group or de-assign the policy groups from it, if it is an individual node. In both cases, make sure to deploy the instrumentation and policies after that.

When dropping the instance definition, the DB2 service tree will be updated automatically and delete the respective branches for this node.

A typical dialogue can be seen here (some lines are not shown to keep it shorter):

```
W158
      DB2SPI Configuration Deletion
      =====
Removing DB2SPI configuration files ...
Are you sure? [y|n]: y
Please wait ...
Processing 'DB2SPI_ownlog1' ...
      * Disable all policies for the specified selection on host
      'localhost'.
INFO:   Disable operation completed successfully.
Processing 'DB2_repliclog_win' ...
      * Disable all policies for the specified selection on host
      'localhost'.
INFO:   Disable operation completed successfully.
Processing 'DB2SPI_fsize' ...
      * Disable all policies for the specified selection on host
      'localhost'.
INFO:   Disable operation completed successfully.
Should the performance data stores be preserved? [y|n]: n
Removing performance measurement ...
Removing 'C:\Program Files\HP OpenView\data\db2spi\metrics'
Removing 'C:\Program Files\HP OpenView\data\tmp\db2spi'
Removing 'C:\Program Files\HP OpenView\data\conf\db2spi'

The instance configuration data have been deleted

Finished

C:\Program Files\HP OpenView\data\log\db2spi\db2s_trace.log
  1 file(s) copied.

Press any key to close the window ...
```

NOTE: If the DB2SPI was setup to work with a non-root Agent, "Config Delete" does not delete **/etc/db2spi.su**. It has to be removed manually using an account with appropriate rights (root). The file does not exist if no special setup for non-root Agent systems was done.

Other Tools to configure the DB2SPI Operation

The tools in this section are used to affect processing characteristics of the DB2SPI rather than touching the objects (DB2 entities) that are being monitored.

DB2SPI Operation during DB2 Maintenance

In case DB2 has to go into maintenance mode for a Fix Pack upgrade, offline backup, etc. it is recommended to disable monitoring for the affected instance. Before taking a DB2 instance offline (db2stop), all applications must be disconnected. The DB2SPI must be regarded as a DB2 application and should be stopped from attaching to the instance where the outage is planned.

There are two recommended ways to achieve this:

- Disable the entire SPI. Use the following command on the command line of the DB2 server or the "DB2SPI Disable" tool for this (recommended for single instance DB2 environments):

```
db2s_start db2s_db2spi.pl [on|off]
```

- In case there are multiple instances and the other instances must be monitored while one instance is being maintained the following command should be used on the command line of the DB2 server or the appropriate DB2SPI Admin tool:

```
db2s_start db2s_entyfilter.pl
```

Enable and Disable the entire DB2SPI

There is a tool pair, which is used to switch operation of the DB2SPI on the given node, "DB2SPI Enable" and "DB2SPI Disable". These tools affect the operation of the policies belonging to the DB2SPI and hence enable / disable all background monitoring activity of the SPI. All DB2SPI tools are kept unaffected and so are automatic and operator actions.

Note that the disabling may take a while to complete as the proper synchronization points in the operation of the HP OM agents processing the policies have to be reached.

Enabling / disabling determines all policies the have "DB2_" or "DB2SPI_" as part of their names and switches them accordingly (except "DB2_nnnn" type, which are passive threshold monitor policies).

When using different policy names for their DB2 monitoring the customer has to make sure that these fragments are still part of the policy names in order to preserve functioning of these tools. Note that these are also applied during "Config Setup" and "Config Delete".

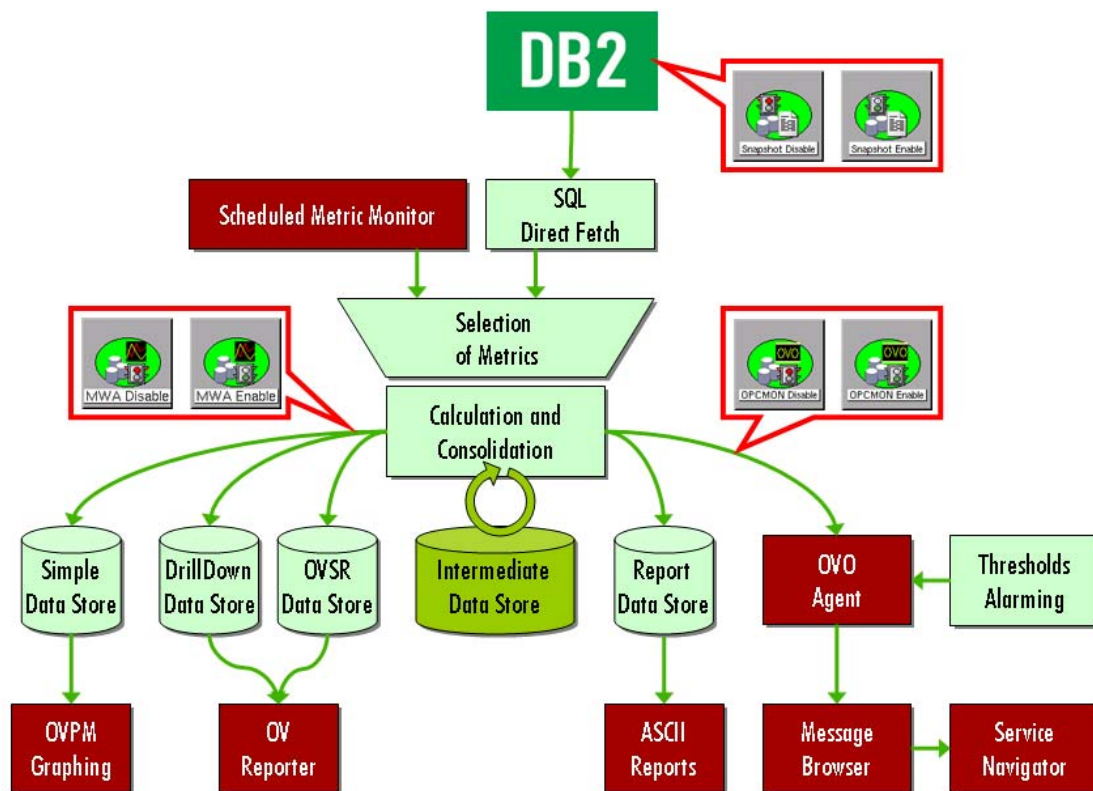
Affecting the Performance Data Flow

This section contains information that you require when maintaining the processing of metric data collected. Please see the Db2SPI Concepts and Troubleshooting Guide for details how performance data are collected and processed by the DB2SPI.

The data flow shown in Figure 11: Metric Data Collection and affecting Tools on page 60 can be affected at three points, symbolized there by three pairs of tool labels and implemented as applications in the "DB2SPI Admin" application group.

This section describes the purpose and steps of these applications.

Figure 11: Metric Data Collection and affecting Tools



Performance Data Access Method

The DB2SPI uses an extremely efficient method to obtain performance data via direct SQL access.

Please note that the DB2 internal performance monitors must be enabled (see next section, Enable / Disable DB2 Snapshots) in order to collect and retrieve these data.

Enable / Disable DB2 Snapshots

DB2 must be configured to provide performance snapshot data. By default, there are no such data provided, so there would be no performance data for threshold monitoring, graphing and reporting.

With the tool "Snapshot Enable" the DB2 database is reconfigured to provide such information. In Figure 12 you see the dialogue of "Snapshot Enable" execution:

Figure 12: Dialogue during "Snapshot Enable" process

Starting snapshot data collection on s40



```
=====
Please select an instance on s40
 1      db2inst1
 2      db2inst2
Enter one index (\a to abort): 1

Instance Attachment Information

Instance server      = DB2/SUN64 8.2.3
Authorization ID    = DB2INST1
Local instance alias = DB2INST1

DB20000I The UPDATE DATABASE MANAGER CONFIGURATION command
completed
successfully.

DB20000I The DETACH command completed successfully.

DB20000I The TERMINATE command completed successfully.

Snapshot creation has been enabled for instance 'db2inst1'

Press any key to close the window ...
```

Disabling DB2 snapshot data creation works similar by executing the "Snapshot Disable" tool in the DB2SPI Admin application group,

A proper message is written to the DB2SPI log file and to the HP OM message browser to inform about the change of the switch.

Alternatively, enter the following command in a command shell on the DB2 server:

```
db2 update dbm cfg using DFT_MON_BUFPOOL on
DFT_MON_LOCK on DFT_MON_SORT on DFT_MON_STMT on
DFT_MON_TABLE on DFT_MON_UOW on
```

Note that DB2 may sometimes show misleading messages on the terminal window when performing this switch, consequently making the DB2SPI believe that it failed.

However, sometimes these are just warnings without impact. You should verify correct operation afterwards with the "Show Snapshot" tool if you are in doubt.

Enable / Disable OPCMON Forwarding

The forwarding of metric data to HP OM and hence threshold monitoring and Operations Manager message creation can be enabled or disabled with the "OPCMON Enable" and "OPCMON Disable" applications.

Note:

When disabled, threshold monitoring does not take place and you will not receive any messages in the HP OM message browser if DB2 resources are outside their normal range.

At the same time, metrics may be forwarded to OVPA/CODA for reporting / graphing.

A proper message is written to the DB2SPI log file and to the Operations Manager message browser to inform about the change of the switch.

Enable / Disable Metric Forwarding to OVPA/CODA

DB2 systems that do not have OVPA/CODA installed should disable "performance data forwarding". A pair of switches is available to achieve this change in DB2SPI internal processing, named "PerfRep Enable" and "PerfRep Disable".

A proper message is written to the DB2SPI log file and to the HP OM message browser to inform about the change of the switch.

At the same time, metrics may be forwarded to HP OM for threshold monitoring and alerting.

Note, that this applies to both OVPA and CODA data storage types, whatever is apparent on the managed node.

Other Tasks and Tools

Show DB2SPI Log

The "Show DB2SPI Log" tool opens a terminal window and displays the DB2SPI log file for the DB2 server that is being selected.

Screen output is separated into pages. After each page the user may decide to continue viewing the output or jumping to the end.

- In order to continue browsing through the snapshot, simply press **<RETURN>**.
- If you want to cancel, hit **<Q>** and **<RETURN>**
- At the end, the script asks if the output of the report shall be saved to disk. If confirmed, a text file with the respective output is saved to disk and can be viewed at any time

Trace Definition

The "Trace Definition" tool is used to define tracing the DB2SPI itself. Tracing can be helpful in troubleshooting difficulties in the operation of the DB2SPI.

You should not enable tracing unless requested by DB2SPI support, or if you are sure that a trace may help resolving a problem you ran into. Tracing may produce enormous amounts of data if run for a longer time, so may sure to turn it off after the problem has been tracked.

DB2SPI tracing is organized by areas and follows the same dialogue concept as the Entity Filter.

You may see a sample session next how to configure tracing the "process monitoring" functionality of the DB2SPI.

```
Current entity:    ALL
```

```
Choose a subentity
0      Exit program
1      - DB2 Metrics
2      - DB2 Service Discovery
3      - DB2 Logfile Monitoring
4      - DB2 Process Monitoring
5      - DB2 Administration Tools
6      - DB2 Information and Reports
7      - DB2SPI Administration
8      - Other DB2SPI Tools and Services
Enter one index: 4
Chosen subentity:  ALL:DB2 Process Monitoring

Select a function
0      Cancel
1      Open DB2 Process Monitoring
2      Get trace for DB2 Process Monitoring
3      Disable tracing DB2 Process Monitoring
Enter one index: 2
Current entity:   ALL

Choose a subentity
0      Exit program
1      - DB2 Metrics
2      - DB2 Service Discovery
3      - DB2 Logfile Monitoring
4      + DB2 Process Monitoring
5      - DB2 Administration Tools
6      - DB2 Information and Reports
7      - DB2SPI Administration
8      - Other DB2SPI Tools and Services
Enter one index: 0
```

The hierarchy of the various areas can be seen from the following list:

```
DB2 Metrics
  Metric Collection
  Metric Reporting and Graphing

DB2 Service Discovery
  Discovery
  Service Tree

DB2 Logfile Monitoring
  Administrative Log Entries
  Replication Log Entries
  Filesize Monitoring
  DB2SPI Logfile Compression

DB2 Process Monitoring
  Processes

DB2 Administration Tools
  Flexible Management
  Common Management
  Snapshot Data Collection

DB2 Information and Reports
  Instance List
  DB2 Configuration
```



DB2 Manager Configuration
Show Snapshot
Show Replication Status
Show Metric Report

DB2SPI Administration
Entity Filter
Global Metric Collection from DB2
Metric Forwarding to OVPA/CODA
Metric Forwarding to OVO

Other DB2SPI Tools and Services
License Report
Instance Start/Stop

Providing Information for the HP Self-Healing Collector

If a problem is detected and real-time data needs to be collected to determine the cause. The DB2SPI provides an Operations Manager application integrated with the HP Self-Healing Service. This helps solving product problems by collecting the required DB2SPI data.

HP has abandoned the Self-Healing program, which has no effect on the functionality provided here.

The SHS collector may be run in one of the following ways:

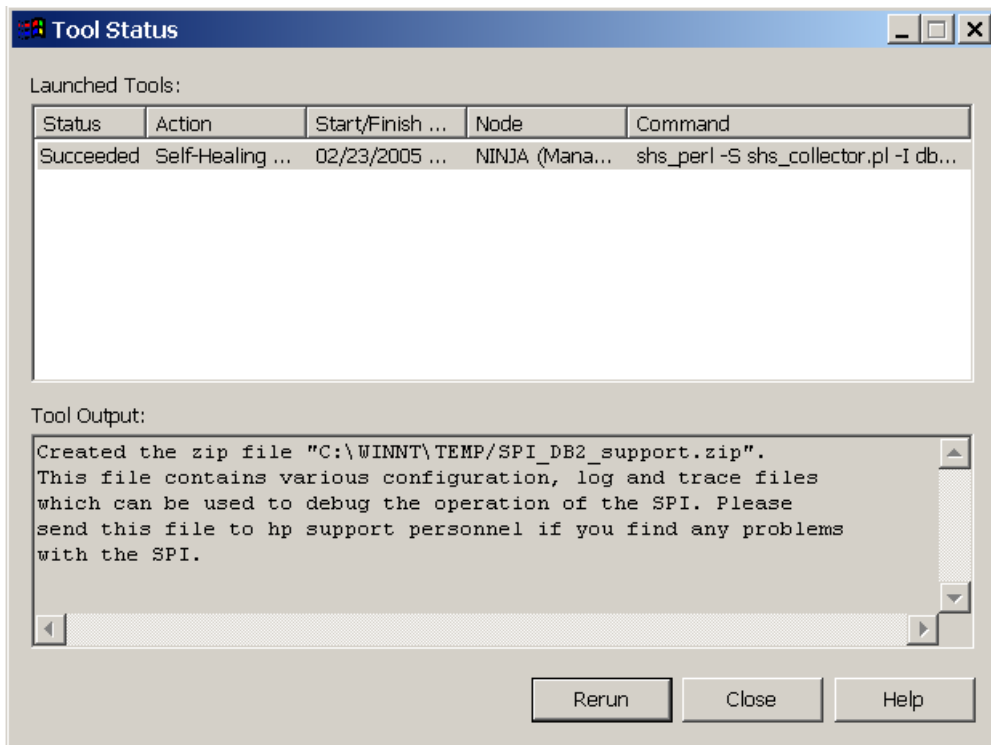
- Self-Healing Info DB2 Server

If the problem concerns a managed node, it is run by launching the new DB2SPI tool “Self-Healing Info DB2 Server” on the managed node in question. A sample tool execution window looks as follows:

- Self-Healing Info HP OM Server

If the problem concerning DB2SPI occurs on the Operations Manager server, the tool “Self-Healing Info HP OM Server” should be run to collect data from the Operations Manager management server.

Figure 13: OM for Windows Self-Healing Tool Output



The complete path to the directory, where the collected data was stored is given in the tool output window (see example above). The data is contained in a .zip or .tar file, depending on the operating system on the managed node (Windows/UNIX).

The uncompressed data / files can also be found in the subdirectory SPI_DB2.