

BMC[®] Performance Manager Express for Hardware

Reference Guide



Supporting

BMC[®] Performance Manager Express for Hardware
Version 2.6.00

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Table of Contents

Foreword	8
Supported Platforms and Requirements	9
Reference Guide	12
Application Classes.....	12
SEN_HW_BLADE.....	12
SEN_HW_CONNECTOR.....	13
SEN_HW_CPU.....	13
SEN_HW_DISKCONTROLLER.....	15
SEN_HW_ENCLOSURE.....	16
SEN_HW_FAN.....	16
SEN_HW_LOGICALDISK.....	18
SEN_HW_MAIN.....	19
SEN_HW_MEMORY.....	21
SEN_HW_NETWORK.....	22
SEN_HW_OTHERDEVICE.....	23
SEN_HW_PHYSICALDISK.....	23
SEN_HW_POWERSUPPLY.....	25
SEN_HW_TEMPERATURE.....	26
SEN_HW_VOLTAGE.....	26
Special Note on Application Collection Status.....	27
Thresholds.....	27
Additional Configuration Properties.....	28
Connectors.....	29
Connector and Platform Reference Table.....	29
Connector Details.....	35
Adaptec IOManager.....	35
Adaptec Storage Manager Web Edition (AAC).....	36
Adaptec Storage Manager (DPT).....	36
Dell OpenManage Array Manager.....	37
Dell DRAC/MC (Dell Remote Access Controller/Modular Chassis).....	37
Dell OpenManage Server Administrator.....	38

Dell OpenManage Storage Manager	39
Fujitsu-Siemens Serverview.....	40
<i>Fujitsu-Siemens Management Blade (FSC BX Blade Servers)</i>	41
Fujitsu-Siemens ServerView RAID Agent.....	41
HP BladeSystem	42
HP BladeTelnet.....	43
HP Insight Management Agent - Drive Array.....	44
HP Insight Management Agent - Fiber Array	44
HP Insight Management Agent - IDE Storage	45
HP Insight Management Agent - SCSI Storage.....	45
HP Insight Management Agent - Server.....	46
HP Insight Management Agent - Server (Tru64).....	46
HP Insight Management Agent - iLO	47
HP MP/GSP card (iLO).....	47
HP TopTools Agent.....	48
HP TopTools NetRaid Agent.....	48
HP-UX – Common.....	49
HP-UX – Disks.....	49
HP-UX STM	50
IBM BladeCenter Management Module	50
IBM AIX – CHRP Environment.....	51
IBM AIX – Common.....	51
IBM AIX – Environment.....	52
IBM AIX – SCSI disks.....	52
IBM Director Agent 3.x – Windows.....	53
IBM Director Agent 4.x – Linux	54
IBM Director Agent 4.x – Windows.....	55
IBM Director Agent 5.10.x – Linux	56
IBM Director Agent 5.10.x – Windows.....	57
IBM Director Agent 5.20.x - Linux	58
IBM Director Agent 5.20.x - ServeRAID - Linux	59
IBM Director Agent 5.20.x - ServeRAID - Windows.....	59
IBM Director Agent 5.20.x - Windows.....	60
IBM Netfinity Manager 5.20.x - Basic.....	61
IBM Netfinity Manager 5.20.x - Disks.....	61

IBM Netfinity Manager 5.20.x - Normal.....	62
IPMI – In-band (IpmiTool).....	62
Linux – Network.....	63
LSI 1030-based GAM Server.....	63
LSI 1030-based GAM Server (Alternate MIB).....	64
LsiLogic MegaRAID SAS.....	64
LsiLogic MegaRAID PowerConsole.....	65
LSI Logic - LsiUtil - RAID.....	65
LSI/Mylex GAM Server.....	66
Motherboard Monitor.....	66
NEC ESMPRO Agent.....	67
Promise FastTrack.....	67
SmartMon Tools.....	68
Sun Advanced Lights-Out Management (ALOM) card.....	69
Sun Fire F12K/F15K/F20K/F25K (SMS).....	70
Sun Fire Mx000 (XSCF).....	71
Sun Solaris – Disks.....	72
Sun Solaris - Non-Sun Disks.....	72
Sun Solaris - Environment (prtdiag, lom).....	73
Sun Solaris - Environment (prtpicl).....	74
Sun Solaris - Environment (ALOM-CMT snapshot).....	75
Sun Solaris - Memory modules.....	76
Sun Solaris – Network.....	76
Sun Solaris - Processors (psrinfo).....	77
VMware ESXi.....	77
WMI – Disks.....	78
WMI – Network.....	78
Index.....	79

Foreword

The BMC® Portal, also referred to as the Portal - is composed of a database, an application server, and a web server, and provides the access point for its utilities and modules. You access BMC® Portal from a browser on your desktop computer.

The BMC® Performance Manager Portal extends the features in the BMC Portal, enabling you to leverage both agent-less technologies and the PATROL Agent to monitor the availability and performance of your business infrastructure.

BMC® Performance Manager Express for Hardware is an agent-less Performance Manager that enables you to ensure the availability of your heterogeneous hardware systems, while providing a centralized view of your enterprise within the BMC® Portal environment. It allows administrators to monitor the hardware of different server brands: IBM®, HP®, DELL®, Sun Microsystems®, NEC®, and Fujitsu-Siemens® amongst many others.

This document describes the application classes and their parameters in detail, explains the system of thresholds and gives you in-depth information about connectors that are vital for the functioning of BMC® Performance Manager Express for Hardware.

The product's documentation consists of:

1. **Installation Guide** – current document
2. [User Guide](#) – for details on how to use the product
3. [Reference Guide](#) – for details on application classes, parameters and menu commands
4. [Release Notes](#) – for a summary of the key features and changes in the product

Supported Platforms and Requirements

For BPM Express for Hardware to collect information from a managed element, it requires specific instrumentation agents or system management tools to be present on the managed element.




A specific hardware agent is often required on each managed element depending on its underlying components.

Platform	Operating System	Required Hardware Agent
DELL PowerEdge	Microsoft Windows	Dell OpenManage Server Administrator, WMI
DELL PowerEdge	Linux	Dell OpenManage Server Administrator, Linux system commands, SmartMonTools
Fujitsu-Siemens BX Blade servers	N/A	Fujitsu-Siemens Management Blade
Fujitsu-Siemens PRIMERGY	Microsoft Windows	Fujitsu-Siemens ServerView / Fujitsu-Siemens ServerView RAID Agent / Promise FastTrack SNMP Agent / LSI GAM Server / LSI MegaRAID SAS SNMP Agent / LSI MegaRAID PowerConsole / Mylex GAM Server, WMI
Fujitsu-Siemens PRIMERGY	Linux	Fujitsu-Siemens ServerView / Fujitsu-Siemens ServerView RAID Agent / Promise FastTrack SNMP Agent / LSI GAM Server / LSI MegaRAID SAS SNMP Agent / LSI MegaRAID PowerConsole / Mylex GAM Serve, Linux system commands, SmartMonTools
HP C-Class BladeSystem	Windows	HP Insight Management Agent
HP C-Class BladeSystem	Linux	HP Insight Management Agent
HP P-Class BladeSystem	N/A	iLO
HP AlphaServer	Tru64	HP Insight Management Agents
HP 9000	HP-UX	HPUX system tools

Platform	Operating System	Required Hardware Agent
HP Integrity	Windows	HP Insight Management Agents
HP Integrity	Linux	None. BPM Express for Hardware uses internal HP-UX system commands for in-band and out-of-band monitoring (using the MP or GSP).
HP Integrity	HP-UX	HPUX system commands + MP/GSP
HP ProLiant	Windows	HP Insight Management Agents, WMI
HP ProLiant	Linux	HP Insight Management Agent, Linux system commands, SmartMonTools
HP Netserver	Windows	TopTools
HP SuperDome (Itanium)	Windows	HP Insight Management Agent
HP SuperDome (Itanium)	Linux	HP Insight Management Agent
HP SuperDome (Itanium)	HP-UX	HP-UX system commands + MP/GSP
HP SuperDome (PA-RISC)	HP-UX	HP-UX system commands + MP/GSP
IBM xSeries, Netfinity	IBM AIX	IBM AIX system commands
IBM RS/6000, pSeries and eServer p5		None
IBM xSeries, IBM NetFinity	Microsoft Windows	IBM Director Agent ,WMI
IBM xSeries, IBM NetFinity	Linux	IBM Director Agent , Linux system commands, SmartMonTools
NEC Express5800	Microsoft Windows	NEC ESMPRO Agent, WMI
NEC Express5800	Linux	NEC ESMPRO Agent
Sun Fire (SPARC)	Solaris	Solaris system commands

Platform	Operating System	Required Hardware Agent
Sun Fire (SPARC, T1, T2)	Solaris	Solaris system commands + Sun ALOM card (Sun Advanced Lights-Out Management)
Sun Fire X64	Solaris	Ipmitool, Isiutil
Sun Fire X64	Linux	Ipmitool, Isiutil

 *The vendor-specific instrumentation agents and system tools are generally provided with the servers and are available on the manufacturer website. Unless mentioned otherwise, these “agents” must be installed on the managed server for BPM Express for Hardware to function properly. Please refer to the [platform-specific guides](#) available on the BMC® Performance Manager Express for Hardware page of the Sentry Software website.*

Please check our web site www.sentrysoftware.net to find the latest updates. Updates are in the form of patches for BPM Express for Hardware. They are for free and do not need an upgrade of the PM itself, unless there are structural changes.

Reference Guide

This manual provides the following detailed chapters:

- **Classes and Parameters:** Parameters, info boxes and menu commands for each application class
- **Connectors and Platforms:** supported platforms, instrumentation agents or system tools they require as well as the connectors that are used to monitor them. Details are given for each connector and show all the components discovered and monitored through them.

Application Classes

This section familiarizes you with all the Application classes used by BPM Express for Hardware on the Portal. It gives a detailed view of each application class describing its function and parameters.

SEN_HW_BLADE

Each instance of the SEN_HW_BLADE class represents a blade server inside a blade enclosure. The Status parameter represents the global status of the blade

Name	Type	Description	Alert Conditions
Status	Text	Displays the overall blade status. Values: OK; Warning; Alarm Example: "OK" or "Alarm!! The blade is missing"	"!" = Warning "!!" = Alarm



"Status" is a text parameter that gives the overall status of the corresponding device or sensor. An alert condition describes in symbolic terms what occurs in the parameter when thresholds are breached: one exclamation mark triggers a warning; two exclamation marks raise an alarm.

Example

If BPM Express for Hardware detects that a blade has exceeded manufacturer-specified thresholds, the Status parameter will report "Warning! or Alarm!! The blade is missing", or as the case may be. On clicking the history graph, you can see the exact problem details, the consequences and the recommended actions.



Depending on your system, all parameters may not be used.

SEN_HW_CONNECTOR

Each instance of the SEN_HW_CONNECTOR class represents a connector currently used by BPM Express for Hardware in order to discover and monitor the hardware components of the server.

- Connectors are continuously monitored to ensure that the underlying technology used by BPM Express for Hardware to discover and monitor the hardware functions properly.
- If something goes wrong with the hardware instrumentation layer (but not with the hardware itself), an alert is raised by the Status parameter of the corresponding SEN_HW_CONNECTOR instance.
- In this case, hardware components that were discovered and monitored through this connector will no longer be monitored. Check the Test Report parameter to have more details about the connector failure.

Name	Type	Description	Alert Conditions
Test Report	Text	Describes the tests performed to evaluate the status of the connector	n/a
Collection Information	Text	Describes the objects discovered and the parameters collected by this connector for the whole element	n/a
Status	Text	Displays the overall connector status Values: OK; Warning; Alarm Example: "OK" or "Alarm!! The connector is not working anymore"	"!" = Warning "!!" = Alarm



"Status" is a text parameter that gives the overall status of the corresponding device or sensor. An alert condition describes in symbolic terms what occurs in the Status parameter when thresholds are breached: one exclamation mark triggers a warning; two exclamation marks raise an alarm.

Example

If BPM Express for Hardware detects that a connector has exceeded a manufacturer-specified threshold, the Status parameter will report "Alarm!! This connector is not working anymore". On clicking the history graph, you can see the exact details of the problem, its consequences and the recommended actions.



Depending on your system, all parameters may not be used.

SEN_HW_CPU

Each instance of the SEN_HW_CPU class represents a physical processor of the server. On high-range servers, the Status parameter will raise an alert "on the fly" as soon as a processor fails. On most servers however, a failed processor causes a server crash. Upon reboot, the processor is likely to be automatically disabled by the BIOS which will then raise an alert in BPM Express for Hardware because the processor is "missing".

- The Corrected Error Count and Predicted Failure parameters (available only for a few high-end processors) help administrators intervene before such a crash occurs.



The "Status" parameter will report an Alarm if the "Corrected Error Count" parameter is greater than zero (that is: the disk encountered some errors). Since the counter is reset every 24th hour, the corresponding alert on the "Status" parameter will be automatically cleared after 24 hours. This mechanism has been implemented to let BPM Express for Hardware/Portal report pure event-driven alerts with no need for manual acknowledgement from the operators.

Name	Type	Description	Alert Conditions
Predicted Failure	Text	Triggers an alert through the Status parameter if a CPU failure is expected Values : OK; Predicted Failure	n/a
Corrected Error Count	Integer	Displays the number of detected and corrected errors Unit: Errors	n/a
Status	Text	Displays the overall CPU status. Values: OK; Warning; Alarm Example: "OK" or "Warning! Failure of the CPU is predicted"	"!" = Warning "!!" = Alarm



"Status" is a text parameter that describes the overall status of the corresponding device or sensor. Alert conditions describe in symbolic terms what occurs in the "Status" parameter when thresholds are breached: one exclamation mark triggers a warning; two exclamation marks raise an alarm.

Example

If BPM Express for Hardware detects that manufacturer-specified thresholds have been breached for a CPU, the Status parameter will report "Warning! Problem: This processor is degraded or about to fail." Or "Alarm!! This processor is not detected anymore", or as may be the case. On clicking the history graph, you can see the exact details of the problem, its consequences and the recommended actions.



Depending on your system, all parameters may not be used.

SEN_HW_DISKCONTROLLER

The purpose of the Disk Controller instance is to display the status of the disk controller battery and the status of the disk controller. In addition, some information regarding the disk controllers, like its brand, model or driver version, may be displayed.

- The Battery Status parameter triggers an alert to predict that the disk controller battery will be unable to support the controller in the event of a power failure.
- The Controller Status parameter displays the status of the disk controller.

Name	Type	Description	Alert Conditions
Battery Status	Text	Triggers an alert to predict that the disk controller battery will be unable to support the controller in the event of a power failure. Values: OK; Warning; Alarm	“!” = Warning “!!” = Alarm
Controller Status	Text	Displays the status of the disk controller Values: OK; Warning; Alarm	“!” = Warning “!!” = Alarm



Depending on your system, all parameters may not be used.

SEN_HW_ENCLOSURE

Basically, each SEN_HW_ENCLOSURE instance represents a box with some hardware components inside. This class is used to represents the computer's main chassis, but also external disk array enclosures or blade enclosures.

- The Intrusion Status parameter, when available, raises an alert when the chassis is opened.
- The Status parameter, if collected, represents the overall status.

Name	Type	Description	Alert Conditions
Intrusion Status	Text	Triggers an alert if the enclosure is opened Values : OK ; Intrusion Detected Example: "Alarm!! Problem: The enclosure is open or has been removed"	"!!" = Alarm
Power Consumption	Integer	Displays the total power consumption of the box in watts Unit: W	n/a
Status	Text	Displays the overall status of the enclosure Values: OK; Warning; Alarm	"!" = Warning "!!" = Alarm



"Status" is a text parameter that describes the overall status of the corresponding device or sensor.



Depending on your system, all parameters may not be used.

SEN_HW_FAN

This class creates monitoring objects for each cooling sensor it discovers. Depending on the system and the data available, one or more parameters will be associated to the fan monitoring. Critical devices like processors, power supplies etc, have fans to avoid over-heating. Monitoring fans is important because they ensure a proper temperature for the system to work efficiently.

Depending on the available information, the Speed and/or Status parameters will be displayed for each detected fan device:

- The Speed parameter represents the speed of the corresponding fan (in rotations/minute). An alert is raised through Status if the fan speed is too low for proper functioning.
- The Speed Percent parameter represents the speed of the corresponding fan in percentage of its maximal speed.
- The Status parameter represents the overall status of the fan. An alert is triggered if the fan stops spinning or does not spin fast enough.

Name	Type	Description	Alert Conditions
Speed	Integer	Displays the speed of the fan Unit: Rotation Per Minute (RPM)	n/a
Speed Percent	Text	Displays the speed of the fan as a percentage of its maximal speed Unit = Percent of maximal speed	n/a
Status	Text	Displays the overall fan status Values: OK; Warning; Alarm Example: "OK" or "Alarm!! This fan is not detected anymore"	"!" = Warning "!!" = Alarm



"Status" is a text parameter that describes the overall status of the corresponding device or sensor. Alert conditions describe in symbolic terms what occurs in the parameter when thresholds are breached: one exclamation mark triggers a warning; two exclamation marks raise an alarm.

Example

If BPM Express for Hardware detects that a fan has breached manufacturer-specified thresholds, the Status parameter will report "Warning! This fan is degraded/is about to fail" or "Alarm!! This fan is not detected anymore", as may be the case. The history graph shows the exact details of the problem, its consequences and recommended actions.



Depending on your system, all parameters may not be used.

SEN_HW_LOGICALDISK

This class creates instances for each logical disk discovered. Logical disks are often a group of physical disks, configured as an array (RAID 0, 1, 5, etc.) and exposed to the operating system as a single physical volume.

- The status of a logical disk typically corresponds to the status of a RAID array (on-line, degraded, rebuilding, etc.). For each logical disk discovered, the Status parameter is displayed.
- The Error Count parameter represents number of errors encountered by the logical disk since the last counter reset. The error count is automatically reset every 24th hour (by default; this setting is configurable).
- The Status parameter represents the overall status of the logical disk. An alert is triggered when the logical disk is not fully operational (degraded, rebuilding, etc.) or not available at all. It triggers an alert if the logical disk missing or if any of the other parameters have breached their thresholds. It is only Status that will trigger and display the alerts. When all is fine, Status shows "OK", and when there is a problem, it shows "Warning!" or "Alarm!!" with a detailed description of the issue, its consequences and recommended actions. The alert conditions for Status are: "!="Warning; "!!"=Alarm. Example: "OK" or "Alarm!!" This logical disk is no longer detected."



For non-RAID disk controllers (as most of IDE controllers, for example), no logical disk will be displayed.



The "Status" parameter will report an Alarm if the "Error Count" parameter is greater than zero (that is: the disk encountered some errors). Since the counter is reset every 24th hour, the corresponding alert on the "Status" parameter will be automatically cleared after 24 hours. This mechanism has been implemented to let Hardware Sentry report pure event-driven alerts with no need for manual acknowledgement from the operators.

Name	Type	Description	Alert Conditions
Attached to	Text	States which disk-controller the logical disk is attached to. Example: Attached to: Disk Controller: PERC 4/SC #1 etc.	n/a
Error Count	Integer	Displays the number of errors encountered by the logical disk since the last counter reset (every 24hrs by default) Unit: Errors	n/a
Status	Text	Displays the overall status of the logical disk Values: OK; Warning; Alarm Example: "OK" or "Alarm!! This logical disk is no longer detected"	"!=" Warning "!!" = Alarm



"Status" is a text parameter that describes the overall status of the corresponding device or sensor. Alert conditions describe in symbolic terms what occurs in the "Status" parameter when thresholds are breached: one exclamation mark triggers a warning; two exclamation marks raise an alarm.

Example

If BPM Express for Hardware detects that manufacturer-specified thresholds for the logical disk have been breached, the Status parameter will report "Warning! This logical disk is degraded/is about to fail" or "Alarm!! This logical disk is not detected anymore", or as may be the case. The history graph shows the exact details of the problem, its consequences and recommended actions.



Depending on your system, all parameters may not be used.

SEN_HW_MAIN

The SEN_HW_MAIN class is responsible for the initialization of all the subclasses (i.e SEN_HW_Fan, SEN_HW_LOGICALDISK, SEN_HW_CPU etc). This class has just one parameter called Machine Status.

Machine Status is a text parameter that reports whether the BPM Express for Hardware on the RSM is able to communicate with the targeted remote element. It detects whether or not the remote element is accessible for monitoring i.e. whether or not the remote element is up & running and can be monitored. Values for this parameter are: "OK" and "WARNING".

Example for OK

"<hostname> is alive. Detected as <OS>. Protocols used: (SNMP/WBEM/ Telnet/SSH)

If this parameter reports that Hardware Sentry cannot communicate with this host, it could be due to any of the following reasons:

- A firewall prevents communication between the RSM and the managed server
- The WMI layer has not been installed or is disabled (Windows only)
- Neither SSH nor telnet connections are allowed on the managed server (UNIX and Linux only)
- The supplied credentials are incorrect
- The SNMP community string is wrong
- None of the connectors match the platform of the remote element

Some examples of possible "Warning!" alerts:

- The remote element is down.

Example

"<hostname> is down. Problem: Either the remote element is not currently running or the firewall is preventing access to the element."

- The remote element is up and running, but none of the connectors match the platform of the remote element.

Example

"<hostname> is alive. Problem: None of the connectors match this platform."

- The remote element is up and running, but the host platform cannot be detected.

Example

"<hostname> is alive. Problem: Host platform cannot be detected."

On clicking on the **History** icon, you can see the details about the problem, its consequences and the recommended actions.



The warning "Machine Status" triggers in case of a problem, is not related to any hardware issue; all it indicates is that the BPM Express for Hardware cannot perform the detection, discovery or collection processes on this remote element.



If one or several connectors are not detected as valid for the targeted server, you need to enable the debug mode of Hardware Sentry and check the debug output for the reason that led it to exclude those connectors.

SEN_HW_MEMORY

Each instance of the SEN_HW_MEMORY module represents a memory module in the server.

- The Status parameter will raise an "on the fly" alert on servers that can dynamically handle failed memory modules or, most often, for modules that have been disabled by the BIOS upon reboot (the module is then flagged as "missing").
- The Error Count parameter represents the number of errors that have been fixed by ECC-enabled memory modules.
- In some case, the Predicted Failure parameter is used to alert administrators that the memory module is about to fail.
- The use of the Error Count, or Predicted Failure parameter depends on the technology being used to report the health of memory modules.



The "Status" parameter reports an Alarm if the "Error Count" parameter is greater than zero (that is: the disk encountered some errors). Since the counter is reset every 24th hour, the corresponding alert on the Status parameter will automatically be cleared after 24 hours. This mechanism enables BPM Express for Hardware/Portal to report pure event-driven alerts with no need for manual acknowledgement from the operators.

Name	Type	Description	Alert Conditions
Predicted Failure	Text	Raises an alert through the Status parameter if a n/a memory failure is expected	
Error Count	Integer	Displays the number of errors encountered since last counter reset (every 24hrs by default) Unit: Errors	n/a
Status	Text	Displays the overall memory status. Values: OK; Warning; Alarm Example: "OK" or "Warning! This memory module encountered an abnormal number of internal errors"	"!" = Warning "!!" = Alarm



"Status" is a text parameter that describes the overall status of the corresponding device or sensor. Alert conditions describe in symbolic terms what occurs in the "Status" parameter when thresholds are breached: one exclamation mark triggers a warning; two exclamation marks raise an alarm.

Example

If BPM Express for Hardware detects that manufacturer-specified thresholds for the memory module have been breached, the Status parameter will report "Warning! This memory module encountered an abnormal number of internal errors" or "Alarm!! An imminent failure is predicted on this memory module", or as may be the case. The history graph shows the exact details of the problem, its consequences and recommended actions.



Depending on your system, all parameters may not be used.

SEN_HW_NETWORK

Each SEN_HW_NETWORK instance represents a network adapter in the server.

- The Link Status reports whether or not the adapter is properly linked to the network from a pure hardware cable perspective (it will not report a bad IP configuration for example). By default, the Link Status parameter raises an alert (through Status) only for previously connected network adapters that are no longer linked to the network.
- The Error Percent parameter represents the percentage of sent and received network packets that were in error. A high percentage of errors often means that the network link is improperly configured or that the network card is functioning erratically and thus needs to be replaced.
- The Status parameter displays the overall status of the instance. It raises an alert if any of the other parameters breach their thresholds. Alerts are triggered only through the Status parameter.

Name	Type	Description	Alert Conditions
Link Status	Text	Triggers a warning if the network interface is not connected (i.e. cable unplugged)	n/a
Error Percent	Integer	Displays the percentage of transmitted and received packets in error between collects Unit: % 10-30 = Warning; 30-100=Alarm	n/a
Status	Text	Displays the overall status of the network interface Values: OK; Warning; Alarm Example: "OK" or "Alarm!! This network adapter is not detected anymore"	"!" = Warning "!!" = Alarm



"Status" is a text parameter that describes the overall status of the corresponding device or sensor. Alert conditions describe in symbolic terms what occurs in the parameter when thresholds are breached: one exclamation mark triggers a warning; two exclamation marks raise an alarm.

Example

If BPM Express for Hardware detects that manufacturer-specified thresholds for the network interface have been breached, the Status parameter will report "Warning! This network adapter has degraded", or, "Alarm!! This network adapter is not detected anymore" or as may be the case. The history graph shows the exact details of the problem, its consequences and recommended actions.



Depending on your system, all parameters may not be used.

SEN_HW_OTHERDEVICE

This class is typically used to monitor devices that do not relate to the other classes and can rarely be monitored on servers. The device definition is given by the connector file and the device is monitored just as any other in any other class.

This represents hardware components that do not fall into other predefined categories i.e. other than processors, memory modules, temperature sensors, fans, voltage sensors, power supplies, network cards, disk controllers, physical disks and logical disks.

Name	Type	Description	Alert Conditions
Status	Text	Displays the overall status of the "other device" Values: OK; Warning; Alarm Example: "OK" or "Alarm!! This device is no longer detected"	"!" = Warning "!!" = Alarm



"Status" is a text parameter that describes the overall status of the corresponding device or sensor. Alert conditions describe in symbolic terms what occurs in the "Status" parameter when thresholds are breached: one exclamation mark triggers a warning; two exclamation marks raise an alarm.

Example

If BPM Express for Hardware detects that manufacturer-specified thresholds for the "other device" have been breached, the Status parameter will report "Alarm! This device has degraded." or "Alarm!! This device is no longer detected", or as may be the case. The history graph shows the exact details of the problem, its consequences and recommended actions.



Depending on your system, all parameters may not be used.

SEN_HW_PHYSICALDISK

Each instance of this class represents a hard drive detected on the platform by BPM Express for Hardware. Its purpose is to monitor the status of each hard drive and possibly detect an incoming failure.

Physical disks must be monitored to avoid loss of data, un-availabilities and performance degradation. When available, S.M.A.R.T technology will be used to predict a disk failure before it occurs. Depending on the available information, the Predicted Failure and/or Status parameters will be displayed for each discovered physical disk:

- The Predicted Failure parameter uses S.M.A.R.T technology to predict physical disk failures. An alert will be triggered if it is predicted that the physical disk will soon break down. The Status parameter represents the current status of the physical disk. An alert is triggered if the physical disk is not available for proper operation.
- The Error Count parameter is incremented each time an error occurs on this physical disk. An alert is raised by the Status parameter from the first detected error. The Status parameter represents the overall status of the physical disk and triggers an alert is triggered if the physical disk is not available for proper operation or if any of the other parameters breach their thresholds.
- The Status parameter represents the overall status of the physical disk. It triggers an alert if the physical disk missing or if any of the other parameters have breached their thresholds. It is only Status that will trigger and display the alerts. When all is fine, Status shows "OK", and when there is a problem, it shows "Warning!" or "Alarm!!" with a detailed description of the issue, its consequences and recommended actions. The alert conditions for Status are: "!"=Warning; "!!"=Alarm



The "Status" parameter reports an Alarm if the "Error Count" parameter is greater than zero (that is: the disk encountered some errors). Since the counter is reset every 24th hour, the corresponding alert on the "Status" parameter will automatically be cleared after 24 hours. This mechanism enables BPM Express for Hardware/Portal to report pure event-driven alerts with no need for manual acknowledgement from the operators.

Name	Type	Description	Alert Conditions
Attached to	Text	States which disk-controller the physical disk is attached to. Example: Attached to: Disk Controller: PERC 4/ SC #1 etc.	n/a
Predicted Failure	Text	Triggers information if a failure is expected	n/a
Error Count	Integer	Displays the number of errors encountered by the physical disk. Unit: errors	n/a
Status	Text	Displays the overall status of the physical disk Values: OK; Warning; Alarm Example: "OK" or "Alarm!! This disk is not detected anymore"	"!" = Warning "!!" = Alarm



"Status" is a text parameter that describes the overall status of the corresponding device or sensor. Alert conditions describe in symbolic terms what occurs in the "Status" parameter when thresholds are breached: one exclamation mark triggers a warning; two exclamation marks raise an alarm.

Example

If BPM Express for Hardware detects that manufacturer-specified thresholds for the physical disk have

been breached, the Status parameter will report “Warning! This physical disk is degraded/is about to fail” or “Alarm! This disk is not detected anymore”, or as the case may be. The history graph shows the exact details of the problem, its consequences and recommended actions.



Depending on your system, all parameters may not be used.

SEN_HW_POWERSUPPLY

Each instance of this class represents a power supply in the system. It is used to monitor their status and to indicate when a power supply is malfunctioning and needs attention.

Power supply is critical and should never fail, which is why servers often have redundant power supplies. Monitoring power supplies allows the operators to be alerted when a power supply fails, or in some cases when a power supply is overloaded. Depending on the information available, the Used Capacity and/or Status parameters will be displayed for each power supply or power unit device:

- The Used Capacity parameter represents the power supply’s power currently in use in percentage. An alert is triggered if the computer uses too much power than it can be supplied.
- The Status parameter represents the current status of the power supply. An alert is triggered if an error occurs with the power supply.

Name	Type	Description	Alert Conditions
Used Capacity	Integer	Displays the percentage of the power supply currently in use Unit: Percentage (%)	n/a
Status	Text	Displays the overall status of the power supply Values: OK; Warning; Alarm Example: “OK” or “Alarm!! The power consumed by the system is out of the supported range”	“!” = Warning “!!” = Alarm



“Status” is a text parameter that describes the overall status of the corresponding device or sensor. Alert conditions describe in symbolic terms what occurs in the “Status” parameter when thresholds are breached: one exclamation mark triggers a warning; two exclamation marks raise an alarm.

Example

If BPM Express for Hardware detects that manufacturer-specified thresholds for power supply have been breached, the Status parameter will report “Warning! Problem: This power supply is in degraded state, or about to fail” or “Alarm!! The power consumed by the system is out of the supported range”, or as may be the case. The history graph shows the exact details of the problem, its consequences and recommended actions.



Depending on your system, all parameters may not be used.

SEN_HW_TEMPERATURE

BPM Express for Hardware detects the temperature probes on the motherboard or devices and creates an instance of this class for each of them. Their location in the platform is described in the instance's label if it is available.

When a temperature reading can be performed, temperature thresholds are automatically set and an alert will be triggered if the temperature rises to a dangerous level. Even in the case that no reading can be made, the Status parameter will display the condition of the temperature in the system.

Name	Type	Description	Alert Conditions
Temperature	Integer	Displays the temperature reading Unit: Celsius degrees (C°)	n/a
Status	Text	Displays the overall temperature status Values: OK; Warning; Alarm Example: "OK" or "Alarm!! The temperature is critically high"	"!" = Warning "!!" = Alarm



"Status" is a text parameter which describes the overall status of the corresponding device or sensor. An alert condition describes in symbolic terms what occurs when thresholds are breached.

Example

If BPM Express for Hardware detects that manufacturer-specified thresholds have been breached for temperature, the Status parameter will report "Warning! The temperature is too high (67°C)" or, "Alarm!! The temperature is critically high" or, as may be the case. There is a complete hardware health report for this temperature sensor. The actual temperature value (when available) is reported by the Temperature parameter but alert thresholds are not directly set on this parameter. The history graph will display details about the problem, its consequences and the recommended actions.



Depending on your system, all parameters may not be used.

SEN_HW_VOLTAGE

The purpose of this class is to monitor power supply voltages. For each voltage sensor (+5V, +12V, -5V, etc.), an instance is created in a container with a label describing its type.

If the computer's configuration allows a reading of the voltages, the values will be available in the Voltage parameter and an alert will be triggered if they do not meet the automatically set thresholds. Otherwise, the Status parameter will inform you if a problem occurs with one of the voltages.

Name	Type	Description	Alert Conditions
Voltage	Integer	Displays the voltage reading Unit : mV	n/a
Status	Text	Displays the overall status of the voltage Values: OK; Warning; Alarm Example: "OK" or "Alarm!! This voltage sensor is no longer detected"	"!" = Warning "!!" = Alarm



"Status" is a text parameter that describes the overall status of the corresponding device or sensor. Alert conditions describe in symbolic terms what occurs in the "Status" parameter when thresholds are breached: one exclamation mark triggers a warning; two exclamation marks raise an alarm.

Example

If BPM Express for Hardware detects that manufacturer-specified thresholds for voltage have been breached, the Status parameter will report "Warning! Although still not critical, the voltage level is out of the normal range." or "Alarm!! This voltage sensor is no longer detected", or as may be the case. The history graph shows the exact details of the problem, its consequences and recommended actions.



Depending on your system, all parameters may not be used.

Special Note on Application Collection Status

This parameter is created by default by the Portal for every application class that is added. Hence when you add BPM Express for Hardware on an element, you will see this parameter. The parameter has Boolean values: True or False

- **True** indicates that BPM Express for Hardware is functioning
- **False** indicates that it is not

Thresholds

BPM Express for Hardware dynamically sets the thresholds on all of its parameters depending on the platform it is running on. This is why a recapitulative table of the alert thresholds of BPM Express for Hardware cannot be provided. It takes the manufacturer-set thresholds for each component and sets alert rules accordingly.

As you have seen in the previous section, it is Status, the text parameter that displays alert conditions. BPM Express for Hardware assigns the pre-set thresholds to its symbolic conditions of exclamation marks.

For instance, when a manufacturer-set threshold reaches warning levels, BPM Express for Hardware translates it to "Warning!" with one exclamation mark, which triggers a Warning alert in the Portal; and for an alarm-level breach, the Status parameter is set to "Alarm!!" with two exclamation marks, which triggers an Alarm alert in the Portal. When a problem occurs, it is the Status parameter that reports "WARNING!" or

“ALARM!!” followed by a full description of the encountered problem, the possible consequences and the recommended action. Nevertheless, it is possible to modify these pre-set thresholds via the Configure tab.



If you wish to modify pre-set thresholds of individual parameters, you must deactivate the thresholds for the Status parameter (which will otherwise continue to consider pre-set thresholds and trigger alerts accordingly), and instead, directly assign threshold values against individual parameters of the class. See the User Guide for details.

Additional Configuration Properties

This section provides detailed information on how to override the default property values used within BPM Express for Hardware. These values have to be defined in the `rsmcfg.properties(%RSM_HOME%\RSMxx\server\rsm\conf\properties\rsm\ rsmcfg.properties)` file.

The following properties may be set to override the default values for a specific element or for all elements at once.

This property allows you to override the default timeout value or the default connector specified timeout value for executing a single command using SSH. The default value is 45 seconds.

- **Property:** `net.sentrysoftware.bpm.hardware.sshTimeout.default=45000`

Example

- To set the value for all hosts: `net.sentrysoftware.bpm.hardware.sshTimeout.default=45000`
- To set the value for a specific host: `net.sentrysoftware.bpm.hardware.sshTimeout.default.<hostname>=45000`

To override the connector specified timeout value:

- **Property:** `net.sentrysoftware.bpm.hardware.sshTimeout.hdf=60000`

Example

- To set the value for all hosts: `net.sentrysoftware.bpm.hardware.sshTimeout.hdf=60000`
- To set the value for a specific host: `net.sentrysoftware.bpm.hardware.sshTimeout.hdf.<hostname>=60000`



The <hostname> tag must be replaced with EXACTLY the hostname or IP address entered when adding the element

This property allows you to override the default timeout value or the default connector specified timeout value for executing a single command using Telnet. The default value is 45 seconds.

- **Property:** `net.sentrysoftware.bpm.hardware.telnetTimeout.default=45000*`

To override the connector specified timeout value:

- **Property:** `net.sentrysoftware.bpm.hardware.telnetTimeout.hdf=60000`

This property allows you to override the default timeout value for executing a single WMI query. The default

value is 45 seconds.

- **Property:** net.sentrysoftware.bpm.hardware.wmiTimeout.default=45000

This property allows you to override the default timeout value for executing a single WBEM query. The default value is 45 seconds.

- **Property:** net.sentrysoftware.bpm.hardware.wbemTimeout.default=45000

This property allows you to specify the namespace that is to be used for executing the WMI query.

- **Property:** net.sentrysoftware.bpm.hardware.wmiNamespace=root\cimv2

This property allows you to specify the namespace that is to be used for executing the WBEM query.

- **Property:** net.sentrysoftware.bpm.hardware.wbemNamespace=root

If an element responds to both Telnet and SSH, by default BPM Express for Hardware uses SSH. This property can be set to “true” in order to force Telnet over SSH.

- **Property:** net.sentrysoftware.bpm.hardware.forceTelnet=true

This property is used to specify BPM Express for Hardware to use SSH.

- **Property:** net.sentrysoftware.bpm.hardware.forceSSH=true

By default BPM Express for Hardware uses the WMI class of BMC portal sdk to perform wmi requests. Setting this property value to “true” will force BPM Express for Hardware to use WMI Script to perform wmi requests.

- **Property:** net.sentrysoftware.bpm.hardware.forceWMIscript=true

Connectors

This section deals with connectors provided with this version of BPM Express for Hardware.

A table provides a quick overview of the connectors as well as their corresponding filenames and applicable environments (i.e. type of computers, servers, operating systems).

Connector and Platform Reference Table

The following table shows all the connectors provided with this versions of BPM Express for Hardware. Each connector is a file with the .hdf extension and they are stored in: %RSM_HOME%\RSMxx\thirdparty\SEN_HW_HDF directory.

Connector filename	Connector for	Typical Platform	Operating System
SEN_HW_IOManager.hdf	Adaptec IOManager	Fujitsu-Siemens PRIMERGY	Microsoft Windows, Linux
SEN_HW_AAC.hdf	Adaptec Storage Manager Web Edition (AAC)	Fujitsu-Siemens PRIMERGY	Microsoft Windows, Linux

Connector filename	Connector for	Typical Platform	Operating System
SEN_HW_DptStorageManager.hdf	Adaptec Storage Manager (DPT)	Fujitsu-Siemens PRIMERGY	Microsoft Windows, Linux
SEN_HW_DellArrayManager.hdf	Dell OpenManage Array Manager	Dell PowerEdge	Microsoft Windows, Linux
SEN_HW_DellDRACMC.hdf	Dell DRAC/MC (Dell Remote Access Controller/Modular Chassis)	Dell PowerEdge	N/A
SEN_HW_DellOpenManager.hdf	Dell OpenManage Server Administrator	Dell PowerEdge	Microsoft Windows, Linux
SEN_HW_DellStorageManager.hdf	Dell OpenManage Storage Manager	Dell PowerEdge	Microsoft Windows, Linux
SEN_HW_Fujitsu-SiemensBlade.hdf	Fujitsu-Siemens Management Blade (FSC BX Blade Servers)	Fujitsu-Siemens BX Blade Servers	N/A
SEN_HW_ServerViewNT.hdf	Fujitsu-Siemens ServerView RAID Agent	Fujitsu-Siemens PRIMERGY	Microsoft Windows, Linux
SEN_HW_FscRaid.hdf	Fujitsu-Siemens ServerView RAID Agent	Fujitsu-Siemens PRIMERGY	Microsoft Windows, Linux
SEN_HW_HPBladeSystem.hdf	HP BladeSystem	HP BladeSystem	Microsoft Windows, Linux
SEN_MS_HW_HPBladeTelnet.hdf	HP BladeSystem - Telnet/SSH	HP BladeSystem	N/A
SEN_HW_CpqDriveArrayNT.hdf	HP Insight Management Agent - Drive Array	HP ProLiant	Microsoft Windows, Linux, HP OpenVMS, HPTru64
SEN_HW_CpqFCADriveArray.hdf	HP Insight Management Agent - Fiber Array	HP ProLiant	Microsoft Windows, Linux, HP OpenVMS, HPTru64
SEN_HW_CpqIDEDriveArray.hdf	HP Insight Management Agent - IDE Storage	HP ProLiant	Microsoft Windows, Linux, HP OpenVMS, HPTru64
SEN_HW_CpMgSm2.	HP Insight Management	HP ProLiant	Microsoft Windows,

Connector filename	Connector for	Typical Platform	Operating System
hdf	Agent - iLO		Linux, HP OpenVMS, HPTru64
SEN_HW_CpqSCSIDriveArray.hdf	HP Insight Management Agent - SCSI Storage	HP ProLiant	Microsoft Windows, Linux, HP OpenVMS, HPTru64
SEN_HW_CpMgServNT.hdf	HP Insight Management Agent - Server	HP ProLiant	Microsoft Windows, Linux, HP OpenVMS, HPTru64
SEN_HW_CpMgServTru64.hdf	HP Insight Management Agent - Server (Tru64)	HP ProLiant	Microsoft Windows, Linux, HP OpenVMS, HPTru64
SEN_HW_HPILO.hdf	HP MP/GSP card (iLO)	HP 9000, Integrity, SuperDome	Microsoft Windows, Linux, HP OpenVMS, HPTru64
SEN_HW_HpNetRaidController.hdf	HP TopTools NetRaid SNMP Sub-Agent	HP 9000, Integrity, SuperDome	N/A
SEN_HW_HPTopToolsNT.hdf	HP TopTools Agent	HP NetServer	Linux, Microsoft Windows
SEN_HW_HPUX.hdf	HP-UX – Common	HP NetServer	Microsoft Windows
SEN_HW_HPUXDisk.hdf	HP-UX – Disks	HP 9000, HP Integrity, HP SuperDome	HP-UX
SEN_HW_HPUXStm.hdf	HP-UXSTM	HP 9000, HP Integrity, HP SuperDome	HP-UX
SEN_HW_IBMBlade.hdf	IBM BladeCenter Management Module	IBM BladeCenter	N/A
SEN_HW_IBMAIX.hdf	IBM AIX – Common	IBM RS/6000, IBM pSeries, IBM eServer p5	IBM AIX
SEN_HW_IBMAIXChrpMachstat.hdf	IBM AIX – CHRP Environment	IBM RS/6000, IBM pSeries, IBM eServer p5	IBM AIX

Connector filename	Connector for	Typical Platform	Operating System
SEN_HW_IBMAIXUeSensor.hdf	IBM AIX – Environment	IBM RS/6000, IBM pSeries, IBM eServer p5	IBM AIX
SEN_HW_IBMAIXDisk.hdf	IBM AIX – SCSI disks	IBM RS/6000, IBM pSeries, IBM eServer p5	IBM AIX
SEN_HW_Director3NT.hdf	IBM Director Agent 3.x – Windows	IBM xSeries, IBM Netfinity	Microsoft Windows
SEN_HW_Director4Linux.hdf	IBM Director Agent 4.x – Linux	IBM xSeries, IBM Netfinity	Linux
SEN_HW_Director4NT.hdf	IBM Director Agent 4.x – Windows	IBM xSeries, IBM Netfinity	Microsoft Windows
SEN_HW_Director5Linux.hdf	IBM Director Agent 5.x – Linux	IBM xSeries, IBM Netfinity	Linux
SEN_HW_Director5NT.hdf	IBM Director Agent 5.x – Windows	IBM xSeries, IBM Netfinity	Microsoft Windows
SEN_HW_Director52Linux.hdf	IBM Director Agent 5.20.x - Linux	IBM xSeries, IBM Netfinity	Linux
SEN_HW_Director52ServeRAIDLinux.hdf	IBM Director Agent 5.20.x - ServeRAID - Linux	IBM xSeries, IBM Netfinity	Linux
SEN_HW_Director52ServeRAIDNT.hdf	IBM Director Agent 5.20.x - ServeRAID - Windows	IBM xSeries, IBM Netfinity	Microsoft Windows
SEN_HW_IbmNetfinityManagerBASIC.hdf	IBM Netfinity Manager 5.20.x - Basic	IBM Netfinity	Microsoft Windows
SEN_HW_IbmNetfinityManagerRAID.hdf	IBM Netfinity Manager 5.20.x - Disks	IBM Netfinity	Microsoft Windows
SEN_HW_IbmNetfinityManager.hdf	IBM Netfinity Manager 5.20.x - Normal	IBM Netfinity	Microsoft Windows
SEN_HW_IpmiTool.hdf	IPMI – In-band (IpmiTool)	Sun Fire (x64)	Linux, Sun Solaris
SEN_HW_LSI1030.hdf	LSI 1030-based Global Array	Fujitsu-Siemens	Microsoft Windows,

Connector filename	Connector for	Typical Platform	Operating System
	Manager Server	PRIMERGY	Linux
SEN_HW_LSI1030Alt.hdf	LSI 1030-based GAM Server (Alternate MIB)	Fujitsu-Siemens PRIMERGY	Microsoft Windows, Linux
SEN_HW_LSIMegaRaidSAS.hdf	LsiLogic MegaRAID PowerConsole	Fujitsu-Siemens PRIMERGY	Microsoft Windows, Linux
SEN_HW_LSIUtilUNIX.hdf	LSI Logic - LsiUtil - RAID	Sun Fire (x64)	Linux, Sun Solaris
SEN_HW_MegaRaidPowerConsole.hdf	LsiLogic MegaRAID PowerConsole	Fujitsu-Siemens PRIMERGY	Microsoft Windows, Linux
SEN_HW_MylexController.hdf	Mylex Global Array Manager Server	Fujitsu-Siemens PRIMERGY	Microsoft Windows, Linux
SEN_HW_LinuxNetwork.hdf	Linux – Network	Dell PowerEdge, HP ProLiant, Fujitsu-Siemens PRIMERGY, IBM xSeries, Sun Fire	Linux
SEN_HW_MBMNT.hdf	Motherboard Monitor	No-name PC	Microsoft Windows, Linux
SEN_HW_NECESmPro.hdf	NEC ESM PRO Agent	NEC Express5800	Microsoft Windows, Linux
SEN_HW_PromiseFSC.hdf	Promise FastTrack	Fujitsu-Siemens PRIMERGY	Microsoft Windows, Linux
SEN_HW_SmartMonitorLinux.hdf	SmartMon Tools	Dell PowerEdge, Fujitsu-Siemens PRIMERGY, HP ProLiant, IBM xSeries, Sun Fire (x64)	Linux
SEN_HW_SunAlom.hdf	Sun Advanced Lights-Out Management (ALOM) card	Sun Fire (SPARC)	N/A
SEN_HW_SunCediag.hdf	Sun Solaris - Memory modules	Sun Fire (SPARC)	Sun Solaris

Connector filename	Connector for	Typical Platform	Operating System
SEN_HW_SunF15K.hdf	Sun Fire F12K/F15K/F20K/F25K (SMS)	Sun Fire (SPARC)	Sun Solaris
SEN_HW_Sunlostat.hdf	Sun Solaris – Disks	Sun Fire (SPARC)	Sun Solaris
SEN_HW_SunlostatNonSun.hdf	Sun Solaris - Non-Sun Disks	Sun Fire (SPARC)	Sun Solaris
SEN_HW_SunNetwork.hdf	Sun Solaris – Network	Sun Fire (SPARC)	Sun Solaris
SEN_HW_SunPrtdiag.hdf	Sun Solaris - Environment (prtdiag, lom)	Sun Fire (SPARC)	Sun Solaris
SEN_HW_SunPrtpicl.hdf	Sun Solaris - Environment (prtpicl)	Sun Fire (SPARC)	Sun Solaris
MS_HW_SunScSnapshot.hdf	Sun Solaris - Environment (ALOM-CMT snapshot)	Sun Fire (SPARC T1/T2)	Sun Solaris
SEN_HW_SunPsrinfo.hdf	Sun Solaris - Processors (psrinfo)	Sun Fire (SPARC)	Sun Solaris
SEN_MS_HW_SunXscf.hdf	Sun Fire Mx000 (XSCF)	Sun Fire (SPARC)	Sun Solaris
SEN_MS_HW_VMwareESXi.hdf	VMware ESXi	VMware ESXi	N/A
SEN_HW_WBEMGenDiskNT.hdf	WMI – Disks	Dell PowerEdge, Fujitsu-Siemens PRIMERGY, HP ProLiant, IBM xSeries, NEC Express5800, Sun Fire (x64)	Microsoft Windows
SEN_HW_WBEMGenNetwork	WMI – Network	Dell PowerEdge,	Microsoft Windows

Connector filename	Connector for	Typical Platform	Operating System
twork.hdf		Fujitsu-Siemens PRIMERGY, HP ProLiant, IBM xSeries, NEC Express5800, Sun Fire (x64)	

Connector Details

This section provides detailed information on each connectors - stating the target, typical platforms, the pre-requisites for Hardware Sentry to function optimally, technology used, and what it will discover (stating precise application class names) and then, most importantly, what it will monitor.

In order to know all about the connectors for your systems, first identify your platforms/environments in the reference table, and then read the corresponding details.

Adaptec IOManager

This connector provides disk monitoring through the Adaptec IO Manager SNMP sub-agent which supports a few AAC-based Adaptec RAID controllers.

Typical platform: Fujitsu-Siemens PRIMERGY

- Operating systems: Microsoft Windows, Linux
- Instrumentation layer: Adaptec IOManager
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status
- SEN_HW_PHYSICALDISK / Predicted Failure

Adaptec Storage Manager Web Edition (AAC)

This connector provides disk monitoring through the Adaptec Storage Manager Web Edition SNMP sub-agent which supports all AAC-based Adaptec RAID controllers.

Typical platform: Fujitsu-Siemens PRIMERGY

- Operating system: Microsoft Windows, Linux
- Instrumentation layer: Adaptec Storage Manager Web Edition
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status
- SEN_HW_PHYSICALDISK / Predicted Failure

Adaptec Storage Manager (DPT)

This connector provides disk monitoring through the Adaptec Storage Manager SNMP sub-agent which supports all DPT-based Adaptec RAID controllers.

Typical platform: Fujitsu-Siemens PRIMERGY

- Operating systems: Microsoft Windows, Linux
- Instrumentation layer: Adaptec Storage Manager
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status
- SEN_HW_PHYSICALDISK / Predicted Failure

Dell OpenManage Array Manager

This connector provides disks monitoring through the Dell OpenManage Array Manager SNMP agent (not to be confused with Storage Manager).

Typical platform: Dell PowerEdge

- Operating systems: Microsoft Windows, Linux
- Instrumentation layer: Dell OpenManage Server Administrator
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status

Dell DRAC/MC (Dell Remote Access Controller/Modular Chassis)

This connector provides environmental information (temperatures, fans and power supplies) on Dell Blade servers through the Dell Remote Access Controller/Modular Chassis (DRAC/MC)

Typical platform: Dell PowerEdge

- Operating system: N/A
- Instrumentation layer: Dell Remote Access Controller/Modular Chassis (DRAC/MC)
- Technology used: Telnet/SSH

Blades (SEN_HW_BLADE)

- Enclosure model (SEN_HW_ENCLOSURE)
- Fans (SEN_HW_FAN)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Other devices (SEN_HW_OTHERDEVICE)

SEN_HW_BLADE / Status

- SEN_HW_ENCLOSURE / Status
- SEN_HW_ENCLOSURE / Power Consumption
- SEN_HW_FAN / Speed
- SEN_HW_FAN / Status
- SEN_HW_TEMPERATURE / Temperature
- SEN_HW_TEMPERATURE / Status
- SEN_HW_POWERSUPPLY / Status
- SEN_HW_OTHERDEVICE / Status

Dell OpenManage Server Administrator

This connector provides hardware monitoring through the Dell OpenManage Server Administrator SNMP agent which supports almost all DELL PowerEdge servers.

Typical platform: Dell PowerEdge

- Operating systems: Microsoft Windows, Linux
- Instrumentation layer: Dell OpenManage Server Administrator
- Technology used: SNMP

Fans (SEN_HW_FAN)

- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Other devices (SEN_HW_OTHERDEVICE)
- Memory modules (SEN_HW_MEMORY)
- Processors (SEN_HW_CPU)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_FAN / Status

- SEN_HW_FAN / Speed
- SEN_HW_VOLTAGE / Voltage
- SEN_HW_VOLTAGE / Status
- SEN_HW_TEMPERATURE / Status
- SEN_HW_TEMPERATURE / Temperature
- SEN_HW_POWERSUPPLY / Status
- SEN_HW_OTHERDEVICE / Status
- SEN_HW_MEMORY / Status
- SEN_HW_CPU / Status
- SEN_HW_ENCLOSURE / Status
- SEN_HW_ENCLOSURE / Intrusion Status

Dell OpenManage Storage Manager

This connector provides Dell disk array monitoring through the Dell Storage Manager Agent which supports almost all DELL disk arrays.

Typical platform: Dell PowerEdge

- Operating systems: Microsoft Windows, Linux
- Instrumentation layer: Dell OpenManage Server Administrator
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_DISKCONTROLLER / ControllerStatus

- SEN_HW_DISKCONTROLLER / BatteryStatus
- SEN_HW_LOGICALDISK / Status
- SEN_HW_PHYSICALDISK / Status

Fujitsu-Siemens Serverview

This connector provides hardware monitoring through the Fujitsu-Siemens Serverview Agent which supports almost all Fujitsu-Siemens PRIMERGY servers.

Typical platform: Fujitsu-Siemens PRIMERGY

- Operating systems: Microsoft Windows, Linux
- Instrumentation layer: Fujitsu-Siemens ServerView Agent
- Technology used: SNMP

Fans (SEN_HW_FAN)

- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Memory modules (SEN_HW_MEMORY)
- Processors (SEN_HW_CPU)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_FAN / Status

- SEN_HW_FAN / Speed
- SEN_HW_VOLTAGE / Voltage
- SEN_HW_TEMPERATURE / Temperature
- SEN_HW_POWERSUPPLY / Status
- SEN_HW_MEMORY / Status
- SEN_HW_MEMORY / Error Count
- SEN_HW_CPU / Status
- SEN_HW_ENCLOSURE / Intrusion Status

This connector provides hardware monitoring through the Fujitsu-Siemens Management Blade SNMP Agent which supports the Fujitsu-Siemens Blade servers (BX300, BX600, etc.). Needs to run remotely.

Typical platform: Fujitsu-Siemens BX Blade Servers

- Operating systems: N/A
- Instrumentation layer: Fujitsu-Siemens Management Blade
- Technology used: SNMP

Fans (SEN_HW_FAN)

- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Blades (SEN_HW_BLADE)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_FAN / Status

- SEN_HW_FAN / Speed
- SEN_HW_TEMPERATURE / Temperature
- SEN_HW_POWERSUPPLY / Status
- SEN_HW_BLADE / Status

Fujitsu-Siemens ServerView RAID Agent

This connector provides disk monitoring through the Fujitsu-Siemens ServerView RAID SNMP sub-agent which supports many RAID controllers in Primergy servers.

Typical platform: Fujitsu-Siemens PRIMERGY

- Operating systems: Microsoft Windows, Linux
- Instrumentation layer: Fujitsu-Siemens ServerView RAID Agent
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_DISKCONTROLLER / BatteryStatus

- SEN_HW_LOGICALDISK / Status
- SEN_HW_PHYSICALDISK / Status
- SEN_HW_PHYSICALDISK / Error Count
- SEN_HW_PHYSICALDISK / Predicted Failure

HP BladeSystem

This connector provides hardware monitoring for the HP BladeSystem racks through the HP Insight Management Agents.

Typical platform: HP BladeSystem

- Operating systems: Microsoft Windows, Linux
- Instrumentation layer: HP iLO / HP Insight Management Agents
- Technology used: SNMP

Fans (SEN_HW_FAN)

- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Other devices (SEN_HW_OTHERDEVICE)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_FAN / Status

- SEN_HW_TEMPERATURE / Temperature
- SEN_HW_TEMPERATURE / Status
- SEN_HW_POWERSUPPLY / Status
- SEN_HW_OTHERDEVICE / Status
- SEN_HW_ENCLOSURE / Status

HP BladeTelnnet

This connector provides hardware monitoring for the HP BladeSystem racks through the Onboard Administrator.

Typical platform(s): HP BladeSystem

- **Operating system(s):** N/A
- **Instrumentation layer:** HP BladeSystem Onboard Administrator
- **Technology used:** Telnet/SSH

- Fans (MS_HW_FAN)
- Temperature sensors (MS_HW_TEMPERATURE)
- Power supplies (MS_HW_POWERSUPPLY)
- Blades (MS_HW_BLADE)
- Other devices (MS_HW_OTHERDEVICE)
- Enclosure model (MS_HW_ENCLOSURE)

- MS_HW_FAN / Status
- MS_HW_FAN / SpeedPercent
- MS_HW_TEMPERATURE / Status
- MS_HW_TEMPERATURE / Temperature
- MS_HW_POWERSUPPLY / Status
- MS_HW_POWERSUPPLY / UsedWatts
- MS_HW_BLADE / Status
- MS_HW_OTHERDEVICE / Status
- MS_HW_ENCLOSURE / Status
- MS_HW_ENCLOSURE / powerconsumption



This connector targets remote devices only.

HP Insight Management Agent - Drive Array

This connector monitors the HP/Compaq Drive Arrays by connecting to the Storage Management SNMP sub-agent of the HP Insight Manager agent.

Typical platform: HP ProLiant

- Operating systems: Microsoft Windows, Linux, HP OpenVMS, HP Tru64
- Instrumentation layer: HP Insight Management Agents
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_DISKCONTROLLER / Controller Status

- SEN_HW_DISKCONTROLLER / Battery Status
- SEN_HW_LOGICALDISK / Status
- SEN_HW_PHYSICALDISK / Status
- SEN_HW_PHYSICALDISK / Predicted Failure

HP Insight Management Agent - Fiber Array

This connector monitors the fiber-connected HP/Compaq StorageWorks Arrays by connecting to the Fiber Array Management SNMP sub-agent of the HP Insight Manager agent.

Typical platform: HP ProLiant

- Operating systems: Microsoft Windows, Linux, HP Tru64, HP OpenVMS
- Instrumentation layer: HP Insight Management Agents
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)
- Other devices (SEN_HW_OTHERDEVICE)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_DISKCONTROLLER / Controller Status

- SEN_HW_DISKCONTROLLER / Battery Status
- SEN_HW_LOGICALDISK / Status
- SEN_HW_PHYSICALDISK / Status
- SEN_HW_PHYSICALDISK / PredictedFailure
- SEN_HW_PHYSICALDISK / Error Count
- SEN_HW_OTHERDEVICE / Status

HP Insight Management Agent - IDE Storage

This connector monitors the HP/Compaq IDE Drive Arrays by connecting to the Storage Management SNMP sub-agent of the HP Insight Manager agent.

Typical platform: HP ProLiant

- Operating systems: Microsoft Windows, Linux, HP Tru64, HP OpenVMS
- Instrumentation layer: HP Insight Management Agents
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status
- SEN_HW_PHYSICALDISK / Predicted Failure

HP Insight Management Agent - SCSI Storage

This connector monitors the HP/Compaq SCSI disk by connecting to the Storage Management SNMP sub-agent of the HP Insight Manager agent.

Typical platform: HP ProLiant

- Operating systems: Microsoft Windows, Linux, HP Tru64, HP OpenVMS
- Instrumentation layer: HP Insight Management Agents
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_DISKCONTROLLER / Controller Status

- SEN_HW_LOGICALDISK / Status
- SEN_HW_PHYSICALDISK / Status
- SEN_HW_PHYSICALDISK / Predicted Failure

HP Insight Management Agent - Server

This connector provides hardware monitoring through the HP Insight Manager (Server Agent) which supports almost all HP ProLiant and Integrity servers under Windows and Linux, as well as Tru64 servers.

Typical platform: HP ProLiant

- Operating systems: Microsoft Windows, Linux, HP Tru64, HP OpenVMS
- Instrumentation layer: HP Insight Management Agents
- Technology used: SNMP

Fans (SEN_HW_FAN)

- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWER_SUPPLY)
- Memory modules (SEN_HW_MEMORY)
- Processors (SEN_HW_CPU)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_FAN / Status

- SEN_HW_TEMPERATURE / Temperature
- SEN_HW_POWER_SUPPLY / Status
- SEN_HW_POWER_SUPPLY / Used Watts
- SEN_HW_MEMORY / Status
- SEN_HW_CPU / Status
- SEN_HW_CPU / Predicted Failure

HP Insight Management Agent - Server (Tru64)

This connector adds HP Tru64-specific hardware monitoring through the HP Insight Manager (Server Agent).

Typical platform: HP ProLiant

- Operating systems: HP Tru64, HP OpenVMS
- Instrumentation layer: HP Insight Management Agents
- Technology used: SNMP

Fans (SEN_HW_FAN)

- Power supplies (SEN_HW_POWER_SUPPLY)
- Network cards (SEN_HW_NETWORK)

SEN_HW_FAN / Status

- SEN_HW_POWER_SUPPLY / Status
- SEN_HW_NETWORK / Status
- SEN_HW_NETWORK / Link Status

HP Insight Management Agent - iLO

This connector provides hardware monitoring OF the HP iLO card in HP ProLiant servers through the HP Insight Manager (Server Agent) which supports almost all HP ProLiant and Integrity servers under Windows and Linux, as well as Tru64 servers.

Typical platform: HP ProLiant

- Operating systems: Microsoft Windows, Linux, HP OpenVMS, HP Tru64
- Instrumentation layer: HP Insight Management Agents
- Technology used: SNMP

Other devices (SEN_HW_OTHERDEVICE)

- Network cards (SEN_HW_NETWORK)

SEN_HW_OTHERDEVICE / Status

- SEN_HW_NETWORK / Status

HP MP/GSP card (iLO)

This connector provides environmental information (temperatures, fans, etc.) on HP 9000 and Integrity servers through HP Integrated Lights-Out Management Card.

Typical platforms: HP 9000, Integrity, SuperDome

- Operating system: N/A
- Instrumentation layer: HP MP/GSP card (iLO)
- Technology used: Telnet/SSH

Fans (SEN_HW_FAN)

- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_FAN / Status

- SEN_HW_TEMPERATURE / Status
- SEN_HW_POWERSUPPLY / Status
- SEN_HW_ENCLOSURE / Status

HP TopTools Agent

This connector provides hardware monitoring through the HP TopTools Agent version 5.x which supports almost all HP NetServer servers under Windows.

Typical platform: HP NetServer

- Operating system: Microsoft Windows
- Instrumentation layer: HP TopTools Agent
- Technology used: System commands, WMI

Fans (SEN_HW_FAN)

- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Memory modules (SEN_HW_MEMORY)
- Processors (SEN_HW_CPU)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_FAN/Speed

- SEN_HW_FAN / Status
- SEN_HW_VOLTAGE / Voltage
- SEN_HW_VOLTAGE / Status
- SEN_HW_TEMPERATURE / Temperature
- SEN_HW_POWERSUPPLY / Status
- SEN_HW_MEMORY / Status
- SEN_HW_CPU / Status

HP TopTools NetRaid Agent

This connector monitors the RAID disks (physical and logical) attached to a HP NetRAID controller. It uses the information provided by the HP NetRAID SNMP Sub-Agent, installed with the HP TopTools Server Agent.

Typical platform: HP NetServer

- Operating systems: Linux, Microsoft Windows
- Instrumentation layer: HP TopTools NetRaid Agent
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status

HP-UX – Common

This connector provides hardware status information (processors, network interfaces) on HP-UX systems. Requires root privileges for disk monitoring.

Typical platforms: HP 9000, HP Integrity, HP SuperDome

- Operating system: HP-UX
- Instrumentation layer: HP-UX system commands (ioscan, lanscan, etc.)
- Technology used: System commands

Processors (SEN_HW_CPU)

- Network cards (SEN_HW_NETWORK)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_CPU / Status

- SEN_HW_NETWORK / Status
- SEN_HW_NETWORK / Link Status
- SEN_HW_NETWORK / Error Count



This connector probably requires root privileges. You need to configure the product to use the root login/password to execute external commands. Alternatively, you can configure the product to use the sudo utility for the following command: /usr/bin/adb

HP-UX – Disks

This connector provides hardware SCSI disks status information on HP-UX systems. Requires root privileges.

Typical platforms: HP 9000, HP Integrity, HP SuperDome

- Operating system: HP-UX
- Instrumentation layer: HP-UX system commands (pvdisplay, ioscan, etc.)
- Technology used: System commands

Disk controllers (SEN_HW_DISKCONTROLLER)

- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_PHYSICALDISK / Status



This connector probably requires root privileges for its proper operation. You need to configure the product to use the root login/password to execute external commands. Alternatively, you can configure the product to use the sudo utility for the following command: /usr/sbin/diskinfo

HP-UX STM

This connector enables monitoring physical disks and memory modules on HP-UX systems through the Support Tools Manager utilities (STM).

Typical platforms: HP 9000, HP Integrity, HP SuperDome

- Operating system: HP-UX
- Instrumentation layer: HP-UX Support Tools Manager (STM)
- Technology used: System commands

Disk controllers (SEN_HW_DISKCONTROLLER)

- Physical disks (SEN_HW_PHYSICALDISK)
- Memory modules (SEN_HW_MEMORY)

SEN_HW_PHYSICALDISK / Status

- SEN_HW_PHYSICALDISK / Error Count
- SEN_HW_MEMORY / Status
- SEN_HW_MEMORY / Error Count

IBM BladeCenter Management Module

This connector provides hardware monitoring of the IBM BladeCenter chassis through the IBM BladeCenter Management Module (SNMP-based). Needs to run remotely.

Typical platform: IBM BladeCenter

- Operating system: Not applicable
- Instrumentation layer: IBM BladeCenter Management Module
- Technology used: SNMP

Fans (SEN_HW_FAN)

- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Blades (SEN_HW_BLADE)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_FAN / Speed Percent

- SEN_HW_VOLTAGE / Voltage
- SEN_HW_TEMPERATURE / Temperature
- SEN_HW_POWERSUPPLY / Status
- SEN_HW_BLADE / Status

IBM AIX – CHRP Environment

This connector provides hardware environment information (temperatures, voltages, fans, power supplies) on IBM CHRP-based AIX systems.

Typical platforms: IBM RS/6000, IBM pSeries, IBM eServer p5

- Operating system: IBM AIX
- Instrumentation layer: IBM AIX system commands (machstat)
- Technology used: System commands

Fans (SEN_HW_FAN)

- Power supplies (SEN_HW_POWERSUPPLY)

SEN_HW_FAN / Status



This connector probably requires root privileges for its proper operation. You therefore will need to configure the product to use the root login/password to execute external commands. Alternatively, you can configure the product to use the sudo utility for the following commands: /usr/sbin/bootinfo; /usr/sbin/machstat

IBM AIX – Common

This connector provides hardware status information (processors, network interfaces) on IBM AIX systems.

Typical platforms: IBM RS/6000, IBM pSeries, IBM eServer p5

- Operating system: IBM AIX
- Instrumentation layer: IBM AIX system commands (lsdev, entstat, etc.)
- Technology used: System commands

Processors (SEN_HW_CPU)

- Network cards (SEN_HW_NETWORK)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_CPU / Status

- SEN_HW_NETWORK / Status
- SEN_HW_NETWORK / Link Status
- SEN_HW_NETWORK / Error Count

IBM AIX – Environment

This connector provides hardware environment information: temperatures, voltages, fans, power supplies on IBM AIX systems.

Typical platforms: IBM RS/6000, IBM pSeries, IBM eServer p5

- Operating system: IBM AIX
- Instrumentation layer: IBM AIX system commands (uesensor)
- Technology used: System commands

Fans (SEN_HW_FAN)

- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)

SEN_HW_FAN/Speed

- SEN_HW_VOLTAGE / Status
- SEN_HW_VOLTAGE / Voltage
- SEN_HW_TEMPERATURE / Temperature
- SEN_HW_POWERSUPPLY / Status

IBM AIX – SCSI disks

This connector provides hardware status information of the non-RAID SCSI physical disks on IBM AIX systems.

Typical platforms: IBM RS/6000, IBM pSeries, IBM eServer p5

- Operating systems: IBM AIX
- Instrumentation layer: IBM AIX system commands (lsdev, pvdisplay, etc.)
- Technology used: System commands

Disk controllers (SEN_HW_DISKCONTROLLER)

- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_PHYSICALDISK / Status

- SEN_HW_PHYSICALDISK / Error Count

IBM Director Agent 3.x – Windows

This connector provides hardware monitoring through the IBM Director Agent version 3.x which supports almost all IBM Netfinity and xSeries servers. This connector is WBEM-based.

Typical platforms: IBM xSeries, IBM Netfinity

- Operating system: Microsoft Windows
- Instrumentation layer: IBM Director Agent 3.x
- Technology used: WMI

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)
- Fans (SEN_HW_FAN)
- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status
- SEN_HW_FAN/Speed
- SEN_HW_VOLTAGE/Voltage
- SEN_HW_TEMPERATURE/Temperature

IBM Director Agent 4.x – Linux

This connector provides hardware monitoring through the IBM Director Agent version 4.x which supports some (not all) xSeries servers.

Typical platforms: IBM xSeries, IBM Netfinity

- Operating system: Linux
- Instrumentation layer: IBM Director Agent 4.x
- Technology used: WBEM

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)
- Fans (SEN_HW_FAN)
- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Memory modules (SEN_HW_MEMORY)
- Processors (SEN_HW_CPU)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status
- SEN_HW_FAN / Speed
- SEN_HW_VOLTAGE / Voltage
- SEN_HW_TEMPERATURE / Temperature
- SEN_HW_POWERSUPPLY / Status
- SEN_HW_MEMORY / Status
- SEN_HW_CPU / Status
- SEN_HW_ENCLOSURE / Intrusion Status



*This connector probably requires root privileges for its proper operation. You therefore will need to configure the product to use the root login/password to execute external commands.
Alternatively, you can configure the product to use the sudo utility for the following command: /opt/IBM/director/CIMOM/bin/cimcli*

IBM Director Agent 4.x – Windows

This connector provides hardware monitoring through the IBM Director Agent version 4.x which supports almost all IBM Netfinity and xSeries servers.

Typical platforms: IBM xSeries, IBM Netfinity

- Operating system: Microsoft Windows
- Instrumentation layer: IBM Director Agent 4.x
- Technology used: WMI

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)
- Fans (SEN_HW_FAN)
- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWER SUPPLY)
- Memory modules (SEN_HW_MEMORY)
- Processors (SEN_HW_CPU)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status
- SEN_HW_FAN/Speed
- SEN_HW_VOLTAGE/Voltage
- SEN_HW_TEMPERATURE/Temperature
- SEN_HW_POWER SUPPLY / Status
- SEN_HW_MEMORY / Status
- SEN_HW_CPU / Status
- SEN_HW_ENCLOSURE / Intrusion Status

IBM Director Agent 5.10.x – Linux

This connector provides hardware monitoring through the IBM Director Agent version 5.x which supports some (not all) xSeries servers.

Typical platforms: IBM xSeries, IBM Netfinity

- Operating system: Linux
- Instrumentation layer: IBM Director Agent 5.10.x
- Technology used: WBEM

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)
- Fans (SEN_HW_FAN)
- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Memory modules (SEN_HW_MEMORY)
- Processors (SEN_HW_CPU)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status
- SEN_HW_FAN/Speed
- SEN_HW_VOLTAGE/Voltage
- SEN_HW_TEMPERATURE/Temperature
- SEN_HW_POWERSUPPLY / Status
- SEN_HW_MEMORY / Status
- SEN_HW_CPU / Status
- SEN_HW_ENCLOSURE / Intrusion Status



This connector probably requires root privileges for its proper operation. You therefore will need to configure the product to use the root login/password to execute external commands. Alternatively, you can configure the product to use the sudo utility for the following command: /opt/ibm/director/cimom/bin/CLI

IBM Director Agent 5.10.x – Windows

This connector provides hardware monitoring through the IBM Director Agent version 5.x which supports almost all IBM Netfinity and xSeries servers.

Typical platforms: IBM xSeries, IBM Netfinity

- Operating system: Microsoft Windows
- Instrumentation layer: IBM Director Agent 5.10.x
- Technology used: WMI

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)
- Fans (SEN_HW_FAN)
- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Memory modules (SEN_HW_MEMORY)
- Processors (SEN_HW_CPU)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status
- SEN_HW_FAN/Speed
- SEN_HW_VOLTAGE/Voltage
- SEN_HW_TEMPERATURE/Temperature
- SEN_HW_POWERSUPPLY / Status
- SEN_HW_MEMORY / Status
- SEN_HW_CPU / Status
- SEN_HW_ENCLOSURE / Intrusion Status

IBM Director Agent 5.20.x - Linux

This connector provides hardware monitoring through the IBM Director Agent version 5.20.x which supports some (not all) xSeries servers.

Typical platforms: IBM xSeries, IBM Netfinity

- Operating system: Linux
- Instrumentation layer: IBM Director Agent 5.20.x
- Technology used: WBEM

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)
- Fans (SEN_HW_FAN)
- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Memory modules (SEN_HW_MEMORY)
- Processors (SEN_HW_CPU)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status
- SEN_HW_FAN/Speed
- SEN_HW_VOLTAGE/Voltage
- SEN_HW_TEMPERATURE/Temperature
- SEN_HW_POWERSUPPLY / Status
- SEN_HW_MEMORY / Status
- SEN_HW_CPU / Status
- SEN_HW_ENCLOSURE / Intrusion Status



This connector probably requires root privileges for its proper operation. You therefore will need to configure the product to use the root login/password to execute external commands. Alternatively, you can configure the product to use the sudo utility for the command: /opt/ibm/icc/cimom/bin/CLI

IBM Director Agent 5.20.x - ServeRAID - Linux

This connector provides IBM ServeRAID disks monitoring through the IBM ServeRAID Manager Agent component of the IBM Director Agent version 5.20.x which supports almost all IBM Netfinity and xSeries servers.

Typical platforms: IBM xSeries, IBM Netfinity

- Operating system: Linux
- Instrumentation layer: IBM Director Agent 5.20.x

Technology used: WBEM

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_DISKCONTROLLER / Controller Status

- SEN_HW_LOGICALDISK / Status
- SEN_HW_PHYSICALDISK / Status

IBM Director Agent 5.20.x - ServeRAID - Windows

This connector provides IBM ServeRAID disks monitoring through the IBM ServeRAID Manager Agent component of the IBM Director Agent version 5.20.x which supports almost all IBM Netfinity and xSeries servers.

Typical platform(s): IBM xSeries, IBM Netfinity

- Operating system: Microsoft Windows
- Instrumentation layer: IBM Director Agent 5.20.x
- Technology used: WMI

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_DISKCONTROLLER / Controller Status

- SEN_HW_LOGICALDISK / Status
- SEN_HW_PHYSICALDISK / Status

IBM Director Agent 5.20.x - Windows

This connector provides hardware monitoring through the IBM Director Agent version 5.20.x which supports almost all IBM Netfinity and xSeries servers.

Typical platforms: IBM xSeries, IBM Netfinity

- Operating system: Microsoft Windows
- Instrumentation layer: IBM Director Agent 5.20.x
- Technology used: WMI

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)
- Fans (SEN_HW_FAN)
- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Memory modules (SEN_HW_MEMORY)
- Processors (SEN_HW_CPU)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status
- SEN_HW_FAN/Speed
- SEN_HW_VOLTAGE/Voltage
- SEN_HW_TEMPERATURE/Temperature
- SEN_HW_POWERSUPPLY / Status
- SEN_HW_MEMORY / Status
- SEN_HW_CPU / Status
- SEN_HW_ENCLOSURE / Intrusion Status

IBM Netfinity Manager 5.20.x - Basic

This connector provides basic environment monitoring through the IBM Netfinity Manager Services SNMP sub-agent which supports almost all old IBM servers (Netfinity) under Windows.

Typical platform: IBM Netfinity

- Operating system: Microsoft Windows
- Instrumentation layer: IBM Netfinity Manager 5.20.x
- Technology used: SNMP

Fans (SEN_HW_FAN)

- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)

SEN_HW_FAN / Status

- SEN_HW_VOLTAGE / Status
- SEN_HW_TEMPERATURE / Status

IBM Netfinity Manager 5.20.x - Disks

This connector provides IBM ServerRAID monitoring through the IBM Netfinity Manager Services SNMP sub-agent which supports almost all old IBM servers (Netfinity) under Windows.

Typical platform: IBM Netfinity

- Operating system: Microsoft Windows
- Instrumentation layer: IBM Netfinity Manager 5.20.x
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status

IBM Netfinity Manager 5.20.x - Normal

This connector provides environment monitoring through the IBM Netfinity Manager Services SNMP sub-agent which supports almost all old IBM servers (Netfinity) under Windows.

Typical platform: IBM Netfinity

- Operating systems: Microsoft Windows
- Instrumentation layer: IBM Netfinity Manager 5.20.x
- Technology used: SNMP

Voltage sensors (SEN_HW_VOLTAGE)

- Temperature sensors (SEN_HW_TEMPERATURE)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_VOLTAGE / Voltage

- SEN_HW_TEMPERATURE / Temperature

IPMI – In-band (Ipmitool)

This connector provides environmental information (temperatures, fans, etc.) on several IPMI-enabled servers through the ipmitool utility and OpenIPMI driver.

Typical platform: Sun Fire (x64)

- Operating systems: Linux, Sun Solaris
- Instrumentation layer: ipmitool
- Technology used: System commands

Fans (SEN_HW_FAN)

- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_FAN / Speed

- SEN_HW_VOLTAGE / Voltage
- SEN_HW_TEMPERATURE / Temperature
- SEN_HW_POWERSUPPLY / Status



This connector probably requires root privileges for its proper operation. You therefore will need to configure the product to use the root login/password to execute external commands. Alternatively, you can configure the product to use the sudo utility for the command: ipmitool

Linux – Network

This connector provides the monitoring of network cards on all Linux systems.

Typical platforms: Dell PowerEdge, HP ProLiant, Fujitsu-Siemens PRIMERGY, IBM xSeries, Sun Fire

- Operating system: Linux
- Instrumentation layer: Linux system commands (ethtool, mii-tool)
- Technology used: System commands

Network cards (SEN_HW_NETWORK)

SEN_HW_NETWORK / Error Count

- SEN_HW_NETWORK / Link Status



This connector probably requires root privileges for its proper operation. You therefore will need to configure the product to use the root login/password to execute external commands. Alternatively, you can configure the product to use the sudo utility for the commands: ethtool; mii-tool

LSI 1030-based GAM Server

This connector provides disk monitoring for LSI c1030-based disk controllers (also known as LSI Integrated Mirroring) through the LSI1030 SNMP sub-agent.

Typical platforms: Fujitsu-Siemens PRIMERGY

- Operating systems: Microsoft Windows, Linux
- Instrumentation layer: LSI GAM Server
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status

LSI 1030-based GAM Server (Alternate MIB)

This connector provides disk monitoring for LSI c1030-based disk controllers (also known as LSI Integrated Mirroring) through the LSI1030 SNMP sub-agent (based on the 1.3.6.1.4.1.3582.2 MIB).

Typical platform: Fujitsu-Siemens PRIMERGY

- Operating system: Microsoft Windows, Linux
- Instrumentation layer: LSI GAM Server
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status

LsiLogic MegaRAID SAS

This connector provides disk monitoring through the LsiLogic MegaRAID SAS SNMP sub-agent which supports all LSI MegaRaid SAS RAID controllers.

Typical platform: Fujitsu-Siemens PRIMERGY

- Operating systems: Microsoft Windows, Linux
- Instrumentation layer: LSI MegaRAID SAS SNMP Agent
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status
- SEN_HW_PHYSICALDISK / Error Count

LsiLogic MegaRAID PowerConsole

This connector provides disk monitoring through the LsiLogic MegaRAID PowerConsole SNMP sub-agent which supports all MegaRAID-based RAID controllers.

Typical platform: Fujitsu-Siemens PRIMERGY

- Operating systems: Microsoft Windows, Linux
- Instrumentation layer: LSI MegaRAID PowerConsole
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status

LSI Logic - LsiUtil - RAID

This connector provides information about physical disks and volumes of LSI Logic SAS RAID controllers through the lsiutil utility.

Typical platform: Sun Fire (x64)

- Operating systems: Linux, Sun Solaris
- Instrumentation layer: lsiutil
- Technology used: System commands

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status



This connector probably requires root privileges for its proper operation. You therefore will need to configure the product to use the root login/password to execute external commands. Alternatively, you can configure the product to use the sudo utility for the following commands: lsiutil

LSI/Mylex GAM Server

This connector provides disk monitoring through the Mylex SNMP sub-agent which supports all Mylex disk controllers.

Typical platform: Fujitsu-Siemens PRIMERGY

- Operating systems: Microsoft Windows, Linux
- Instrumentation layer: Mylex GAM Servers
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_LOGICALDISK / Status

- SEN_HW_PHYSICALDISK / Status

Motherboard Monitor

This connector provides hardware monitoring through Motherboard Monitor version 5.x which supports almost all non-branded PCs under Windows.

Typical platform: Unbranded PC

- Operating system: Microsoft Windows
- Instrumentation layer: Motherboard Monitor
- Technology used: System commands

Fans (SEN_HW_FAN)

- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_FAN/Speed

- SEN_HW_VOLTAGE / Voltage
- SEN_HW_TEMPERATURE / Temperature

NEC ESMPRO Agent

This connector provides hardware monitoring through the NEC ESMPRO Agent which supports almost all NEC Express5800 and some BULL NovaScale servers running Windows and Linux.

Typical platform: NEC Express5800

- Operating systems: Microsoft Windows, Linux
- Instrumentation layer: NEC ESMPRO Agent
- Technology used: SNMP

Fans (SEN_HW_FAN)

- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Memory modules (SEN_HW_MEMORY)
- Processors (SEN_HW_CPU)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_FAN / Status

- SEN_HW_VOLTAGE / Voltage
- SEN_HW_TEMPERATURE / Temperature
- SEN_HW_POWERSUPPLY / Status
- SEN_HW_MEMORY / Status
- SEN_HW_CPU / Status

Promise FastTrack

This connector provides disk monitoring through the Promise FastTrack SNMP agent.

Typical platform: Fujitsu-Siemens PRIMERGY

- Operating systems: Microsoft Windows, Linux
- Instrumentation layer: Promise FastTrack SNMP Agent
- Technology used: SNMP

Disk controllers (SEN_HW_DISKCONTROLLER)

- Logical disks, RAIDs (SEN_HW_LOGICALDISK)
- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_DISKCONTROLLER / BatteryStatus

- SEN_HW_LOGICALDISK / Status
- SEN_HW_PHYSICALDISK / Status
- SEN_HW_PHYSICALDISK / Predicted Failure

SmartMon Tools

This connector provides S.M.A.R.T.-enabled physical disk information through the smartd/smartctl utility under Linux.

Typical platforms: Dell PowerEdge, Fujitsu-Siemens PRIMERGY, HP ProLiant, IBM xSeries, Sun Fire (x64)

- Operating system: Linux
- Instrumentation layer: SmartMonTools
- Technology used: System commands

Physical disks (SEN_HW_PHYSICALDISK)

- Temperature sensors (SEN_HW_TEMPERATURE)

SEN_HW_PHYSICALDISK / Predicted Failure

- SEN_HW_TEMPERATURE / Temperature



This connector probably requires root privileges for its proper operation. You therefore will need to configure the product to use the root login/password to execute external commands. Alternatively, you can configure the product to use the sudo utility for the command: /usr/sbin/smartctl

Sun Advanced Lights-Out Management (ALOM) card

This connector provides environmental and disk information (temperatures, fans, etc.) on Sun SPARC servers equipped with an ALOM card. Telnet must be enabled on the ALOM card.

Typical platform: Sun Fire (SPARC)

- Operating system: N/A
- Instrumentation layer: Sun Advanced Lights-Out Management (ALOM) card
- Technology used: Telnet/SSH

Physical disks (SEN_HW_PHYSICALDISK)

- Fans (SEN_HW_FAN)
- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Other devices (SEN_HW_OTHERDEVICE)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_PHYSICALDISK / Status

- SEN_HW_FAN / Status
- SEN_HW_FAN / Speed
- SEN_HW_VOLTAGE / Status
- SEN_HW_VOLTAGE / Voltage
- SEN_HW_TEMPERATURE / Status
- SEN_HW_TEMPERATURE / Temperature
- SEN_HW_POWERSUPPLY / Status
- SEN_HW_OTHERDEVICE / Status

Sun Fire F12K/F15K/F20K/F25K (SMS)

This connector provides environmental information (temperatures, fans, etc.) and boards status on Sun Fire F12K, F15K, F20K and F25K servers.

Typical platform: Sun Fire (SPARC)

- Operating system: Sun Solaris
- Instrumentation layer: Sun SMS utilities installed on the System Controller (SC on F15K, etc.)
- Technology used: System commands

Fans (MS_HW_FAN)

- Voltage sensors (MS_HW_VOLTAGE)
- Temperature sensors (MS_HW_TEMPERATURE)
- Power supplies (MS_HW_POWERSUPPLY)
- Other devices (MS_HW_OTHERDEVICE)
- Enclosure model (MS_HW_ENCLOSURE)

MS_HW_FAN / Status

- MS_HW_VOLTAGE / Status
- MS_HW_VOLTAGE / Voltage
- MS_HW_TEMPERATURE / Status
- MS_HW_TEMPERATURE / Temperature
- MS_HW_POWERSUPPLY / Status
- MS_HW_OTHERDEVICE / Status

Sun Fire Mx000 (XSCF)

This connector provides environmental information (temperatures, fans, etc.) and boards status on Sun Fire M4000, M5000, M8000 and M9000 servers.

Typical platform(s): Sun Fire (SPARC)

- **Operating system(s):** Sun Solaris
- **Instrumentation layer:** Sun XSCF utilities installed on the System Controller
- **Technology used:** System commands, tableunion

Fans (MS_HW_FAN)

- Voltage sensors (MS_HW_VOLTAGE)
- Power supplies (MS_HW_POWERSUPPLY)
- Other devices (MS_HW_OTHERDEVICE)
- Memory modules (MS_HW_MEMORY)
- Processors (MS_HW_CPU)
- Enclosure model (MS_HW_ENCLOSURE)

MS_HW_FAN / Status

- MS_HW_VOLTAGE / Voltage
- MS_HW_POWERSUPPLY / Status
- MS_HW_OTHERDEVICE / Status
- MS_HW_MEMORY / Status
- MS_HW_CPU / Status



This connector targets remote devices only.

Sun Solaris – Disks

This connector provides physical disk information (status and error count) on Sun Solaris systems through the `iostat -En` utility. Supports only official Sun disks.

Typical platform: Sun Fire (SPARC)

- Operating system: Sun Solaris
- Instrumentation layer: Sun Solaris system commands (`iostat`, `dd`)
- Technology used: System commands

Disk controllers (MS_HW_DISKCONTROLLER)

- Physical disks (MS_HW_PHYSICALDISK)

MS_HW_PHYSICALDISK / Error Count

- MS_HW_PHYSICALDISK / Status



This connector probably requires root privileges for its proper operation. You therefore will need to configure the product to use the root login/password to execute external commands. Alternatively, you can configure the product to use the sudo utility for the command: `/usr/sbin/dd`

Sun Solaris - Non-Sun Disks

This connector provides physical disk information (status and error count) on Sun Solaris platforms through the `iostat -En` utility. It supports only non-Sun disks in Sun systems. This connector needs to be manually activated and will never be picked up automatically during platform detection and component discovery.

Typical platform: Sun Fire (SPARC)

- Operating system: Sun Solaris
- Instrumentation layer: Sun Solaris system commands (`iostat`, `dd`)
- Technology used: System commands

Disk controllers (SEN_HW_DISKCONTROLLER)

- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_PHYSICALDISK / Error Count

- SEN_HW_PHYSICALDISK / Status

Sun Solaris - Environment (prtdiag, lom)

This connector provides environmental information (temperatures, fans, etc.) on several Sun platforms through the prtdiag or lom utility.

Typical platform: Sun Fire (SPARC)

- Operating system: Sun Solaris
- Instrumentation layer: Sun Solaris system commands (prtdiag, lom, psrinfo, etc.)
- Technology used: System commands

Fans (SEN_HW_FAN)

- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Power supplies (SEN_HW_POWERSUPPLY)
- Memory modules (SEN_HW_MEMORY)
- Enclosure model (SEN_HW_ENCLOSURE)

SEN_HW_FAN / Status

- SEN_HW_VOLTAGE / Voltage
- SEN_HW_VOLTAGE / Status
- SEN_HW_TEMPERATURE / Temperature
- SEN_HW_TEMPERATURE / Status
- SEN_HW_POWERSUPPLY / Status
- SEN_HW_MEMORY / Status



*This connector probably requires root privileges to function. You need to configure the product to use the root login/password to execute external commands.
Alternatively, you can configure the product to use the 'sudo' utility for the following command: /usr/sbin/lom*

Sun Solaris - Environment (prtpicl)

This connector provides environmental information (temperatures, fans, etc.) on several Sun platforms through the prtpicl utility. This connector is to be used mainly on Solaris 10 systems.

Typical platform: Sun Fire (SPARC)

- Operating system: Sun Solaris
- Instrumentation layer: Sun Solaris system commands (prtpicl, etc.)
- Technology used: System commands

Fans (SEN_HW_FAN)

- Voltage sensors (SEN_HW_VOLTAGE)
- Temperature sensors (SEN_HW_TEMPERATURE)

SEN_HW_FAN/Speed

- SEN_HW_FAN / Speed Percent
- SEN_HW_FAN / Status
- SEN_HW_VOLTAGE / Voltage
- SEN_HW_VOLTAGE / Status
- SEN_HW_TEMPERATURE / Temperature
- SEN_HW_TEMPERATURE / Status

Sun Solaris - Environment (ALOM-CMT snapshot)

This connector provides environmental and disk information (temperatures, fans, etc.) on Sun SPARC T1/T2 servers equipped with an ALOM card. It gathers the hardware information from the ALOM card in-band (no Telnet or SSH connection over the network). The connector requires the SUNWexplo (Sun Explorer) package.

Typical platforms: Sun Fire (SPARC T1/T2)

- Operating system: Sun Solaris
- Instrumentation layer: Sun Explorer and the ALOM-CMT card
- Technology used: System commands

Enclosure model (MS_HW_ENCLOSURE)

- Fans (SEN_HW_FAN)
- Other devices (MS_HW_OTHERDEVICE)
- Physical disks (MS_HW_PHYSICALDISK)
- Power supplies (MS_HW_POWERSUPPLY)
- Temperature sensors (SEN_HW_TEMPERATURE)
- Voltage sensors (MS_HW_VOLTAGE)

SEN_HW_FAN/Speed

- SEN_HW_FAN / Status
- SEN_HW_OTHERDEVICE / Status
- SEN_HW_PHYSICALDISK / Status
- SEN_HW_TEMPERATURE / Temperature
- SEN_HW_TEMPERATURE / Status
- SEN_HW_VOLTAGE / Voltage
- SEN_HW_VOLTAGE / Status



This connector probably requires root privileges for its proper operation. You therefore will need to configure the product to use the root login/password to execute external commands. Alternatively, you can configure the product to use the sudo utility for the following command: /opt/SUNWexplo/bin/snapshot

Sun Solaris - Memory modules

This connector provides memory modules monitoring on Sun Solaris 8 and 9 SPARC systems. Requires root privileges.

Typical platform: Sun Fire (SPARC)

- Operating system: Sun Solaris
- Instrumentation layer: Sun Solaris system commands (cediag, cestat)
- Technology used: System commands

Memory modules (SEN_W_MEMORY)

SEN_W_MEMORY / Predicted Failure

- SEN_W_MEMORY / Status



This connector probably requires root privileges for proper operation. You therefore will need to configure the product to use the root login/password to execute external commands. Alternatively, you can configure the product to use the sudo utility for the command: /opt/SUNWcest/bin/cediag

Sun Solaris – Network

This connector provides the monitoring of network cards on all Sun Solaris systems.

Typical platform: Sun Fire (SPARC)

- Operating system: Sun Solaris
- Instrumentation layer: Sun Solaris system commands (kstat, ndd, ifconfig, etc.)
- Technology used: System commands

Network cards (SEN_HW_NETWORK)

SEN_HW_NETWORK / Status

- SEN_HW_NETWORK / Error Count
- SEN_HW_NETWORK / Link Status



This connector probably requires root privileges for its proper operation. You therefore will need to configure the product to use the root login/password to execute external commands. Alternatively, you can configure the product to use the sudo utility for the following commands: /usr/bin/kstat; /usr/sbin/ndd

Sun Solaris - Processors (psrinfo)

This connector discovers and monitors the processor in any Sun SPARC-based Solaris machine through the psrinfo system command.

Typical platform: Sun Fire (SPARC)

- Operating system: Sun Solaris
- Instrumentation layer: Sun Solaris system commands (psrinfo, etc.)
- Technology used: System commands

Processors (SEN_HW_CPU)

SEN_HW_CPU / Status

VMware ESXi

This connector provides hardware monitoring through the VMware ESXi agent.

Typical platform(s): VMware ESXi

- **Operating system(s):** N/A
- **Instrumentation layer:** WBEM
- **Technology used:** WBEM, tablejoint

Fans (MS_HW_FAN)

- Power supplies (MS_HW_POWERSUPPLY)
- Memory modules (MS_HW_MEMORY)
- Processors (MS_HW_CPU)
- Enclosure model (MS_HW_ENCLOSURE)

MS_HW_FAN / Status

- MS_HW_POWERSUPPLY / Status
- MS_HW_MEMORY / Status
- MS_HW_CPU / Status
- MS_HW_ENCLOSURE / Status



This connector targets remote devices only.

WMI – Disks

This connector provides monitoring of the S.M.A.R.T.-enabled disks that are directly handled by Windows (and WBEM through the WMI service). It tries to exclude disks that are actually logical disks exposed by some RAID controllers.

Typical platforms: Dell PowerEdge, Fujitsu-Siemens PRIMERGY, HP ProLiant, IBM xSeries, NEC Express5800, Sun Fire (x64)

- Operating system: Microsoft Windows
- Instrumentation layer: WMI
- Technology used: WMI

Disk controllers (SEN_HW_DISKCONTROLLER)

- Physical disks (SEN_HW_PHYSICALDISK)

SEN_HW_PHYSICALDISK / Status

- SEN_HW_PHYSICALDISK / Predicted Failure

WMI – Network

This connector provides the monitoring of network cards on all Windows-based systems through the WMI layer (root/WMI namespace).

Typical platforms: Dell PowerEdge, Fujitsu-Siemens PRIMERGY, HP ProLiant, IBM xSeries, NEC Express5800, Sun Fire (x64)

- Operating system: Microsoft Windows
- Instrumentation layer: WMI
- Technology used: WMI

Network cards (SEN_HW_NETWORK)

SEN_HW_NETWORK / Status

- SEN_HW_NETWORK / Link Status
- SEN_HW_NETWORK / Error Count

Index

- A -

Adaptec IOManager 35
Adaptec Storage Manager (DPT) 36
Adaptec Storage Manager Web Edition (AAC) 36
Application Classes 12, 13, 15, 16, 18, 19, 21, 22, 23, 25, 26

- C -

Connector 29, 35
Connectors 35, 36, 37, 38, 39, 40, 41, 42, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 70, 72, 73, 74, 75, 76, 77

- D -

Dell 37, 38, 39
Dell DRAC/MC (Dell Remote Access Controller/Modular Chassis) 37
Dell OpenManage Array Manager 37
Dell OpenManage Server Administrator 38
Dell OpenManage Storage Manager 39

- F -

Fujitsu-Siemens 40, 41
Fujitsu-Siemens Management Blade (FSC BX Blade Servers) 41
Fujitsu-Siemens Serverview 40
Fujitsu-Siemens ServerView RAID Agent 41

- H -

HP 42, 44, 45, 46, 47, 48, 49, 50
HP BladeSystem 42
HP Insight Management Agent - Drive Array 44
HP Insight Management Agent - Fiber Array 44
HP Insight Management Agent - IDE Storage 45
HP Insight Management Agent - iLO 47
HP Insight Management Agent - SCSI Storage 45
HP Insight Management Agent - Server 46

HP Insight Management Agent - Server (True64) 46
HP MP/GSP card (iLO) 47
HP TopTools Agent 48
HP TopTools NetRaid Agent 48
HP-UX – Common 49
HP-UX – Disks 49
HP-UX STM 50

- I -

IBM 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62
IBM AIX – CHRP Environment 51
IBM AIX – Common 51
IBM AIX – Environment 52
IBM AIX – SCSI disks 52
IBM BladeCenter Management Module 50
IBM Director Agent 4.x – Windows 55
IBM Director Agent 5.10.x – Linux 56
IBM Director Agent 5.10.x – Windows 57
IBM Director Agent 5.20.x - Linux 58
IBM Director Agent 5.20.x - ServeRAID - Linux 59
IBM Director Agent 5.20.x - ServeRAID - Windows 59
IBM Director Agent 5.20.x - Windows 60
IBM Netfinity Manager 5.20.x - Basic 61
IBM Netfinity Manager 5.20.x - Disks 61
IBM Netfinity Manager 5.20.x - Normal 62
IPMI – In-band (IpmiTool) 62

- L -

Linux – Network 63
LSI 63, 64, 65, 66
LSI 1030-based GAM Server (Alternate MIB) 64
LSI 1030-based Global Array Manager Server 63
LSI Logic - LsiUtil - RAID 65
LSI/Mylex GAM Server 66
LsiLogic MegaRAID PowerConsole 65
LsiLogic MegaRAID SAS 64

- M -

Motherboard Monitor 66

- N -

NEC ESMPRO Agent 67

- P -

Promise FastTrack 67

- R -

Requirements for Managed Elements 9

- S -

SmartMon Tools 68

Sun Advanced Lights-Out Management (ALOM) card
69

Sun Fire F12K/F15K/F20K/F25K (SMS) 70

Sun Solaris 72, 73, 74, 75, 76, 77

Sun Solaris – Disks 72

Sun Solaris – Environment 73

Sun Solaris - Environment (ALOM-CMT snapshot)
75

Sun Solaris - Environment (prtpicl) 74

Sun Solaris - Memory modules 76

Sun Solaris – Network 76

Sun Solaris - Non-Sun Disks 72

Sun Solaris - Processors (psrinfo) 77

Supported Platforms and Requirements 9

- W -

WMI 78

WMI – Disks 78

WMI – Network 78



9 6 4 5 6



About BMC® Software

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