# Integrating HP Insight Management WBEM (WMI) Providers for Windows with HP System Insight Manager

Integration note, 4th edition

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>2</td>
</tr>
<tr>
<td>Utilizing HP WBEM Providers for Windows</td>
<td>2</td>
</tr>
<tr>
<td>Security</td>
<td>3</td>
</tr>
<tr>
<td>HP WBEM Providers deployment and SNMP agent removal</td>
<td>3</td>
</tr>
<tr>
<td>Integration with HP SIM</td>
<td>3</td>
</tr>
<tr>
<td>Identification</td>
<td>4</td>
</tr>
<tr>
<td>Systems page</td>
<td>4</td>
</tr>
<tr>
<td>WBEM indications</td>
<td>5</td>
</tr>
<tr>
<td>Disk thresholds</td>
<td>8</td>
</tr>
<tr>
<td>Status polling</td>
<td>8</td>
</tr>
<tr>
<td>WBEM Provider deployment and configuration</td>
<td>9</td>
</tr>
<tr>
<td>Hardware and software inventory</td>
<td>12</td>
</tr>
<tr>
<td>Property pages</td>
<td>13</td>
</tr>
<tr>
<td>Scenarios using HP WBEM Providers</td>
<td>14</td>
</tr>
<tr>
<td>Disabling Embedded Agent Management in ProLiant Gen8 servers</td>
<td>14</td>
</tr>
<tr>
<td>Configuring the WMI Mapper in HP SIM</td>
<td>15</td>
</tr>
<tr>
<td>HP SIM WMI Mapper service</td>
<td>15</td>
</tr>
<tr>
<td>WMI Mapper configuration</td>
<td>15</td>
</tr>
<tr>
<td>WMI Mapper installation preparation</td>
<td>15</td>
</tr>
<tr>
<td>WMI Mapper installation complete</td>
<td>16</td>
</tr>
<tr>
<td>Using HP SIM to install and configure HP WBEM Providers on a managed node</td>
<td>18</td>
</tr>
<tr>
<td>Configure and identify existing HP WBEM Providers through HP SIM</td>
<td>20</td>
</tr>
<tr>
<td>Setting configurable disk thresholds in HP SIM</td>
<td>24</td>
</tr>
<tr>
<td>Identifying issues with hardware components</td>
<td>25</td>
</tr>
<tr>
<td>HP SIM indication support for HP WBEM Providers</td>
<td>27</td>
</tr>
<tr>
<td>Indications in the HP SIM user interface</td>
<td>28</td>
</tr>
<tr>
<td>Troubleshooting WBEM Indications in HP SIM</td>
<td>28</td>
</tr>
<tr>
<td>Confirming WBEM as a management protocol</td>
<td>29</td>
</tr>
<tr>
<td>For more information</td>
<td>30</td>
</tr>
</tbody>
</table>
Introduction

HP Insight Management WBEM Providers utilize the Distributed Management Task Force’s (DMTF) Web-based Enterprise Management standard for managing server hardware, operating systems, and applications. HP Insight Management WBEM Providers simplify integration with existing management tools and processes. HP WBEM Providers give you an integrated set of standards-based management tools built on top of Windows Management Instrumentation (WMI). WMI is the Microsoft implementation of Web-based Enterprise Management (WBEM), a set of industry-standard technologies for accessing system information in a distributed management environment.

HP Insight Management WBEM Providers deliver in-depth hardware management, inventory data, system state, and event notifications for ProLiant and Integrity servers. You can manage our HP ProLiant Gen8 servers with HP WBEM Providers or with the HP iLO Management Engine that comes with all ProLiant Gen8 servers. HP Systems Insight Manager (HP SIM) is a key building block of the HP Insight Management portfolio providing essential lifecycle management for HP Servers.

This paper provides IT professionals implementing HP SIM information about moving from Simple Network Management Protocol (SNMP) to HP Insight Management WBEM Providers for Windows.

Utilizing HP WBEM Providers for Windows

When using HP WBEM Providers, you must decide how to incorporate its management capabilities. You can access the management infrastructure provided by HP WBEM Providers using the System Management Homepage (SMH), which is in the HP Service Pack for ProLiant (HP SPP). You can also configure HP SIM version 7.0 and later to leverage HP WBEM Providers infrastructure. Many client applications are available for WMI that let you work with the HP WBEM Providers. You can also easily write scripts for fully customized management. For more information, see the following web sites:


Security

Switching from SNMP-based server management to server management based on WBEM Providers can help increase system security. If attackers can intercept SNMP packets, they can get the data carried by SNMP, including system hardware information. Since you can encrypt WBEM, it is less vulnerable to attacks based on network snooping.

HP WBEM Providers use Windows-based authentication for local and remote access to server management data. You can control access by using the restrictions in the standard Windows account. An administrator account has sufficient rights and security group memberships to access the HP WBEM Providers’ management information for both local and remote access.

For a standard user account, WMI namespace security and Distributed COM User group membership may affect security when accessing WMI. WMI namespace security settings govern access to WMI information. You can allow or deny Windows user accounts specific privileges only through WMI namespace. For more information about namespace security, see “Access to WMI Namespaces” at http://msdn2.microsoft.com/en-us/library/aa822575.aspx. Another resource is the “HP Insight Management WBEM Providers User Guide.” It is available at http://h20000.www2.hp.com/bc/docs/support/SupportManual/c02219794/c02219794.pdf?jumpid=reg_R1002_USEN.

Only users who belong to the Distributed COM (DCOM) User group can connect remotely to WMI and access management information. This group includes administrators by default. You must add non-administrator users to the Distributed COM Users group for remote WMI connectivity. For more information, read the Microsoft article “Connecting to WMI on a Remote Computer.” Find it at http://msdn2.microsoft.com/en-us/library/aa389290.aspx.

HP WBEM Providers deployment and SNMP agent removal

The HP WBEM Providers are independent of SNMP agents. If you currently depend on SNMP to provide your management infrastructure, you can remove the agents when you install HP WBEM Providers. On the other hand, you can remove the SNMP agents later because there are no interdependencies.

Integration with HP SIM

We integrated HP SIM 7.0 or later and HP WBEM Providers for identification, inventory, reporting, event monitoring, disk thresholding, and status polling.

HP SIM provides many capabilities:

- A mechanism to identify a Windows server that hosts HP WBEM Providers
- A variety of WBEM data on the Systems page that characterizes the managed node
- WBEM indications including subscribing for CIM (Common Interface Model) alerts and user-defined disk thresholds
- The ability to set disk thresholds from within the WBEM-based System Management Homepage
- A module that keeps status up to date and makes it easy to find an individual component that is experiencing problems
- WBEM consolidated status (an indicator of overall server health) as a component of Health Status
- A link to the System Management Homepage
- A variety of reports that include inventory and configuration information
• An on-demand WBEM inventory of hardware and status
• Remote Deployment of HP WBEM Providers and configuration of the providers
• Starting with HP SIM 7.0, embedded agents along with HP Agentless Management (HP AMS) provide the default management software option installed on HP ProLiant Gen8 servers from HP Service Pack for ProLiant. This component collects information from the operating system and provides host-specific data to the HP iLO firmware. Windows Server 2008 x86 and x64 support HP AMS.

The following sections illustrate points of integration between HP SIM and HP WBEM Providers.

Identification

During the HP SIM identification process, HP SIM determines if a managed node is running a Windows operating system. If so, HP SIM attempts to contact the HP WBEM Providers. If they are present, HP SIM identification creates a path so it can immediately contact and collect data from the WBEM providers using the reporting and status polling function.

Systems page

The HP SIM Systems page gives you an overview of the managed node. The Systems page summary includes IP and DNS information, links to additional management tools such as SMH, and a highlighted list of WBEM indications and SNMP events generated by the managed node.
Figure 1 provides an example of how the HP SIM Systems page integrates with HP WBEM Providers.

**Figure 1:** The HP SIM Systems page integrates with the HP WBEM Providers.

---

**WBEM indications**

HP SIM can subscribe to and receive WBEM indications, and then report the indications received. WBEM indications are asynchronous alerts that provide HP SIM users a real-time status for hardware components experiencing problems. Figures 2 and 3 show how to activate WBEM indications. Figure 2 illustrates how to subscribe to these indications using the HP SIM interface. Each indication or event in the Events list contains a link that provides a detailed display of the indication content. Figure 3 shows how to subscribe using the HP SIM command line interface.
Figure 2: How to subscribe to WBEM indications using the HP SIM user interface.
Figure 3: How to subscribe to WBEM indications using the HP SIM CLI.

Figure 4 displays a WBEM indication report.

Figure 4: HP SIM lets you view WBEM indication reports.
Disk thresholds
You can set WBEM-based disk thresholds and processor thresholds from within the SMH. HP SIM receives indications (if subscribed) when the system exceeds thresholds. You can also set thresholds in HP SIM by going to Configure > Disk Thresholds > Set Disk Thresholds.

NOTE
HP SIM versions prior to 5.3 cannot receive disk and processor thresholds via WBEM indications.

You can also set thresholds in HP SIM by going to Configure > Disk Thresholds > Set Disk Thresholds.

Figure 5 shows the window that lets you set thresholds.

Figure 5: The SMH lets you configure disk and CPU thresholds.

Status polling
The HP SIM Status Polling module keeps HP SIM status up to date and provides a “follow-the-red” picture for users. “Follow-the-red” refers to following a top-level status value down through various levels to the problem hardware.

HP SIM Status Polling collects an overall status value from the Insight Providers every five minutes. This polling task contacts all discovered managed nodes with WBEM as a discovered protocol and collects the overall status. You can change the status value collection interval by going to Options > Status Polling > Hardware Status Polling.

Figure 6 illustrates how to use “follow-the-red” by first clicking Health Status and tracing through the System Management Homepage, which lists problem hardware in the Storage list.
WBEM Provider deployment and configuration

HP SIM provides a convenient deployment tool for HP WBEM Providers. The HP SIM Configure or Repair Agents (CRA) tool lets you push the HP WBEM Providers to the managed node and automatically subscribe to them. You can also trigger a test indication to confirm that the WBEM subscription was successful. The CRA tool lets you set up a non-administrator with privileges to perform various WBEM operations for Windows servers.

You can start deployment and configuration in Manage Communications, available from the Configure menu. The Manage Communications function provides information about your management communications channel configuration. A working communications channel lets you deploy various components and configure settings. Manage Communications leads you to the CRA tool, which lets you configure a variety of options.

Figure 7 shows how to select a system to modify and then access Manage Communications. Figure 8 shows the Manage Communications window.
Figure 7: How to access Manage Communications.

Figure 8: How to begin deployment and configuration.

Figure 9 shows the window you can use to install providers and agents. Figure 10 shows the WBEM configuration window.
Figure 9: Step 2 of the CRA tool lets you install HP WBEM Providers on a Windows server.

Figure 10: Step 3 of the CRA tool lets you configure HP WBEM Providers on a Windows server.
Hardware and software inventory

HP SIM provides a comprehensive inventory of hardware and software on the managed node, including reports for specific platforms. You may select from a variety of inventory items to create custom reports in several different output formats. Figure 11 shows the window to configure custom reports.

Figure 11: HP SIM lets you configure managed node hardware and software inventory reports.

HP SIM also provides a Data Collection Report from the Tools & Links tab on the Systems page. The default Data Collection Report contains all categories under the General heading as shown in Figure 12.
Property pages

HP SIM Property pages (Figure 13) display overall server characteristics (1), status information (2), and configuration and inventory data (3). Read and reported in real time, the Property page data is exclusive to WBEM.
Scenarios using HP WBEM Providers

Disabling Embedded Agent Management in ProLiant Gen8 servers

To use HP WBEM Providers on ProLiant Gen8 servers, you must disable Embedded Agent Management.

1. Log in to iLO4 on a ProLiant Gen8 server.
2. On the menu on the left side of the screen, expand **Administration**, and then select **Management**.
3. Under **Configure SNMP**, select **SNMP Pass-thru**.
4. Click **Apply**.
Figure 14 shows the iLO4 Management page.

Figure 14: Disable Embedded Agent Management in iLO4.

Configuring the WMI Mapper in HP SIM
You must configure the WMI Mapper service to run with HP SIM.

HP SIM WMI Mapper service
HP SIM supports industry-standard protocols such as WBEM. WMI Mapper 2.4 gives you a two-way translation from WMI (a DCOM-based interface) to a standardized WBEM interface (CIM XML/HTTP (2)). HP SIM requires WMI Mapper to manage Windows computers, including ProLiant servers running the HP WBEM Providers. The WMI Mapper service runs separately from the HP SIM service.

WMI Mapper configuration
HP SIM supports two different configurations for the WMI Mapper:

- Co-hosted on the HP SIM Central Management Server (CMS)
- Installed on a stand-alone Windows server

WMI Mapper installation preparation
If you install HP WBEM Providers on a Windows platform, the system installs WMI Mapper as an optional component. For more information, see “HP Systems Insight Manager 7.0 Installation and Configuration Guide for MS Windows”: http://h18013.www1.hp.com/products/servers/management/hpsim/infolibrary.html#b2.

Installing WMI Mapper on a different server than HP SIM requires these steps:
• Move the mapper to a secondary Windows server to remove some network traffic and processing from the server that hosts HP SIM CMS.

• Install the mapper on a separate Windows server if you are installing HP SIM on a Linux or HPUX server.

• If installing the HP SIM CMS on Linux or HPUX, the mapper will not run since it is a Windows service. From Linux, an administrator can discover a Windows system with the mapper service running. HP SIM on Linux can then apply the WMI Mapper proxy settings to point to that WMI Mapper service on that Windows system. Then the Linux HP SIM CMS can use WBEM to communicate with the WMI Mapper to pass data to the Windows WMI managed devices.

If installing the HP SIM CMS on a Windows server, the HP SIM installation package installs the WMI Mapper by default. You can also install the WMI Mapper on a remote Windows server. The WMI Mapper application is available from the HP website. Find it at http://h18000.www1.hp.com/products/servers/management/hpsim/dl_windows.html. You should activate the indication service when installing the WMI Mapper from the command line.

If you use a CLI command to install the WMI Mapper kit, use the following command line to get a complete installation: WMIMapper.msi INDICATIONSSUPPORT=yes. This command installs both the services of the WMI Mapper, the indications services, and the instances service.

Declare the correct server as the Mapper by opening the HP SIM user interface and going to Options > Protocol Settings > WMI Mapper Proxy.

To confirm the Mapper is working properly, access the Mapper system page and confirm two things: WBEM is a discovered management protocol, and the Properties link is present and working.

**WMI Mapper installation complete**

The WMI Mapper installs in Program Files\The Open Group\WMI Mapper. The ConfigREADME.txt file contains configuration parameters, including enabling logging. Two services should be present, one that supports indications and another that supports WMI data requests. You must install the Indications service for HP SIM to receive indications. Figure 15 shows the Mapper service listed in the Services window.
Figure 15: The WMI Mapper requires installation of the Mapper services.

Figure 16 shows the screen in HP SIM used to configure the Mapper.

Figure 16: Use the WMI Mapper Proxy window to configure the Mapper.
Using HP SIM to install and configure HP WBEM Providers on a managed node

1. Make sure to configure the WMI Mapper in HP SIM. For more information, see the earlier chapter “Configuring the WMI Mapper in HP SIM.”


3. Use the HP SIM Configure or Repair Agents tool to deploy the HP WBEM Providers to ProLiant Servers. Figure 17 highlights the WBEM installation option in the Windows HP SIM user interface used to deploy agents through CRA.

Figure 17: Step 2 of the CRA tool lets you deploy agents.

4. Configure the target to receive WBEM test events; configure a non-administrator-user; subscribe for WBEM events (see Figure 18).
Figure 18: Step 3 of the CRA tool lets you configure various items.

Figure 19: Sign into the target using the Enter credentials window.

5. Sign into the target using either stored credentials, or type in new credentials (see Figure 19). The credentials used must be from a member of the Administrative Group.
Configure and identify existing HP WBEM Providers through HP SIM

1. Configure the WMI Mapper in HP SIM. For more information, see the earlier chapter “Configuring the WMI Mapper in HP SIM.”

2. Configure the correct WBEM credentials in HP SIM.

3. Click Options > Protocol Settings > Global Protocol Settings, and then populate the WBEM credentials table.

4. Discover ProLiant Windows servers with the HP WBEM Providers installed.

5. Once discovered, the ProLiant Windows servers display in the HP SIM All Systems list.

6. Access the System page and confirm that WBEM is a discovered management protocol (see Figure 20).

Figure 20: Use the System page to confirm WBEM is discovered.
7. If WBEM does not show up as a protocol, supply the credentials under **Options > Security > System Credentials**. Note that when supplying credentials, the automatic identification task runs. Figure 21 shows the Global Protocol settings path and page.

**Figure 21:** The Global Credentials window lets you configure global log in credentials.
Figure 22 shows the System Credentials path and page.

**Figure 22:** The System Credentials window lets you configure system log in credentials.
8. Enter the WBEM credentials. Figure 23 shows the System Protocol Settings window.

**Figure 23:** Use the System Protocol Settings window to enter WBEM credentials.
Setting configurable disk thresholds in HP SIM

1. Configure the WMI Mapper in HP SIM. For more information, see the earlier chapter “Configuring the WMI Mapper in HP SIM”.

2. Access the SMH through HP SIM using the **System Management Homepage** link on the Systems page (Figure 24).

**Figure 24:** You can access the SMH from the System Status page.

3. Click **Tasks**.

4. Select **Server Configuration**.

5. In left panel, select **Threshold Information**.

6. Set the Processor (1) and Disk (2) thresholds (Figure 25). When the system exceeds thresholds, HP SIM receives an indication describing the conditions.
Figure 25: The System Thresholds window lets you configure processor and disk thresholds.

Identifying issues with hardware components

Using HP WBEM Providers, HP SIM provides a way to identify hardware components with potential problems. This ‘follow-the-red’ strategy employs a consolidated status available in the providers and displays the overall status of the ProLiant manage node on the Systems page. To use this feature, you must configure the WMI Mapper in HP SIM. For more information, see “Configuring the WMI Mapper in HP SIM”.

The Systems page Health Status link reflects the status from the Providers. Select the Health Status link to navigate to the SHM (if installed). Otherwise, the Health Status link navigates to the HP SIM Property Page Status tab. Both navigation methods let you find the problem components.

The following example illustrates a Major status in HP SIM. Figure 26 shows the location of the Health Status. Additionally, clicking on the [+] button expands the health status, displaying each hardware status component. Clicking on these components takes you to the SMH page (if available), or to the Property Link tab.
Figure 26: View health status in the System Status window.

Figure 27 shows the System Management Homepage as viewed when clicking through from the Major status in HP SIM.

Figure 27: Access the SMH from the Major status in HP SIM.
HP SIM indication support for HP WBEM Providers

You can configure HP SIM to subscribe to WBEM events.

1. Configure the WMI Mapper in HP SIM. For more information, see the earlier chapter “Configuring the WMI Mapper in HP SIM”.

2. Create a subscription in the user interface by clicking **Options > Events > Subscribe to WBEM Events**.

You do not have to provide any arguments, because HP SIM can generate the necessary arguments. Figure 28 shows the subscription creation page. Click **Schedule** or **Run Now** to create the subscription.

---

**Figure 28:** Use the Subscribe to WBEM Events window to create a subscription.

---

Alternatively, you may choose to create subscriptions using the CLI (see Figure 4):

```
mxbemsub -a -n <node name>
```

You can specify which HP SIM CMS is the destination address for the WBEM subscription. In this example, the HP SIM CMS is not declared, and the local CMS is the destination.
**Indications in the HP SIM user interface**

1. The System Page *Events* tab displays Indications in *All Events* or on a per system basis (as shown in Figure 29).
2. Open an event to get more details (shown at the bottom of Figure 7).

![Figure 29: You can view indications in the Events tab.](image)

**Troubleshooting WBEM Indications in HP SIM**

Follow these steps if a subscription fails:

1. Make sure WBEM is a discovered protocol on the managed node (*Systems Page > Product Description table > Management Protocols*).
2. Make sure the node is accessible (*Properties* link on the Systems Page or *Options > Identify*).
3. Make sure the WMI Mapper has both services created and running.
If no indications display in HP SIM, follow these steps:

1. Select **Options > Events > Event Filter Settings**.
2. Select **Accept unregistered events** as highlighted in Figure 30.

---

**Figure 30:** Use the Event Filter Settings window to accept unregistered events.

---

3. Use HP WBEM Providers test event tool to generate events.
4. Make sure the WMI Mapper Indication Service is running.
5. List the known subscriptions:
   - `Mxwbemsub -l -n <node name>`
   - Running the list command contacts the WMI Common Interface Model Object Manager on the managed node and searches for the subscription.

### Confirming WBEM as a management protocol

Confirm that the system identifies the HP WBEM Providers as a management protocol:

1. Access the Systems page (the page that contains an overview of the selected server).
2. Confirm WBEM is one of the possible protocols for the **Management Protocols** entry in the Product Description table.
# For more information

Visit the URLs listed below if you need additional information.

<table>
<thead>
<tr>
<th>Resource description</th>
<th>Web address</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP Service Pack for ProLiant (SPP)</td>
<td><a href="http://www.hp.com/go/spp">http://www.hp.com/go/spp</a></td>
</tr>
</tbody>
</table>

Send comments about this paper to [TechCom@HP.com](mailto:TechCom@HP.com)

Follow us on Twitter: [http://twitter.com/ISSGeekatHP](http://twitter.com/ISSGeekatHP)